

Information about GB Non-native Species Risk Assessments

The Convention on Biological Diversity (CBD) emphasises the need for a precautionary approach towards non-native species where there is often a lack of firm scientific evidence. It also strongly promotes the use of good quality risk assessment to help underpin this approach. The GB risk analysis mechanism has been developed to help facilitate such an approach in Great Britain. It complies with the CBD and reflects standards used by other schemes such as the Intergovernmental Panel on Climate Change, European Plant Protection Organisation and European Food Safety Authority to ensure good practice.

Risk assessments, along with other information, are used to help support decision making in Great Britain. They do not in themselves determine government policy.

The Non-native Species Secretariat (NNSS) manages the risk analysis process on behalf of the GB Programme Board for Non-native Species. Risk assessments are carried out by independent experts from a range of organisations. As part of the risk analysis process risk assessments are:

- Completed using a consistent risk assessment template to ensure that the full range of issues recognised in international standards are addressed.
- Drafted by an independent expert on the species and peer reviewed by a different expert.
- Approved by an independent risk analysis panel (known as the Non-native Species Risk Analysis Panel or NNRAP) only when they are satisfied the assessment is fit-for-purpose.
- Approved for publication by the GB Programme Board for Non-native Species.
- Placed on the GB Non-native Species Secretariat (NNSS) website for a three month period of public comment.
- Finalised by the risk assessor to the satisfaction of the NNRAP.

To find out more about the risk analysis mechanism go to: www.nonnativespecies.org

Common misconceptions about risk assessments

To address a number of common misconceptions about non-native species risk assessments, the following points should be noted:

- Risk assessments consider only the risks posed by a species. They do not consider the practicalities, impacts or other issues relating to the management of the species. They therefore cannot on their own be used to determine what, if any, management response should be undertaken.
- Risk assessments are about negative impacts and are not meant to consider positive impacts that may also occur. The positive impacts would be considered as part of an overall policy decision.
- Risk assessments are advisory and therefore part of the suite of information on which policy decisions are based.
- Completed risk assessments are not final and absolute. Substantive new scientific evidence may prompt a re-evaluation of the risks and/or a change of policy.

Period for comment

Draft risk assessments are available for a period of three months from the date of posting on the NNSS website*. During this time stakeholders are invited to comment on the scientific evidence which underpins the assessments or provide information on other relevant evidence or research that may be available. Relevant comments are collated by the NNSS and sent to the risk assessor. The assessor reviews the comments and, if necessary, amends the risk assessment. The final risk assessment is then checked and approved by the NNRAP.

*risk assessments are posted online at: <https://secure.fera.defra.gov.uk/nonnativespecies/index.cfm?sectionid=51>

comments should be emailed to nnss@fera.gsi.gov.uk

GB NON-NATIVE ORGANISM RISK ASSESSMENT SCHEME

For more information visit: www.nonnativespecies.org

Name of Organism:	<i>Rhododendron ponticum</i>
Objectives:	Assess the risks associated with this species in GB.
Version:	First published on NNSS website: 03/09/13
Author:	Katharina Dehnen-Schmutz
Suggested citation:	Dehnen-Schmutz, K. (2013). GB Non-native Organism Risk Assessment for <i>Rhododendron ponticum</i> . www.nonnativespecies.org

Stage 1: Initiation

1 - What is the principal reason for performing the Risk Assessment? (Include any other reasons as comments)

A request is made by the GB Programme Board for non-native species.

2 - What is the Risk Assessment Area?

Great Britain

3 - What is the name of the organism? **This will appear as a heading** (Other names used for the organism can be entered in the comments box)

Rhododendron ponticum

Comments:

The populations of *Rhododendron ponticum* L.f found in the British Isles are genetically, ecologically and generally morphologically distinct from other populations of the species (Milne & Abbott 2000, Erfmeier & Bruelheide 2004, 2005). Their main ancestor is the population of *R. ponticum* in Spain and Portugal and their minor ancestors are *R. catawbiense* and *R. maximum* from the Appalachian mountains in North America and other *Rhododendron* spp.; the Black Sea populations of *R. ponticum* seem not to have been involved (Milne & Abbott 2000). Recently, the name *Rhododendron x superponticum* Cullen has been suggested for the invasive populations in Britain and Ireland (Cullen 2011).

