

# MANAGEMENT PLAN TO PREVENT INVASIVE ALIEN SPECIES OF NATIONAL CONCERN



Adopted by decision of the Ministry of Agriculture and Forestry  
on 27 October 2020

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# I BACKGROUND

## Invasive alien species

Alien species are species that have spread outside their natural distribution due to human activity. 'Alien species' and 'invasive alien species' are defined in the EU Regulation on Invasive Alien Species (the 'Invasive Alien Species Regulation' or the 'IAS Regulation')<sup>1</sup>.

According to the EU Regulation on Invasive Alien Species<sup>1</sup>, an alien species is regarded as invasive if its 'introduction or spread has been found to threaten or adversely impact upon biodiversity'. Alien species may also have adverse social and economic impacts. Invasive alien species must not be brought into the territory of the European Union, transferred from one Member State to another, bred, grown, sold, kept or released into the environment.

Finland and the other EU Member States must seek to eradicate invasive alien species already found in their territories or prevent them from spreading. Eradicating invasive alien species and preventing them from spreading will hereinafter be referred to as the 'prevention of alien species'. The purpose of prevention of alien species is to safeguard biodiversity and the functioning of ecosystems, as well as the benefits of these for human wellbeing.

The EU Regulation on Invasive Alien Species requires the Member States to have in place effective management measures to prevent widely spread alien species included on the list of invasive alien species of Union concern. Each Member State decides on such measures independently. According to the Invasive Alien Species Regulation, these measures must not unreasonably burden the environment and their benefits must outweigh their costs. In addition, the Member States must prioritise the measures according to the size of the risk caused by the target species and the cost-efficiency of the measures.

The species targeted within the European Union are specified on the list of invasive alien species of Union concern, which is adopted by the European Commission. The first list

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<sup>1</sup> [Regulation \(EU\) No 1143/2014 of the European Parliament and of the Council on the prevention and management of the introduction and spread of invasive alien species.](#)

entered into force on 3 August 2016. The list was supplemented for the first time on 2 August 2018 and for the second time on 15 August 2019.

Finland's national list of invasive alien species was adopted on 1 June 2019 by Government Decree<sup>2</sup> (List of invasive alien species of national concern, Appendix 1). The rationale for drawing up the national list is described in the explanatory memorandum to the Government Decree<sup>3</sup>. Although the EU Invasive Alien Species Regulation does not directly apply to the species included on the national list, its definitions, bans and prevention principles are nevertheless applied, as laid down in the national Invasive Alien Species Act<sup>4</sup>.

## Preparation and adoption of the management plan

This management plan only deals with species included on the list of invasive alien species of national concern. The species on the list of invasive alien species of Union concern are addressed in separate management plans.

According to the Invasive Alien Species Act<sup>4</sup>, the Ministry of Agriculture and Forestry approves plans to determine and control the prevention measures referred to in the EU IAS Regulation. The Ministry approved a management plan for the species included on the first list of invasive alien species of Union concern in March 2018<sup>5</sup> and its first supplementary list in May 2019<sup>6</sup>. While not directly required in the Invasive Alien Species Act, it has also become necessary to draw up corresponding plans – i.e. a plan on management measures and an analysis concerning the pathways of unintentional spread – to prevent invasive alien species of national concern.

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<sup>2</sup> [Government Decree on Managing the Risk Caused by Alien Species \(704/2019\)](#) and the annexed national list.

<sup>3</sup> [Explanatory memorandum to Government Decree 704/2019](#) (pdf, in Finnish).

<sup>4</sup> [Act on Managing the Risks Caused by Alien Species \(1709/2015, the 'Invasive Alien Species Act'\)](#), section 9.

<sup>5</sup> [Management plan I to prevent invasive alien species](#) (approved on 13 March 2018).

<sup>6</sup> [Management plan II to prevent invasive alien species](#) (approved on 23 May 2019).

To serve this purpose, the Ministry carried out a study<sup>7</sup> in 2019–2020 on how widely the invasive alien species included on the national list are found in Finland and how these can be prevented in the most cost-effective manner.

The study and the resulting proposal for a plan to prevent invasive alien species were prepared as part of the FIN-HAVI project (FIN-HAVI – Distribution, pathways of spread and management measures of invasive alien species of national concern<sup>8</sup>). The FIN-HAVI project was carried out by the Natural Resources Institute Finland (coordinator) and the Finnish Environment Institute. The project’s final report provides additional and background information for the measures included in this management plan.

## Key content of the management plan

The primary management measures in which Finland should invest were assessed and selected on the basis of the risk arising from invasive alien species of national concern and the costs and benefits of the prevention measures. The risk assessment is based on the characteristics, harmful effects, current distribution and current stage of spread of the species, their opportunities to spread and thrive in our climate, and the prevention measures available.

Invasive alien species at different stages of spread require different prevention measures. The most effective option is to completely prevent a species from being introduced or spreading into a new area, if possible. If a species is widely spread and its prevention or eradication is not technically possible or financially sensible, minimising its harmful effects by controlling

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<sup>7</sup> FIN HAVI – Kansallisesti haitallisten vieraslajien levinneisyys, leviämistäylyt, riskit ja hallintatoimenpiteet [*FIN HAVI – Distribution, pathways of spread and management measures of invasive alien species of national concern*] (2/2019 – 6/2020). See (in Finnish): <https://vieraslajit.fi/fi/content/fin-havi>.

<sup>8</sup> FIN HAVI – Kansallisesti haitallisten vieraslajien levinneisyys, leviämistäylyt, riskit ja hallintatoimenpiteet [*FIN HAVI – Distribution, pathways of spread and management measures of invasive alien species of national concern*] (2/2019 – 6/2020). Available in Finnish (English abstract) at: <http://urn.fi/URN:ISBN:978-952-287-939-4>.

the population or preventing the species from spreading into new areas can be set as the goal.

### **Examples from the plan**

- The rugosa or Japanese rose will be eradicated most urgently from areas of highest biodiversity value and their vicinity, especially from coastal and archipelago areas. Prevention measures will also be carried out inland: Populations of Japanese rose will be eradicated and prevented from spreading on roadsides and in yards and gardens.
- Measures to prevent the large-leaved lupine will be concentrated in nature conservation areas, in the vicinity of threatened and near threatened species, as well as in roadside meadows with a diverse range of meadow species.
- The Canadian waterweed will be prevented from spreading into sites of highest conservation value, which will also be priority areas for eradication measures.
- Mink culling will primarily be enhanced in archipelago areas, wetland areas important for birds, nesting areas of threatened and declining birds, and trout brooks.
- Prevention of the Spanish slug will pay special attention to populations and pathways through which the species can easily spread into the environment. The species will be prevented from spreading through seedlings, garden waste and earthmoving operations. People will also be encouraged to remove the species when detected in yards, gardens and public areas and to organise prevention drives.
- Active measures will be continued to raise awareness about the bans on importing, cultivating, breeding and releasing any invasive alien species of national concern. With regard to pathways of spread, special attention will be given to the appropriate treatment and disposal of garden waste. Pet owners will be advised to make sure that their pets will not get any chance to breed or escape.

