

Policy Memorandum on Invasive exotic species

Introduction

This document firstly deals with developments in exotic species policy: globalisation, international agreements and the lack of specific Dutch policy to prevent damage to biodiversity from exotic species invasion. The principles of the new policy are then discussed. Lastly, the way in which the policy will be implemented is explained. As illustration, a number of examples of exotic species are presented in the appendices.

What is an exotic species?

An exotic species is a non-native plant, animal or micro-organism that is not capable of entering the Netherlands by its own efforts, but has been introduced by humans (transport, infrastructure). In most cases the introduction of exotic species does not cause serious problems as only a limited number of them display invasive behaviour. An exotic species can be said to be invasive if it establishes and develops at an explosive rate. Invasive exotic species may pose a threat to native biodiversity or public health and safety, so causing serious problems and economic damage to society.

Species occurring naturally in neighbouring countries of the Netherlands and entering independently, due for instance to climate change, do not fall under this definition. This is because species entering by their own efforts are usually expected to cause less damage than those introduced by human activity. For instance, prey animals moving independently to new areas usually also bring their predators with them, which keeps the numbers in check. In addition, from a practical point of view it would be impossible to control these species.

Reason for developing exotic species policy

Signatories to the Convention on Biological Diversity, including the Netherlands, have established that after loss of habitat and exploitation, invasive exotic species pose the greatest threat to biodiversity. Under Section 8h of the Convention countries are obliged to develop policy to prevent the introduction of species that threaten native species or ecosystems.

Increasing globalisation

As a consequence of increasing globalisation and greater movement of people and goods over longer distances there is a greater chance that plants, animals and micro-organisms will be spread around the world. In addition, species are sometimes imported and exported intentionally, often without full knowledge of the risks. The great majority of these species are not able to survive in their new environment, and there are others which survive and cause no damage.

In some cases new species develop explosively and become a pest which may threaten biodiversity, public health, safety and the economy. As a trading nation the Netherlands has always played an important role in spreading and receiving new species. The number of newly introduced species increases annually. (Biological Globalisation, 2007)¹

Demarcation of exotic species policy

As well as causing problems for biodiversity, exotic species may also pose a threat to safety and public health. Where there is policy area overlap the Ministry will work in consultation with the Ministry of Health, Welfare and Sport or the Ministry of Transport, Public Works and Water Management. Our policy is, where necessary, to work as much as possible with other Ministries and their services so that the best use can be made of existing organisation structures.

Veterinary and plant diseases and pests infestations are often caused by exotic species which have entered the Netherlands from abroad. The Netherlands has a long tradition of policy and associated measures to protect agricultural crops and livestock and successful detection and eradication programmes have been established. This memorandum is therefore not concerned

¹ *Biological Globalisation Bio-invasions and their impacts on nature, the economy and public health* Wouter van der Weijden, Rob Leewis and Pieter Bol.

with these aspects of exotic species policy. However, in implementing policy, where possible we will attempt to tie in with existing organisation structures to ensure the best use is made of existing expertise and infrastructures.

The Netherlands does not yet have specific policy to prevent damage to biodiversity from invasive exotic species. This memorandum proposes new policy to prevent, control and contain the threat to biodiversity from invasive exotic species.

International agreements

The Netherlands is an open country and species can enter and colonise the country from the sea, its rivers or over land. Because the EU has open borders and the Netherlands functions as transit country it is not automatically possible to close our borders to non-native species. Economic considerations also play a role here, which is why international agreements and international collaboration are essential for successful exotic species policy.

Much has already been regulated internationally:

- *Convention on Biological Diversity*: recognises the spread of species to far beyond their original habitats as the result of human activity as one of the most important causes of the decline in biodiversity. For this reason the Convention includes the requirement under Section 8h that countries develop policy to prevent the introduction of species that threaten native species or ecosystems.
- *Convention on the conservation of European wildlife and natural habitats*: This Convention further elaborates the principles of the Convention on Biological Diversity at European level with proposals to develop control of invasive exotic species at European level.
- *International Plant Protection Convention*: The aim of this Convention is to combat the risk produced by international trade of spreading plant diseases, pests and weeds that pose a threat to plants, while causing minimal disruption to trade. The IPPC supports the need for policy for invasive exotic species and instruments to prevent spread and establishment of diseases, pests and weeds and can most suitably be used to control exotic species in nature areas if they pose a threat to plants or plant products.
- *Phyto Directive (2000/29)*: Within the EU the basis of phytosanitary regulation for harmful organisms for plants and plant products is laid down in Council Directive 2000/29. The main aim of the Phyto Directive is to prevent the introduction and spread of organisms harmful to plants.
- *Convention for the Control and Management of Ships' Ballast Water*
To prevent the spread of non-native organisms in ship's ballast water the International Maritime Organisation has drawn up a Convention to regulate its management. This Convention will only come into force when sufficient countries have signed up to it and represent 35% of the gross tonnage in world trade. The Netherlands has signed the Convention, but will not ratify it until 2009, after implementation of the Convention in national law. Work is currently underway on the legal implementation and development certification of technical ballast water treatment systems.

