

Annex 2. Invasive Alien Species in the Wadden Sea- Communication plan and examples

(Note: as separate document WSB 23/5.2/3 MAPAS Annex2)

Invasive Alien Species in the Wadden Sea- Communication plan

Invasive Alien Species in the Wadden Sea- Communication examples:

- 1) *Rosa rugosa*. Help us eradicate the Japanese rose and save our native beach plants
- 2) Aquaculture. Did you spot one today?
- 3) Educational. Outline course sustainable shipping 2018



Invasive Alien Species in the Wadden Sea Area

- COMMUNICATION PLAN -



INTRODUCTION p.3

- General introduction communication plan
- Introduction: Alien Species
- Analysis of the pathways

PATHWAYS



p.4

TARGET GROUPS

- Owners of ships
- Supervisors of shipping crew
- Port authorities and masters of professional shipping harbours
- Maritime institutes

Other communication channels p.11

- Social media
- Network of NGOs
- Strategy
- Communication products
- List of websites related to Alien Species



PATHWAY
RECREATION

p.7

TARGET GROUPS

PLEASURE CRUISING

- Owners of pleasure craft (sailing boats and motor boats)
- Owners of commercial craft
- Masters of pleasure craft harbours

THE GENERAL PUBLIC

- Inhabitants of the Wadden Sea Islands
- Inhabitants of the Wadden Sea Coast (mainland)
- Day trippers and tourists
- Primary and secondary schools

INTRODUCTION

GENERAL INTRODUCTION COMMUNICATION PLAN

This Communication Plan for Invasive Alien Species in the Wadden Sea Area will be part of the Trilateral Alien Species Management and Action Plan, devised by the Working Group on Alien Species under the Common Wadden Sea Secretariat.

The issues at hand were delineated by interviewing employees of governmental organisations, NGOs, aquacultural companies, and harbours for pleasure craft and shipping. We gathered input from 27 people from these stakeholder groups: 13 of them were interviewed, and 14 filled out an online survey. This exploratory study amongst stakeholders was a valuable source of information for creating a general overview of the issue of Alien Species in the Wadden Sea Area.

INTRODUCTION: ALIEN SPECIES

DEFINITION INVASIVE ALIEN SPECIES

According to EU Regulation No 1143/2014 and as mentioned in the draft of the Alien Species Management and Action Plan the term 'Alien Species' is defined as follows:

"Alien Species means any live specimen of a species, subspecies or lower taxon of animals, plants, fungi or micro-organisms introduced outside its natural range; it includes any part, gametes, seeds, eggs or propagules of such species, as well as any hybrids, varieties or breeds that might survive and subsequently reproduce."

Based on the replies of interviewees, the most generally accepted definition of 'Alien Species' is:

"Alien Species are non-native species whose introduction and dispersal is usually vectored through human actions, such as transportation and trade. Alien Species are referred to as 'invasive' when they maintain and reproduce themselves on such a scale that they become an ecological threat."

It is important to mention human activity in the definition of Alien Species, because dispersal of species through human activities can be regulated by measures to limit further introductions and spread to other areas.

It is difficult to control or manage the spread of Alien Species due to reasons beyond human influence, such as

changes in temperature, salinity etc. Such species and the processes of dispersal are therefore not considered when dealing with the management of Alien Species.

THE WADDEN SEA AREA

The Wadden Sea Area is a UNESCO World Heritage Site due to its outstanding universal value (OUV). It is the world's largest continuous system of intertidal sand and mud flats and is characterised by high biodiversity. Due to its connection with the open sea, characterised by seaports and shipping activities, the area is highly accessible for non-native species. Alien Species bring ecological risks to native species populations by competing for food and space or by feeding on the native species thereby causing extinctions or imbalances in the level of inherent biodiversity in the system. Introduced parasites and diseases can cause severe ecosystem effects.

Besides the risk for biodiversity, Alien Species can pose a risk for the economy, infrastructure, safety and public health. The management of Alien Species in the Wadden Sea Area and the islands is subject to EU Regulation 1143/2014 on Invasive Alien Species. On the EU list Alien

1 http://ec.europa.eu/environment/nature/invasivealien/list/index_en.htm

Species marked as invasive are being managed, in some cases with the aim of extinction. For this communication plan, the Wadden Sea Area is divided into four different regions:

1. Wadden Sea (marine environment)
2. Terrestrial ecosystems near the Wadden Sea on the mainland (above the high-water mark)
3. The Wadden Sea Islands (terrestrial environment)
4. Freshwater systems on the Wadden Sea Islands

Different Alien Species occur in the various regions and these are managed in different ways. For example, ground predators like raccoon dog (*Nyctereutes procyonoides*) in the terrestrial parts of the Wadden Sea Area are immediately eradicated. The presence of the Pacific oyster (*Crassostrea gigas*) in the marine part of the Wadden Sea Area is being monitored, since complete eradication in the marine area is impossible. The management of Alien Species is important for the formulation of the core messages to the target groups. The allocation shown above facilitates ascribing activities to certain communication target groups, as described later in the plan.