# Implementation of the management plan and funding for the measures

According to the Invasive Alien Species Act, the Centre for Economic Development, Transport and the Environment (ELY Centre) monitors compliance with the bans and obligations included in the EU Regulation on Invasive Alien Species and the national law<sup>9</sup>. The bans and obligations, as well as the statutory means to enhance compliance, facilitate the prevention of invasive alien species. Bans and obligations may be used when the party responsible for the spread of an invasive alien species can be expressly identified. However, prevention of invasive alien species mostly concerns populations whose origin and method of spread are not known and there is no party responsible for prevention. The management plan addresses the prevention of such populations of invasive alien species in particular.

The Invasive Alien Species Act does not impose the task of implementing the management plan on any specific party. The authorities are responsible for the prevention of invasive alien species in accordance with their competence under other laws. The ELY Centres and local authorities are tasked with promoting nature conservation in their respective jurisdictions<sup>10</sup>. Local authorities must monitor and promote environmental protection in their areas in order to ensure a healthy, pleasant, stimulating and ecologically sustainable living environment for municipal residents by protecting, maintaining and developing natural and other environments<sup>11</sup>. The duties of the Finnish Transport Infrastructure Agency, for example, include maintaining the state road and railway networks and coordinating related measures<sup>12</sup>. The public administrative duties of Metsähallitus, the agency governing the use of state-owned land, include the management and use of the national network of conservation areas and the management of other land and water areas and assets intended for discharging these

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<sup>9</sup> The ban on import into the EU area is supervised by Customs. The Southern Finland Regional State Administrative Agency supervises compliance with the permits it grants for the use of invasive alien species.

<sup>10</sup> [Nature Conservation Act \(1096/1996\)](#), section 6.

<sup>11</sup> [Act on Municipal Environmental Administration \(64/1986\)](#), section 3 (in Finnish).

<sup>12</sup> [Act on the Finnish Transport Infrastructure Agency \(862/2009\)](#), section 2.

duties<sup>13</sup>. In 2019, the duties of the Finnish Wildlife Agency and their funding remained unchanged, even though the control of the raccoon dog and certain other previous game species was transferred from the Hunting Act (615/1993) to the Invasive Alien Species Act by an amendment to the latter. Furthermore, management of invasive alien species will also benefit from the river basin and marine management measures carried out in Finland.

The EU Regulation on Invasive Alien Species and the national legislation do not require the prevention of all occurrences of alien species. Management measures must be planned and implemented paying attention to the damage caused by the invasive alien species and its likelihood, as well as to the costs of the measures relative to their benefits. Based on the study carried out for the management plan, it is fair to say that the current prevention measures – such as the work carried out by the ELY Centres and local authorities, voluntary measures and provision of information and advice – also meet the requirements of the alien species legislation.

The management plan describes the responsible parties and cooperation partners for the implementation of the measures, as well as presenting a schedule for implementation. The management plan is intended for use by the authorities and other operators in their efforts to prevent invasive alien species, with a view to allocating the measures and the necessary resources as effectively as possible. The Natural Resources Institute Finland coordinates the measures presented in the management plan and their monitoring.

Under the supervision of the Natural Resources Institute Finland, a national network of experts in alien species supports the monitoring of alien species. The Finnish Biodiversity Info Facility, managed by the Finnish Museum of Natural History (Luomus), offers a tool that can be used to monitor the efficiency and effectiveness of prevention measures<sup>14</sup>, help operators maintain measures to prevent invasive alien species and facilitate consistent national reporting to the European Union, for example.

As noted above, the authorities carry out their respective measures to prevent invasive alien species as part of their statutory duties. The Ministry of Agriculture and Forestry was granted

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<sup>13</sup> [Act on Metsähallitus](#) (234/2016), section 5 (in Finnish).

<sup>14</sup> See (in Finnish): <https://laji.fi/theme/vieraslajit/instructions>.



EUR 0.8 million in budget funding for 2020 in order to enhance the prevention of invasive alien species in keeping with the 2019 Government Programme. This budget was used to allocate one additional person-year to the operating expense item for the Centres for Economic Development, Transport and the Environment in order to enhance the national coordination of management of alien species and another two additional person-years to the Natural Resources Institute Finland's budget item in order to enhance communications on alien species and management of risks caused by such species. The Kainuu ELY Centre can use the budget for enhancing the prevention of invasive alien species to grant financial assistance for the purposes of prevention, provision of advice and monitoring of prevention measures in keeping with the management plan. Parliament decides on the budget every year (incl. the 2019 Government Programme items during the period from 2021 to 2023). Furthermore, it is possible to apply for separate project funding for research, analysis and development projects aiming to improve the management of alien species, on a case-by-case needs basis, through the Government's analysis, assessment and research activities (VN TEAS), or from the EU LIFE+ programme, for example.

## Ban on cultivating invasive plant species; capturing and killing invasive animal species

### **Ban on cultivating invasive plant species**

#### Cultivation ban

Cultivating invasive plant species is prohibited under Invasive Alien Species Act section 11. The Invasive Alien Species Act does not specifically define what 'cultivation of an invasive plant species' means. Invasive plant species are characterised by their tendency to proliferate naturally in the environment without seeding or planting. Cases where a plant population has spread onto a property from its surroundings have frequently raised the question of whether the cultivation ban is applicable.

Where an invasive plant species is found on a property that is being continuously used and managed by its owner or holder, the Ministry of Agriculture and Forestry considers that the presence of such species on the property can reasonably be equated with cultivation. In such

cases, the presence of an invasive plant species does not, in practical terms, differ from any other species found on the property. This should be the approach regardless of how the invasive alien species had originally spread onto the property or whether the species was being actively tended or just passively tolerated.

### Cultivated populations to be eradicated

Because cultivating invasive alien species is prohibited, the owner or holder of a property must eradicate any such populations that they have cultivated from their property. The Invasive Alien Species Act does nevertheless provide that, in lieu of eradication, it may be sufficient to contain the species effectively.

In other words, the eradication obligation may also apply to populations spread from adjacent properties or somewhere else in the environment, even if these were not being actively cultivated. People living in the same neighbourhood, for example, should therefore cooperate to take prevention measures at the same time, in order to efficiently stop the species from spreading again.

As owners of public areas, local authorities are responsible for preventing invasive plant species from spreading in municipal areas. As a general rule, the presence of invasive plant species in municipal areas under regular management, in particular, such as street greenery, parks and beaches, can reasonably be equated with cultivating the species.

Road managers are responsible for managing and maintaining road areas. Their total area is very large and maintenance needs and measures vary considerably even within the same road sections. This needs to be taken into account when assessing whether the presence of an invasive plant species in a road area can reasonably be equated with cultivation.

### Transition period for the ban on cultivating the Japanese rose

The Japanese rose is widely used as an ornamental and economic plant in yards, gardens and public areas. Since it is a widely spread and commonly cultivated species, it has been necessary to provide property owners with a transition period to comply with the ban.

A transition period is also necessary for the ELY Centre as the supervisory authority in order to prepare for implementation.

Cultivating the Japanese rose will be prohibited as of 1 June 2022, i.e. within three years of entry into force of the Government Decree. It is important to note that the ban on sales of the Japanese rose, as well as any other bans with the exception of the cultivation ban, entered into force on 1 June 2019 without any transition period.

## **Capturing and killing invasive animal species**

Provisions on capturing and killing invasive alien birds and mammals are laid down in the Invasive Alien Species Act, the Hunting Act and the Animal Welfare Act (247/1996), while the obligations arising from the Nature Conservation Act must also be taken into account. Likewise, the capturing and killing of any other invasive animal species must be performed in compliance with animal welfare legislation and the Nature Conservation Act.

