EUROPEAN AND MEDITERRANEAN PLANT PROTECTION ORGANIZATION

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Summary of EPPO Prioritization process[1] for: *Limnophila sessiliflora*

In 2022/23, a number of species on the EPPO Observation List were re-prioritized with current information to assess if they should remain on the Observation List or be moved to another list. This is the prioritization summary for *Limnophila sessiliflora* where the outcome is the species should remain on the Observation List.

Section A. Prioritization process scheme for the elaboration of different lists of invasive alien plants (pests or potential pests) for the area under assessment

A.1 Is the plant species known to be alien in all, or a significant part, of the area under assessment?
Yes: *Limnophila sessiliflora* is native to south-east Asia (EPPO, 2012).

A.2 Is the plant species established in at least a part of the area under assessment? (if yes goto A5)
Yes. The plant was initially only recorded as casual in thermal ponds in Hungary and Slovalia (EPPO, 2012). According to Hrivnák et al. (2019), the species is still considered casual in Slovakia. However, in Hungary, Lukács et al. (2016) consider *Limnophila sessiliflora* as naturalized in thermal waters.

A. 3 Is the plant species known to be invasive outside the area under assessment?
A yes for question A.2 means this question is skipped.

A.4 Based on ecoclimatic conditions, could the species establish in the area under assessment?
A yes for question A.2 means this question is skipped.

A.5 How high is the spread potential of the plant in the area under assessment?
High spread potential with moderate uncertainty: *Limnophila sessiliflora* has the ability to reproduce sexually, with each flower able to produce as many as 300 seeds with up to a 96% germination rate (Spencer and Bowes 1985). In addition to sexual reproduction, it can reproduce through stem fragmentation (Hall et al. 1991). Fragments with fewer than six nodes did not grow at all.
Asexual reproduction by stem fragments can lead to efficient dispersal along watercourses. However, in the EPPO region, the plant is currently only known from thermal ponds, which limits further spread. As the spread potential assessment include unintentional spread to unintended habitats "by unintentional human assistance" including "discarded aquarium plants" (EPPO, 2012b), we can consider the spread potential as high due to the fact that *Limnophila sessiliflora* is widely available through aquarium plants trade.

A.6 How high is the potential negative impact of the plant on native species, habitats and ecosystems in the area under assessment?
Medium with a high uncertainty:
When it covers the water surface, *Limnophila sessiliflora* can shade out submerged species and deplete oxygen in the water, killing fish (Ramey, 2001; TAMU, 2020). Evidence of its strong competitive ability is that it can outcompete another invasive plant: *Hydrilla verticillata* (Scher et al., 2015). In addition, a toxin present in the stem tissue may prevent herbivorous fish from eating the plant (Hall & Vendiver, 2003).

[1] EPPO (2012) EPPO Prioritization process for invasive alien plants. EPPO Bulletin 42, 463-474.

There are conflicting information on the overall environmental impact. In Florida, Ramey (2001) says the species has not been reported as a major concern during the past 25 years but Scher et al. (2015) report that it has had an impact there.

Due to conflicting information, scarce evidence of impact and the fact that there is no impact in the EPPO region R where the ecoclimatic conditions are not as optimal as in Florida, I scored a Medium impact with a High uncertainty.

A.7 How high is the potential negative impact of the plant on agriculture, horticulture or forestry in the area under assessment?

Medium with a medium uncertainty: In Asia, *Limnophila sessiliflora* is a weed in rice paddies (EPPO, 2012a) where it has developed herbicide resistant populations (Wang et al., 2000 ; Lin *et al*., 2004). It seems to be a common weed in rice: in a study conducted in the eastern Kanto plain in Japan, it was one of the 8 species with a frequency of occurrence above 50% (Yamada *et al*., 2010). However, there is no indication that it is a very problematic weed.

The species would impact on agricultural production in Italy, France, Spain and other areas where rice is cultivated in the EPPO region.

It should be noted that a hybrid between *Limnophila indica* and *Limnophila sessiliflora* (*Limnophila* × *ludoviciana* Thieret) has been recorded in Italy in rice fields (Picoli, 1974). It is now considered as naturalized and slowly expanding (Galasso *et al*., 2016): "*This hybrid was identified for the first time by Piccoli (1974) for Emilia-Romagna, based on populations discovered a few years earlier in rice fields in the Ferrara province (Codigoro and Jolanda di Savoia; see Buzzi 1973). He also provided a detailed description of the plant (Piccoli 1974). Viggiani et al. (2003) provided several color pictures of plants from the same areas. The plants collected in Veneto are identical to those of Ferrara province, according to the above-cited sources. Piccoli et al. (2014) indicated this hybrid as occurring in Italy only in the administrative region of Emilia-Romagna, specifically in Ferrara and Reggio nell'Emilia provinces (see also http://www.actaplantarum.org/floraitaliae/viewtopic.php?f=40&t=79251). The new findings reveal a gradual expansion of the hybrid, which appears to be relatively slow, perhaps due to its estimated infertility or low fertility."*

A.8 How high are the potential additional impacts (e.g. on animal and human health, on infrastructures, on recreational activities, other trade related impacts such as market losses)?

Medium with a high uncertainty: As an aquatic species, *Limnophila sessiliflora* has the potential clog canals, pump, and power stations (Ramey, 2001; Scher et al., 2015) thereby impacting on infrastructure. A large surface biomass of *L. sessiliflora* could also be a nuisance for recreational activities (EPPO, 2012a).

Outcome of Section A: *Limnophila sessiliflora* is included on the EPPO Observation List

		A5 -Spread potential		
		Low	Medium	High
Adverse impacts (maximum rating from questions A6, A7 and A8.	Low	List of minor concern	List of minor concern	List of minor concern
	Medium	List of minor concern	Observation List	Observation List
	High	Observation List	Observation List	List of invasive alien plants

Limnophila sessiliflora is not considered further. The assessment stops here. It is recommended that L. sessiliflora remains on the Observation List. One reason for this is that it is widely sold as an aquarium plant and that it could escape and establish in the Mediterranean region. The case of the hybrid known in Italy should also be monitored.

B. Prioritization process scheme for the identification of invasive alien plants for which a PRA is needed

B.1 Is the plant species internationally traded or are there other existing or potential international pathways?

B.2 Is the risk of introduction by these international pathways identified to be superior to natural spread?

B.3 Does the plant species still have a significant area suitable for further spread in the area under assessment?

Outcome of section B:

Selected references

EPPO (2012a). *Limnophila sessiliflora* in the EPPO region: addition to the EPPO Alert List. *EPPO Reporting Service* 2 : 46.

EPPO (2012b). EPPO prioritization process for invasive alien plants. *EPPO Bulletin* 42 (3), 463–474

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