TARGET GROUPS BASED ON PATHWAYS

In the following pages we describe the most important target groups linked to these priority pathways of Alien Species in the Wadden Sea Area. We describe the problem analysis, policy aims, communication strategy, core message, communication products and an indication of the expenses of the proposed communication products.

COST OF THE PROPOSED COMMUNICATION ACTIVITIES

As the expenses of printed offline media, for example, can differ per region and country, we indicate a range of costs rather than exact prices. For the range we use three different icons:



ANALYSIS OF THE PATHWAYS

The introduction and spread of Alien Species can occur through a vast number of pathways. Based on the conclusions of the exploratory study amongst stakeholders and the proposals by Molnar et al (2008)² and Smolders et al. (2017)³, we analysed three priority pathways to the Wadden Sea Area through which Alien Species are introduced and distributed. These pathways are characterised as priority because they have the largest influence on the introduction and spread of Alien Species:

- Professional shipping
- Aquaculture
- Recreation

2 Molnar, J.L. et al. (2008) Assessing the global threat of invasive species to marine biodiversity, p. 489.

3 Smolders, A.A.J., Drs. (2017) Biofouling as a transport vector of non-native marine species in the Dutch Delta, along the North Sea coast and in the Wadden Sea, Report nr. GIMaRIS_2017_03.



PATHWAY PROFESSIONAL SHIPPING



PROBLEM ANALYSIS

According to the draft of the Alien Species Management and Action Plan, professional shipping is one of the main pathways for introducing Alien Species. Also, the exploratory study amongst stakeholders revealed that for professional shipping the two most important transport vectors for Alien Species are ballast water and biofouling¹. The hot spots for Alien Species are the harbours.

In September 2017, the Convention for Ballast Water² came into force. Within five years, the entire professional shipping sector will have to comply with the regulations on ballast water. In this period every ship will have to install a ballast water treatment system. This is relatively expensive and will therefore probably be done in the last year of the 5 year-period. Therefore ballast water will still be a vector for Alien Species for the next four to five years.

The professional shipping sector is very much aware of the obligations they have to fulfill concerning ballast water for the coming 5 years. Some harbours also offer solutions for ballast water. At present Groningen Seaports offers the facility of a central purifier. Damen Shipyards developed a mobile ballast water installation which is available for use in professional shipping harbours in the Wadden Sea Area.

Another vector for the introduction of Alien Species is biofouling. In total more non-native species were found in harbours than on dikes, shellfish beds, reefs, and in soft sediments in the Dutch Delta, along the North Sea coast and in the Wadden Sea. Harbours are therefore well-known

1 Molnar, J.L., et al. (2008) Assessing the global threat of invasive species to marine biodiversity, p. 489.

2 <http://www.imo.org/en/OurWork/Environment/Ballast-Water-Management/Pages/BWMConventionandGuidelines.aspx>

as places where non-natives are primarily introduced, due to biofouling³.

Biofouling also decreases the hydrodynamic properties of a ship, resulting in higher fuel consumption and costs. This motivates the owners to clean the hull. Not all hull cleaning procedures prevent introduction of Alien Species. Therefore it is important that hulls are cleaned in accordance with the (voluntary) guidelines from the International Maritime Organization (IMO).

It may take several years to realise the expected results from the implementation of the ballast water convention and the voluntary IMO guideline for biofouling. In the mean time, raising awareness about the problems of ballast water and biofouling could help to reduce the rate of introductions and spread of Alien Species in the Wadden Sea Area.

Registering the occurrences of Alien Species is important for national authorities to gain a view on their dispersal. National authorities need this information for decisions regarding management or eradication.

3 Smolders, A.A.J., Drs. (2017) *Biofouling as a transport vector of non-native marine species in the Dutch Delta, along the North Sea coast and in the Wadden Sea*. Report nr. GiMaRIS_2017_03.