Inflicting undue pain and distress on animals is prohibited under section 3 of the Animal Welfare Act. Its section 32 provides that the killing of animals must be performed as quickly and painlessly as possible and only by those with adequate knowledge about the killing methods and techniques appropriate for a specific animal species as well as adequate skills to perform the procedure.

The provisions of the Hunting Act and the Hunting Decree (666/1993) on unprotected animals apply to capturing and killing invasive alien birds and mammals (Invasive Alien Species Act section 16). Provisions on permitted hunting devices and methods are included in both the Invasive Alien Species Act and hunting legislation.

Capturing or killing individuals of invasive alien species must not cause any disturbance to specimens of protected species prohibited under the Nature Conservation Act, particularly during breeding, in important resting places during migration, or on any other sites of significance to their life cycles. Species must be identified with certainty. If the intention is to capture or kill specimens of an alien species in a nature conservation area, this will either require the right to do so under the site's protection regulations or a derogation from such regulations.

Anyone who intends to capture or kill an invasive alien bird or mammal must be familiar with the provisions of the Invasive Alien Species Act, the Hunting Act, the Animal Welfare Act and the Nature Conservation Act. Mistake of law is punishable. If necessary, expert assistance

should be requested from an experienced hunter or a local game management association or hunting club.

Contact details for local game management associations can be found through the [contact search](#) (in Finnish) on the Finnish Wildlife Agency website.

Information about hunting clubs is available in the [Hunting](#) section of the Finnish Wildlife Agency website and from the Finnish Hunters' Association ([www.metsastajaliitto.fi](http://www.metsastajaliitto.fi), in Finnish and Swedish).

## II MANAGEMENT PLAN

### 1 Classification of measures; species-specific measures and targeting

Based on the risk analysis, the species and taxonomic groups included on the list of invasive alien species of national concern can be divided into four groups according to their current distribution, risk of spread and the necessary management measures. The management measures are presented in their order of priority for each group. In some animal groups, the list highlights certain species considered to require more detailed analysis in Finland for species-specific discussion.

It is prohibited to import, cultivate, breed, sell, keep for any other purpose, and release into the environment any of the species included on the list of invasive alien species of national concern. By derogation, owners are allowed to keep animals included on the EU or national list of invasive alien species as pets until the end of their natural lives, provided that these animals were already kept as pets prior to being included on the list. Owners must also ensure that the pets will not get any chance to breed or escape.

#### 1.1 Established species

Group 1 consists of the following species: **Nootka lupine, Aleutian ragwort, Himalayan knotweed, Japanese knotweed, giant knotweed, Canadian waterweed, large-leaved lupine, Japanese rose, orange jewelweed, mink, sand lizard, green frogs, alpine newt, and Spanish slug.**

This group includes all the species with growing populations in Finland: all of the plant species on the list (Nootka lupine, Aleutian ragwort, Himalayan knotweed, Japanese knotweed, giant knotweed, Canadian waterweed, large-leaved lupine, Japanese rose, and orange jewelweed) and the mink, the sand lizard, green frogs, the alpine newt, and the Spanish slug from other taxonomic groups.

The primary measure recommended for widely spread plant species (Canadian waterweed, large-leaved lupine and Japanese rose) is containment from areas where they may cause

major harm to biodiversity. For less prolific plant species (Aleutian ragwort, orange jewelweed and Nootka lupine), the aim is to eradicate them and prevent their introduction into the country.

Among carnivores, it is recommended that the proliferation of mink be controlled by means of culling, particularly in areas where it can cause major harm, such as archipelagos and bird wetlands. The recommendation for the sand lizard, green frogs, the alpine newt and the Spanish slug is eradication and containment.

The primary management measures for these species are as follows:

### ***1.1.1 Japanese rose***

**The rugosa or Japanese rose will be eradicated most urgently from areas of highest biodiversity value and their vicinity as follows:**

- Populations found in or in the vicinity of nature conservation areas located in archipelagos or continental coasts and sites with threatened and near threatened species and habitats (such as seashore meadows, sand beaches, dunes, heaths and dry meadows);
- Populations found in the vicinity of coastal and archipelago areas with threatened habitats and species included in the Habitats Directive;
- Naturalised and planted populations in archipelagos outside conservation areas;
- Naturalised and planted populations found in or in the vicinity of inland conservation areas, shores, esker areas, and sites with threatened and near threatened species.
  - Responsible parties and cooperation partners: Metsähallitus, ELY Centre Environment and Natural Resources Departments, other landowners (incl. central government, local authorities, private landowners).
  - Schedule: 2020–, continuous.

**In support of the above-mentioned measure, regional action plans will be drawn up to prevent the Japanese rose in archipelago areas (in the Gulf of Finland, the Archipelago Sea, the Bothnian Sea, the Kvarken and the Bothnian Bay) outside conservation areas.**

- Sites of high nature value and any populations of invasive alien species threatening these will be identified and inventoried.

- Other necessary additional investments will be made while assessing funding needs and securing adequate funds for operations, and recruiting coordinators and operators for prevention measures.
- The plans will indicate the parties responsible for monitoring the planned prevention measures and any possible after-care measures determined in the plans.
  - Responsible parties and cooperation partners: Metsähallitus, ELY Centre Environment and Natural Resources Departments, other landowners (incl. central government, local authorities, private landowners).
  - Schedule: 2020–, action plans 2021, continuous.

**The Japanese rose will be eradicated from road, street and other built environments in order of urgency as follows:**

1. Sites of high nature value, including those in the vicinity of populations of threatened species, roads crossing conservation areas, and valuable habitat types such as meadows and sun-exposed habitats;
2. Plantings in the vicinity of shores, incl. waterways (e.g. channels and ferry banks).
  - Responsible parties and cooperation partners: Finnish Transport Infrastructure Agency, ELY Centre Environment and Natural Resources and Transport and Infrastructure Departments, local authorities, Association of Finnish Local and Regional Authorities, private landowners.
  - Schedule: 2020–, continuous.

**In support of the above-mentioned measure, regional action plans will be drawn up to establish the details of Japanese rose populations in road and railway areas, valuable nature sites, and the measures and costs required for these.**

- The plans will indicate the parties responsible for monitoring the planned prevention measures and any possible after-care measures determined in the plans.
  - Responsible parties and cooperation partners: Finnish Transport Infrastructure Agency, ELY Centre Environment and Natural Resources and Transport and Infrastructure Departments, local authorities, Association of Finnish Local and Regional Authorities.
  - Schedule: 2020–, continuous.

**Populations of Japanese rose will be eradicated and prevented from spreading on roadsides, in parks, carparks and other public areas, as well as in yards and gardens with no significant nature values.**

- Responsible parties and cooperation partners: Finnish Transport Infrastructure Agency, ELY Centre Transport and Infrastructure Departments, local authorities, parishes, landscaping operators and gardening enthusiasts, housing companies and other private landowners.
- Schedule: 2020–.

**Options will be developed for preventing extensive plantings of Japanese rose along motorways and other dual-carriageway roads while linking removal of invasive alien species to other road improvement works. Prevention measures will be put in place on the road network no later than as part of competitive tendering procedures for new area maintenance contracts.**

- Responsible parties and cooperation partners: Finnish Transport Infrastructure Agency, ELY Centre Transport and Infrastructure Departments.
- Schedule: 2020–.