Throughout this assessment, the name *Rhododendron ponticum* generally refers to these British populations and if references to other populations outside the British Isles are made these will be indicated.

4 - What is the status of any earlier Risk Assessment?

none exists

Stage 2a: Organism Risk Assessment

6 - If you are sure that the organism clearly presents a risk, or that in any case a full Risk Assessment is required, you can omit this section and proceed directly to Section B.

Go to the main Risk Assessment, SECTION 2B

Stage 2b: Pathways

20 - How many pathways are relevant to the potential entry of this organism?

For organisms which are already present in Great Britain, only complete the entry section for current active pathways of new entry.

very few

Comments:

The main pathway of introduction for *R. ponticum* has been ornamental horticulture.

21 - Please list relevant pathways through which the organism could enter (one per line).

Give details about specific origins and end points of the pathways (where possible) in the comment box.

ornamental horticulture

22 - Please select the pathway:

ornamental horticulture

PATHWAY – ORNAMENTAL HORTICULTURE

23 - How likely is it that the organism is strongly associated with the pathway at the point(s) of origin?

likely

Level of confidence: very high

Comments:

R. ponticum has been deliberately introduced as an ornamental species. It is still available to buy from nurseries in the risk assessment area as well as in supermarkets

24 - How likely is it that large numbers of the organism will travel along this pathway from the point(s) of origin?

unlikely

Level of confidence: high

Comments:

The RHS Plant Finder (<http://apps.rhs.org.uk/rhsplantfinder/index.asp>, accessed August 2010) lists 8 nurseries in the Risk Assessment Area selling *R. ponticum*. There are no figures available on the number of plants sold and subsequently planted. However, compared to other rhododendrons listed in the Plant Finder this is a higher than average number of nurseries selling the species (average for 120 randomly picked listings 3.8 nurseries, median 2) indicating that *R. ponticum* is not an unpopular choice which may be more widely planted than the average rhododendron species or cultivar listed in the Plant Finder. It is, however, unclear if the plants available in the trade are identical to the established populations in Britain or of different origin.

25 - How likely is the organism to survive during passage along the pathway?

very likely

Level of confidence: very high

Comments:

As an ornamental plant *R. ponticum* is deliberately transported and will usually be kept in a healthy condition ready to grow at its intended destination.

26 - How likely is the organism to enter Great Britain undetected?

very unlikely

Level of confidence: very high

Comments:

As an ornamental plant *R. ponticum* is deliberately introduced into the Risk Assessment Area and usually labelled.

27 - How likely is the organism to multiply/increase in prevalence during transport /storage?

very unlikely

Level of confidence: very high

Comments:

Usually mature plants will be transported ready to flower and produce seeds. It seems however very unlikely that transport duration and conditions would allow natural propagation.

28 - How likely is the organism to survive existing management practices within the pathway (answer N/A for intentional introductions)?

very likely

Level of confidence: very high

Comments:

Existing management practises for the transport of ornamental plants are designed to ensure plants arrive healthy and alive.

29 - How likely is the organism to arrive during the months of the year most appropriate for establishment (if intentional introduction answer N/A)?

likely

Level of confidence: very high

Comments:

R. ponticum is usually sold growing in pots with most sales probably taking place in the spring planting season or autumn.

30 - How likely is the organism to be able to transfer from the pathway to a suitable habitat or host?

likely

Level of confidence: high

Comments:

Nowadays most *R. ponticum* plants are probably planted in private gardens. Usually mature flowering plants will be planted that are immediately able to produce viable seeds. However, transfer into unintended habitats depends on the availability of suitable habitats in the surrounding of gardens. These are not available in the entire Risk Assessment Area or in more densely populated urban areas.

END

31 - Do other pathways need to be considered?

no

32 - Please estimate the overall likelihood of entry into the Risk Assessment Area for this organism (please comment on the key issues that lead to this conclusion).

very likely

Level of confidence: very high

Comments:

R. ponticum is already present in the Risk Assessment Area since 1763 (Aiton 1789). It is now widely distributed and established in the Risk Assessment Area (Preston et al. 2002).

