

Fiches on the species proposed to be included on the list of invasive alien species of Union concern

Final Version – working document presented in preparation of the 12th meeting of the Committee on IAS (14 June 2019)

Criteria for listing (Article 4(3) of Regulation 1143/2014):

Invasive alien species shall only be included on the Union list if they meet all of the following criteria:

- a) they are found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;
- b) they are found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;
- c) they are, based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;
- d) it is demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;
- e) it is likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.

Elements to be taken in consideration when listing (Article 4(6) of Regulation 1143/2014):

When adopting or updating the Union list, the Commission shall apply the criteria set out in paragraph 3 with due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio-economic aspects. The Union list shall include as a priority those invasive alien species that:

- a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;
- b) are already established in the Union and have the most significant adverse impact.

Disclaimer:

The following narrative notes on all species proposed for the second update of the list of IAS of Union concern are intended to support the discussions towards the adoption of this update of the list of Invasive Alien Species of Union concern.

The information to compile these notes has been drawn from the underlying risk assessments and from the information brought by the IAS Committee members in the discussions at the IAS Committee, as well as other sources, including stakeholder input. As short summary notes, they cannot reflect the opinion of each of the Member States, nor can they describe the specific situation of the species in each Member State.

These narrative notes are provided as a summary of what has been discussed within the IAS Committee. They are provided with the understanding that due to their concise size they can only present a summary of the available information and can therefore lead to serious misinterpretations if read out of context. It is strongly advised that readers also refer to the underpinning Risk Assessments (links provided in each fiche).

Scientific name	Common name
<i>Acacia saligna</i>	Golden wreath wattle
<i>Ailanthus altissima</i>	Tree of heaven
<i>Andropogon virginicus</i>	broomsedge bluestem
<i>Cardiospermum grandiflorum</i>	Balloon vine
<i>Cortaderia jubata</i>	purple pampas grass
<i>Ehrharta calycina</i>	perennial veldtgrass
<i>Gymnocoronis spilanthoides</i>	Senegal tea plant
<i>Humulus scandens</i>	Japanese hop
<i>Lespedeza cuneata</i>	Chinese bushclover
<i>Lygodium japonicum</i>	Japanese climbing fern
<i>Pistia stratiotes</i>	Water lettuce
<i>Prosopis juliflora</i>	Mesquite
<i>Salvinia molesta</i>	African payal
<i>Triadica sebifera</i>	Chinese tallow

Scientific name	Common name
<i>Acridotheres tristis</i>	Common myna
<i>Arthurdendyus triangulatus</i>	New Zealand flatworm
<i>Lepomis gibbosus</i>	Pumpkinseed
<i>Plotosus lineatus</i>	Striped eel catfish

Species name – common	Golden wreath wattle
Species name – scientific	<i>Acacia saligna</i>
Overall assessment of risk	High risk – low uncertainty
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to Western Australia
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Established and spreading in CY, IT, PT, ES. - Capable of establishing and spreading also in HR, FR, GR, MT, SI - In foreseeable climate change conditions, could also establish in BG, RO, BE, DK, DE, NL, UK, PL, SE
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity: High impact - Forms dense tickets, outcompetes native species, builds up massive seed banks, threatens habitats of community importance and critically endangered species, modifies ecosystems, difficult to reverse - Ecosystem services: High impact - Increases fire intensity, strong hydrological impact, reduces water availability - Economy: High impact - Can spread <i>Xylella fastidiosa</i>
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will help to prevent respectively introduction and spread into (parts of) the MS where this species is not currently established - Management will reduce negative impacts in priority areas where the species is already established. - The species is already regulated in PT, MT.
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release, as well as management of pathways of unintentional introduction and spread (garden waste, soil movement), will be effective in preventing the introduction of the species into new areas. - Early detection and rapid eradication: Rapid eradication, through an integrated approach, has proven effective in different LIFE-projects. - Management: Once established, very difficult to control, due to its strong resprouting, root suckering and long-lived seedbank. An integrated approach is needed. This reinforces the need for prevention and rapid eradication.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	Implementation cost: <ul style="list-style-type: none"> - Prevention: alternative native species are available. - Early detection and rapid eradication: only feasible at initial stages of invasion. - Management: an integrated control strategy is needed, entails very high costs.
	Cost of inaction: <ul style="list-style-type: none"> - Further spread and adverse impacts across Southern

	and Western Europe
	<p>Cost-effectiveness</p> <ul style="list-style-type: none"> - Coordinated action will be more cost-effective than the current scattered approach.
	<p>Socio-economic aspects:</p> <ul style="list-style-type: none"> - Commonly available on the market, as ornamental, melliferous and forestry species, also for erosion control, soil stabilisation and protection purposes - In the EU, benefits are exceeded by the costs of negative impacts - In IT, it is included among the species considered in the definition of "short rotation coppice" under the direct payments regime of the Common Agricultural Policy
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	<p>The species is established in the EU, but there is scope for much wider spread.</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	<p>Where the species is established, it has the most significant adverse impact.</p>

Species name – common	Tree of Heaven
Species name – scientific	<i>Ailanthus altissima</i>
Overall assessment of risk	High risk – very high confidence
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to Asia (eastern, China)
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Established and spreading in PT, RO, ES, AT, BE, CY, FR, GR, HU, IT, PL, SK, SI, UK, DE, CZ, HR, DK, NL - Capable of establishing and spreading in most of Europe - In foreseeable climate change conditions, could also establish further north
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity or related ecosystem services: Major impact on native vegetation, habitats and ecosystems, including areas of high conservation value, given its ability to create dense stands, allelopathy, and its ability to modify the structure of the invaded communities. Adverse impact on urban environments is less pronounced (although there it impacts human health and the economy, see below), however urban environments can act as propagule source for the species to spread into ecosystems at risk. - Human health: Minimal impact - cause allergic reactions, respiratory problems, and skin rashes - Economy: Moderate impact - damages infrastructure (damaging pavements, archaeological remains, walls, etc. by root system), damage railway tracks.
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will help to prevent respectively introduction and spread into (parts of) the MS where this species is not currently established - Management will reduce negative impacts in priority areas where the species is established. -
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release of this species will be effective in preventing the introduction of the species into new areas. - Early detection and rapid eradication: Rapid eradication can be very effective in containing the natural spread into new areas. As young plants respond to disturbance with vegetative reproduction, control of root suckers will be required for some years. - Management: Once established, very difficult to control, an integrated approach is needed. This reinforces the need for prevention and rapid eradication.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-	<p>Implementation cost:</p> <ul style="list-style-type: none"> - Prevention: the plant is popular in trade, banning the