TARGET GROUPS

We divide the target group professional shipping into different subgroups:

- Owners of ships
- Supervisors of shipping crew
- Port authorities and masters of professional shipping harbours
- Maritime institutes

The owners of ships and supervisors of shipping crew are the most important group as they decide how the ships are managed.

AIMS TARGET GROUPS

As mentioned in the draft of the Alien Species Management and Action Plan, raising awareness about potential problems with Alien Species amongst shipping is an important aspect to prevent introductions and the further spread of Alien Species in the marine environment of the Wadden Sea Area.

The aims of the communication actions are as follows:

- raising awareness on the risks of Alien Species
- increasing knowledge and understanding about the risks of Alien Species
- encouraging the cleaning of hulls in accordance with the IMO guidelines
- reporting occurrences of unknown species

STRATEGY

In the Netherlands and Denmark (but not yet Germany), the education about ballast water is given by ProSea, Marine Education. They organise training sessions and workshops for maritime professionals such as shipping crews, shipping companies, fishers, maritime officers at maritime academies, and harbours. They can pay attention to the problems of Alien Species and the proposed solutions in their training sessions and workshops.

Storytelling is an effective way to illustrate the consequences of invasive Alien Species and the damage these cause. Also, training sessions and workshops are suitable settings to integrate media for storytelling such as video. The first 30 minutes of the IMO production of the BBC Worldwide *Invaders From the Sea* give an impressive visual presentation of the consequences of invasive Alien Species.

Owners of ships are best reached by umbrella organisations. For example, in the Netherlands all ship owners are members of The Royal Association of Netherlands Shipowners (KVRN). Government bodies play a role in realising and supervising water management and can best be personally contacted to act as communication channels for reaching the target groups.

The Dutch organisation *Waddenzeehavens* focusses on the largest harbours and organise trilateral conferences. The next *Trilateral harbour week conference* will be held on 18 May 2018. Alien Species are also on the list of topics, as well as best practices of prevention of Alien Species. We recommend organising a presentation at such conferences, to reach a large audience on the topic of Alien Species.

The mobile ballast water installation, developed by Damen Shipyards, is available for use in professional shipping harbours in the Wadden Sea Area. This could be promoted in the trilateral countries.



PATHWAY PROFESSIONAL SHIPPING



CORE MESSAGE

Since the Wadden Sea Area has an open connection to the sea, it is impossible to prevent the introduction of Alien Species completely. However, many actions can be taken to decrease the rate of introduction and spread through this pathway. For this target group, it is important to connect with the existing jargon of this sector. For example, in the Netherlands communication about Alien Species is done under the heading '*Schoon Schip*' (Clean Ship) or '*Duurzame scheepvaart*' (Sustainable Shipping – ProSea). For the communication to be effective the environmental and human health risks that are felt by society as a whole should be stressed.

Cleaning the hull of a ship is an expensive and time-consuming matter. Therefore, the most effective way is to raise awareness on the importance of cleaning the hull while the ship is docked for maintenance.

The core message for the target group is defined as follows:

"Alien Species pose a risk for economy, infrastructure, safety, biodiversity and public health. Ballast water as well as biofouling on the hull of the ship are important vectors for the introduction and spread of Alien Species. In addition to the measures you take for ballast water, it is important to take measures for biofouling by cleaning your hull in accordance with the IMO guidelines. So, when placed in a dry-dock for maintenance, make sure that the hull of your ship is cleaned as prescribed by the IMO."

In addition, for fishers in the core message will be emphasised to report species they don't know:

"When you observe an unknown species, make sure you report it. Your observation is used for decisions regarding management or eradication."

COMMUNICATION PRODUCTS LEAFLET

A leaflet can be produced to raise awareness. These can be disseminated via direct mail and conferences. The addresses of shipping companies, ferries, fishing companies, shipping harbours and maritime institutes therefore need to be collected.

This leaflet can also be used for fishermen to stress the importance of reporting the occurrence of Alien Species and the website for where to report them. The leaflet can be displayed in harbours, by relevant associations for fishing companies, and at meeting places like canteens of fish auctions.

TRAININGS AND WORKSHOPS

We recommend providing training sessions and workshops at educational marine institutes and shipping companies that are given by organisations like ProSea. Such educational organisations have the necessary network in the shipping sector. Adjustments could be made to the

training programmes already provided by ProSea so as to include biofouling and cleaning the hull in accordance with the IMO guidelines.

STORYTELLING

The introduction of the movie *Invaders From the Sea* is an effective way of visual storytelling. This movie can be found on YouTube: "<https://www.youtube.com/watch?v=u5JKRMTedI>" and can also be spread via DVD. Training sessions and workshops are suitable settings to use this video.