Our neighbouring countries are developing policy and regulation for exotic species harmful to European nature. The Netherlands will continue to look for ways to tie in with the organisation of exotic control in other European countries.

Principles of policy

The need to intervene depends on the nature and seriousness of the problems that an exotic species can cause. Prevention, control and containment of exotic species is only necessary when introduced species pose a real threat. However, the risk is often difficult to predict and it is better to prevent exotic species entering nature and if that is not possible, these species are best removed when the populations are small and containable. The criteria for identifying a species as a problem species are described later in this section.

Control of exotic species is not always successful. Plants and animals that have established themselves and spread over the whole of the country are often impossible to remove. This is even more difficult if the species is common in our neighbouring countries. In deciding whether to

intervene to prevent the spread of an exotic species, the feasibility of doing so must also be taken into account.

Another aspect to be taken into consideration is the possible negative effects of any control method. We have to take care that the solution is not worse than the problem, for instance if certain chemicals are used. Prevention is usually preferably to control or containment of exotic species. A risk and cost and benefit analysis should be carried out in each case.

Not every exotic species will therefore be actively controlled. The decision will depend on the nature and size of the problem caused and the anticipated effort, both social and financial, that the control requires.

Ecological damage caused by exotic species

An exotic species can pose a threat to biodiversity and the ecosystem in various ways:

- outcompete native species
- infection, predation and parasitisation of native species
- transfer infectious diseases to native species
- genetic mixing causing loss of characteristics of native species and sub-species.

Consequences of policy

The consequences of the decision to only intervene if exotic species form a real danger to biodiversity and only if measures are effective and achievable, is that the majority of exotic species present in the Netherlands are left in peace. This policy accepts that such changes have taken place. It also applies to species that have entered the Netherlands independently by their own efforts.

These choices are justified by the dynamism inherent to ecosystems on a local and global scale and the consequent limitations to controlling the country's composition of species. Policy that deals more radically with the issue of exotic species is accompanied by expensive and far-reaching measures which restrict trade and may also be harmful to native species.

This memorandum sets out how prevention, control and containment of exotic species that pose a real threat to biodiversity can be carried out with an acceptable level of resources and financial effort.

Role of Government

The role of the government will primarily be to prevent invasive species from becoming established in the Netherlands. If an invasive species does establish itself then it is vital that it is detected as early as possible and action is taken. For this it is important that:

- sufficient knowledge about the processes and effects of invasion is available and accessible, so that it can serve as a basis for risk analysis;
- an efficient detection system is in operation and that people in the field can recognise exotic species;
- all parties involved are aware of the problems that can be caused by exotic species and people are aware of the consequences of their own actions;
- sufficient measures can be taken on import to prevent undesirable species being carried in on imported goods;
- in identifying a potentially invasive exotic species sufficient resources and capacity are available in order to eliminate the species as quickly as possible;
- there is a clear division of responsibility between the various organisations involved;
- there is sufficient legal basis to be able to deal effectively with the situation.

The primary tasks of the Ministry of Agriculture, Nature and Food Quality will be assigned to the Coordinating body for invasive exotic species (*COIE*). In 2006 an inventory was made in preparation for the establishment of this body. More details will be given later in this memorandum.

The situation may arise in which an exotic species has already established itself in a large area and eradication is no longer a realistic possibility. The remaining option is to control and manage the

problems caused by the species. We simply have to learn to live with certain species. Policy is then directed at management. At that stage exotic species management becomes part of normal site management.

Relevant regulation

To deal more effectively with exotic species a legal framework is required. This is necessary to impose measures which will limit the import of exotic species, but also to create sufficient legal basis for eradication activities. A number of relevant laws exist to control exotic species. These are outlined below.