<p>effectiveness and the socio- economic aspects</p>	<p>trade would thus bear some costs for the sectors concerned. Species substitution would however be an option. Trade and import bans are already in place in some MS, however they will only be effective if implemented at the Union level. Given the ease of spread of this plant and the costs linked to its management once established, prevention of introduction into new areas where it is not yet present would be –for those areas- the cheapest course of action</p> <ul style="list-style-type: none"> - Early detection and rapid eradication: given the costs of management, a prompt response to natural spread into new areas will be important to avoid later management costs in these areas. - Management: containment and control likely to be costly, which reinforces the need for preventive action. However there are reports of an experimental method that involves the application of saprophytic fungi as an alternative to pesticides¹ <p>Cost of inaction:</p> <ul style="list-style-type: none"> - Wide scale spread of this species with significant costs and environmental impacts. <p>Cost-effectiveness</p> <ul style="list-style-type: none"> - The restrictions and the rapid eradication will be important to prevent additional introductions and spread and to avoid costs linked to managing the species in the currently non-invaded areas. Nevertheless, cost effective management in priority areas is possible, as experienced in the framework of several LIFE-projects addressing <i>Ailanthus altissima</i> successfully, e.g. LIFE Alta Murgia². <p>Socio-economic aspects:</p> <ul style="list-style-type: none"> - Cultivated in nurseries in BE, DK. Annual turnover is limited, but losses for nurseries would be considerable given the long production time (4-20 years). - The plant is used for ornamental horticulture, bee keeping, landscaping. It has potential for forestry restoration. Outside EU uses in traditional medicine and chemical industry are reported, though not within the EU. - It is also considered as a species that could be used for climate change adaptation, in particular for harsh urban environments and for forestry on infertile soils, when native species cease to thrive. However, alternative tree species or alternative provenances which are likely to be more resilient to climate change should preferably be ‘native’ (i.e. under a climate change scenario originate from nearby warmer and dryer areas).
<p>4.6 The Union list shall include as a priority those invasive alien species that: (a) are not yet present in the Union or are at an early</p>	<p>There is a high risk of further spread into (protected) areas where the species is not yet present, and where it would also outcompete the native vegetation and modify the ecosystem structure.</p>

¹ http://www.invassep.eu/manual%20ailanto%20final_LQ.pdf

stage of invasion and are most likely to have a significant adverse impact;	
4.6 The Union list shall include as a priority those invasive alien species that: (b) are already established in the Union and have the most significant adverse impact.	The plant is present in almost all MS, and therefore coordinated action is needed to minimise its significant adverse impact on biodiversity.

Species name – common	Broomsedge bluestem
Species name – scientific	<i>Andropogon virginicus</i>
Overall assessment of risk	High risk – moderate uncertainty
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to North, Central and South America
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Established and expanding rapidly in FR. - Capable of establishing and spreading also in AT, HR, DE, IT, SI - In foreseeable climate change conditions, could also establish in ES, BE, LU
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity: High impact - Highly competitive grass covering large areas and outcompeting other species, documented negative impact on native species in FR, but lack of scientific studies - Ecosystem services: Moderate impact - Fire-adapted and fire-promoting species - Economy: High impact on plantation forestry and pastures, vector of crop diseases, concern for railway sector because it increases fire frequencies that could result in a tremendous safety hazard for passengers and employees.
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will help to prevent respectively introduction and spread into (parts of) the MS where this species is not currently established - Management will reduce negative impacts in priority areas where the species is established. - EPPO A2 list of pests recommended for regulation
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release, as well as management of pathways of unintentional introduction and spread (e.g. transport of hay, cleaning equipment) will be effective in preventing the introduction of the species into new areas (low confidence). - Early detection and rapid eradication: Rapid removal may be effective (low confidence). - Management: An integrated approach is needed, efforts will need to be continued due to the establishment of new seedlings (low confidence). This reinforces the need for prevention and rapid eradication.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	<p>Implementation cost:</p> <ul style="list-style-type: none"> - Prevention: species of low economic value, minimal opportunity cost. - Early detection and rapid eradication: limited experience. - Management: limited experience. <p>Cost of inaction:</p>

	<ul style="list-style-type: none"> - Further spread and adverse impacts in a number of Member States
	<p>Cost-effectiveness</p> <ul style="list-style-type: none"> - limited experience. Preventing the establishment of this species would prevent wild fires e.g. along railways.
	<p>Socio-economic aspects:</p> <ul style="list-style-type: none"> - Available in horticultural trade, promoted for landscaping, low economic value
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	<p>The species is established in parts of FR, but there is risk of introduction and subsequent establishment in other MS.</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	<p>-</p>

Species name – common	Balloon vine
Species name – scientific	<i>Cardiospermum grandiflorum</i>
Overall assessment of risk	Moderate risk – moderate uncertainty
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to a wide neotropical range, from southern Mexico to Brazil and the Caribbean
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Established and spreading in MT, casual and probably in the process of establishing in FR, IT. - Capable of establishing and spreading also in ES, PT - In foreseeable climate change conditions, could also establish in BE, NL, DE, UK
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity and related ecosystem services: Moderate impact (high uncertainty) – vine outcompeting native plants by forming dense mats and depriving them of sunlight, devastating impact on native species (incl. a Natura 2000 site) in Malta, ecological transformer, seeds are well adapted for extreme long-distance dispersal (balloons floating on water courses) - Economy: Moderate impact – Substantial impact on agricultural productivity
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will help to prevent respectively introduction and spread into (parts of) the MS where this species is not currently established and management will reduce negative impacts in priority areas where the species is established. - EPPO A2 list of pests recommended for regulation
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release will be highly effective in the EU, as the species is only limitedly present. Misidentification may however reduce the effectiveness (confusion with <i>C. halicacabum</i>). Awareness raising may be effective to prevent unintentional introduction and spread. - Early detection and rapid eradication: Probably effective, follow-up required, as seeds will often mass germinate. - Management: A catchment-wide approach would be needed, will probably be very costly. This reinforces the need for prevention and rapid eradication.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	Implementation cost: <ul style="list-style-type: none"> - Prevention: species of low economic value, minimal opportunity cost. - Early detection and rapid eradication: will require follow-up, due to mass germination. - Management: probably very costly. This reinforces the need for prevention and rapid eradication.
	Cost of inaction: <ul style="list-style-type: none"> - Further spread and adverse impacts in many other