### **Prevention methods**

It is recommended to primarily use mechanical prevention methods. Chemical prevention methods may also be used professionally and carefully for extensive, mostly monospecific perennial populations, as well as for remote and less accessible sites, in particular, such as archipelago areas. See regularly updated information on prevention methods in the [species card for Japanese rose](#) on the Invasive Alien Species Portal (in Finnish).

### ***1.1.2 Large-leaved lupine***

**The large-leaved lupine will be eradicated most urgently from areas of highest biodiversity value and their vicinity as follows:**

- Nature conservation areas
- Populations found in and in the vicinity of sites with threatened species and habitats (e.g. seminatural grasslands and grazed woodlands, esker forests, sun-exposed habitats, herb-rich forests).
  - Responsible parties and cooperation partners: Metsähallitus, ELY Centre Environment and Natural Resources Departments, landowners (incl. central government, local authorities, private landowners).



- Schedule: continuous.

**The large-leaved lupine will be prevented from spreading in road, street and other built environments in order of urgency as follows:**

1. Roadside sites of high nature value, including those in the vicinity of populations of threatened or near threatened species, roads crossing conservation areas, and valuable habitat types such as meadows and sun-exposed habitats;
2. Stretches of roads and streets and other areas into which the large-leaved lupine is only just spreading.
  - Responsible parties and cooperation partners: Finnish Transport Infrastructure Agency, ELY Centre Transport and Infrastructure and Environment and Natural Resources Departments, local authorities, local associations, private landowners.
  - Schedule: 2020–, continuous.

**At least 50-metre lupine-free buffer zones will be created to protect valuable nature sites, which will be kept permanently free of lupines.**

- Responsible parties and cooperation partners: Finnish Transport Infrastructure Agency, ELY Centre Environment and Natural Resources and Transport and Infrastructure Departments, local authorities.
- Schedule: 2020–, continuous.

**In support of the above-mentioned measures, regional action plans will be drawn up to establish the details of the presence of large-leaved lupine populations on the road network in the vicinity of valuable nature sites and the measures and costs required for these. Sites overrun with lupine where no nature values are threatened and prevention is currently less cost-effective will also be identified and treated in keeping with normal mowing practices.**

- The plans will indicate the parties responsible for monitoring the planned prevention measures and any possible after-care measures determined in the plans.
  - Responsible parties and cooperation partners: Finnish Transport Infrastructure Agency, ELY Centre Transport and Infrastructure and Environment and Natural Resources Departments, local authorities, parishes, local associations, landscaping operators and gardening enthusiasts, housing companies and other private landowners.
  - Schedule: 2020–, continuous.

**The spread of large-leaved lupine in road and railway environments and other public areas will be slowed down while preventing its spread into previously lupine-free road sections. Prevention measures will be put in place on the road network no later than as part of competitive tendering procedures for new area maintenance contracts.**

- Roadside mowing practices and methods will be developed and put in place to slow down the spread of large-leaved lupine, in terms such as mowing schedules and minimisation of other risks of spread.
- Road sections that are still completely free of lupine will be identified in order to prevent its spread at the earliest possible stage.
- The chances to clean roadside mowing machines before moving into lupine-free road sections will be examined.
- Ways of organising the collection of mowed plant matter as part of roadside mowing operations will be examined, including situations where mowing needs to be performed in a less than ideal stage of flowering.
- More training will be provided in prevention work on road and railway sections.
  - Responsible parties and cooperation partners: Finnish Transport Infrastructure Agency, ELY Centre Transport and Infrastructure and Environment and Natural Resources Departments, local authorities, landscaping operators and gardening enthusiasts, private landowners, contractors.
  - Schedule: continuous.

**The level of awareness about roadside sites of high nature value will be raised to be able to focus prevention measures cost-effectively on the right areas. Research and development into prevention measures will be launched with a view to drawing up clear general prevention guidelines for road areas.**

- Roadside sites of high nature value and the presence of large-leaved lupine in their vicinity will be determined and inventoried.
- Site-specific prevention measures will be planned for the most valuable sites.
  - Responsible parties and cooperation partners: Finnish Transport Infrastructure Agency, ELY Centre Environment and Natural Resources and Transport and Infrastructure Departments, local authorities, Finnish Environment Institute.
  - Schedule: continuous.

**The large-leaved lupine will be prevented from spreading into forests while also launching prevention measures in forest environments.**

- Methods will be developed to identify sites relevant to the spread of large-leaved lupine and to prevent its spread in regeneration areas, for example. Prevention is most effective when lupines are still seedlings.
- Attention will be paid to forest machine movements to prevent seeds from being carried from populations of the invasive alien species into cutting areas, while developing efficient methods to prevent the species from spreading in this manner.
  - Responsible parties and cooperation partners: Metsähallitus, forest owners, contractors, forest management associations, Finnish Forestry Centre.
  - Schedule: continuous.

**The large-leaved lupine will be prevented from spreading in other public areas, as well as in yards and gardens with no significant nature values.**

- Responsible parties and cooperation partners: ELY Centres, local authorities, parishes, landscaping operators and gardening enthusiasts, local associations, housing companies and other private landowners.
- Schedule: continuous.

**Prevention methods**

It is recommended to primarily use mechanical prevention methods. Chemical prevention methods may also be used professionally and carefully for extensive, mostly monospecific perennial populations. See regularly updated information on prevention methods in the [species card for large-leaved lupine](#) on the Invasive Alien Species Portal (in Finnish).

***1.1.3 Japanese knotweed, giant knotweed, Himalayan knotweed***

**Any populations of large knotweed species that have spread into the wild will be eradicated in order of urgency as follows:**

1. Nature conservation areas and their immediate vicinity;
2. Areas in the vicinity of observation sites of threatened species or otherwise valuable nature sites;
3. Other natural environments.
  - Responsible parties and cooperation partners: Metsähallitus, landowners.
  - Schedule: continuous.

**Populations of large knotweed species will be eradicated from residential areas and the road network.**

- Any populations unintentionally introduced by rhizome fragments transported with soil will be eradicated.
- Knotweed populations will be mowed off from roadsides and removed as part of road improvement projects.
- Knotweed populations will be removed from yards, gardens and parks and their immediate vicinity.
  - Responsible parties and cooperation partners: local authorities, private landowners and housing companies, landscaping operators and gardening enthusiasts, Finnish Transport Infrastructure Agency, ELY Centre Transport and Infrastructure and Environment and Natural Resources Departments.
  - Schedule: continuous.

**Prevention methods**

It is recommended to primarily use mechanical prevention methods. Chemical prevention methods may also be used professionally and carefully for extensive, mostly monospecific perennial populations. See regularly updated information on prevention methods in the following species cards on the Invasive Alien Species Portal (in Finnish):

- [Japanese knotweed](#);
- [giant knotweed](#);
- [Himalayan knotweed](#).

***1.1.4 Canadian waterweed***

**The species will be prevented from spreading.**

- Information will be provided on the importance of carefully cleaning boats, gear and other fishing equipment as part of containment.
- Spread will be prevented in areas where waterweed is only found infrequently and outside its current range.
- Transfer of water vessels into small water bodies of high conservation value (e.g. calcareous ponds and small lakes) will be prohibited in carefully considered cases. Parties such as local authorities and ELY Centres may apply for restrictions on water transport in keeping with the [environmental administration guidelines](#) (in Finnish).