BUDGET

Trainings and workshops



DVD 'Invaders From the Sea'



Leaflet





PATHWAY AQUACULTURE



PROBLEM ANALYSIS

From the exploratory study amongst stakeholders we concluded that an important vector for Alien Species is aquaculture. Most of the time, the spreading of invasive Alien Species by the aquaculture sector can pose an economic risk for the sector as well. For example, the Asian oyster drill *Urosalpinx cinerea* and *Ocenebrellus inornatus*, the Pacific Oyster (*Crassostrea gigas*), and especially the diseases and parasites they spread such as the herpes virus, are harmful to the aquaculture sector. Transfer of live material over longer distances and across biological barriers should therefore be avoided.

Some EU regulations are already in place. For example, the transportation of mussels and oysters between the south of the Netherlands and the Wadden Sea is prohibited. In Germany the import of seed mussels has been banned by a court decision in 2012.

In the aquaculture sector there is already quite a bit of attention for preventing new introductions and the further spread of Alien Species through transportation. The awareness for the problem should be kept in permanent focus.

TARGET GROUPS

The pathway aquaculture includes the following target groups:

- Shellfish companies and shellfish fishers

AIMS TARGET GROUPS

For the target group 'Aquaculture' the aim is to raise their awareness about the importance of minimising the risk of introducing or further transporting invasive Alien Species in the marine environment of the Wadden Sea Area. After all, the presence of invasive Alien Species may be harmful to the sector itself.

As mentioned in the draft of the Alien Species Management and Action Plan, the intended action is to carry out monitoring plans to prevent the introduction and spread of potentially harmful species into the Wadden Sea. According to this plan the monitoring could focus on hotspots of introduction (such as ports, marinas and aquaculture plots) and specific natural hotspots (such as oyster reefs). Since shellfish fishers come across a lot of sea life, they can play a part in monitoring the Alien Species.

The aims of the communication actions are as follows:

- raising awareness about the risk of Alien Species and the need to cooperate
- reporting occurrences of unknown (possibly alien) species

STRATEGY

The exploratory study amongst stakeholders revealed that some shellfish fishing companies and fishers have a well-established mutual communication system. They use their mobile phones and WhatsApp to communicate with each other and to report occurrences of unknown species, often accompanied by photographs. We advise facilitating these activities with these and other shellfish fishing communities. This facilitation can be realised through posters and events at local fairs, including regular campaigns at strategic public locations.

Using the communication products together will be much more effective. For example, a mailing or WhatsApp message to start a campaign, followed by posters and with a website as backup information.

Relevant associations like the Dutch Nederlandse Visserbond and the German Niedersächsische Muschelfischer GbR have useful communication channels for fishers to raise awareness and stress the importance of reporting occurrences of unknown species.

CORE MESSAGE

The core message for the target group is defined as follows:

"Invasive Alien Species, and the parasites and diseases they spread, may have a huge impact on the economy and infrastructure. In addition, they pose a risk for safety, biodiversity and public health. Reporting the occurrence of unknown species helps to prevent the spread of Alien Species and decreases the economic risk in aquaculture. So report when you see a species that you do not recognise."

The communication products will emphasise that reported sightings will be used as input for management or eradication decisions. The need to avoid the long-distance transport of mussels and oysters will also be emphasised.

COMMUNICATION PRODUCTS POSTER CAMPAIGN

For raising awareness and as a call to action we advise a campaign. The campaign can be started by sending a mailing or WhatsApp with the purpose of the action: to raise awareness on Alien Species and to pose a call to action to report any Alien Species observed. The WhatsApp message or mailing and the posters should have a similar design for recognition. The campaign can also be supported by social media. More about social media can be found in the last chapter of this communication plan.

The posters can be produced with different topics: a call to action on reporting Alien Species; the information that several new Alien Species are introduced per year with yet unknown risks, and a poster about the harmful parasites and diseases that Alien Species spread, like the herpes virus that is spread by the Pacific oyster (*Crassostrea gigas*). The poster with a call to action for reporting could have a text like 'Did you spot one today?'

On the posters there should be clear photographs of certain Alien Species for recognition and an email address for reporting the species. The poster will urge members of the public who see it to take photos with their mobile phones and to keep in contact with colleagues about this as well. There should be a clear reference to a website with background information. On the website, more Alien Species can be shown for recognition and more background information should be given on monitoring and what happens with the submitted reports of Alien Species.