	<p>areas and MS</p> <p>Cost-effectiveness</p> <ul style="list-style-type: none"> - Coordinated action is essential, as once it starts spreading over the continent it will be impossible to contain. - Risk of mislabelling (confusion with <i>C. halicacabum</i>), which could reduce the cost-effectiveness <p>Socio-economic aspects:</p> <ul style="list-style-type: none"> - In ornamental trade and botanical gardens, although trade is limited, and socio-economic value is limited. Medicinal value, however no commercial use in the EU.
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	<p>The species is established in MT, and there is risk of introduction and subsequent establishment into other MS.</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	<p>-</p>

Species name – common	Purple pampas grass
Species name – scientific	<i>Cortaderia jubata</i>
Overall assessment of risk	Moderate risk – moderate uncertainty
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to South America
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Not established in the EU - Capable of establishing and spreading in BE, BG, HR, CY, FR, DE, GR, HU, IE, IT, NL, PT, RO, SI, ES, UK - In foreseeable climate change conditions, could also establish in AT, CZ, DK, LU, MT, PL, SK, SE
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity and related ecosystem services: Moderate impact (high uncertainty) – Outcompetes native species by producing large amounts of biomass, produces over 100,000 wind-dispersed seeds per inflorescence, may invade a wide range of habitats - Human health: Moderate impact by exacerbating asthma - Economy: Moderate impact on forestry
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will prevent the introduction into and subsequent establishment of the species in the EU. - EPPO A1 list of pests recommended for regulation - ES has a strategy in place on Cortaderia species.
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release would normally be effective, as the species is not yet established. However, identification of Cortaderia species in trade is difficult, appropriate identification tools will be needed. - Early detection and rapid eradication: Also rapid eradication will be hampered by identification difficulties. Effective eradication measures available, but follow-up required, as seeds will germinate. - Management: Effective management measures available, however the seed production will cause permanent reinvasion.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	Implementation cost: <ul style="list-style-type: none"> - Prevention: the species is not available from European nurseries, minimal opportunity cost - Early detection and rapid eradication: Limited information available - Management: once established, management will be costly. This reinforces the need for prevention and rapid eradication.
	Cost of inaction: <ul style="list-style-type: none"> - Invasion of large parts of Europe

	<p>Cost-effectiveness</p> <ul style="list-style-type: none"> - Coordinated action will be more cost-effective than scattered approach, prevention would be highly cost-effective. - However, mislabelling could reduce the cost-effectiveness. <p>Socio-economic aspects:</p> <ul style="list-style-type: none"> - Ornamental species, currently not available from nurseries in the EU, but available online. Commercial interest limited as <i>C. selloana</i> is preferred.
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	<p>The species is not yet established in the EU.</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	<p>-</p>

Species name – common	Perennial veldtgrass
Species name – scientific	<i>Ehrharta calycina</i>
Overall assessment of risk	Moderate risk – moderate uncertainty
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to South Africa and Southern Namibia
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Established and spreading in PT, ES. - Capable of establishing and spreading also in FR, IT - In foreseeable climate change conditions, the Mediterranean areas would no longer be suitable and the species could move towards the north, countries at risk are DE, SE, UK
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity and related ecosystem services: High impact – Can dominate plant communities, excludes native species through rapid growth and shading out, transforms woodlands to grasslands, increases fire frequencies - Economy: vector of crop diseases, concern for railway sector because it increases fire frequencies that could result in a tremendous safety hazard for passengers and employees.
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will prevent this invasion into the endangered parts of the EU. - The species may be in the lag phase of invasion, action now will prevent it from becoming a wider problem. - EPPO A2 list of pests recommended for regulation
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release will be effective. - Early detection and rapid eradication: Limited information available - Management: Limited information available
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	Implementation cost:
	<ul style="list-style-type: none"> - Prevention: no information about any cultivation or sale within the EU, minimal opportunity cost - Early detection and rapid eradication: Limited information available - Management: Limited information available
	Cost of inaction:
	<ul style="list-style-type: none"> - Potential invasion in certain parts of Europe
	Cost-effectiveness
	<ul style="list-style-type: none"> - Coordinated action will be more cost-effective than a scattered approach. Preventing this species would prevent wild fires e.g. along railways.
	Socio-economic aspects:
	<ul style="list-style-type: none"> - Value as forage grass, and erosion control and landscaping, but there is no information about any cultivation or sale within the EU
4.6 The Union list shall include as a priority those invasive alien species that:	The species is only established in a few places in ES and PT, there is scope for wider spread.

<p>(a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	-

Species name – common	Senegal tea plant
Species name – scientific	<i>Gymnocoronis spilanthoides</i>
Overall assessment of risk	High risk – high uncertainty
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to South America
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Established in IT, HU. - Capable of establishing and spreading also in HR, GR, SI - In foreseeable climate change conditions, could also establish in FR, IE, UK, ES, BE, NL, DE
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity and related ecosystem services: High impact (high uncertainty) – Radically modifies aquatic and wetland ecosystems, by forming dense and rapidly growing mats, displaces native species, may impact several species of Community importance - Economy: Moderate impact (high uncertainty) – May negatively impact crops, block drainage, cause flooding
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will help to prevent respectively introduction and spread into (parts of) the MS where this species is not currently established and management will reduce negative impacts in priority areas where the species is established. - EPPO A2 list of pests recommended for regulation
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release will be effective in preventing the introduction of the species into new areas. - Early detection and rapid eradication will be effective in containing the natural spread into new areas, requires follow up as regrowth from fragments is very likely. - Management: Effectiveness depends on the extent of the invasion. An integrated approach is needed. This reinforces the need for prevention and rapid eradication.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	<p>Implementation cost:</p> <ul style="list-style-type: none"> - Prevention: A trade ban would have some impact on the ornamental trade. According to EPO/OFI, the retail value of the species in the EU would be approximately 75,000 euro/year. However, alternatives are available, including native plants. - Early detection and rapid eradication: No cost information available. - Management: In NL, for Ludwigia, a similar species, it took 70,000€ and 2700 working hours to achieve a serious reduction of one 3-4 years old infestation.