- Responsible parties and cooperation partners: ELY Centres, Finnish Environment Institute, Metsähallitus, Finnish Transport and Communications Agency (Traficom), local authorities, commercial and recreational fishers, owners of water areas.
- Schedule: continuous.

**The current status will be surveyed.**

- The current status of waterweed will be surveyed in conservation areas and threatened habitats, in particular, in order to prioritise boating ban areas and removal measures.
- Guidance and technical means will be provided to ensure that abundance estimates of waterweed are produced in a consistent manner for the Invasive Alien Species Portal.
  - Responsible parties and cooperation partners: ELY Centres, Metsähallitus, Finnish Environment Institute, Finnish Museum of Natural History.
  - Schedule: 2020–2030.

**Removal methods will be developed.**

- Removal methods and their effects on different types of lakes will be studied and details of the results and experiences obtained will be communicated.
  - Responsible parties and cooperation partners: Finnish Environment Institute, Natural Resources Institute Finland, ProAgria.
  - Schedule: 2020–2030.

**Sites of highest conservation value will be prioritised in removal measures and the species will be removed in order of urgency as follows:**

1. Conservation areas where removal is necessary to safeguard valuable species and habitats while, however, carefully considering any potential risks involved in removal and minimising these when selecting the removal method;
2. Threatened habitat types, such as:
  - a. Naturally eutrophic lakes,
  - b. Eutrophic ponds and small lakes,
  - c. Calcareous lakes in Northern Finland,
  - d. Calcareous ponds and small lakes in Southern and Northern Finland;

3. Areas where waterweed causes significant harm to recreational use, with frequent dense masses, or with no signs of decline;
4. Recreational areas that can function as potential pathways of spread into sites of high conservation value;
  - a. Fishing sites (lure fishing, net fishing, seine fishing);
  - b. Beaches;
  - c. Marinas prioritised on grounds such as population density.
    - Responsible parties and cooperation partners: ELY Centres, Finnish Environment Institute, local authorities.
    - Schedule: continuous.

**Prevention will be cost-effective.**

- Waterweed will be removed from head waters before downstream waters to contain spread.
- The removed plant matter will be put to effective use, where possible, in order to increase the cost-effectiveness of removal measures.
  - Responsible parties and cooperation partners: ELY Centres, owners of water areas, remediation companies.
  - Schedule: 2020–.

**Prevention methods**

See regularly updated information on prevention methods in the [species card for Canadian waterweed](#) on the Invasive Alien Species Portal (in Finnish).

***1.1.5 Nootka lupine, Aleutian ragwort, orange jewelweed***

**Any populations of the species will be eradicated.**

- Responsible parties and cooperation partners: ELY Centres, local authorities, landscaping operators, gardening enthusiasts, landowners.
- Schedule: immediately.

**The Nootka lupine will be prevented from spreading into the country through communication measures.**

- Responsible parties and cooperation partners: Ministry of Agriculture and Forestry, Ministry of the Environment, Natural Resources Institute Finland, Finnish

Environment Institute, ELY Centres, Customs, Finnish Food Authority, garden stores, landscaping operators, interest groups and non-governmental organisations.

- Schedule: continuous.

**Gardening enthusiasts will be informed about the species import ban.**

- Responsible parties and cooperation partners: Ministry of Agriculture and Forestry, Ministry of the Environment, Natural Resources Institute Finland, Finnish Environment Institute, ELY Centres, Customs, Finnish Food Authority, garden stores, landscaping operators, interest groups and non-governmental organisations.
- Schedule: continuous.

**Prevention methods**

It is recommended to primarily use mechanical prevention methods. Chemical prevention methods may also be used professionally and carefully for extensive, mostly monospecific perennial populations. See regularly updated information on prevention methods in the following species cards on the Invasive Alien Species Portal (in Finnish):

- [Nootka lupine;](#)
- [Aleutian ragwort;](#)
- [orange jewelweed.](#)

**1.1.6 American mink**

**Enhancing mink culling primarily in archipelagos, wetland areas important for birds and nesting areas of threatened and declining birds (incl. game birds). Minks will also be hunted on trout brooks.**

- Responsible parties and cooperation partners: Finnish Wildlife Agency, Metsähallitus, ELY Centres, local authorities, hunters, interest groups and non-governmental organisations.
- Schedule: continuous.

**Mink hunting will be enhanced in late winter and spring in particular to ensure that the mink population is as small as possible during birds' nesting period.**

- Responsible parties and cooperation partners: Finnish Wildlife Agency, Metsähallitus, ELY Centres, hunters, interest groups and non-governmental organisations.
- Schedule: continuous.

**Communications will be increased to ensure the effective and appropriate hunting of the mink, also covering areas other than its primary hunting grounds. Communications will also be especially increased for summer residents in archipelagos and in the vicinity of other bird waters.**

- Responsible parties and cooperation partners: Ministry of Agriculture and Forestry, Natural Resources Institute Finland, Finnish Wildlife Agency, Finnish Food Authority, ELY Centres, Finnish Environment Institute, Finnish Hunters' Association, hunting clubs, local authorities, interest groups and non-governmental organisations.
- Schedule: continuous.

**A Decree will be issued on the protection of fur animals, laying down a fencing obligation to prevent minks from escaping.**

- Responsible parties and cooperation partners: Ministry of Agriculture and Forestry.
- Schedule: 2021.

### ***1.1.7 Spanish slug***

**Specimens of the species will be removed when detected. Special attention will be paid to populations and contexts (nurseries, wasteland, garden waste, earthmoving operations) in which the species can easily spread into the environment.**

- Responsible parties and cooperation partners: local authorities, ELY Centres, landowners, interest groups and non-governmental organisations, private citizens.
- Schedule: continuous.

**The species will be prevented from spreading and proliferating by means of communication measures.**

- Responsible parties and cooperation partners: Ministry of Agriculture and Forestry, Ministry of the Environment, Natural Resources Institute Finland, Finnish Environment Institute, Finnish Museum of Natural History, ELY Centres, Finnish Food Authority, landscaping operators, interest groups and non-governmental organisations.
- Schedule: continuous.

**Local prevention drives will be organised while encouraging people to remove the species from public areas.**

- Responsible parties and cooperation partners: local authorities, ELY Centres, landowners, interest groups and non-governmental organisations.



- Schedule: continuous.

### **Prevention methods**

See regularly updated information on prevention methods in the [species card for Spanish slug](#) on the Invasive Alien Species Portal (in Finnish).

It should be noted that professional operators are obliged to prevent the Spanish slug from spreading outside the land area managed by them through mould, soil or plants, for example (Invasive Alien Species Act section 5: Obligation of an operator).

### ***1.1.8 Sand lizard, green frogs, alpine newt***

**The presence of the species in Finland will be established and appropriate management measures will be carried out.**

- Responsible parties and cooperation partners: ELY Centres, Finnish Environment Institute, Natural Resources Institute Finland, Finnish Museum of Natural History.
- Schedule: 2021–.

**Awareness-raising measures will be carried out about the bans on import, breeding and release. Pet owners will be advised to make sure that their pets will not get any chance to breed or escape.**

- Responsible parties and cooperation partners: Ministry of Agriculture and Forestry, Ministry of the Environment, Natural Resources Institute Finland, Finnish Environment Institute, ELY Centres, hobby organisations.
- Schedule: continuous.

