

STRATEGIC FRAMEWORK ALIEN SPECIES

Strategic Framework for dealing with Alien Species in the trilateral Wadden Sea

Background

The dispersal of organisms is a natural process limited by multiple barriers, among which geographical barriers are the most evident. However, for centuries humans have introduced species to new areas where they were previously absent. These alien species might survive and subsequently reproduce in a newly occupied habitat. If they are invasive, they are known or expected to have negative effects on native populations and species, natural habitats and ecosystems. With increasing global trade, the introduction of alien species, both intentional and unintentional, has increased concomitantly and has increased in complexity. Next to global habitat loss and climate change, this biological globalization has become a key process in altering the biosphere and a threat to biodiversity.

At the North Sea coast, many of the alien species, mainly algae and invertebrates, arrived via international ship traffic, especially in ballast water and on ships' hulls, but also through aquaculture. They most often became established within estuaries and on hard substrates, with currently more than 80 known species. At least more than 50 of them occur within the Wadden Sea and a preliminary assessment of the aliens' impact on the natural biodiversity of the Wadden Sea shows that presently most species have no or only minor negative impacts.

However, six of these alien species have already had or are about to have effects on the composition of the existing marine biota in the Wadden Sea: cord-grass, Japanese seaweed, bristle worm, American razor clam, American slipper limpet and Pacific oyster. Terrestrial alien plant and animal species have also found – and will find – their way into the Wadden Sea ecosystem. A well-known example is the (former) introduction of the rugose rose, which has in several places outflanked the original species and vegetation types, and reduced the typical dynamics of some dune habitat types. Of the mammalian aliens, the North American mink, ferret, racoon dog and muskrat have caused changes, e.g. in the predation pressure on breeding birds and the safety of sea dikes in some places.

To support and intensify efforts to harmonise approaches to the prevention, management and monitoring of aquatic and terrestrial alien species introductions the Trilateral Cooperation strives to develop a common strategy for dealing with alien species, recognizing that it is difficult to determine the precise cost-benefit level of taking concrete management measures against invasive alien species since it is difficult to assess the economical consequences of damaging a complete ecosystem.

Consequently and following the recommendation of the UNESCO World Heritage Committee whilst inscribing the Wadden Sea of the Netherlands and Germany as natural world heritage site it has been decided at the 11th trilateral Governmental Conference on the protection of the Wadden Sea Westerland/Sylt on 18th of March 2010:

25. Support the ongoing international efforts to prevent and manage alien species introductions inter alia by ratifying the 2004 International Convention for Control and Management of Ships' Ballast Water and Sediments (BWM Convention) as soon as possible, but in all cases not later than 2013 and instruct the Board to investigate the possibility to get involved in already ongoing ballast water projects covering the Wadden Sea (e.g. the Interreg Project "North Sea Ballast Water Opportunity").

26. Instruct the Board to develop during the period until the next Ministerial Conference a common strategy for dealing with alien species introductions in the Wadden Sea, also taking account of the request of the UNESCO World Heritage Committee and the BWM Convention.

Many international and/or regional conventions, codes of conduct and other instruments have been developed to address new introduction and the spread of alien species. However, through various reasons (including the use of different terminologies, the complexity of different institutional mechanisms and decision-making procedures and the lack of practical guidance for implementation) these documents do not always provide a clear framework how to deal with alien species. At present international policies and guidelines are implemented in the three Wadden Sea countries using different national strategies and legislations. A Trilateral Strategy should be used to develop a common approach for the implementation of international EU-law, policies and/or guidelines. The strategy complies with national and international developments on alien species, amongst others the developments within the Convention on Biological Diversity (CBD), IMO International Convention on the Control and Management of Ships' Ballast Water and Sediments (BWMC), the Habitat Directive, the Marine Strategy Framework Directive and the developments towards an EU Strategy on Invasive Alien Species.

To avoid misunderstandings it is recommended to use one set of definitions in policies related to alien species in the international Wadden Sea. This set is based on already existing sets of definitions.

Definitions (based on Definitions of CBD VI/23)**Native species**

"Native species" refers to a species, subspecies or genetically distinct populations, occurring within its natural range (past and present).