	<p>Such experiences reinforce the need for prevention and rapid eradication.</p> <p>Cost of inaction:</p> <ul style="list-style-type: none"> - Further spread and adverse impacts in a part of Europe <p>Cost-effectiveness</p> <ul style="list-style-type: none"> - Coordinated action will be more cost-effective than a scattered approach. - Given the common market, a trade ban will only be cost-effective if it is EU-wide. <p>Socio-economic aspects:</p> <ul style="list-style-type: none"> - Widely sold as ornamental species, used in aquaria and outdoor ponds, see above.
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	<p>The species is only established in a few places in IT and HU, there is scope for introduction and spread in wider areas of the EU.</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	-

Species name – common	Japanese hop
Species name – scientific	<i>Humulus scandens</i>
Overall assessment of risk	High risk – low uncertainty
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to Eastern Asia
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Established and spreading in BG, FR, IT, HU. - Capable of establishing and spreading also in DE, AT, PL, SK, SI, HR, GR, RO, and marginally in ES, PT - In foreseeable climate change conditions, could establish in most MS, except IE, CY and MT
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity and related ecosystem services: High impact – Vine, forming dense stands and outcompeting other species, may suffocate small trees, transformer species, affects riparian habitats - Human health: Moderate impact - Causes pollen allergy and skin irritation
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will help to prevent respectively introduction and spread into (parts of) the MS where this species is not currently established and management will reduce negative impacts in priority areas where the species is established. - EPPO A2 list of pests recommended for regulation
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release are effective. Management of pathways of unintentional introduction and spread (soil movement, equipment and vehicles) may also be effective. Awareness raising may be effective in preventing secondary spread. - Early detection and rapid eradication: Effective in early invasion stage - Management: Effective, follow-up required.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	Implementation cost: <ul style="list-style-type: none"> - Prevention: low horticultural value, minimal opportunity cost. - Early detection and rapid eradication: only feasible at initial stages of invasion. - Management: long term management of this species would rapidly exceed several dozen million euros. This reinforces the need for prevention and rapid eradication.
	Cost of inaction: <ul style="list-style-type: none"> - Further spread and adverse impacts across Europe
	Cost-effectiveness <ul style="list-style-type: none"> - Coordinated action will be more cost-effective than the current scattered approach.

	Socio-economic aspects: - Minor horticultural value
4.6 The Union list shall include as a priority those invasive alien species that: (a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;	The species is established in the EU, but there is scope for much wider spread.
4.6 The Union list shall include as a priority those invasive alien species that: (b) are already established in the Union and have the most significant adverse impact.	-

Species name – common	Chinese bushclover
Species name – scientific	<i>Lespedeza juncea sericea</i> (= <i>L. cuneate</i>)
Overall assessment of risk	Moderate risk – moderate uncertainty
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Eastern Asia and eastern Australia
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Present in some gardens, but not established in the natural environment. - Capable of establishing and spreading across the EU, except FI, UK, IE - In foreseeable climate change conditions, could establish across the EU, except IE, MT, CY
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity and related ecosystem services: Moderate impact - Forms dense stands, outcompetes native species, allelopathic effects, disrupts pollination networks (attracts more pollinators than co-occurring native species). In the US, the species would have been introduced as fodder (big amounts of seeds used), causing it to become problematic.
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will prevent invasion of this species in the EU. - EPPO A1 list of pests recommended for regulation
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release are effective. Management of pathways of unintentional introduction and spread (contaminated hay) is also effective. Necessary in order to avoid the use of herbicides if it were to establish. - Early detection and rapid eradication: Effective with chemicals, only acceptable if proportionate with the impact on the environment and compliant with any legal provisions. - Management: Effective with chemicals, monitoring and follow-up treatments needed, only acceptable if proportionate with the impact on the environment and compliant with any legal provisions.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	<p>Implementation cost:</p> <ul style="list-style-type: none"> - Prevention: currently low value species, minimal opportunity cost. - Early detection and rapid eradication: more feasible at initial stages of invasion. - Management: the further the invasion expands, the higher the costs, could imply extensive use of chemicals, only acceptable if proportionate with the impact on the environment and compliant with any legal provisions. This reinforces the need for prevention and rapid eradication. <p>Cost of inaction:</p>

	<ul style="list-style-type: none"> - The cost of inaction could be very high, if the species would be introduced as fodder, spread and invade the EU, the ecological damage could be significant. <p>Cost-effectiveness</p> <ul style="list-style-type: none"> - Coordinated action will be more cost-effective than scattered approach, prevention would be highly cost-effective. <p>Socio-economic aspects:</p> <ul style="list-style-type: none"> - Marginal use for fodder, soil conservation, revegetation, e.g. in US, could raise interest in the EU - Medicinal use in native range, no medicinal use in EU - In EU, low horticultural value, no other known uses
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	<p>Not yet present in the EU.</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	<p>-</p>

Species name – common	Japanese climbing fern
Species name – scientific	<i>Lygodium japonicum</i>
Overall assessment of risk	Moderate risk – high uncertainty
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to south-eastern Asia
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Present in some botanical gardens, but not established in the natural environment - Capable of establishing and spreading in PT, ES, FR, IT, SI, HR, GR, MT, CY - In foreseeable climate change conditions, could establish across the EU (except CY, MT, BG)
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity and related ecosystem services: High impact (high uncertainty) – Rhizomatous vine, smothers groundcover and shrubs, outcompetes native species, alters fire intensity, spreads by very light spores - Economy: Low impact (high uncertainty) – Damages forests
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will prevent invasion in the EU. - EPPO A1 list of pests recommended for regulation
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release are effective. Management of pathways of unintentional introduction and spread (plants for planting, vehicles, equipment, clothing) may be effective. Awareness raising is effective in preventing secondary spread. Necessary in order to avoid the use of herbicides if it were to establish. - Early detection and rapid eradication: Effective with chemicals, only acceptable if proportionate with the impact on the environment and compliant with any legal provisions, follow-up needed. - Management: Effective with chemicals, to kill the entire root system and suppress spore germination, monitoring and repeated treatments are needed, only acceptable if proportionate with the impact on the environment and compliant with any legal provisions. Spores travel by wind for several kilometres, requiring more monitoring and treatments. This reinforces the need for prevention and rapid eradication.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	<p>Implementation cost:</p> <ul style="list-style-type: none"> - Prevention: low horticultural value, minimal opportunity cost. - Early detection and rapid eradication: more feasible at initial stages of invasion. - Management: the further the invasion expands, the

