

Bioinvasion and Global Environmental Governance: The Transnational Policy Network on Invasive Alien Species

Sweden's Action on IAS

Description⁴

Sweden, officially the Kingdom of Sweden, is a Nordic country on the Scandinavian Peninsula in Northern Europe. Sweden has land borders with Norway to the west and Finland to the northeast, and it is connected to Denmark by the Öresund Bridge in the south. At 450,000 km² (173,746 sq mi), Sweden is the third largest country in the European Union in terms of area, and it has a total population of over 9.2 million. It has a temperate climate in the south with cold, cloudy winters and cool, partly cloudy summers; subarctic in north. The terrain is mostly flat or gently rolling lowlands, but mountainous in the west.

Sweden is a constitutional monarchy with a parliamentary system of government and a highly developed economy. Sweden has achieved an enviable standard of living under a mixed system of high-tech capitalism and extensive welfare benefits. Sweden joined the EU in 1995, but the public rejected the introduction of the euro in a 2003 referendum. Timber, hydropower, and iron ore constitute the resource base of an economy heavily oriented toward foreign trade.

Overview of Biodiversity

Sweden is a Northern European country, characterised partly by boreal taiga. Sweden has a varied landscape with many different ecotypes. Forests and forest plantations cover almost 70% of the land, and agriculture is practiced mainly in the southern parts. Most of the regions have a long history of intensive forestry, agriculture or hydroelectric developments.

- [CBD Country Profile](#)
- [Earth Trends Country Profile on Biodiversity and Protected Areas](#)

Legislation relating to IAS³

- [The Environment Code](#) (SFS 1998)
- [The Species Protection Act](#) (SFS 1998)
- [The Fisheries Law](#) (SFS 1993)
- [The Hunting Law](#) (SFS 1987)
- [The Forestry Act](#) (1979)
- [The Act on Import of Living Animals](#) (SFS 1994)
- [The Law on Plant Protection](#) (SFS 1995)
- [Act on plant protection and measures against the spread of plant pests](#) (SFS 1995)
- [The act on environmentally dangerous activities and health protection](#) (SFS 1998: 899)

Government Agencies/Programs dealing with IAS

- [Environmental Protection Agency](#)
- [Swedish National Board of Fisheries](#)
- [Swedish Forestry Agency](#) (previously the National Board of Forestry)
- [Swedish National Board of Agriculture](#)

Major Invasive Alien Species^{2&5}

Ambrosia artemisiifolia (herb)	Heterosiphonia japonica (red algae)
Aphanomyces astaci (fungus)	Impatiens glandulifera (herb)
Balanus improvisus (barnacle)	Limulus polyphemus (crab)
Bonnemaisonia hamifera (red algae)	Mustela vison (mammal)
Carassius gibelio (fish)	Mya arenaria (mussel)
Chara connivens (stonewort)	Myocastor coypus (mammal)
Colpomenia peregrina (brown algae)	Mytilopsis leucophaeata (mussel)
Dasya baillouvia (red algae)	Pacifastacus leniusculus (crustacean)
Dreissena polymorpha (mussel)	Petricolaria pholadiformis (mussel)
Elodea canadensis (aquatic plant)	Phytophthora ramorum (fungus)
Elodea nuttallii (aquatic plant)	Potamopyrgus antipodarum (snail)
Ensis directus (mussel)	Sargassum muticum (brown algae)
Fucus evanescens (brown algae)	Senecio inaequidens (shrub)
Gracilaria vermiculophylla (red algae)	Undaria pinnatifida (kelp)
Heracleum mantegazzianum (herb)	

Major Exported Species²

Acer platanoides (tree)	Ips typographus (insect)
Columba livia (bird)	Perca fluviatilis (fish)
Cytisus scoparius (shrub)	Rhamnus cathartica (tree)
Didymosphenia geminata (algae)	Salmo salar (fish)
Frangula alnus (shrub)	Salmo trutta (fish)
Glyceria maxima (aquatic plant, grass)	Tomicus piniperda (insect)

Table 1 Action to prevent, detect and management invasive alien species based on three areas: biodiversity, human health, and economic

Note: Many actions including projects, publications and programs that fit into one area may also fit the dimensions of another; where available project links and funding (in brackets) is provided.