Alien species¹

"Alien species" refers to a species, subspecies or genetically distinct populations, introduced outside its natural past or present distribution; includes any part, gametes, seeds, eggs, or propagules of such species that might survive and subsequently reproduce.

Invasive alien species

"Invasive alien species" means an alien species whose introduction and/or spread threaten biological diversity (For the purposes of the present guiding principles, the term "invasive alien species" shall be deemed the same as "alien invasive species" in decision V/8 of the Conference of the Parties to the Convention on Biological Diversity.).

Problem or nuisance species

A species for which it can be assumed that based on the best available scientific evidence it will have a (significant) negative impact on the conservation goals of a Natura 2000 area.

Introduction

"Introduction" refers to the movement by human agency, indirect or direct, of an alien species outside of its natural range (past or present). This movement can be either within a country or between countries or areas beyond national jurisdiction.

Intentional introduction

"Intentional introduction" refers to the deliberate movement and/or release by humans of an alien species outside its natural range.

Unintentional introduction

"Unintentional introduction" refers to all other introductions which are not intentional.

Establishment

"Establishment" refers to the process of an alien species in a new habitat successfully producing viable offspring with the likelihood of continued survival

Risk analysis

"Risk analysis" refers to: (1) the assessment of the consequences of the introduction and of the likelihood of establishment of an alien species using science-based information (i.e., risk assessment), and (2) to the identification of measures that can be implemented to reduce or manage these risks (i.e., risk management), taking into account socio-economic and cultural considerations.

¹ Species occurring naturally in neighbouring countries of the Wadden Sea and entering independently due to for instance climate change, do not fall under this definition.

The Strategic Framework

Objective

The overall objective of the Strategic Framework is to prevent threats to the Wadden Sea ecosystem and biodiversity through alien species. This will be done by

- Preventing alien species from entering the Wadden Sea Area
- Minimising further spread of alien species once they have been detected in the Wadden Sea Area
- Eradicating, if feasible, alien species that have become established in the Wadden Sea Area and are assessed as (potentially) invasive

Several approaches provide recommendations for management of alien species in the Wadden Sea (e.g. national strategies and/or action plans and various publications, amongst them the QSR 2009).

There is general agreement that efforts to address alien species in the Wadden Sea should focus on five main elements:

- 1. Prevention**
- 2. Early Warning/Detection and rapid response**
- 3. Eradication and control**
- 4. Raising awareness**
- 5. Implementation**

1. Prevention

Prevention is the first line of defence. In aquatic environments, alien species can be hard to detect and organisms disperse rapidly. It is a fact that the eradication of an introduced species, once it has widely established in the Wadden Sea, will be very difficult (and expensive), or even impossible. Therefore, the prevention of introductions (at best at source) is the most effective and least costly management strategy. Moreover, prevention is the only option where different measures for intended and unintended introductions have to be applied.

A: Aquatic Environment

a.) Ballast Water Management Convention:

Specific mandatory regulations have been developed to prevent further spread of alien species by ballast water (e.g. International Convention for Control and Management of Ships' Ballast Water and Sediments [BWM Convention]).

Trilateral policy and action

- **Work towards a harmonized implementation of the regulations under the BWM Convention.**

b.) Ship's hulls and harbours (commercial shipping)

Beside the introduction through ballast water, ship's hulls are the second important introduction path of alien species by shipping activities. At present there are no obligatory regulations to prevent the spread of alien species by hull bio fouling, but recently IMO agreed on guidelines for hull bio fouling management in international shipping.

Trilateral policy and action

- **The IMO guidelines for hull bio fouling management (Annex) should be made mandatory for the Wadden Sea. Strong legal provisions should be made in particular. The practical implementation of this guideline in the international Wadden Sea should be harmonised on a trilateral level.**
- **If alien species have been detected in a harbour, a risk assessment will be carried out and, based on the outcome, all hard substrates including ship hulls may have to be cleaned immediately to avoid further establishment of these species. The legal basis for this action should be secured or developed.**

c.) Aquaculture:

At present cultivation of blue mussels is the most important form of marine aquaculture in the Wadden Sea and only occurs in the Dutch and German Wadden Sea. Despite the increasing use of artificial seed collectors (ASC), seed mussels have recently been imported from the British Isles (mainly UK, Ireland) to the German Wadden Sea and consumption mussels imported to the Eastern Scheldt. In 2012 seed mussels have been transported from the Eastern Scheldt to the Dutch Wadden Sea because of the still low availability of seed mussels in the Wadden Sea. In addition, in Germany (Schleswig-Holstein) a single oyster culture (Pacific oyster) exist, which imports oyster seed from the British Isles. There is a risk that these transports facilitate the introduction and spread of alien species/problem species to the Wadden Sea. The cultivation plots themselves could provide a suitable habitat for the further establishment of alien species.

Trilateral policy and action

- **[The Netherlands and Germany to stop import of seed bivalves as they are a frequent vector for alien species (and DK not to start with this).]²**
- **[If deemed necessary, seed bivalve imports will only be allowed from the OSPAR coastal regions II (North Sea) and III (Celtic Sea). An**

² Proposal Germany

integral risk assessment has to be made including a shellfish dependent species inventory of the export area indicating that there are no problem species for the Wadden Sea detected. A control- and management plan which includes a retro-spective monitoring of the import area has to be drafted.]³

d.) Recreational crafts and marinas:

Recreational boats and consequently marinas in the Wadden Sea have been in parts of the Wadden Sea pointed out as a relevant introduction path for aliens into the Wadden Sea. Environmental- and user-friendly management of bio fouling and hull cleaning should be provided to any recreant or recreational facility (e.g. marinas and ship yards for recreational vessels) in the Wadden Sea area. This should be conducted not only for recreational craft in the Wadden Sea, but also for recreational craft coming from other sea areas to the Wadden Sea.

Trilateral policy and action

- **The hull of a recreational boat has to be cleaned efficiently before entering the Wadden Sea.**
- **IMO Guidelines for hull bio-fouling management to be adapted to recreational vessels and to be made mandatory.**

B: Terrestrial Environment

Terrestrial alien plant and animal species have also found – and will find – their way into the Wadden Sea ecosystem. A well-known example is the (former) introduction of the rugose rose, which has in several places outflanked the original species and vegetation types, and reduced the typical dynamics of some dune habitat types. Of the mammalian aliens, the North American mink, ferret and muskrat have caused changes, e.g. in the predation pressure on breeding birds and the safety of sea dikes in some places and are of special concern on islands and halligen being formerly free of such predators.

Trilateral policy and action

- **Prevent introduction and immigration of alien species to the Wadden Sea Area.**
- **Prevent introduction and immigration of mammalian predators to the Wadden Sea islands. Artificial structures allowing predators to reach areas which they could not use under more natural conditions, may not be constructed, or, where possible, removal should be considered. Man-made dams that connect islands to the mainland are made less permeable for mammalian invasions by constructing artificial barriers, if feasible.**

³ Alternative proposal Netherlands

2. Early Detection and Rapid Response

Early detection and rapid response is important to avoid biological invasion into the Wadden Sea or further spread of newly introduced species. The development of an effective early detection and rapid response system is necessary to detect and to determine the status and risk level of newly occurring alien species in the Wadden Sea. By rapid measures (see below) any potential invasion can be “nipped in the bud” – avoiding impacts on biodiversity and livelihoods, and saving large amounts of management resources. Invasive alien species which are ranked high in relevant databases and which have a chance of getting introduced by one of the pathways should get risk assessed in advance in order to determine the risk profile for the Wadden Sea.

Adequate surveillance and monitoring and detection programs are necessary to aid early detection of alien species new to the region. Rapid risk assessment is required to determine the risk level of these alien species. This is essential for taking rapid response and control measures, especially in the case of newly observed invasive alien species, because these species can spread quickly and cause unwanted negative effects.

Long-term monitoring is of special relevance to obtain information about the invasibility of habitats, and the spreading and establishment of alien species and about the efficiency of measures.