	<p>higher the costs, could imply extensive use of chemicals, only acceptable if proportionate with the impact on the environment and compliant with any legal provisions.</p>
	<p>Cost of inaction: - Invasion across the EU, with significant damage and control costs</p>
	<p>Cost-effectiveness - Coordinated action will be more cost-effective than scattered approach, prevention would be highly cost-effective.</p>
	<p>Socio-economic aspects: - Medicinal value in native range, no medicinal use in EU - Ornamental plant, not readily available in the EU</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that: (a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	<p>Species not yet present in the EU</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that: (b) are already established in the Union and have the most significant adverse impact.</p>	<p>-</p>

Species name – common	Water lettuce
Species name – scientific	<i>Pistia stratiotes</i>
Overall assessment of risk	High risk – moderate uncertainty
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native range unclear, either South-America, or pan-tropical
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Established in FR, DE, SI (in DE, SI in thermal waters), casual occurrence in AT, BE, CZ, HU, IT, NL, PT, RO, SI, ES, UK - Capable of establishing and spreading also in PT, ES, IT, GR - In foreseeable climate change conditions, could also establish in UK, BE, NL, HU, HR, BG
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity: High impact (high uncertainty) – Free-floating aquatic species, forms dense mats, completely alters trophic dynamics, resulting in long-term changes, threatens native species, - Ecosystem services: High impact (high uncertainty) – Alters water quality, limits water availability, restricts access for recreation and tourism - Human health: High impact (high uncertainty) - Favours water-borne diseases - Economy: High impact (high uncertainty) – Interferes in irrigation and drainage systems, hydro-electric schemes, hinders navigation and fishing
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will help to prevent respectively introduction and spread into (parts of) the MS where this species is not currently established and management will reduce negative impacts in priority areas where the species is established. - EPPO A2 list of pests recommended for regulation - Regulated in ES and PT
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release, as well as management of pathways of unintentional introduction and spread (water sport equipment, contaminated sediment) will be effective in preventing the introduction of the species into new areas. Although once established, natural spread through fragments and seeds is difficult to contain. - Early detection and rapid eradication: successful eradication of small infestations is possible, including follow-up until the last plant is removed. - Management: Once established, very difficult to control. This reinforces the need for prevention and rapid eradication.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	<p>Implementation cost:</p> <ul style="list-style-type: none"> - Prevention: A trade ban would have a considerable impact on the ornamental trade. The characteristic of freezing in winter makes the species very profitable. According to the sector, there is no

	<p>alternative for the species. In the UK, sales of Pistia increased significantly in 2018 (+ 500%), following the EU wide ban on water hyacinth. According to EPO/OFI, the retail value of Pistia in the EU would be approximately one million euro/year, and thousands of businesses would be involved. This indicates that the impact of a trade ban per business could remain reasonable, except for the most specialised businesses. Prevention of establishment would however prevent significant costs of eradication efforts / long term management. Early detection and rapid eradication: only feasible in early invasion stage.</p> <ul style="list-style-type: none"> - Management: very difficult to control, could entail very high costs.
	<p>Cost of inaction:</p> <ul style="list-style-type: none"> - Further introductions and spread and very significant adverse impacts across a part of Europe
	<p>Cost-effectiveness</p> <ul style="list-style-type: none"> - Coordinated action will be more cost-effective than a scattered approach (currently regulated in PT, ES). <p>Socio-economic aspects:</p> <ul style="list-style-type: none"> - Widely sold as ornamental plant, see above.
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	<p>The species is established in a few places in the EU, but there is scope for much wider spread.</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	<p>-</p>

Species name – common	Mesquite
Species name – scientific	<i>Prosopis juliflora</i>
Overall assessment of risk	Moderate risk – moderate uncertainty
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to northern South America, Central America and the Caribbean
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Not established in the EU. - Capable of establishing and spreading in PT, ES, IT, MT, GR, CY - In foreseeable climate change conditions, it could spread further in the same MS, probably also in HR
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity: Moderate impact (high uncertainty) – Aggressive shrub/tree, outcompetes native vegetation, reduces biodiversity - Ecosystem services: Moderate impact (high uncertainty) – Impacts water resources (lowers water tables), nutrient cycling, successional processes, soil conservation, transforms pasture land into thorn woodland - Economy: Moderate impact (high uncertainty) – Blocks irrigation canals, roads and trails. Thorns pierce tyres and shoes, cause scratches to humans and animals.
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will prevent the species from invading the Mediterranean region. - EPPO A2 list of pests recommended for regulation
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release are effective. Once the species is established, preventing further spread is not possible. - Early detection and rapid eradication: Rapid eradication is only effective in early invasion stage and with follow-up actions over many years. - Management: Once established, an integrated action plan is needed, many tropical countries already have such action plan. Even with significant efforts, the effectiveness proves minimal. This reinforces the need for prevention, and thus listing the species.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	<p>Implementation cost:</p> <ul style="list-style-type: none"> - Prevention: as currently there is no socio-economic interest in the species in the EU, the opportunity cost is minimal. - Early detection and rapid eradication: As soon as the number of new detections increases, the cost of rapid eradication increases and the invasion gets out of control. - Management: an integrated control strategy is needed, entails high costs, however no cost

	<p>quantification is available.</p> <p>Cost of inaction:</p> <ul style="list-style-type: none"> - Possible invasion and serious negative impacts in the Mediterranean region. <p>Cost-effectiveness</p> <ul style="list-style-type: none"> - Coordinated action will be more cost-effective than a scattered approach - Taxonomic confusion could reduce the cost-effectiveness <p>Socio-economic aspects:</p> <ul style="list-style-type: none"> - Multi-purpose tree, mainly in developing countries. Used for fuel, poles, timber, fodder, human food, honey, medicine and others. Also planted for soil conservation and as amenity tree.
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	<p>The species is not yet present in the EU.</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	<p>-</p>