## **1.2 Species kept as a pets in Finland**

Group 2 consists of the following species: **chipmunks and the wolfdog from the taxonomic group carnivores.**

These species have been or are being kept as pets in Finland on occasion. A few wolfdogs have also been found in the wild in Finland. The primary measures for species included in this group are raising awareness about the bans on import, breeding and release. Any specimens of these species found in the wild will be eradicated following identification.

**Awareness-raising measures will be carried out about the bans on import, breeding and release. Pet owners will be advised to make sure that their pets will not get any chance to breed or escape.**

- Responsible parties and cooperation partners: Ministry of Agriculture and Forestry, Ministry of the Environment, Natural Resources Institute Finland, Finnish Environment Institute, ELY Centres.
- Schedule: continuous.

**In the event that a specific set of circumstances or some other information obtained by the authorities gives rise to reasonable suspicion that the exemption for pets is not applicable to keeping an animal, its owner will be asked to account for its origin and grounds for its keeping.**

- Responsible parties and cooperation partners: ELY Centres, the Police, Customs, provincial and municipal veterinary officers.
- Schedule: continuous.

**The presence of hybrids of dogs and wild wolves in the wild will be tracked as part of the DNA monitoring of the wolf population.**

- Responsible parties and cooperation partners: Ministry of Agriculture and Forestry, Natural Resources Institute Finland, Finnish Wildlife Agency.
- Schedule: continuous.

### **1.3 Species found occasionally in Finland**

Group 3 consists of the following species: **alien species of falcons, hybrids of lesser white-fronted goose and the yellow-bellied toad.**

Some falcon species alien to Finland are bred for hunting purposes in Russia, Central Europe and the United Kingdom. In 2018, Denmark also allowed the use of hunting falcons, which may increase incidents of captive-bred falcons straying into Finland in the future. The challenge is to distinguish alien peregrine falcons and gyrfalcons straying from aviary populations and falcon hybrids from wild specimens nesting in Northern Finland. Any confirmed hybrid or captive-bred bird found nesting with a wild gyrfalcon or peregrine should be removed.

Hybrids of lesser white-fronted goose mostly come from Sweden, where lesser white-fronted geese have been farmed and introduced to Northern Sweden. In order to protect the original Fennoscandian population of the species, it is justified to capture (to confirm genetic origin) and, where necessary, remove any confirmed or suspected hybrids, colour-ringed or unringed, originating in aviaries or from introduced Swedish populations. With regard to suspected hybrids or individuals from introduced Swedish populations of lesser white-fronted goose, it is imperative to urgently determine the party that will take action, where necessary, to establish the needs for and chances of removal and, where the conditions are satisfied, to implement removal measures. Any measures must be carried out in compliance with the Nature Conservation Act. The Finnish working group for Lesser White-fronted Goose keeps close track of the presence of the species in Finland and serves as a species expert body, informing public authorities of the need to launch measures to target individuals meeting the definition of an invasive alien species.

Measures must be taken in the event that any individuals meeting the above-mentioned criteria are found in Finland. Any observations and measures must be reported to the Invasive Alien Species Portal.

**Immediate measures will be taken to remove the above-mentioned bird species when detected.**

- Responsible parties and cooperation partners: ELY Centres, Metsähallitus, Finnish working group for Lesser White-fronted Goose, BirdLife Finland.
- Schedule: continuous.

Yellow-bellied toads have been found occasionally in the wild in Finland, but the current status of the species is unknown. It is necessary to establish the status and presence of the yellow-bellied toad in Finland. Any populations that may be found must be prevented from spreading and the individuals in these populations must be eradicated, whenever possible, as long as their presence is still localised.

**The presence of the yellow-bellied toad in Finland will be established.**

- Responsible parties and cooperation partners: Finnish Environment Institute, Natural Resources Institute Finland, ELY Centres.
- Schedule: 2021–.

**Any individuals detected will be removed and the species will be prevented from spreading.**

- Responsible parties and cooperation partners: ELY Centres.
- Schedule: continuous.

## **1.4 Species with a low risk of spread**

Group 4 consists of the following alien species: **alien birds of prey, alien owls, alien crows and alien bats, as well as the European green tree frog, the northern leopard frog and the agile frog.**

None of the invasive alien species within this group has been found in Finland and, with the exception of some bat species, these species would not thrive in Finnish climate conditions. Monitoring the distribution of these species outside Finland and raising awareness about the ban on importing them into Finland are currently sufficient management methods.

**The development of the range of these species outside Finland will be monitored.**

- Responsible parties and cooperation partners: Ministry of Agriculture and Forestry, Natural Resources Institute Finland, Finnish Environment Institute, Finnish Museum of Natural History, ELY Centres, BirdLife Finland.
- Schedule: continuous.

**Enthusiasts will be informed about the import ban.**

- Responsible parties and cooperation partners: Ministry of Agriculture and Forestry, Ministry of the Environment, Natural Resources Institute Finland, Finnish Environment Institute, ELY Centres, Customs, BirdLife Finland.
- Schedule: continuous.

## **2 Recommended measures for the general management of alien species**

The measures listed below are needed for the general management of invasive alien species.

**Awareness about alien species will be raised through multichannel communication:**

- Efforts will be made to enhance communications targeted at local authorities and private citizens as well as operators in various sectors, including aquarium stores and

enthusiasts, garden stores, (home) gardeners, pet owners and stores, recreational and commercial fishers and tourists.

- Communication measures will be used to motivate citizens to report their observations to the Invasive Alien Species Portal and participate in prevention efforts and organisation of prevention drives.
- Communication measures will also be used to encourage landowners and local authorities to be aware of their obligations concerning the prevention of invasive alien species found on their lands.
- Landowners will be informed early and extensively enough of inventories of invasive alien species to be eradicated and planned prevention work with a view to ensuring cooperation and coordination.
  - Responsible parties and cooperation partners: Ministry of Agriculture and Forestry; Ministry of the Environment; Ministry of Transport and Communications; research institutes; higher education institutions; ELY Centres; local authorities; parishes; Metsähallitus; Natural Resources Institute Finland; Finnish Environment Institute; Finnish Advisory Board for Invasive Alien Species; Finnish Wildlife Agency; game management associations; Association of Finnish Local and Regional Authorities; Finnish Federation for Recreational Fishing; interest groups, advisory organisations and educational institutions in the agriculture, forestry and horticultural sectors; local operators (e.g. local heritage, sports and exercise, recreational, nature and youth organisations); aquarium and pet stores; other companies.
  - Schedule: continuous.

**Measures and observations concerning all invasive alien species will be consistently reported via the Invasive Alien Species Portal. The monitoring system for prevention methods will be developed further while expanding its introduction. Efforts will be made to ensure that all observation data on invasive alien species is available for use via the Finnish Biodiversity Info Facility.**

- Responsible parties and cooperation partners: Natural Resources Institute Finland; Finnish Environment Institute; Finnish Museum of Natural History; ELY Centres; local authorities, Finnish Wildlife Agency; Metsähallitus; Federation of Finnish Fisheries Associations; interest groups and advisory organisations in the

agriculture, forestry and horticultural sectors; groups of enthusiasts (e.g. hunters, fishers, nature enthusiasts).

