

**EUROPEAN AND MEDITERRANEAN PLANT PROTECTION ORGANIZATION
ORGANISATION EUROPEENNE ET MEDITERRANEENNE
POUR LA PROTECTION DES PLANTES**

06-12801 Final
WPPR point 9.5

Report of a Pest Risk Analysis

This summary presents the main features of a Pest Risk Analysis which has been conducted on *Crassula helmsii*, according to the EPPO Decision Support Scheme.

Pest: *Crassula helmsii* (Kirk) Cockayne
PRA area: EPPO region
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Date: First PRA 2005-09, revised 2006-05
Reviewed: Panel on IAS 2006-05-16/19 (editorial modifications by EPPO Secretariat 2007-01)

Reason for doing PRA: This plant has been introduced intentionally into Europe (as an ornamental plant for garden ponds and aquaria). It has escaped from garden ponds and is invading waterways and competing with the native flora. Most EPPO Countries are still free from this pest.
Taxonomic position of pest: *Plantae – Crassulaceae*

Entry

Geographical distribution: **EPPO region:** Belgium, Denmark, France, Germany, Ireland, the Netherlands, the United Kingdom (Great Britain, Northern Ireland, Guernsey).
North America: USA (Florida and North Carolina).
Oceania: Australia (New South Wales, South Australia, Tasmania, Victoria, Western Australia), New Zealand.

Major host plants or habitats: This aquatic plant colonizes inland wetlands (marshes, peat bogs), coastal wetlands, continental waters (water courses, water bodies), banks of continental water, riverbanks / canal sides (dry river beds) and muddy margins of ponds.

Which pathway(s) is the pest likely to be introduced on: The main pathway is intentional introduction for ornamental purposes.
C. helmsii is also often found as a “contaminant” of other traded aquatic plants.
Natural spread along waterways.

Establishment

Plants or habitats at risk in the PRA area: All suitable habitats mentioned in the entry section are present in the PRA area.

Climatic similarity of present distribution with PRA area (or parts thereof): The climate in the PRA area is largely similar to the present area of distribution.
C. helmsii is already established in several EPPO countries. In the southern hemisphere, *C. helmsii* is present in areas that have levels of precipitation from 100-550 mm in summer (November - April) and 200-3000 mm in winter (May - October). Its temperature requirements are restricted to a summer range of 20-25°C and a winter range of 0-15°C including extended periods under snow. In its native range it inhabits a wide range of climatic variation, from

<u>Aspects of the pest's biology that would favour establishment:</u>	a mean temperature of 30°C in summer to -6°C in winter. No information is available to assess its survival capacity in extreme conditions (e.g. very cold conditions). <i>C. helmsii</i> mainly reproduces vegetatively. Plant parts and turions (even single nodes of 10 mm of stem fragments) can generate new plants and are transported by waterflow and mud. It is very competitive and can form monospecific stands.
<u>Characteristics (other than climatic) of the PRA area that would favour establishment:</u>	The plant does not seem to be affected by abiotic factors other than temperatures. <i>C. helmsii</i> has been found in water ranging from acid to alkaline pH and has also been recorded in semi-saline sites.
<u>Which part of the PRA area is the endangered area:</u>	The endangered area is the whole EPPO area, with a question mark to the Eastern part of the region where winters are very cold. The plant is absent from these areas and there is not sufficient information on its potential behaviour there.
How much economic impact does the pest have in its current area of distribution:	The environmental impact is massive, but the effect on crops is minimal. Mats formed by the plant choke ponds and drainage ditches. Strongly invaded waters lose their attractiveness for recreation and flooding may be caused. The mats can be dangerous to pets, livestock and children who mistake them for dry land. Loss of biodiversity is also reported. Dense mats formed by this species reduce the conservation value of nature reserves by the reduction or displacement of native (and rare) species.
Describe damage to potential hosts/ habitats in the PRA area:	Damage to potential habitats in the PRA area would be similar.
How much economic impact would the pest have in the PRA area:	Similar impacts are expected to those in the current area of distribution. The environmental impact in the endangered area is expected to be massive. Effect on crops is expected minimal. Removal of <i>C. helmsii</i> from invaded waters is very costly and regular management costs will also arise.
Summarize the major factors that influence the acceptability of the risk from this pest:	
Estimate the probability of entry:	The species has already entered the EPPO region. The key pathway is intentional introduction as an ornamental plant for garden ponds and aquaria. Another pathway is the import of other aquatic plants contaminated by <i>C. helmsii</i> .
Estimate the probability of establishment:	Establishment of <i>C. helmsii</i> is very likely in many countries within the EPPO region. It is already established (Belgium, Germany, France and Ireland) and invasive (the Netherlands, the United Kingdom) in the EPPO region.
Estimate the potential economic impact:	Medium to high.
Degree of uncertainty	When performing the PRA the following areas of uncertainty have been identified: Volumes of trade of <i>C. helmsii</i> for ornamental purposes. Volumes of other aquatic plants potentially contaminated. There are question marks concerning the survival of the plant under very cold conditions.