Species name – common	African payal
Species name – scientific	<i>Salvinia molesta</i>
Overall assessment of risk	High risk – moderate uncertainty
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to Brazil
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Not established in the EU. - Under current conditions, high likelihood to establish in the Mediterranean biogeographical region (mainly ES, FR, GR, IT, PT) as well as thermal waters elsewhere (e.g. DE, HU). Also likely to establish in limited areas of Black Sea and Atlantic biogeographical regions. - Under foreseeable climate change conditions, it could spread further in UK, BE, NL, HU, HR, BG, RO
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity and related ecosystem services: High impact (high uncertainty) – Able to form dense mats on the surface of water bodies, potentially resulting in alteration of aquatic habitats and loss of native species, including endangered ones. Such dense mats are likely to degrade the water quality beneath them by blocking sunlight, resulting in decreases in dissolved oxygen and pH, and increases in CO₂ and H₂S concentrations. If established, the build-up of vegetation and decaying matter can reduce water flow and increases siltation, which further reduces the water flow. - Economy: High impact (high uncertainty) – If established, it has potential to impede transport and affect recreation, irrigation and drainage, due to formation of dense mats.
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - The species is widely cultivated and traded within EU, resulting in transient populations (recorded in AT, BE, DE, FR, IT, NL, PT). Restrictions and rapid eradication will help to prevent establishment into the EU (potential areas described above). - Included in the “EPPO A2 list of pests recommended for regulation (invasive plants)” - Regulated in ES.
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<p>Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release are effective to prevent establishment within EU and therefore to prevent the potential impacts. Potential issues with mislabelling could be encountered: It is commonly mislabelled as <i>Salvinia natans</i>, a native species. In general all plants in trade labelled as <i>Salvinia</i>, could be <i>S. molesta</i>.</p> <p>Early detection and rapid eradication: is considered feasible</p> <p>Management: Once established, very difficult to control, this reinforces the need for preventing the establishment in any part of the EU. Where <i>Salvinia</i></p>

	<i>molesta</i> invades habitats with <i>S. natans</i> , management will become challenging because of the morphological similarity between both species.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	<p>Implementation cost:</p> <ul style="list-style-type: none"> - Prevention: A trade ban would have an impact on the ornamental trade. The characteristic of freezing in winter makes the species very profitable. According to EPO/OFI, the retail value of <i>Salvinia</i> in the EU would be approximately one million euro/year, and thousands of businesses would be involved. This indicates that the impact of a trade ban per business could remain reasonable, except for the most specialised businesses. Prevention of establishment would however prevent significant costs of eradication efforts / long term management. - Early detection and rapid eradication is considered feasible in early invasion stage when trained staff is involved in active surveillance of endangered habitats. Expected to be costly but with return on investment still higher than having to manage established populations. - Management: very difficult to control if established, could entail very high costs, including that of disposal of removed plants. <p>Cost of inaction:</p> <ul style="list-style-type: none"> - High likelihood to establish at least in the Mediterranean biogeographical region, with consequent high costs of management and potentially significant impacts on biodiversity, ecosystem services and the economy. <p>Cost-effectiveness</p> <ul style="list-style-type: none"> - Opportunity to avoid potential future costs if species established within the EU. Costs avoided could easily surpass the loss for trade. <p>Socio-economic aspects:</p> <ul style="list-style-type: none"> - Widely sold as an ornamental species within the EU (see data above), used in aquaria, and as an ornamental plant for outdoor ponds, also traded informally between aquatic plant enthusiasts. - Has been identified for potential use of dense growth for removal of excess nutrients and pollutants, but considered uneconomical - Has been suggested for biomass for compost, biogas production and animal feed, but not practised in EU. - During the public feedback, the sector expressed some acceptance of listing the species, given the morphological similarities with <i>Salvinia natans</i>.
4.6 The Union list shall include as a priority those invasive alien species that: (a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;	Currently not established in the EU but transient populations have been recorded in AT, BE, FR, DE, IT, NL, PT.

<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	<p>N/A</p>
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Species name – common	Chinese tallow
Species name – scientific	<i>Triadica sebifera</i> (= <i>Sapium sebiferum</i>)
Overall assessment of risk	High risk – high uncertainty
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to China and Japan
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Not established in the EU. - Capable of establishing and spreading in countries bordering the Mediterranean: PT, ES, FR, IT, SI, HR, MT, GR, CY - In foreseeable climate change conditions, could also establish in UK, BE, LU, NL, DE, HU, RO, BG
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity and related ecosystem services: High impact (high uncertainty) – Tree, establishing dominant stands, transforming grasslands into woody thickets, threatening native species. Leaf litter affecting water and soil quality, toxic to amphibians, altering nutrient cycling and species composition. - Human health and the economy: Moderate impact - causes skin irritation to humans, toxic to livestock
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will prevent invasion into the EU. - EPPO A1 list of pests recommended for regulation
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release are effective. - Early detection and rapid eradication: Effective, critical to remove the species before seeding (may occur within 1 year, usually 3-8 years) - Management: Once established, very difficult to control, due to resprouting and extensive seed production and germination. This reinforces the need for prevention and rapid eradication.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	<p>Implementation cost:</p> <ul style="list-style-type: none"> - Prevention: No known current commercial value in the EU, thus minimal opportunity costs. - Early detection and rapid eradication: No cost information available. - Management: the further the invasion expands, the higher the costs, follow-up of resprouting needed, could imply extensive use of chemicals, only acceptable if proportionate with the impact on the environment and compliant with any legal provisions. <p>Cost of inaction:</p> <ul style="list-style-type: none"> - Possible invasion and serious negative impacts, in the first place in the Mediterranean region.