Establishment

33 - How likely is it that the organism will be able to establish in Great Britain based on the similarity between climatic conditions in Great Britain and the area of the organism's current distribution?

very likely

Level of confidence: very high

Comments:

R. ponticum is already widely established in the entire Risk Assessment Area (Preston et al. 2002). Climatic conditions in the Risk Assessment Area seem to offer ideal conditions for the species. Growth in the drier east of the area is less vigorous than in the damper west (Cross 1975). The life stage most dependent on more specific climatic conditions are seedling germination and survival which can be severely affected by droughts in spring and summer because of their shallow root system (Cross 1975, Shaw 1984). Cold winters may harm flower buds but usually do not kill any plants. Climate change in the Risk Assessment Area with projections for warmer and drier summers (<http://ukclimateprojections.defra.gov.uk/>, accessed August 2010) could therefore have a negative impact on the species' establishment ability in the future in some of the habitats currently occupied but may also favour the species in other habitats (e.g. acidic peaty wetlands).

34 - How likely is it that the organism will be able to establish in Great Britain based on the similarity between other abiotic conditions in Great Britain and the area of current distribution to be similar?

very likely

Level of confidence: very high

Comments:

R. ponticum grows best in acidic soils with pH values below 5 (Cross 1975) which can be widely found in the Risk Assessment Area.

35 - How many species or suitable habitats vital for the survival, development and multiplication of the organism species are present in Great Britain? Please specify in the comment box the species or habitats.

many

Level of confidence: very high

Comments:

R. ponticum is currently found in the Risk Assessment Area in heathy and rocky hillsides, rocky stream banks and ravines, and as an understorey in woodland on acid soils (Preston et al. 2002). It is also growing in sand dunes along the coast (Fuller & Boorman 1977), as well as in bog communities (Cross 1975).

36 - How widespread are the species or suitable habitats necessary for the survival, development and multiplication of the organism in Great Britain?

widespread

Level of confidence: very high

Comments:

Heathlands and woodlands on acid soils are widespread in the Risk Assessment Area.

37 - If the organism requires another species for critical stages in its life cycle then how likely is the organism to become associated with such species in Great Britain?

very likely

Level of confidence: very high

Comments:

R. ponticum grows with mycorrhizal fungi typical for ericaceous plants but it is not depending on their presence for germination (Cross 1975).

38 - How likely is it that establishment will occur despite competition from existing species in Great Britain?

very likely

Level of confidence: very high

Comments:

R. ponticum is already widely established in the Risk Assessment Area (Preston et al. 2002) demonstrating that competition from existing species is not preventing establishment.

39 - How likely is it that establishment will occur despite predators, parasites or pathogens already present in Great Britain?

very likely

Level of confidence: very high

Comments:

R. ponticum is already widely established in the Risk Assessment Area (Preston et al. 2002) demonstrating that predators, parasites or pathogens are currently not having significant effects on the species. There have been investigations in fungal pathogens and herbivores found on *R. ponticum* but so far none has turned out to be serious threat for the long term establishment of the species although they are investigated for their potential as biological control agents (Cross 1975, Searle 1999, Seier 2009).

40 - How likely are management practices in Great Britain to favour establishment?

very likely

Level of confidence: very high

Comments:

R. ponticum establishment has been considerably favoured by management practices in the past, eg. through planting and sowing in woodlands for game shelter or by the use as grafting stock (Dehnen-Schmutz & Williamson 2006). Nowadays establishment is favoured by different management practices, in particular forest cycles of clear felling and re-planting seem to provide perfect opportunities for *R. ponticum* seedling establishment on moss covered tree stumps and bare ground (Stephenson et al. 2006) as well as grazing pressure by deer and sheep (Cross 1981, 2002), and outside woodlands by grazing and traditional burning of *Calluna* in heathlands (Cross 1981). However, there is also evidence showing that high grazing pressure prevents new invasions because the sheep eat the young seedlings (Jackson 2008). Another management which hugely favours spread is the control of dense stands close to existing seed sources. Cleared areas can be perfect seed beds for re-invasion.