Trilateral policy and action

- To implement in line with EU Directives (e.g. MSFD) an effective and cost efficient harmonized surveillance system for both aquatic and terrestrial species, aimed at early detection of new alien species at the hot spots of invasion (e.g. in selected harbours, marinas, Wadden Sea islands and on mussel beds).
- To supplement this surveillance system with long-term monitoring of alien species in the framework of existing monitoring parameters (e.g. benthos, mussel beds, dunes etc.) also to fulfil the needs of the relevant EU Directives, where applicable within the Wadden Sea.
- To install an alien species early warning and reporting system on the CWSS website including a Wadden Sea black list of alien, species scientifically assessed and linked to EU and international data bases on alien species.
- If invasive alien species have been detected in a marina or harbour, a risk assessment will be carried out and, based on the outcome, all hard substrates including ship hulls may have to be cleaned immediately to avoid further establishment of these species. The legal basis for this action should be secured or developed.

3. Eradication and control

Once a potentially invasive alien species occurs/is detected within a location in an aquatic system, it poses a threat to an entire region due to its rapid dispersal via coastal water currents, shipping canals and rivers. Therefore time is limited during which rapid measures is a practicable option. Its realization and choice of methods will be influenced by ecological, financial, legal and political considerations. Especially for newly introduced alien species, which are known as invasive or are being defined as invasive after a risk assessment, eradication is the most coherent solution in terms of biodiversity conservation. However, a basic requirement is the availability of at least one efficient eradication method which in any case has to be in line with the guiding principle “to achieve, as far as possible, a natural and sustainable ecosystem in which natural processes proceed in an undisturbed way”.

If an alien species is defined as invasive after a risk assessment and if rapid measures fail or are not practicable, further proliferation has to be prevented. Where it is ecologically feasible and socially acceptable, eradication should be the preferred option over long-term control, because eradication is usually more cost effective and less risky for the environment than control. However, especially in the aquatic environment, it is almost hopeless and it may not be in line with the guiding principle, to eradicate widespread invasive alien species (*i.e.* the measures should not be more damaging than the expected impact of the species at stake).

Trilateral policy and action

A. Aquatic Environment

- **If alien species are discovered during surveillance and monitoring of marinas, landing stages/pontoons have to be cleaned; if already listed as invasive, the cleaning should include ship hulls and be executed immediately.**
- **If alien species, classified as problem species are discovered during other activities inside the Wadden Sea, rapid measures and their potential success in line with the guiding principle should be discussed and conducted accordingly in each single case.**

B. Terrestrial Environment:

- **Invasive alien plants on islands should be removed when feasible. In an initial phase pilot projects should be established on selected islands.**
- **Animal problem species, harmful to the ecosystem on islands and halligen, have to be eradicated or removed from islands, within ecologically feasible time windows.**

4. Raising awareness

An important part of prevention for all topics is raising awareness of potential problems with alien species in the Wadden Sea amongst managing authorities, companies (e.g. shipping, marina operators and aquaculture facilities), scientists and the public. Several websites already exist that are used for raising awareness. Examples at European level include a website developed as part of the Delivering Alien Invasive Species In Europe (DAISIE) project (www.europealiens.org) and a website developed by the European Network on Invasive Alien Species (NOBANIS) (www.nobanis.org). Other options for raising general awareness of alien species include presentations in the scientific world and for the public and paying special attention to alien species in various information centres and nature guides of the Wadden Sea. Raising awareness is also important to generate/ensure acceptance for control measures.

Trilateral policy and action

Develop a communication (awareness raising) and education plan involving communication goals, target groups, communication methods, etc.

Communication actions in such a communication plan should include:

- **The production of information material with pictures to identify potentially alien species and provide contact details for reporting for harbour masters, skippers, guides and the public as print materials and on CWSS website.**
- **The development of education material, amongst others in the framework of the IWSS**
- **The development, together with all relevant stakeholders, of information material for skippers on prevention of new introductions and spreading of alien species including best practice methods for hull cleanings.**
- **The enhancement of public participation in implementation matters (detection, reporting, eradication)**

5. Structural arrangements and way forward

At the national level different authorities are responsible for the different elements of this strategic Framework. In order to coordinate and harmonise the catalogue of actions and activities presented in this strategy, with the aim of creating synergies and optimising cost-benefits, cooperation between different responsible authorities and institutions at various levels of government is necessary.