	<p>Cost-effectiveness</p> <ul style="list-style-type: none"> - Coordinated action will be more cost-effective than scattered approach.
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	<p>Socio-economic aspects:</p> <ul style="list-style-type: none"> - Highly valued for ornamental quality and productive capability. Valuable wood. A variety of uses in China, eg oil from seeds, tallow from seed cover, medicinal use. No current commercial use in the EU. <p>Not yet established in the EU.</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	<p>-</p>

Species name – common	Common myna
Species name – scientific	<i>Acridotheres tristis</i>
Overall assessment of risk	High risk – medium confidence
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da , see Annex V of the RA
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to Central, South and South-East Asia
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Locally established in IT, PT. Casual observations in other MS. - Capable of establishing and spreading also in ES, FR, HR, SI, GR - In foreseeable climate change conditions, could establish in most of the EU - Recent research (Cohen et al. 2019)³ reconfirmed the large areas worldwide, including large parts of the EU, at risk of common myna invasion.
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity and related ecosystem services: Moderate impact (low confidence) – Contributes to the decline of native bird species (predation of eggs, competition, transmission of diseases) and to the spread of invasive alien plants. - Human health: Moderate impact (low confidence) - Spreads parasites and diseases - Economy: Moderate impact (low confidence) - Agricultural pest, e.g. for fruits. Property damage in Queensland was estimated at least €30 million.
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will prevent invasion into the EU.
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release will be effective in preventing the introduction of the species into the European environment.. - Early detection and rapid eradication: Variety of effective methods available, although mynas quickly learn to avoid them. - Management: Same methods, may encounter public resistance.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	<p>Implementation cost:</p> <ul style="list-style-type: none"> - Prevention: No known current commercial value in the EU, thus minimal opportunity costs. - Early detection and rapid eradication: No cost information available. - Management: No cost information available. <p>Cost of inaction:</p> <ul style="list-style-type: none"> - Possible EU-wide invasion and serious negative impacts.

³ <https://link.springer.com/article/10.1007%2Fs10530-018-1900-3>

	<p>Cost-effectiveness</p> <ul style="list-style-type: none"> - Coordinated action will be more cost-effective than scattered approach.
	<p>Socio-economic aspects:</p> <ul style="list-style-type: none"> - Limited socio-economic benefits in the EU. Mynas are sometimes traded as cage birds. There is a small dedicated community of bird keepers interested in the species. 5 specimens are kept by 4 EAZA institutions (GR, DE, FR, PL).
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	<p>At an early state of invasion and most likely to have a significant adverse impact.</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	<p>-</p>

Species name – common	New Zealand flatworm
Species name – scientific	<i>Arthurdendyus triangulatus</i>
Overall assessment of risk	High risk – medium confidence
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da , see Annex VI of the RA
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to New-Zeeland
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<ul style="list-style-type: none"> - Established in UK, IE. - Capable of establishing and spreading also in BE, FR, DK, DE, LU, NL, PL, SE (Atlantic and Continental biogeographical regions) - In foreseeable climate change conditions, could establish also further north into the southern areas of the Boreal region.
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity: High impact – Predates on and depletes earthworm populations, impacting earthworm-feeding native species. - Ecosystem services: High impact – Affects ecosystem services related to earthworms: pedogenesis, development of soil structure, water regulation, nutrient cycling, primary production, climate regulation, pollution remediation, cultural services. In IE, ecosystem services provided by earthworms were estimated at €1 billion/year. - Economy: High impact – The loss of grassland productivity in Northern Ireland was estimated at €13 million.
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will prevent invasion of the EU-continent.
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Measures on the movement of plants in pots, e.g. inspections and surveillance will reduce the introduction risk. - Early detection and rapid eradication: Eradication has not been attempted, would only be feasible for a small area. - Management: Management has not been attempted.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	Implementation cost: <ul style="list-style-type: none"> - Prevention: No information available on costs of pathway management. Currently, only visual inspection is possible. Listing could promote research in DNA methods. - Early detection and rapid eradication: No experience. - Management: No experience.
	Cost of inaction: <ul style="list-style-type: none"> - Possible EU-wide invasion and serious negative impacts.

	<p>Cost-effectiveness</p> <ul style="list-style-type: none"> - Coordinated action will be more cost-effective than scattered approach.
	<p>Socio-economic aspects:</p> <ul style="list-style-type: none"> - No known socio-economic benefits.
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	<p>At an early state of invasion and most likely to have a significant adverse impact.</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	-

Species name – common	Pumpkinseed
Species name – scientific	<i>Lepomis gibbosus</i>
Overall assessment of risk	Moderate risk with medium confidence
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/ead324a2-f37a-461d-b6bf-b3870c7308ce
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to Eastern part of North America
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	Established in AT, BE, BG, HR, CY, CZ, DK, FI, FR, DE, GR, HU, IT, LV, LT, LU, NL, PO, PT, RO, SK, SL, ES, UK. Capable of establishing and spreading in MT, EE, IE, SE
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	- Biodiversity and related ecosystem services: Major impact. Strong and effective competitor of native fish due to plasticity of diet, parental care (high reproductive success) and aggressive behaviour. Decreases in the densities of fish, also responsible for locally strong decline and disappearance of endangered amphibians, gastropods and dragonflies, including several species listed in the Habitats Directive. Due to trophic alterations in abiotic conditions could lead to a negative impact of ecosystem function. It also affects the quality of the water increasing levels of chlorophyll, turbidity and concentrations of N, P.
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	- Restrictions and rapid eradication will help to prevent respectively introduction and spread into more (parts of) MS where this species is currently not established - Management will reduce negative impacts in priority areas where the species is established.
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	- Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release will contribute to the prevention of any further releases or escapes of the species. - Early detection and rapid eradication: Methods for early detection include eDNA, ichthyological surveying through mechanical removal and active participation of fishers and citizens. In Sweden, rapid eradication after first observation was successful. Eradication is extremely difficult once the species is established. - Management: When established in wider basin areas, populations can only decline with rigorous measures, such as overfishing (mechanical removal). Yearly fishing using funnel traps is a possible management option. Other fishing techniques such as gill netting and electrofishing have proved to be efficient and more selective. Other options include control and containment

	measures to avoid escapements from outflow systems. Caution is needed to avoid collateral damage.
4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects	Implementation cost: - Prevention: Limited socio-economic value, thus low opportunity cost. - Early Warning Rapid Eradication: Difficult to quantify - Management: Difficult to quantify, could imply extensive use of chemicals and alteration of habitats, only acceptable if proportionate with the impact on the environment and compliant with any legal provisions.
	Cost of inaction: If widespread the impacts could be considerable to native biodiversity, and may also lead to some loss of income to recreational fisheries.
	Cost-effectiveness: Restrictions will effectively prevent additional introductions. The use of environmental DNA screening is proving to be an effective method for detecting scarce species because it is more sensitive than traditional sampling methods. Eradication will only be cost-effective in a very early invasion stage.
	Socio-economic aspects: Low importance for sport-fishing, low trade value as ornamental fish.
4.6 The Union list shall include as a priority those invasive alien species that: (a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;	The species is established in 24 of the 28 EU Member States, but there is scope for wider spread, also within the 24 Member States where it has established.
4.6 The Union list shall include as a priority those invasive alien species that: (b) are already established in the Union and have the most significant adverse impact.	Where the species is established, it has a major adverse impact on biodiversity.