- *Flora and Fauna Act* Animals or eggs may not be released into nature. It is also prohibited to plant or sow certain plants in nature. The Flora and Fauna Act also provides for a ban on the trade in and possession of plants and animals. The ban in trade and possession currently only applies to the floating marsh pennywort and the muntjac deer. This Act allows action to be taken when harmful species are introduced intentionally into the Netherlands. Article 67 of the Flora and Fauna Act provides for the authorisation of persons or organisations for the eradication of harmful animal species to prevent damage to flora and fauna. This authority is the responsibility of the Provincial Executives.
- *Nature Conservation Act 1998* This Act lays down conditions for activities in Natura 2000 areas to ensure that these activities will not affect the achievement of maintenance targets for the area concerned. For marine ecosystems for instance this can be reason to ban activities which pose a risk of the introduction of undesirable species.
- *Water Framework Directive* This Directive requires the realisation of good water quality by 2015. Exotic species influence the realisation of ecological goals. This issue is being considered at European level.
- *Fisheries Act* This Act applies to all species of fish, shellfish and crustaceans defined under the Act, including a number of established exotic species. On the basis of the Fisheries Act further restrictions can be applied to fishing and to the introduction of specific species. Decisions were based on the interests of nature conservation. The restrictions may be dependent on the situation (species, area) or may take the form of generic regulation or licensing restrictions. The policy applies to coastal waters and inland waterways.
- At European level Council Regulation 708/2007 has been developed on the use of alien and locally absent species in aquaculture.
- *Plant Diseases Act* National phytosanitary policy is laid down in this framework act implementing the EU's phytosanitary law in the Netherlands. A mandate decision under this Act places responsibility for action with the Director of the Plant Protection Service when organisms harmful to plants are discovered.
- *The convention on international trade in endangered species of wild fauna and flora* (CITES) supervises international trade in endangered plant and animal species. Although the focus of this international law is concentrated on endangered plant and animal species, it also deals with the international transport of organisms. Diseases that these plants and animals may bring with them during transport pose threats to the biodiversity of the Netherlands.

Measures

The introduction of a new species usually occurs over a number of stages. The opportunity to intervene in the spread of such species varies according to the stage.

An international strategy for exotic species has been agreed in the framework of the Convention on Biological Diversity. This strategy assumes intervention at the earliest stage possible. The order of priority is:

- 1 prevention
- 2 eradication
- 3 isolation and management of the population

A Coordinating Body for Invasive Exotic species is being set up to advise the Minister of Agriculture, Nature and Food Quality on the procedure to be followed for an exotic species on the basis of a Pest Risk Analysis. This would include aspects such as the potential harm that could be

caused by a species, the effectiveness of preventative and curative measures, and a cost-benefit analysis.

Prevention

A species that has already established itself is very difficult to eradicate. Policy will therefore concentrate on preventative measures. The majority of non-native species which cause problems in the Netherlands were imported into the country intentionally, and intentionally or unintentionally released into the wild. The intentional introduction of non-native species arises from a lack of awareness of the risks involved in importing exotic species by the people concerned. By raising people's awareness these introductions can largely be prevented.

In addition to raising awareness, a large part of the problem can be prevented by making agreements with the sectors involved and by implementing regulation on the import and possession of exotic species. There are currently few agreements on the import of non-protected non-native species which are widely used in gardens, parks, aquariums and ponds and which can spread in the wild. Much can be achieved by making clear agreements with sectors such as importers, garden centres and transport operators and by including safety measures in the rules for import of non-native species. For regulation of the trade in plants and animal species a sound scientific basis is necessary in relation to agreements made in the World Trade Agreement. As mentioned in the previous section the Flora and Fauna Act also provides scope to ban the import and possession of specific species. This could be considered for some cases.

The Ministry of Agriculture, Nature and Food Quality will follow a pro-active communication strategy to raise awareness. In addition the Ministry will hold consultations with the sectors which can be held responsible for the import of exotic plants and animals. The aim is to make agreements with the sector on a voluntary basis on the conditions governing introductions. The Pest Risk Analysis can be used as instrument to determine the import risks for specific exotic species.