41 - How likely is the organism to establish despite existing management practices in Great Britain?

very likely

Level of confidence: very high

Comments:

R. ponticum is already widely established in the Risk Assessment Area (Preston et al. 2002) demonstrating that existing control and management measures are insufficient to prevent establishment. A survey among stakeholders affected revealed that despite control efforts the area affected by *R. ponticum* was nevertheless reported to increase (Dehnen-Schmutz et al. 2004). An assessment of the species' distribution in the Snowdonia National Park found that since 1986 the area covered by *R. ponticum* (at least 10% density) increased from 1921 hectares in 1986 to 2075 hectares in 2007 with an control effort effectively clearing 230 hectares insufficient to contain the species (Jackson 2008). Similarly, a recent study on the distribution of *R. ponticum* in woodlands in the Argyll and Bute area in Scotland concluded that current control efforts would not prevent expansion of the species by 23% over the next 20 years and by 58% over the next 50 years (Edwards & Taylor 2008).

42 - How likely is it that biological properties of the organism would allow it to survive eradication campaigns in Great Britain?

very likely

Level of confidence: very high

Comments:

R. ponticum is so wide spread in the Risk Assessment Area (Preston et al. 2002) that it seems to be impossible that it could be entirely eradicated from the whole area although eradication in particular locations may be possible subject to sufficient and long term secured funding. Biological properties of the species that could prevent successful local eradication are its ability to resprout from cut stumps that have not been controlled adequately with pesticide applications and the slow-early seedling growth and development of a "seedling bank" allowing it to survive in shaded locations undetected until changes in environmental conditions would allow rapid growth and re-occupation of a site. Occurrences of the species in private gardens add to this difficulty as they may continue to provide a reservoir seed source.

43 - Is establishment likely to be aided by the biological characteristics of the organism?

very likely

Level of confidence: very high

Comments:

R. ponticum is already widely established in the Risk Assessment Area (Preston et al. 2002) and this has been aided by the biological characteristics of the species, in particular the production of large amounts of seeds and the ability to out compete other species (Cross 1975). Seed viability declines very fast after the first year, however, it has been observed that a small proportion of seeds may survive for several years (Jackson 2008). There is also experimental evidence of negative allelopathic impacts of *R. ponticum* leaf and root extracts on the germination and growth rate of other plants (Rotherham & Read 1988, Colak 1997) which may contribute to the species competitive ability. Further establishment success in the future could be influenced by drier summers that may decrease the survival rate of seedlings.

44 - Is the organism's capacity to spread likely to aid establishment?

very likely

Level of confidence: very high

Comments:

R. ponticum is already widely established in the Risk Assessment Area (Preston et al. 2002) and although this has initially been mainly due to extensive plantings in suitable habitats more recent establishment in areas where the species has not been present before are to a higher proportion the result of the species ability to spread by seeds (Dehnen-Schmutz et al. 2004, Stephenson et al. 2007).

45 - How likely is the adaptability of the organism to aid its establishment?

likely

Level of confidence: high

Comments:

R. ponticum populations found in the Risk Assessment Area seem to have adapted to the environmental conditions since the first introduction of the species. Plants with evidence of introgression from the more cold tolerant species *R. catawbiense* were found to be significantly more abundant in the areas coldest winter region in Eastern Scotland than elsewhere in the British Isles (Milne & Abbott 2000). Non-native Irish populations were found to have higher growth rates and more successful seedling establishment than native Spanish and Georgian populations (Erfmeier & Bruelheide 2004). There is also indirect evidence for improved hardiness from reports in the gardening literature (Dehnen-Schmutz & Williamson 2006).

46 - How likely is it that the organism could establish despite low genetic diversity in the founder population?

moderately likely

Level of confidence: medium

Comments:

No information could be found on genetically homogenous *R. ponticum* populations. In its native area in Southern Spain *R. ponticum* survives in relict populations characterised by a lack of young plants and seedling recruitment (Mejías et al. 2002).