Area	Action
Biodiversity	<ul style="list-style-type: none"> • The Swedish Biodiversity Centre, in cooperation with government agencies, reviewed national legislature in 2004 to identify the national needs for implementing the Guiding Principles of the CBD, they concluded the need for changes in legislature, development of a national strategy on IAS, developing an organization, plan and funding for dealing with newly discovered IAS, and developing methods for analyzing

	<p>and managing risks associated with IAS.¹</p> <ul style="list-style-type: none"> • Have completed a preliminary assessment of the risks posed to ecosystems and species by alien species in three reports by the Swedish Environmental Protection Agency in 1994, 1997 and 1999 and a report by the Nordic Council of Ministers in 2000.¹ • One example of cross-sectoral cooperation through network building is the AquAliens which involves Swedish Environmental Protection Agency, the National Board of Fisheries and researchers from universities throughout Sweden. The project assessed the risks posed to aquatic environments by IAS and their ecological effects.¹ • A report was published in 2004 listing the risks posed to indigenous populations by the introduction of invasive fish, forest tree and bird populations.¹ • Eradication programmes are in place in certain Swedish County Administrative Boards for several species: the American mink <i>Mustela vison</i> and the Giant hogweed <i>Heracleum mantegazzianum</i>. In Västra Götalands län (West Gothland County) there is a programme aimed at eradicating a newly discovered marine algae, <i>Gracilaria vermiculophylla</i>.¹ • Current risk assessments are preliminary; there is a need for enhanced risk assessments for certain taxonomic groups, certain pathways of introduction, and the development of assessment protocols.¹ • The Swedish Environmental Protection Agency has a policy stating that the introduction of alien species which may harm biodiversity is prohibited.¹ • The Swedish National Board of Fisheries also has policies which prohibit the introduction of new alien species to Sweden. It takes stocks and controls of non-indigenous populations of fish, with the exception of the rainbow trout and signal crayfish.¹ • The Environment Code (SFS 1998:808) 6 Chapter. An application for establishing an aquaculture facility in a <i>Natura</i> 2000 area should contain an environmental impact analysis Special regulations for the protection of animal and plant species. 8 Chapter. §3 Special regulations for the protection of animal and plant species. Government bodies are given the authority to regulate the release of animal or plant species to the natural environment. § 4 Governmental bodies are authorized to regulate import and export, transportation of, storage of, preparation of and showing of animals and plants or trade with them. 14 Chapter §7 & 11 Regulation of chemical products and biotechnical organisms.³ • The Species Protection Act (SFS 1998; 179) outlaws the
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	<p>import of living freshwater crayfish from the families <i>Astacidae</i>, <i>Cambaradae</i>, and <i>Parastacidae</i> in Section 11. Section 18 requires permits for the show of wild animals in zoos and includes provisions necessary to keep animals from escaping.^{1&3}</p> <ul style="list-style-type: none"> • The Fisheries Law enables the government to call for an environmental analysis (par. 20) before transplanting fish, and bestows upon the government the authority to “forbid or limit fishing” (par. 28). The Swedish National Board of Fisheries regulations on the culture, stocking, and moving of fish (FIFS 2001:3) excludes permits for the stocking of invasive species.³ • Par. 32 of The Forestry Act (1979:429) requires an environmental impact analysis before the employment of new methods of forest care and culture materials.³ • Act on plant protection and measures against the spread of plant pests (SFS 1995) regulates the control and limiting of the spread of plant pests, which can seriously damage plant cultures, forests, other land or plants.³ • Alien Species in Swedish Seas and archipelagos is an attempt to compile current knowledge on alien species in Swedish seas and archipelago areas, including the Skagerrak/Kattegat and the Baltic Sea. It addresses all those who want to know more about aquatic invaders in the marine environment. This includes people who deal with alien species on a professional basis, those who encounter aquatic invaders in their private lives, and those who can influence the spread of alien species to sea areas. The site, which was launched on 22 September 2005, is a joint information channel for the three regional Information Offices along the Swedish coast: the Skagerrak/Kattegat area on the Swedish west coast, the Baltic Sea proper, and the Gulf of Bothnia. • The National Biodiversity Strategy and Action Plan includes ACTION 31: <ul style="list-style-type: none"> - Develop <i>better basic documentation and procedures for risk assessment</i> relating to introductions. As part of this action, an assessment should be made of the risk of 'genetic contamination' of various Swedish plant species (if possible also of other groups of organisms). - Establish a conceptual apparatus, preferably geared to the EU context. - Highlight this problem within the EU and seek to ensure that national controls can be established in certain cases. Restrict introductions where there is a danger that they will cause problems in terms of biodiversity. A closer study needs to be made of how this should be done; among other things, the feasibility of measures to control
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	<p>introductions of non-native animal species should be examined (by the Environmental Protection Agency).</p> <ul style="list-style-type: none"> - Document introductions that have already occurred. - Document the present situation and projections concerning the economic losses and ecological damage caused by earlier introductions.
Human health	<ul style="list-style-type: none"> • The act on environmentally dangerous activities and health protection (SFS 1998: 899) dictates that an impact analysis “may be required for activities that may be dangerous to the environment, such as aquaculture with an annual net production more than one ton, agriculture with a substantial number of animals, mink farms and ostrich farms.”³ • The Swedish National Board of Agriculture and the Swedish Environmental Protection Agency control the introduction of pathogens and other alien species through the introduction of animals through import regulations based on the OIE Convention and EU directives on animal health.¹ • The Act on Import of Living Animals (SFS 1994) regulates animal import in order to prevent the spread of animal diseases in par. 11.³
Economic	<ul style="list-style-type: none"> • The Law on Plant Protection (SFS 1995: 681) “regulates the control of plant pests and limits their spread within the region.”³ • The precautionary approach is used when assessing the feasibility of intentional introducing alien species and for developing control programmes for certain invasive species.¹ • The Hunting Act (SFS 1987) permits the hunting of threatening IAS all year long, while the Act on Forest Care (1993:106) empowers the Swedish Board of Forestry to regulate culture materials, and restricts the use of IAS to exceptional cases. See paragraphs 9, 29, and 32.³ • The Swedish National Board of Agriculture regulations on the control of the Giant Hogweed <i>Heracleum mantegazzianum</i> (SJVFS 1998:31) provides guidelines for controlling this pest. The Swedish National Board of Agriculture regulations on fish, crustaceans, mollusks and products thereof (SJVFS 1995:125, revised in 2000:157) provides regulations for moving species to and within Sweden.³ • The Species Protection Act (SFS 1998: 179), in sections 7, 9, and 17, prevents the “storage, transport, and sale of species that are listed in the EU’s Bird and Species and Habitat Directives”.³

