

Scientific name	<i>Lagarosiphon major</i>
Common name	Curly waterweed
Broad group	Plant
Number of and countries wherein the species is currently established	10: AT, BE, DE, ES, FR, IE, IT, NL, PT, UK
Risk Assessment Method	GB NNRA
Links	https://secure.fera.defra.gov.uk/nonnativespecies/downloadDocument.cfm?id=241
1. Description (Taxonomy, invasion history, distribution range (native and introduced), geographic scope, socio-economic benefits)	<i>Lagarosiphon major</i> is traded and imported for ornamental purposes (Brunel, 2009).
6. Can broadly assess environmental impact with respect to ecosystem services	May affect provisioning, regulating and cultural services (Lafontaine <i>et al.</i> , 2013a, Matthews <i>et al.</i> , 2012).
8. Includes status (threatened or protected) of species or habitat under threat	Adversely impacts Chara communities (see Ireland Risk Assessment). Also include effects on Loch Corib in Ireland (Caffrey <i>et al.</i> , 2010).
9. Includes possible effects of climate change in the foreseeable future	Increased warming could increase risk of collapse of submerged plant communities, and there could be a switch towards phytoplankton communities increasingly dominated by cyanophytes (McKee <i>et al.</i> , 2002, Moss <i>et al.</i> , 2003). In contrast, the plant community proved resilient (McKee <i>et al.</i> , 2003, McKee <i>et al.</i> , 2002). There was no switch to phytoplankton dominance, even at the highest nutrient levels in the presence of fish. In another mesocosm experiment involving a 3°C temperature increase and 0.5 mg N l ⁻¹ enrichment, the proportion of warm-water exotics like <i>L. major</i> increased (McKee <i>et al.</i> , 2003)

	<p>Additionally <i>L. major</i> was the major beneficiary of continuous warming in a mesocosm experiment designed to test the effect of simulated climate warming (McKee <i>et al.</i>, 2002). Risk increase in the Atlantic region (Kelly <i>et al.</i>, 2014).</p>
<p>11. Documents information sources</p>	<p>Brunel S. 2009. Pathway analysis: aquatic plants imported in 10 EPPO countries. <i>EPPO Bulletin</i> 39: 201-213.</p> <p>Caffrey JM, Millane M, Evers S, Moron H, Butler M. 2010. A novel approach to aquatic weed control and habitat restoration using biodegradable jute matting. <i>Aquatic Invasions</i> 5: 123-129.</p> <p>Kelly R, Leach K, Cameron A, Maggs CA, Reid N. 2014. Combining global climate and regional landscape models to improve prediction of invasion risk. <i>Diversity and Distributions</i>.</p> <p>Lafontaine R-M, Beudels-Jamar RC, Delsinne T, Robert H. 2013. Risk analysis of the Curly Waterweed <i>Lagarosiphon major</i> (Ridley) Moss. - Risk analysis report of non-native organisms in Belgium from the Royal Belgian Institute of Natural Sciences for the Federal Public Service Health, Food chain safety and Environment. 57 p.</p> <p>Matthews J, Beringen R, Collas F, Koopman K, Odé B, Pot R, Sparrius L, van Valkenburg J, Verbrugge L, Leuven R. 2012. Knowledge document for risk analysis of the non-native Curly Waterweed (<i>Lagarosiphon major</i>) in the Netherlands. <i>Reports Environmental Science</i> 414.</p> <p>McKee D, Atkinson D, Collings S, Eaton J, Gill A, Harvey I, Hatton K, Heyes T, Wilson D, Moss B. 2003. Response of freshwater microcosm communities to nutrients, fish, and elevated temperature during winter and summer. <i>Limnology and Oceanography</i> 48: 707-722.</p> <p>McKee D, Hatton K, Eaton JW, Atkinson D, Atherton A, Harvey I, Moss B. 2002. Effects of simulated climate warming on macrophytes in freshwater microcosm communities. <i>Aquatic Botany</i> 74: 71-83.</p> <p>Moss B, McKee D, Atkinson D, Collings S, Eaton J, Gill A, Harvey I, Hatton K, Heyes T, Wilson D. 2003. How important is climate? Effects of warming, nutrient addition and fish on phytoplankton in shallow lake microcosms. <i>Journal of Applied Ecology</i> 40: 782-792.</p> <p>See also:</p> <ul style="list-style-type: none"> - The Irish risk analysis report
<p>Main experts</p>	<p>Johan van Valkenburg</p>

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Other contributing experts	Belinda Gallardo
Notes	GBNNRA: high risk in the Atlantic area. Area at risk: Atlantic, Mediterranean and Black Sea regions. Some countries not yet invaded in relevant bioregions.
Outcome	Compliant