47 - How likely is the organism to be established in protected conditions (in which the environment is artificially maintained, such as wildlife parks, glasshouses, aquaculture facilities, terraria, zoological gardens) in Great Britain?

(Note that home gardens are not considered protected conditions in this sense.)

very unlikely

Level of confidence: very high

Comments:

No records of *R. ponticum* in protected conditions are known.

48 - Based on the history of invasion by this organism elsewhere, how likely is it to establish in Great Britain? (If possible, specify the instances of invasion in the comments box.)

moderately likely

Level of confidence: medium

Comments:

R. ponticum is established in several other European countries, and although no recent new records on country level have been reported existing invasions in continental Europe seem to increase (DAISIE, <http://www.europe-alien.org/speciesFactsheet.do?speciesId=17261#>, accessed 2/9/2010).

49 - If the organism does not establish, then how likely is it that transient populations will continue to occur?

very likely

Level of confidence: very high

Comments:

R. ponticum is already widely established in the Risk Assessment Area (Preston et al. 2002).

50 - Please estimate the overall likelihood of establishment (mention any key issues in the comment box)

very likely

Level of confidence: very high

Comments:

R. ponticum is already widely established in the Risk Assessment Area (Preston et al. 2002). Establishment of new populations is most likely in areas where climatic conditions and suitable habitats mainly on acidic soils are available. Change in management practices in particular decreasing grazing densities in upland grasslands could also contribute to the establishment of *R. ponticum* in previously not affected habitats.

Spread

51 - How rapidly is the organism liable to spread in Great Britain by natural means?

very slowly

Level of confidence: very high

Comments:

R. ponticum produces large numbers of wind-dispersed seeds with average numbers of 4900 seeds per raceme resulting in more than one million seeds in a bush with 233 buds reported in one study (Cross 1975). Dispersal of the seeds by wind has been measured in field conditions up to 100 m (Stephenson et al. 2007) but it has been suggested that several hundred meters may be possible in rare circumstances. It has also been suggested that seeds can be dispersed attached to furry animals pushing through the bushes (Cross 2002). Vegetative spread through layering is very limited and slow (Cross 1975).

52 - How rapidly is the organism liable to spread in Great Britain by human assistance?

very rapidly

Level of confidence: very high

Comments:

Long distance dispersal of more than 200 km is possible through deliberate movement of *R. ponticum* plants for ornamental purposes which can then become a source for seeds establishing populations in unintended habitats. The current distribution of *R. ponticum* in the British Isles is mainly the result of anthropogenic movement of the species (Dehnen-Schmutz & Williamson 2006).

53 - Within Great Britain, how difficult would it be to contain the organism?

difficult

Level of confidence: very high

Comments:

First attempts to control *R. ponticum* in the Risk Assessment Area are documented for the 1930s (Dehnen-Schmutz & Williamson 2006) and although efforts have considerably increased over the years it has not been possible to contain it from spreading. Given the high control costs and the wide distribution it seems very difficult to contain the species without substantial increases in funding and a more coordinated and long term approach for the control work. Spatially explicit models for successful control strategies taking into account life-history, demographic and dispersal parameters have been developed for *R. ponticum* (Harris et al. 2009) and could be utilized in a containment campaign.

Additional legal challenges come from the fact that the species often occurs on private lands including gardens where landowners cannot be forced to undertake control work and that therefore may continue to be seed sources. The species is still being sold commercially although planting in the wild is banned through the 2010 Amendment of the Wildlife and Countryside Act 1981 (Variation of Schedule 9) (England and Wales) Order 2010 and the Wildlife and Natural Environment (Scotland) Act 2011.

54 - Based on the answers to questions on the potential for establishment and spread in Great Britain, define the area endangered by the organism.

Entire Risk Assessment Area.

Comments:

R. ponticum is already widely established and still spreading in the entire Risk Assessment Area.

55 - Please estimate overall potential for spread (using the comment box to indicate any key issues).

very rapidly

Level of confidence: very high

Comments:

R. ponticum has a high potential for spread both through deliberate transport of plants for ornamental purposes as well as through natural means by seeds.