The posters should be put at relevant places, like canteens for the fishers or at local fairs.

LOCAL FAIRS

According to the Niedersächsische Muschelfischer GbR, a regional organisation of German shellfish fishers, annual mussel festivals are events where fishers and employees can meet informally. Another relevant event is the Muschelsaisoneröffnung, where the mussel fishers and politicians meet to celebrate the start of the mussel season. For these kinds of fairs, a sort of amusement act like 'Recognise me or not?' or 'How fast can you report me?' can be developed to stress the importance of reporting Alien Species in a playful way.

BUDGET





PATHWAY RECREATION / PLEASURE CRUISING



PROBLEM ANALYSIS

Harbours are hot spots where Alien Species are primarily introduced in the marine environment of the Wadden Sea Area. Scientific studies show that biofouling is an important transport vector for Alien Species in the pleasure craft sector¹. The chances of Alien Species being introduced through biofouling are comparable to those of ballast water and aquaculture. This is not particularly relevant for pleasure craft that only stay in the Wadden Sea Area, but it is highly relevant for the craft that sail into the area from abroad. The IMO has drawn up guidelines for cleaning the hull, but these are unknown to most boat owners and harbour masters. In addition, pleasure craft are sold and transported elsewhere without hull cleaning and this results in the spreading of species.

Biofouling as a vector for the introduction and spread of Alien Species is not only a risk for biodiversity. Heavy biofouling decreases the hydrodynamic properties of the craft, thereby increasing fuel expenses.

An example of an invasive Alien Species that uses biofouling as transport vector is the Asian kelp *Undaria pinnatifida*. The Asian kelp is considered a real pest and can change the structure of ecosystems, especially in areas where native seaweeds are absent. Besides fouling on boats it can also foul mussel farms.²

In the Wadden Sea the formation of banks of the Alien Species Pacific oyster (*Crassostrea gigas*) makes it difficult to anchor. In addition, the shells can damage the hull.

It is therefore vitally important that owners of pleasure craft become aware of the risk of biofouling and the need to clean the hull properly, especially after transfer from distant seas.

1 Smolders, A.A.J., Drs. (2017) Biofouling as a transport vector of non-native marine species in the Dutch Delta, along the North Sea coast and in the Wadden Sea. Report nr. GiMaRIS_2017_03.

2 <http://www.iucngisd.org/gisd/species.php?sc=68>

TARGET GROUPS

The most important target groups for the vector of bio-fouling are:

- Owners of pleasure craft (sailing boats and motor boats)
- Owners of commercial craft
- Masters of pleasure craft harbours

In Germany, most harbours for pleasure craft are run by an association of the owners.

However, most of the pleasure craft harbours in the Netherlands are owned by the local municipality. Therefore communication with the masters of pleasure craft harbours is realised through the municipality.

Sea sailors - owners of pleasure craft who sail to far away places over sea - are best targeted through sail clubs or other associations. For example, the HISWA and the ANWB in the Netherlands are good communication channels for informing this target group.

AIMS TARGET GROUPS

According to the draft of the Alien Species Management and Action Plan the IMO guidelines on hull fouling are recognised and are being implemented.

The most important aim is to ensure that boats reaching the harbour from outside the Wadden Sea Area are kept clean of fouling organisms. It is therefore important that boat owners clean their hulls in accordance with the IMO guidelines.

The communication will therefore focus on the following aims:

- raising awareness about the risk of Alien Species
- raising awareness about biofouling as an important vector for Alien Species
- increasing the knowledge and understanding the risks
- informing about (how to find) the IMO guidelines
- Understanding the need to clean the hull in accordance with the IMO guidelines

STRATEGY

From the interviews we learned that harbours are good centres for spreading information in the form of a leaflet or brochure. The leaflets present are normally well spread. The attention of the target group can be gained by publishing interviews with the IMO or interested boat owners and harbour masters in relevant water sport magazines or using such interviews for television broadcasts.

CORE MESSAGE

The core message to the target groups will be defined as follows:

"Alien Species might pose a risk for biodiversity,

economy, infrastructure, safety and public health.

Biofouling is an important transport vector for Alien

Species when sailing abroad. You can play an impor-

tant part in preventing the introduction and spread

of Alien Species by cleaning your hull."

The communication products will also emphasise that biofouling decreases the hydrodynamic properties of a ship, resulting in increased fuel consumption and costs.

