Scientific name	*Myriophyllum aquaticum*
Common name	Parrot's feather
Broad group	Plant
Number of and countries wherein the species is currently established	9: AT, BE, DE, FR, IE, IT, NL, PT, UK
Risk Assessment Method	GB NNRA
Links	https://secure.fera.defra.gov.uk/nonnativespecies/downloadDocument.cfm?id=274
1. Description (Taxonomy, invasion history, distribution range (native and introduced), geographic scope, socio-economic benefits)	Socio-economic benefits. Plant is traded and imported for ornamental purposes (Brunel, 2009).
6. Can broadly assess environmental impact with respect to ecosystem services	Ecosystem services: the plant may affect provisioning, regulating and cultural services by interfering with irrigation systems and water supply systems, crowding of recreational waterways, limiting boating and angling activities (Hassan & Ricciardi, 2014) (GB NNRA).
8. Includes status (threatened or protected) of species or habitat under threat	Impact on threatened species and habitats: occurs in Natura 2000 sites, where it can make dense populations (Johan van Valkenburg, personal communication).
9. Includes possible effects of climate change in the foreseeable future	The plant originates from South America and is known not to tolerate very cold winters present in continental Europe. However, it is known to survive most winters in the UK in its current area of distribution. Personal observation suggests that emergent biomass is relatively susceptible to frosts, but submerged biomass tends to tolerate colder conditions, if not encased in ice. This allows regeneration from submerged material in the following spring. However, regrowth from submerged material is slower than from material with emergent biomass that survives over winter. An experimental population survived encasement in ice and overnight

	temperature of -14.9 °C in January 2010. This population was still viable and producing green shoots as of 1st March 2010. It appears that this species is tolerant of much colder temperatures than previously observed. (Newman, Personal observtaion). The inability to store phosphate in rhizomes overwinter may limit its distribution in colder areas with oligotrophic water, but overwintering in eutrophic ponds is possible due to compensation in continued P supply in the following spring (Barko & Smart, 1983, Sytsma & Anderson, 1993). Climate matching exists for a similar species: *M. heterophyllum* in Uk for current conditions (Gallardo & Aldridge, 2013a). The study suggests certain limitation by minimum annual temperature of this species, which suggest climate change may allow it to shift northwards. Increase in the Atlantic area (Kelly *et al.*, 2014).
11. Documents information sources	**Barko J, Smart R. 1983.** Effects of organic matter additions to sediment on the growth of aquatic plants. *The journal of Ecology***:** 161-175. **Brunel S. 2009.** Pathway analysis: aquatic plants imported in 10 EPPO countries. *EPPO Bulletin* **39:** 201-213. **Gallardo B, Aldridge DC. 2013.** The 'dirty dozen': socio-economic factors amplify the invasion potential of 12 high-risk aquatic invasive species in Great Britain and Ireland. *Journal of Applied Ecology* **50:** 757-766. **Hassan A, Ricciardi A. 2014.** Are non-native species more likely to become pests? Influence of biogeographic origin on the impacts of freshwater organisms 3. *Frontiers in Ecology and the Environment* **12:** 218-223. **Kelly R, Leach K, Cameron A, Maggs CA, Reid N. 2014.** Combining global climate and regional landscape models to improve prediction of invasion risk. *Diversity and Distributions*. **Lafontaine, R.-M., Beudels-Jamar, R.C., Delsinne, T., Robert, H. (2013).** Risk analysis of the Parrotfeather Myriophyllum aquaticum (Vell.) Verdc. - 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. 40 p. **Sytsma MD, Anderson L. 1993.** Biomass, nitrogen, and phosphorus allocation in parrotfeather (*Myriophyllum aquaticum*). *Journal of Aquatic Plant Management* **31:** 244-248. See also :

	- The Belgian risk analysis report - The Irish risk analysis report - The Q-Bank data sheet
Main experts	Johan van Valkenburg - Etienne Branquart
Notes	GB NNRA: High risk in the Atlantic region. Area at risk: Atlantic region and probably also the Mediterranean and Continental regions. Already established in 9 EU countries: AT, BE, DE, FR, IE, IT, NL, PT, UK
Outcome	Compliant