Impacts

56 - How great is the economic loss caused by the organism within its existing geographic range, including the cost of any current management?

massive

Level of confidence: very high

Comments:

R. ponticum is causing massive economic losses within its existing geographic range in particular in the British Isles. Losses are due to management and control costs of the species, losses of biodiversity, impacts on landscape aesthetics, loss of grazing land, impacts on forestry, and the species' role as a reservoir for the tree pathogens *Phytophthora ramorum* and *P. kernoviae*. Not all of these losses have been valued economically yet, in particular the impacts on biodiversity and amenity values. There are, however, a few studies providing evidence for the huge economic impacts of the species. A survey among nature conservation organisations, forestry and private landowners provided information on 52,000 ha of land affected by *R. ponticum* in 2001 (Dehnen-Schmutz et al. 2004). Costs reported for the control of 1275 ha of *R. ponticum* in that year totalled more than £670,000. A more recent study on the impacts of *P. ramorum* and *P. kernoviae* estimated the costs of *R. ponticum* clearance for about 400 ha of woodland in areas affected by the pathogens mainly in Cornwall to be £4.3 million over a period of twenty years (Defra, Welsh Assembly Government, Forestry Commission, 2008). The same study assumed the average benefit in biodiversity gained from the *R. ponticum* control work to be 70% of the clearance costs. Negative impacts on tourism through overgrowing of footpaths and rides are reported from the Snowdonia National Park (Jackson 2008). In its native range in Turkey, *R. ponticum* ssp *ponticum* is causing considerable problems for forestry (Esen & Zedaker 2004).

57 - How great a loss of production is the organism likely to cause in Great Britain? For example, how serious is the direct negative economic effect of the organism likely to be on crop yield and/or quality, livestock or fish health and production? (Describe the nature and extent of expected losses in the comment box.)

massive

Level of confidence: very high

Comments:

If *R. ponticum* continues to spread the economic loss already caused by its current presence in the Risk Assessment Area (see previous question) will increase. If further spread would be prevented the massive economic loss already caused by the organism would still continue.

58 - How great are the additional economic costs associated with managing this organism likely to be?

moderate

Level of confidence: high

Comments:

Producer profits are mainly affected in forestry. In a survey in 2001 twenty forest managers gave estimates of the impact of *R. ponticum* on woodland management most reporting that there were negative effects on harvest, maintenance, new plantings and timber growth as well as on the costs of all these operations and the timber yield although it was impossible to quantify these effects economically (Dehnen-Schmutz et al. 2004). There are also losses due to the loss of areas invaded by *R. ponticum* previously used for low intensity grazing (Shaw 1984, Jackson 2008). The plant is also poisoning for animals (except for the seedlings) and mortalities have been reported in spring when sheep return from wintering (Jackson 2008).

59 - How great a reduction in consumer demand is the organism likely to cause in the Risk Assessment Area?

minimal

Level of confidence: high

Comments:

The direct impact of *R. ponticum* on consumer demand for recreation in some areas is seen as controversial and there have been no attempts to value it. There is evidence that in some areas more visitors were noticed during flowering time of the species (Dehnen-Schmutz et al. 2004) although bus tours into the main affected areas in the Snowdonia National Park popular in the 1980s and 1990s no longer seem to be offered. Overgrown footpaths and riding paths (Jackson 2008) may deter tourists but no data exist that would allow to value these impacts.

60 - How significant might the losses in export markets be due to the presence of the organism in the Risk Assessment Area?

minimal

Level of confidence: high

Comments:

Currently there is no evidence for any negative impacts of *R. ponticum* on export markets.

61 - How important might other economic costs be resulting from introduction of the organism? (specify in the comment box)

NA

62 - How important is environmental harm caused by the organism within its existing geographic range under any current management regime?

massive

Level of confidence: very high

Comments:

R. ponticum is considered one of the worst invasive plants within its alien range in the British Isles (e.g. Hill et al. 2005, Williamson 2002). The main direct environmental harm caused by *R. ponticum* is the change of species composition and reduced biodiversity in invaded habitats (Rotherham & Read 1988, Rotherham 2001, Cross 1982). This is due to the ability of the species to out compete other plants mainly through the reduction of light preventing the regeneration of native plants (Cross 1975). Negative impacts on biodiversity have been demonstrated for the example of the endemic plant *Coincya wrightii* which is the only host plant for the endemic flea beetle, *Psylliodes luridipennis*, on the island of Lundy where *R. ponticum* was overgrowing the plant's habitats (Compton & Key 2000).