- Schedule: continuous.

**Efforts to inventory the populations of invasive alien species will be enhanced and continued for the purpose of planning and prioritising prevention measures.**

- Responsible parties and cooperation partners: ELY Centres, Metsähallitus, local authorities, research institutes.
- Schedule: 2020–.

**The utilisation of projects supported through rural development funds (Leader) in prevention of invasive alien species will be enhanced by means such as improving communications.**

- Responsible parties and cooperation partners: Ministry of Agriculture and Forestry/National Rural Network, ELY Centres, local Leader action groups.
- Schedule: continuous.

**Efforts will be made to ensure the monitoring of already prevented invasive plant species and the necessary after-care measures.**

- Responsible parties and cooperation partners: parties performing and purchasing prevention measures, landowners.
- Schedule: continuous.

**New non-chemical prevention measures will be developed to prevent invasive plant species (burying, covering, crushed rock fines, etc.).**

- Responsible parties and cooperation partners: research institutes, higher education institutions, companies.
- Schedule: continuous.

**Efforts will be made to ensure that any soil to be transported is free of alien species.**

- Responsible parties and cooperation partners: landowners, earthmoving and construction operators, landscaping operators, INFRA – Infra Contractors Association in Finland.
- Schedule: continuous.

**Efforts will be made to develop more effective reception and appropriate treatment of waste and soil containing invasive plant material as well as cost-effective disposal methods**

**for these. Effective solutions will be sought for treating large amounts of invasive plant waste. Guidance will be provided on timing prevention of invasive alien species in order to minimise the amount of invasive plant waste. The number of reception sites will be increased and information about these will be actively provided, while also exploring opportunities for organising reception free of charge. Guidance and communications on treatment of invasive species waste will be harmonised in different locations.**

- Responsible parties and cooperation partners: Ministry of the Environment, ELY Centres, Finnish Transport Infrastructure Agency, Natural Resources Institute Finland, Senate Properties, Metsähallitus, waste management plants, landowners, Finnish Association of Landscape Industries and other organisations, INFRA – Infra Contractors Association in Finland, companies, research institutes.
- Schedule: 2020–.

**Local authorities will be encouraged to create opportunities for preventing the spread of invasive alien species through voluntary work by means such as giving and lending the necessary equipment.**

- Responsible parties and cooperation partners: local authorities.
- Schedule: 2020–.

# III ANALYSIS AND ACTION PLAN CONCERNING THE PATHWAYS OF UNINTENTIONAL INTRODUCTION AND SPREAD

## 1 Classification of pathways of spread

The pathways of spread of invasive alien species of national concern were studied by dividing them into categories in accordance with the classification used in the UN Convention on Biological Diversity (CBD) (Harrower et al. 2018). The CBD classification divides the introduction pathways into six categories and further into 44 subcategories (Table 8.1). The six categories can be divided into intentional (release in nature or escape from confinement) and unintentional (transport by contaminated organisms or by vectors) pathways, and into categories that describe both the pathway and spread (corridor or unaided dispersal) (Table 8.1). A species may have several pathways of spread. The study distinguished the pathways of spread detected in Finland from the potential pathways of spread of the species.

## 2 Results

### 2.1 Detected pathways of spread

‘Release in nature’ was identified as a pathway of spread for the Japanese rose (erosion control) as well as for the Canadian waterweed and the orange jewelweed (landscape/flora ‘improvement’ with alien species). ‘Other intentional release’ was found to be a pathway of spread for the yellow-bellied toad and the alpine newt. ‘Escape from confinement’ was a pathway of spread for all plant species, with the exception of the Aleutian ragwort and the orange jewelweed. The Aleutian ragwort and the Canadian waterweed have spread from botanical gardens. Escape from confinement was also a pathway of spread for the mink (fur farming) and the wolfdog, chipmunks and the yellow-bellied toad.

Four pathways of spread were identified in the ‘transport by contaminated organisms’ category. The Nootka lupine, Canadian waterweed, large-leaved lupine and Japanese rose have spread on animals. The Japanese knotweed, giant knotweed, large-leaved lupine and



Japanese rose have spread through transportation of habitat material. The Spanish slug has spread through nursery material, plant waste and transportation of habitat material.

Waterways were identified as another pathway of spread for the Canadian waterweed, Japanese rose and orange jewelweed.

Only one pathway of spread was identified in the 'transport by vectors' category. The large-leaved lupine and the Spanish slug have been transported by machinery and equipment.

All birds classified as alien species and the mink were also found to have spread across Finland's national border on their own. Of these species, spreading across the national border is most significant for hybrids of lesser white-fronted goose.

## **2.2 Potential pathways of spread**

The most important potential pathways of spread are related to alien bird species, the sand lizard and amphibians escaping from confinement or being intentionally released by pet owners. While various plant species have many potential pathways of spread, it is unlikely that such specimens would spread into Finland through these. These plant species are already prevalent in Finland and their use for ornamental purposes has been the most significant pathway of spread. Unlike other organisms, amphibians could also spread as stowaways on ships. Amphibians could also spread through waterways.

# **3 Goals for management of primary pathways and prevention of spread**

## **3.1 Escape prevention**

Escape prevention is a key measure in terms of preventing the spread of alien species under human control. This measure applies to all plant species (except for the orange jewelweed), the mink, the wolfdog, chipmunks and the yellow-bellied toad. Almost all of the plant species are already widely spread. The key way of preventing their propagation is careful treatment of garden and other mowing waste. In addition, it is important to raise awareness about the ban on sales of such species. Some minks escape from fur farms, but escaped individuals do

not thrive in the wild. Wolfdogs and chipmunks are occasionally kept as pets. Owners must prevent pets under their control from escaping.

### **3.2 Transport by contaminated products or by vectors**

Transport by contaminated products or by vectors may occur both from abroad to Finland and within Finland. The spread of the listed species from abroad into Finland is unlikely, or at least insignificant in terms of management. Within Finland, the species may be transported by vehicles and soil. Transportation of plants and the Spanish slug on habitat material plays a key role in terms of management. Spanish slugs may also spread on nursery material and plants. It is difficult to control and prevent spread through both vectors and contaminated products due to the large scale of transport. If prevention of the spread of a certain species is to be prioritised, this will require specified objectives and targeted measures. Communications can be used to facilitate the prevention of local spread through garden waste, for example.

## **4 Primary measures**

### **4.1 Targeted civic awareness and general communication measures**

#### **Information will be provided about species governed by legislation.**

Information will be provided at the national level about the pathways and prevention of spread of invasive alien species of national concern and the ban on release into the environment.

- Responsible parties and cooperation partners: Ministry of Agriculture and Forestry, Ministry of the Environment, Natural Resources Institute Finland, Finnish Environment Institute, Finnish Wildlife Agency, ELY Centres, local authorities, landscaping operators, hobby organisations and associations, companies.
- Schedule: continuous.

#### **Information campaigns will be launched.**

Information will be provided about the appropriate treatment and destruction of garden waste to prevent ornamental plants and the Spanish slug from spreading into the environment. Information measures will especially focus on the prevention of Japanese rose and large-leaved lupine and the disposal of prevention waste.

- Responsible parties and cooperation partners: Ministry of Agriculture and Forestry, Ministry of the Environment, Natural Resources Institute Finland, Finnish Environment Institute, ELY Centres, local authorities, Finnish Museum of Natural History, landscaping operators, hobby organisations and associations, companies.
- Schedule: continuous.