For masters of pleasure craft harbours the importance of raising awareness for the issue amongst owners of pleasure and commercial craft will be stressed, so they pay attention on the dissemination of the leaflets. Also, they should be informed of the IMO guidelines of cleaning hulls and the possibilities to facilitate the cleaning in their harbours.

COMMUNICATION PRODUCTS LEAFLET OR BROCHURE

An attractive and colourful leaflet or brochure will probably be taken by passing boat owners when placed in the right spot. The front must appeal to boat owners and address them directly with a call to action. The focus will be on the risk of possible damage to their boats by Alien Species such as the Pacific oyster, and also on the loss of fuel and therefore expense that severe biofouling causes. The leaflet must clearly explain how to clean the hull correctly and include a checklist and explanatory illustrations.

INTERVIEWS IN MAGAZINES

The interviews should be placed in magazines about water sport, pleasure craft and sailing. The best effect will be achieved when the interview is held with a person who is very well known in the pleasure craft sector and who is concerned about the risk of Alien Species. It needs to be somebody who the target group can identify with, like other boat owners and harbour masters. Biofouling as an important vector for Alien Species and the risk for biodiversity, economy, infrastructure, safety and public health should be discussed. Magazines are often looking for news. Therefore if they are approached in advance and presented with a current issue they might be willing to cooperate, which will lower the expenses.

INTERVIEW ON TELEVISION

The television interviews must be held with people from the world of pleasure cruising as well as an expert on Alien Species. Biofouling is an important transport vector for species and the main topic will be consequences of invasive Alien Species for biodiversity, health and the economy.



PATHWAY RECREATION / PLEASURE CRUISING

TIMING

The best time for spreading and the placing and broadcasting of the interviews falls in two periods:

- April-May, when the season starts
- At the end of the season, when boats are taken out of the water to clean the hull

BUDGET



Leaflet



Brochure



Interview in magazine
(based on free publicity)



Advertisement in magazine



Interview on television
(based on free publicity)



Interview on commercial
television





PATHWAY RECREATION / GENERAL PUBLIC



PROBLEM ANALYSIS

Most people seem to be unaware of the risk of Alien Species. As a result, people empty their aquaria in open water or set their unwanted pets free into the wild. The hazards of introducing non-native species are especially great in the terrestrial ecosystems near the Wadden Sea on the mainland (above the high-water mark), the Wadden Sea Islands (terrestrial environment) and the freshwater systems on the Wadden Sea Islands.

Since some Alien Species look very cute, such as the Japanese raccoon dog (*Nyctereutes procyonoides*) or the beautiful Japanese beach rose (*Rosa rugosa*), people often find it hard to imagine they are harmful, or they mind eradication. On the other hand, tourists and inhabitants can also be the eyes and ears in the field to look out for Alien Species. Therefore it is of great importance to increase public awareness of Alien Species, to make sure they are well-informed and feel the urgency to act.

TARGET GROUPS

The general public can be divided into different subgroups:

- Inhabitants of the Wadden Sea Islands
- Inhabitants of the Wadden Sea Coast (mainland)
- Day trippers and tourists
- Primary and secondary schools

As the depositing of water plants in the islands' freshwater systems and setting unwanted pets free into the wild is a genuine risk, we consider garden centres, pet shops and, for example, amphibians exhibitions to be important information channels, but also as a target group.

AIMS TARGET GROUPS

The most important aim is that no new Alien Species are introduced, so that Alien Species cannot end up in the terrestrial ecosystems and the fresh water systems of the Wadden Sea Area. We plan to raise awareness, increase the knowledge and make people understand the risk. Besides, we also aim to make the subgroups feel concerned with the problem so that they will report the occurrence of an unknown species.

In short, the most important aims for the general public are:

- raising awareness about the risk of Alien Species
- increasing the knowledge and making people understand the risk of Alien Species
- prevention of introduction of new Alien Species
- reporting occurrences of unknown species
- participation in eradication actions where feasible

STRATEGY

To inform the target subgroups, we will use different channels of communication.

One of the main subgroups are inhabitants. For example, people living on the Wadden Sea Islands or near the Wadden Sea coast became alarmed about the local eradication campaign of the Alien Species the Japanese beach rose (*Rosa rugosa*). In case of local eradication campaigns, inhabitants should be informed through information meetings or door-to-door mailings.

The way to inform day trippers and tourists from abroad is through tourist information agencies, local tourist shops, nature information centres, and other tourist hot spots. Also, in case of local eradication actions of Alien Species, placing sign boards helps to raise understanding of the issue.