The species is also likely to alter other ecosystem services, for example the water retention or carbon sequestration ability of habitats. *R. ponticum* growing along streams has been found to disrupt food webs by degrading community structures with reduced invertebrate abundance and suppressed algal production (Hladysz et al. 2011). Impacts on provisioning services such as timber production have been mentioned in the comment to question 58. Up to now no studies analysing the whole range of potentially negative as well as positive impacts of *R. ponticum* on ecosystem services have been conducted.

63 - How important is environmental harm likely to be in Great Britain taking into account any management interventions that might be implemented?

massive

Level of confidence: very high

Comments:

R. ponticum is already causing massive environmental harm (see question 62) and it is not expected that that will change in the future if current management intervention efforts are not increased. If the species spreads further this environmental harm is likely to increase. Additional harm could be caused if strategies to control *P. ramorum* and *P. kernoviae* would fail.

64 - How important is social, health or other harm (not directly included in economic and environmental categories) caused by the organism within its existing geographic range under any current management regime?

moderate

Level of confidence: high

Comments:

See answer to question 59 for current impacts on recreational values.

65 - How important is the social, health or other harm likely to be in Great Britain taking into account any management interventions that might be implemented?

massive

Level of confidence: high

Comments:

See answer to question 59 for possible impacts on recreational values.

66 - How important is it that genetic traits of the organism could be carried to native species, modifying their genetic nature and making their economic, environmental or social effects more serious?

very unlikely

Level of confidence: very high

Comments:

There are no native *Rhododendron* species growing in the Risk Assessment Area.

67 - How important are the expected impacts of the organism despite any natural control by other organisms, such as predators, parasites or pathogens, that may already be present in Great Britain?

very likely

Level of confidence: very high

Comments:

R. ponticum is already widely established in the Risk Assessment Area (Preston et al. 2002) demonstrating that predators, parasites or pathogens are currently not having significant effects on the species.

68 - How difficult is it likely to be to control the organism in Great Britain?

very difficult

Level of confidence: very high

Comments:

Control of *R. ponticum* in the Risk-Assessment Area is very difficult mainly because of its very wide distribution. This is due to the very labour intensive methods of control and the follow up monitoring and treatment required once sites are cleared (Wong et al. 2002). However, control in restricted areas can be successful if follow up management is applied and the risk of re-invasion from adjacent seed sources is also controlled.

69 - How likely are control measures introduced for this new organism to disrupt existing biological or integrated systems used to control other organisms in Great Britain?

unlikely

Level of confidence: low

Comments:

There seems to be no evidence that any of the control measures against *R. ponticum* would disrupt any other existing control system against other organisms.

70 - How likely is the organism to act as food, a host, a symbiont or a vector for other damaging organisms?

very likely

Level of confidence: very high

Comments:

R. ponticum is the most important host species for *Phytophthora ramorum* one of the most significant quarantine pathogens in Europe threatening trees, woodland ecosystems and other environmentally important habitats (Webber 2008). In Britain, it has played a key role in disease escape into the natural and seminatural environments and the subsequent spread to trees (Webber 2008). *R. ponticum* plays a similar role in outbreaks of *P. kernoviae* (<http://www.forestry.gov.uk/fr/INFD-73RER3>).

71 - Indicate any parts of Great Britain where economic, environmental and social impacts are particularly likely to occur (provide as much detail as possible).

Entire Risk Assessment Area

72 - Overall impact rating (please comment on the main reasons for this rating).

massive

Level of confidence: very high

Comments:

R. ponticum has already massive impacts in the Risk Assessment Area and it is not expected that these will decrease in the future.

Conclusion

73 – Conclusion of the risk assessment

high

Level of confidence: high

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