Detection and eradication

When, in spite of preventative measures, a potentially invasive exotic species has entered nature in the Netherlands it is vital that it is detected, the risks analysed, and action taken as quickly as possible. Eradication is usually only possible if the process of establishment is at an early stage and the numbers are still manageable. An efficient detection network is vital. The Government wishes to make use of a database of 15,000 volunteer field and water biologists. Active observation by these people increases the chance of a new species being detected quickly.

Isolation and management of populations

The responsibility for repelling and eradicating an invasive exotic species lies primarily with the Ministry. However, the management of a population that has already established itself is the responsibility of the land manager. Managers are responsible for the proper condition of their land, which also implies that they can be expected to keep threats from exotic plants and animals under control.

If a non-native species causes a problem that is too great for the individual manager to cope with, organisations like provincial and local governments, water authorities and fauna management bodies will assist in controlling it. In consultation with the Ministry it may be decided that the Ministry will undertake action to limit the spread of a species or that specific research is carried out into control methods. However, this type of action has its limitations and activities will ultimately be handed over to other organisations. The Ministry of Agriculture, Nature and Food Quality will only play a supporting role. The term land managers should be understood to include farmers, water authorities, private land owners, municipalities, etc.

Knowledge, information and monitoring

We are still developing our knowledge about invasive exotic species, as little is known about their behaviour. We can only succeed in preventing their introduction if up-to-date information about potential introductions and what problems they may cause is collected in a structural manner and made accessible. For this purpose an efficient detection and monitoring system will be developed. This process is already underway for invasive plants.

In addition, managers and other people regularly in the field require a certain level of knowledge about exotic species. This should involve both the ability to recognise exotic species and knowing how to act when one is discovered. Private voluntary organisations can make an important contribution here.

Coordinating body for invasive exotic species

The Ministry’s responsibilities will mostly be brought together under the Coordinating body for invasive exotic species (COIE). The most important task of the COIE is to advise the Minister of Agriculture on the approach to be taken to invasive exotic species. The coordinating body is also assigned the following tasks:

- *Exotic species hotline* The COIE serves as hotline for new discoveries of exotic species. An important task of the COIE is to raise awareness of the public and organisations about the possible risks. The public and organisations can contact the COIE with their questions.
- *Detection and monitoring* The COIE will set up a detection network and serve as a central collection point for information, where possible making use of existing monitoring structures like those of the voluntary organisations. The COIE will also collect information from abroad about exotic species that may reach the Netherlands in the future.
- *Risk analyses* The COIE will commission risk analyses for a detected exotic species and form recommendations on the necessity and nature of measures to be taken against an exotic, using knowledge available in the Netherlands or elsewhere. In addition to assessing the potential threat posed by a species, financial and social costs from the prevention or control of a species and the impact this control would have on society is also assessed.
- *Prevention and control* If, on the basis of COIE recommendations it is decided to take preventative or controlling action, the COIE can support the management and coordination of such action. The COIE can also initiate research into environmentally-friendly control techniques. The COIE itself has no legal mandate to impose control measures. In certain cases there is an official authority which can carry out control measures, such as the Plant Protection Service of the Ministry of Agriculture. Other instruments are the development of codes of behaviour and providing information about exotic species.
- *Communication and information* The COIE communicates and provides information on exotic species and the measures to be taken in consultation with the organisations implementing the measures. An important objective here is to raise the awareness of businesses, organisations and the public, to prevent problems with exotic species.

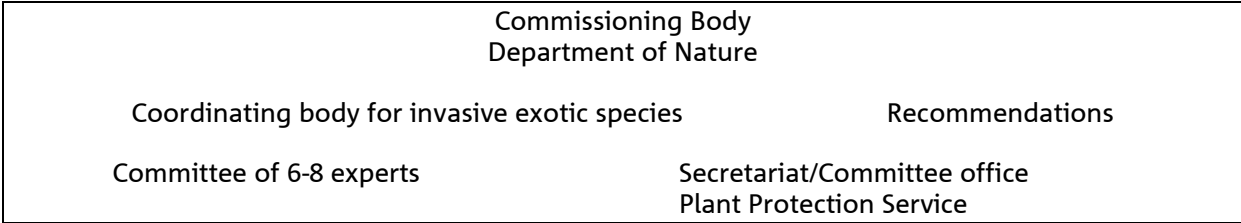


Figure 1 Organisation Structure of COIE

The most important task of the COIE is to advise the Minister of Agriculture, Nature and Food Quality on the approach to be taken towards invasive exotic species. The COIE will eventually be made up of a Committee of independent experts and management and a secretariat (figure 1). The secretariat will comprise several officials and will be included in the structure of the Plant Protection Service. This organisation has many years experience of risk analyses and control of harmful organisms. However, its expertise is limited to organisms that are harmful to plants. The COIE will largely have to make use of other parties and organisations for information about other types of exotic species. The COIE secretariat will be managed by the committee made up of managers from the sector, knowledge institutions, civil society and land managers. The Chair will act as the Committee’s spokesperson.