Many NGOs have special programmes for school children. Educational programmes such as school programmes or games will be an excellent medium to inform about Alien Species. The International Wadden Sea School (IWSS) can play an essential role in providing educational materials and spreading educational skills.

By educating garden centres and pet shop owners, their clients can be informed about the risks of introduction of Alien Species.

Citizen Science - involving the public in scientific research on alien species - can be used to raise awareness and involve the general public. The already existing Citizen Science platform BeachExplorer.org is available in all Wadden Sea languages and aims at identification and reporting of all kinds of beach finds from the trilateral Wadden Sea - including all macroscopic alien species. The platform can serve as central recording and education tool and only needs additional advertisement. The website offers a recording scheme for alien species.

CORE MESSAGE

According to the draft of the Alien Species Management and Action Plan, the enhancement of public participation in the implementation of campaigns related to detection, reporting and eradication of Alien Species is crucial.

The general core message for the public will be as follows:

"Alien Species may pose a risk to biodiversity, economy, infrastructure, safety and public health. You can play an important part in preventing the introduction and spreading of Alien Species. Help your environment by not releasing species into the wild and by reporting species you don't know."

As described in the strategy, for the different target groups a specific core message will be formulated. For the islanders and multipliers, the emphasis in the message will be on raising awareness, preventing introduction and asking their co-operation with local eradication of Alien Species. For day trippers, tourists and school children the emphasis in the message will be on detecting and reporting Alien Species.



PATHWAY RECREATION / GENERAL PUBLIC



COMMUNICATION PRODUCTS

CITIZEN SCIENCE PLATFORM

The already existing Citizen Science platform BeachExplorer.org is available in all Wadden Sea languages and aims at identification and reporting of all kinds of beach finds from the trilateral Wadden Sea - including all macroscopic alien species. The platform can serve as central recording and education tool and only needs additional advertisement.

EDUCATIONAL MATERIALS

As mentioned before, the IWSS can play an essential role in education. Presently, they don't have any non-Dutch information or education resources on Alien Species. It would be helpful for them if the WG-AS defines guidelines on Alien Species. Based on these guidelines, IWSS can develop an international educational programme on Alien Species. IWSS has a large network and also knows how to reach the necessary target groups for this programme, so they should be able to carry this out very effectively.

For example, there already is some interesting online educational material available on Alien Species, to be used in schools and visitor centres:

- In the Netherlands, NEC-E and Radboud University developed the Dutch education programme LINVEXO, an interactive digital learning environment on invasive Alien Species. The teacher's manual and worksheets for these lessons will soon be available on www.nwva.nl/invasieve-exoten.
- Visual designer iTZiT developed a game about Alien Species: <https://itzit.com/producten/edugames/>
- These online experiences can also be used as an example for developing similar products.

INFORMATION EVENINGS

In case of a local eradication action, gatherings for neighbours should be arranged where specialists on Alien Species can explain the issue and the inhabitants can ask questions.

ADVERTISEMENT

Advertisements in local 'free newspapers' is a good way to inform inhabitants of the Wadden Sea Area. The advertisements can be produced in different languages. The focus of such advertisements is to raise awareness about Alien Species and to prevent the introduction of Alien Species. The core message to the inhabitants is not to plant non-native species in the garden (like *Rosa rugosa*), not to dispose of aquatic plants in the freshwater systems of the islands, and not to release unwanted pets into the wild. Images that show the consequences of Alien Species should be used, like an overgrown ditch. The advertisements are more effective when they are accompanied with a poster.

POSTER

A poster is a good medium to reach the inhabitants as well as the tourists and day trippers in the Wadden Sea Area. The main focus is to raise awareness and to set a call to action for reporting unknown species. It should refer to an e-mail address for reporting the species and to a website that informs people where they can find more information about Alien Species. The poster can be hung in tourist information agencies, meeting places like cafés and restaurants, on the beach (best in toilets), nature information centres, garden centres, pet shops, or amphibian exhibitions.

SIGNBOARD

A signboard can be erected at locations of temporary eradication campaigns to inform the local public and create understanding. The signboard can be made from a banner or sailcloth.

FINDING ALTERNATIVES

Garden centres that sell invasive Alien Species can be contacted and offered assistance in finding alternative species to be sold instead, like native pond plants.

EXHIBITION

To raise the awareness and general concern, a touring exhibition on Alien Species in the Wadden Sea area can be organised. Since images are much more effective than words in raising awareness, photographs and movies can be used to explain the issue. The exhibition can make a tour of tourist agencies, municipalities and other public locations.