Table 2 Action on IAS in cooperation with other countries

Bilateral agreement/ Organization	Countries/ Member	Action
The North European Baltic Network on Invasive Alien Species	Austria, Belgium, Denmark, Estonia, Finland, Faroe Islands, Germany, Greenland, Iceland, Ireland, Latvia, Lithuania, the Netherlands, Norway, Poland, European part of Russia, Slovakia, Sweden.	<p>The North European and Baltic Network on Invasive Alien Species (NOBANIS) has developed a network of common databases on alien and invasive species of the region. By establishing a common portal access to IAS-related data, information and knowledge in the region is facilitated.</p> <p>NOBANIS is a network for cooperation between competent authorities of the region and contributes to implementing recommendations from CBD's COP6. One of the goals of NOBANIS is to provide administrative tools for making the precautionary approach operational in preventing the unintentional dispersal of invasive alien species. Furthermore, NOBANIS establishes a regional cooperation to aid countries in eradication, control and mitigation of ecological effects of invasive alien species. It was developed, in part, from the Nordic/Baltic Invasive Species Informational Network - meeting in Tallinn (word-file)</p> <p>The database of alien species in NOBANIS will be used to identify species that are invasive at present and species that may in the future become invasive. NOBANIS thus provides the foundation for the future development of an early warning system for invasive alien species.</p>

Case Studies

[Calculation of costs of alien invasive species in Sweden – technical report](#)⁶

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Abstract

The purpose of this paper is to present and document calculations of total costs of 13 different alien invasive species (AIS) in Sweden classified into four different categories; aquatic (bay barnacle, furunculosis, yellow floating heart, signal crayfish), biodiversity (Iberian slug, Japanese rose, min, giant hogweed), health (mugwort and ragweed, HIV and AIDS, giant hogweed), and others (Dutch elm disease, rodents). All included species are subjected to control of Swedish public authorities and estimates for most AIS include either damage cost or control cost. The results indicate a total annual cost ranging between 1620 and 5081 millions of SEK, which corresponds to approximately SEK 180 and SEK 565 per capita in Sweden. However, data availability and quality differ for the species, in particular with respect to quantification of invasive alien species impacts. The results indicate that the relatively most reliable estimates are related to human and animal health impacts, and that the costs of impacts on biodiversity are the least reliable estimates.

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