Policy Planning

Preparations for the establishment of a coordinating body for invasive exotic species will take place in 2007 and 2008. The *COIE* will be fully functioning as of 1 January 2009.

Enforcement and liability

The legal basis for this policy for invasive exotic species was outlined at the beginning of this memorandum. The Ministry will primarily concentrate on raising awareness of the risk posed by non-native species to native biodiversity, and on making agreements with the sector. The Flora and Fauna Act provides scope to ban the trade in and possession of specific species. This was the case with the floating marsh pennywort. Other plants and animals could be added. One point for attention is enforcement. We are studying whether the European liability directive has scope to hold entrepreneurs liable for the costs of exotic species control. The environmental liability directive provides a framework for the prevention and restoration of environmental damage. The concept of environmental damage includes damage to species of flora and fauna, nature areas of special interest, bodies of water and soil. The central objective of the directive is that a business which, through its activities, causes damage or an immediate threat to the environment by its activities is ultimately financially responsible for the damage.

Examples of problematic invasive exotic species in the Netherlands

Damage to Biodiversity

Mnemiopsis ledyi (comb jelly) was detected in the summer of 2006 in the Wadden Sea and Grevelingenmeer. This species is a native of the temperate and sub-tropical river estuaries along the Atlantic coast of North and South America. Around 1980 the species was introduced from ships' ballast water into the Black Sea and later the Caspian Sea. The comb jelly has a great impact on the whole ecosystem there as it feeds on the same zooplankton as native species. This affects the whole of the food chain, right to the top, causing a decline in the numbers of dolphins and sea lions.

Harmonia axyridis (Harlequin ladybird) This ladybird species was originally imported as biological pest controller for aphids, but has now spread across large areas of Europe. The harlequin ladybird's huge appetite poses a potential threat to native species.

Muntjac deer: De muntjac deer is a small deer species originating in India and is thought to have escaped from parks and deer parks. In a large part of England the species has become a pest that is almost impossible to control. It is overwhelming native deer populations and has a serious effect on the vegetation. In the Netherlands a population of several hundred are living in the Veluwe area. It is permitted to cull this species, but there is no active control because the matter is not given priority. Moreover, it is feared that public opinion would be against such action. If no measures are taken, the species may also develop into a pest in the Netherlands.

Harm to public health

Aedes albopictus The Asian tiger mosquito is carried into the country on imports of Dracaenas or Lucky Bamboo from China. It is a mosquito species with an aggressive bite which can also carry a number of viruses which are harmful to humans, including Dengue fever.

Ambrosia (ragweed) Originally from North America. This plant is now established in large parts of southern and eastern Europe and is being increasingly detected in the Netherlands, probably introduced in contaminated birdseed and agricultural seed. The pollen from *Ambrosia* causes allergic reactions in humans and can extend the hay fever season by two months. In the United States two species cause the most problems : *A. artemisiifolia* and *A. trifida*.

Economic damage

Hydrocotyle ranunculoides (Floating pennywort) Originating from North America this is the only species that is banned under the Flora and Fauna Act. Nevertheless, the species is common in various sites in the Netherlands. The surface area it covers continues to increase. This water plant forms a thick layer of floating vegetation that chokes other species and blocks up water channels, consequently causing serious economic damage. Water authorities have been conducting an active control policy for a number of years costing millions of euros. Control of the sources is however not legally regulated, which means that the species can continue to spread.

Threats to safety

Ondatra zibethicus (muskrat) The muskrat was introduced into Europe from North America at the beginning of the 20th Century for hunting purposes and for its valuable fur. Within a few decades it had developed explosively and began to form a pest. Muskrats dig tunnels which can cause the collapse of dykes and railway lines, resulting in dangerous situations.

The muskrat is currently actively controlled by the Provincial governments, which in most cases delegate the task to the water authorities. Considerable amounts of money are involved in muskrat control.