Species name – common	Striped eel catfish
Species name – scientific	<i>Plotosus lineatus</i>
Overall assessment of risk	High risk with medium confidence
Link to Risk Assessment	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da
Link to Risk Management Information	https://circabc.europa.eu/w/browse/1dd916e3-e138-43c1-8a88-44a03100a9da (see annex 11 of the RA)
4.3 (a) found, based on available scientific evidence, to be alien to the territory of the Union excluding the outermost regions;	Native to the Indo-Pacific region.
4.3 (b) found, based on available scientific evidence, to be capable of establishing a viable population and spreading in the environment under current conditions and in foreseeable climate change conditions in one biogeographical region shared by more than two Member States or one marine subregion excluding their outermost regions;	<p>Not established in the EU.</p> <p>Currently established in the Mediterranean-Aegean-Levantine Sea (Egypt, Israel, Lebanon, Syria, Turkey) and South Western Mediterranean Sea (Tunisia).</p> <p>It is very likely that it will expand to North Western Mediterranean, Ionian Sea, the Central Mediterranean, Adriatic Sea, Black Sea, Bay of Biscay and the Iberian coast (BG, HR, CY, FR, GR, IT, MT, PT, RO, SI, ES), under current and climate change conditions</p>
4.3 (c) based on available scientific evidence, likely to have a significant adverse impact on biodiversity or the related ecosystem services, and may also have an adverse impact on human health or the economy;	<ul style="list-style-type: none"> - Biodiversity: Major impact (low confidence). It is likely that it exerts significant predation pressure and compete for prey resources with other native predators. Has the potential to drastically change the structure of native communities and outcompete similar native species. The venom extracted from its spinal gland has proven lethal for a number of vertebrates. - Ecosystem services: Minor impact - It interferes with local fisheries catches, as constitutes a discard species in significant amounts and also requires extra time for species sorting. - Human health: Major impact (low confidence), The species is highly venomous which requires extra care for its handling. The venomous sting is likely to cause reversible health impacts over a large area, while more severe symptoms associated with secondary infections and deep puncture wounds remain a possibility. - Economy: Minor impact (low confidence) - Cost of species sorting in fishery catch is increased and loss of working time. Also reduced beach use with associated impacts on the tourism.
4.3 (d) demonstrated by a risk assessment carried out pursuant to Article 5(1) that concerted action at Union level is required to prevent their introduction, establishment or spread;	<ul style="list-style-type: none"> - Restrictions and rapid eradication will prevent invasion into EU marine regions and subregions where this species could establish. - Action now will help prevent this species from becoming a wider problem across the EU Seas.
4.3 (e) likely that the inclusion on the Union list will effectively prevent, minimise or mitigate their adverse impact.	<ul style="list-style-type: none"> - Prevention: Restrictions on keeping, sale, transport, exchange, breeding and release will reduce the introduction risk, although the species is rather expected to invade the EU through natural spread through the Suez canal, a pathway that is beyond EU control. Methods to reduce this spread have been

	<p>proposed, such as the installation of high-salinity locks in the Suez Canal. Inclusion of Lessepsian species on the Union list is necessary for demonstrating the EU willingness to address this issue in relevant international negotiations.</p> <ul style="list-style-type: none"> - Early detection and rapid eradication: Early warning systems have proved effective for the early detection of Lessepsian invasive fishes, although this is a small-sized fish, not easy to spot. Eradication may theoretically be possible for localised newly established populations at low densities with limited dispersal capabilities. This would require an early warning system, monitoring efforts and a removal programme. Removal has not been attempted as it is not expected to be a cost-effective, ecologically acceptable and realistic option. - Management: It could still be theoretically possible to contain and control newly established populations with targeted fishing activities, including human consumption, however this would require a long-term commitment over consecutive years over localized areas.
<p>4.6 due consideration to the implementation cost for Member States, the cost of inaction, the cost-effectiveness and the socio- economic aspects</p>	<p>Implementation cost:</p> <ul style="list-style-type: none"> - Prevention: Very limited commercial value, so minimal opportunity cost. - Early warning rapid eradication: not attempted, not expected to be cost-effective - Management: Containment of populations would involve a considerable cost. <p>Cost of inaction: Invasion of EU seas, with significant consequences for biodiversity and human health, failing to achieve the objectives of the Marine Strategy Framework Directive⁴</p> <p>Cost-effectiveness: Specific control/eradication actions are difficult to undertake and probably not cost-effective.</p> <p>Socio-economic aspects: Aquarium species, but retail trade in the EU is low, considered too big and too aggressive for aquaria. Evidence about 1 trader selling 15 specimens in SE during 1 year. Displayed in public aquaria in AT, IT, DE MT, PL. 15 specimens kept by 1 EAZA institution (DK). The fact that the current benefits are limited provides an opportunity to act before the species gains increased popularity in the trade, preventing any possible escape/release.</p>
<p>4.6 The Union list shall include as a priority those invasive alien species that: (a) are not yet present in the Union or are at an early stage of invasion and are most likely to have a significant adverse impact;</p>	<p>The species is not yet established in the EU marine regions, but it is most likely to expand its distribution into EU Seas in the short-mid term.</p>

⁴ Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) (OJ L 164, 25.6.2008, p. 19). See also recital (6) of Regulation (EU) 1143/2014.

<p>4.6 The Union list shall include as a priority those invasive alien species that:</p> <p>(b) are already established in the Union and have the most significant adverse impact.</p>	-
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