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Before going into the species in any detail, it is worth highlighting that the list consists of species that are seen as “the most threatening *POTENTIAL* IAS that do not yet occur in Europe.” Therefore, species like the water hyacinth (*Eichhornia crassipes*), red swamp crayfish (*Procambarus clarkii*) and all the others already included in the current ‘List of Invasive Alien Species of Union Concern’ do not appear on the new list. Instead, the proposed listing features species that are not yet established within the EU, but which should be assessed with a view to possible future inclusion in the above-mentioned ‘List’, i.e. they are organisms which are not yet found within the EU, except in captivity.

The team of 44(!) researchers, led by Helen Roy, an ecologist from the Centre for Ecology and Hydrology in England, examined a list of 329 ‘candidates’ consisting of known invasive species and trimmed this down to the 66 which they deemed to pose the greatest potential threats. According to the authors of the report, these 66 species are expected to invade Europe within the next decade and outcompete native species.

Using an approach known as horizon scanning, they graded the 66 species according to perceived risk, as follows: very high – 8 species; high – 40 species; medium – 18. Horizon scanning consists of scoring species regarding their likelihood of arrival, establishment, spread and magnitude of the potential negative impact on biodiversity within the EU.

I need to stress that, while 329 candidate species were considered, this represents a fraction of the total number of IAS currently known to exist in Europe. This is estimated at over 14,000 species, with more than 50% originating from outside the EU and the remaining 50% from the EU itself, i.e. originating in one or more EU Member

States and invading others.

There are relatively few species which are of direct relevance to the ornamental aquatic industry, but, worryingly, some of these received the highest scores, thus representing species with a high or very high risk of invasion.

For example, the Senegal tea plant (*Gymnocoronis spilanthoides*), was the highest-scoring species of all, with a total score of 625. Yet, its risk level is thought to be high, rather than very high. This is an easy-to-culture plant which may be grown in aquaria or ponds. It has large showy white flowers which are particularly attractive to butterflies.

Also scoring highly is the marine striped eel catfish (*Plotosus lineatus*) which is considered a very high risk species. This is a brackish water and marine catfish which is found in the aquarium trade and hobby. It possesses a venomous serrated spine in the dorsal fin and its juveniles often congregate in ‘balls’ consisting of upwards of 100 individuals.

Top of the list, though, is the northern snakehead (*Channa argus*) which is probably the species which is seen by the team as posing the highest threat throughout Europe. This large species (up to 1 metre) is one for the specialist aquarist (in those countries where it is permitted) and for public aquaria. It is also exploited for human consumption.

There are other aquatic species in the list, including a shrimp, a crayfish and several algae, but these are either of minor or no interest for the aquarium industry and hobby. Also included is the Japanese fire belly newt (*Cynops pyrrhogaster*) which is extremely toxic and can prove fatal, even to humans, in as little as six hours! However, captive-bred specimens are reported to lose their toxicity.

We need to note that, as things stand at the moment, none of the species mentioned in this article, or in the listing, are included in the current ‘EU

List of Invasive Alien Species of Union Concern’, so there is no active legislation banning trade in them. Having said this, the ‘EU List’ is constantly being reviewed and updated and the latest version, which is under discussion as I write these lines, includes all three species highlighted above.

Therefore, we can fully expect them all to be officially included over the coming months... along with the water lettuce (*Pistia stratiotes*), giant salvinia (*Salvinia molesta*) and the mosquito fish (*Gambusia* sp). ■

FURTHER READING

The full text of the report: Developing a list of invasive alien species likely to threaten biodiversity and ecosystems in the European Union; Helen E. Roy, et al: www.onlinelibrary.wiley.com/doi/full/10.1111/gcb.14527

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