OVERALL CONCLUSIONS

The risk of establishment of *Crassula helmsii* in waterways, and of its interference with their vegetation and use, and ecosystem changes justifies the identification of management options should to prevent further introduction and spread of this plant in the EPPO region.

STAGE 3: PEST RISK MANAGEMENT

IDENTIFICATION OF THE PATHWAYS

Pathways studied in the pest risk management (ranked by likelihood).

Very likely

Pathway 1:

Intentional introduction as an ornamental plant for garden ponds and aquaria, plants escape from there into unintended habitats.

Pathway 2:

Unintentional introduction: “contaminant of other plants”.

Plant fragments may also spread with birds or other animals and along waterways, but there are no quantitative data available.

IDENTIFICATION OF POSSIBLE MEASURES

Pathway1 : Intentional introduction as an ornamental plant

No essential interest is served by continuing trade of *Crassula helmsii*. Its overall value is minor, and non-invasive aquatic plants are available. Further trade, introduction and movement could have negative economic and environmental impacts, which may be irreversible. Without a strict preventive approach, more invasions are foreseeable. Therefore, the following measures/requirements are proposed:

- publicity
- introduction into and spread within EPPO member countries should be prohibited (by prohibition of import, sale, holding, planting, and movement)
- obligation to report findings
- monitoring/surveillance
- emergency plan
 - establishment of an action plan and eradication, when the plant is found
- proposal of alternative aquatic species.

Pathway 2 : Unintentional introduction: “contaminant of other plants”.

Measures related to consignments:

No measures related to consignments have been identified.

Measures related to the crop or to places of production:

The plants should be grown in protected conditions (separate containers) so that contamination with *Crassula helmsii* cannot occur

The pest is considered to have a low to medium mobility, pest-free place of production¹ and pest-free area² for *Crassula helmsii* are recommended measures.

EVALUATION OF THE MEASURES IDENTIFIED IN RELATION TO THE RISKS PRESENTED BY THE PATHWAYS

¹ According to ISPM 10 "Requirements for the establishment of pest-free places of production and pest-free production sites"

² According to ISPM no.4 "Requirements for pest-free areas"

Degree of uncertainty

The degree of uncertainty is low

CONCLUSION:

Recommendation for possible measures for the endangered area:

Plants of <i>Crassula helmsii</i>	<u>Prohibited</u> (see also recommendations for internal measures)
Aquatic plants originating in countries where <i>Crassula helmsii</i> occurs	PC and, if appropriate, RC Area freedom for <i>Crassula helmsii</i> according to EPPO Phytosanitary Procedure No <u>or</u> Place of production freedom for <i>Crassula helmsii</i> <u>Or</u> The plants should be grown in protected conditions (separate containers) to avoid contamination with <i>Crassula helmsii</i> .

PC= Phytosanitary Certificate, RC= Phytosanitary Certificate for Re-Export