## **4.2 Targeted communications on contaminated plant material and vectors**

**Information campaigns will be launched and a training day will be organised about the treatment of soil and about alien species spreading through transport (mobile machinery in particular).**

- Responsible parties and cooperation partners: ELY Centres, local authorities, landscaping operators, nursery and garden producers' organisations, companies.
- Schedule: continuous.

Table 8.1. Study on pathways of spread.

Pathways of spread currently identified in Finland are marked with an x, and potential future pathways of spread are marked with an (x).

	PLANTS	BIRDS	MAMMALS	REPTILES	AMPHIBIANS	MOLLUSCS
	Nootka lupine Aleutian ragwort Himalayan knotweed Japanese knotweed Giant knotweed Canadian waterweed Large-leaved lupine Japanese rose Orange jewelweed	Birds of prey Falcons Owls Crows Hybrids of lesser white-fronted goose	Mink Wolfdog Bats Chipmunks	Sand lizard	Green frogs European green tree frog Yellow-bellied toad Northern leopard frog Agile frog Alpine newt	Spanish slug
<b>INTENTIONAL</b>						
<b>MOVEMENT OF COMMODITY</b>						
<b>RELEASE IN NATURE</b>						
Biological control						
Erosion control	(x)	(x)	(x)	(x)	(x)	x
Fish stocking						
Game stocking						
Landscape/flora/fauna 'improvement' with alien species				x		x
Introduction for conservation or population management purposes					(x)	
Release in nature for other use <sup>1</sup>						
Other intentional release	(x)			(x)	(x)	(x)
<b>ESCAPE FROM CONFINEMENT</b>						
Agriculture (incl. bioenergy)		(x)	(x)	(x)		
Aquaculture						
Botanical garden/zoo/aquarium <sup>2</sup>	x		x	(x)	(x)	
Pet, aquarium and terrarium species and live food for such species <sup>3</sup>			(x)	(x)	(x)	(x)
Farmed animals <sup>4</sup>					x	x
Forestry (incl. reforestation)	(x)					
Fur farming					x	
Horticulture						(x)
Ornamental purpose (other than horticulture)	x	(x)	x	x	x	x
Research and ex-situ breeding						
Live food and live bait						
Other escape from confinement		(x)	(x)	(x)		
<b>UNINTENTIONAL</b>						
<b>TRANSPORT BY CONTAMINATED ORGANISMS</b>						
Contaminant nursery material						x
Contaminated bait						
Food contaminant (incl. live food)						
Contaminant on animals <sup>4</sup>	x		x	x	x	(x)
Parasites on animals <sup>5</sup>						
Contaminant on plants <sup>6</sup>					(x)	x
Parasites on plants <sup>7</sup>						
Seed contaminant			(x)	(x)		
Timber trade						
Transportation of habitat material	(x)	x	x	x	x	(x)
<b>VECTOR</b>						
<b>TRANSPORT BY VECTORS</b>						
Angling/fishing equipment		(x)				
Container/bulk						
Hitchhikers in or on airplane			(x)		(x)	
Hitchhikers on ship/boat <sup>8</sup>					(x)	(x)
Machinery and equipment		(x)	x	(x)		x
People and their luggage/equipment (in particular tourism)						
Organic packaging material (in particular wood packaging)						
Ship/boat ballast water					(x)	
Ship/boat hull fouling		(x)				
Other vehicles		(x)	(x)	(x)		
Other means of transport		(x)	(x)	(x)		
<b>CORRIDOR &amp; DISPERSAL</b>						
<b>DISPERSAL</b>						
<b>CORRIDOR</b>						
Interconnected waterways	(x)		x	(x)	x	x
Tunnels and land bridges						
<b>UNAIDED</b>						
Natural dispersal of an alien species across borders			x	x	x	x

<sup>1</sup> (fur, transport, medical use); <sup>2</sup> (excl. domestic aquaria); <sup>3</sup> (incl. animals left under limited control);

<sup>4</sup> (excl. parasites, species transported by host/vector); <sup>5</sup> (incl. species transported by host/vector); <sup>6</sup> (excl. parasites, species transported by host/vector); <sup>7</sup> (incl. species transported by host/vector); <sup>8</sup> (excl. ballast water and hull fouling)

# Appendix 1

**List of invasive alien species of national concern** (Government Decree on Managing the Risk Caused by Alien Species 704/2019).

## **Annex A**

### **ANIMALS**

Paragraphs 1.1–2.4 and 4.1 of Annex A refer to those species belonging to the taxonomic group in question that, in Finland, are outside of their native area and that are not included on the list of invasive alien species of European Union concern.

#### **1 Mammals**

1.1 taxonomic group: **carnivores** (*Carnivora*),

including

1.1.1 **hybrids of domestic dog and wolf** (*Canis lupus*) **or domestic dog and other canid species** (*Canidae*) **in generations F1–F4, as well as hybrids of these hybrids and canids other than the domestic dog;**

1.1.2 **hybrids of domestic cat and other feline species in generations F1–F4, as well as hybrids of these hybrids and felines other than the domestic cat;**

and excluding the following species:

- carnivores referred to in paragraphs 1 and 2 of section 42, subsection 1 of the Hunting Act (615/1993);
- domestic dog and its hybrids from generation F5 onwards;
- domestic cat and its hybrids from generation F5 onwards;
- ferret.

1.2 taxonomic group: **bats** (*Chiroptera*)

1.3 taxonomic group: **chipmunks** (*Tamias*)

#### **2 Birds**

2.1 taxonomic group: **birds of prey** (*Accipitriformes*) **and their hybrids**

2.2 taxonomic group: **falcons** (*Falconiformes*) **and their hybrids**

2.3 taxonomic group: **owls** (*Strigiformes*)

2.4 taxonomic group: **crows** (*Corvidae*)

2.5 **hybrids of lesser white-fronted goose** (*Anser erythropus*) **and other species of geese**

#### **3 Reptiles**

3.1 **sand lizard** (*Lacerta agilis*)

#### **4 Amphibians**

- 4.1 taxonomic group: **green frogs** (*Pelophylax*)
- 4.2 **European green tree frog** (*Hyla arborea*)
- 4.3 **yellow-bellied toad** (*Bombina variegata*)
- 4.4 **northern leopard frog** (*Lithobates pipiens*)
- 4.5 **agile frog** (*Rana dalmatina*)
- 4.6 **alpine newt** (*Ichthyosaura alpestris*)

#### **5 Molluscs**

- 5.1 **Spanish slug** (*Arion vulgaris*)

#### **Annex B**

#### **PLANTS**

- 1 **Nootka lupine** (*Lupinus nootkatensis*)
- 2 **Aleutian ragwort** (*Jacobaea cannabifolia*)
- 3. **Himalayan knotweed** (*Reynoutria x bohemica*)
- 4 **Japanese knotweed** (*Reynoutria japonica*)
- 5 **giant knotweed** (*Reynoutria sachalinensis*)
- 6 **Canadian waterweed** (*Elodea canadensis*)
- 7 **large-leaved lupine** (*Lupinus polyphyllus*)
- 8 **rugosa rose** (*Rosa rugosa*, incl. *Rosa rugosa* f. *alba*)
- 9 **orange jewelweed** (*Impatiens capensis*)