BUDGET

Information evenings	€	€	€	€	€
Advertisement	€	€	€	€	€
Poster	€	€	€	€	€
Touring exhibition	€	€	€	€	€
Educational program IWSS	€	€	€	€	€

Other communication channels

SOCIAL MEDIA

Social media are effective communication channels for raising awareness about Alien Species, especially in the case of an alert. With social media you can reach different target groups and you can enlarge the effect of other media, like posters and leaflets.

You can announce the start of the campaign of actions following the Trilateral Alien Species Management and Action Plan and use identical images to reinforce the recognisability. You can promote messages (played advertisements) to enlarge the range of your messages. Through the social media channels you can monitor your target groups and adjust your messages accordingly. For example, the exploratory study amongst stakeholders revealed that owners of pleasure crafts are frequent users of Facebook.

The Wadden Sea Forum is a platform that is closely involved with the Wadden Sea Board and has a Facebook page. However, the topics on the Facebook page are too general for our purpose. The most effective way is to open social media accounts on Alien Species in particular, with the WG-AS (or other authority on Alien Species) as a recognisable sender. The purpose of your social media accounts would be to act as an information channel.

Social media will be an effective instrument for communicating with NGOs in the Wadden Sea Area and sharing their relevant content. Once you have established a connection with these NGOs, they can form a valuable information channel through which messages, like an alert for an invasive Alien Species, can be quickly spread.

It is important to choose a recognisable and specific name for the accounts, with the words 'Wadden Sea', 'Alien Species' or 'native'. After a start-up campaign it would be sufficient to post messages once every 2 or 3 weeks.

NETWORK OF NGOS

In the trilateral area of the Wadden Sea, many NGOs are present. Thousands of tourists and day trippers visit the area each year. A lot of NGOs have materials for visiting schools and visitors interested in nature education. These organisations have a large network of relevant stakeholders and mostly a large database of members. The employees of

the NGOs are well informed about Alien Species, or at least one employee has enough knowledge on the issue. Organisations can form an excellent communication channel in the case of a sudden appearance of an invasive Alien Species or other relevant news on the topic.

COMMUNICATION CHANNELS

Most of the organisations as mentioned above have the following online media:

- website
- newsletter
- database for direct mailing
- social media such as Twitter, Facebook, LinkedIn, Instagram and a YouTube channel

Apart from the online media they have:

- regular lectures
- communities
- events
- guided walking tours
- printed magazines

STRATEGY

We advise gathering all the addresses of relevant NGOs in the Wadden Sea Area and seeking contact with them, using a mailing or newsletter. Announce your social media campaign and request them to follow your social media accounts. Also, follow their social media accounts. NGOs are interested in recent issues, important decisions and urgent news about Alien Species and are often willing to share this information with their network. In the case of an alert for an invasive species or other relevant issues, NGOs can spread information to a large group of people within a short period of time. The organisations can adjust this information to their own media, like social media, website or newsletter.

By feeding NGOs with recent and relevant information another target group can be reached as well: the nature

guides working at the NGOs. The NGOs can inform their guides. The NGOs can also use the relevant information in their regular training courses for new and existing nature guides. The nature guides give lectures and guided tours for many visiting schools, tourists and day trippers a year and so this strategy will reach a large group of people. We advise always to add a call to action or few explanatory lines what the purpose is for your message. For example, 'practical information for nature guides'.

For example, the Waddenvereniging has offered to help in spreading messages about Alien Species. Their weekly newsletter has more than 8000 subscribers and their WADENmagazine has more than 20,000 subscribers. Their Facebook account has more than 10,000 followers and their Twitter account 6000 followers. In their Wadden Ambassadors project entrepreneurs, especially sailors, receive training on the characteristics of the World Heritage Wadden Sea and they can form a target group as well.

COMMUNICATION PRODUCT

CENTRAL REPORT OF ALIEN SPECIES

Records of alien species can be collected online using the trilateral BeachExplorer platform. All records are immediately visible there and can be used for trilateral search and recording campaigns. We advise WG-AS seeking contact with BeachExplorer about the possibilities of acting as a central reporting platform for Alien Species in the Wadden Sea Area.

IMAGE LIBRARY

The exploratory study amongst stakeholders revealed that there are few widely available photographs of Alien Species. High-resolution images need to be readily accessible for the organisations concerned to facilitate awareness about and recognition of Alien Species. We recommend an online image library of the Alien Species on a central website, for example the website of the Common Wadden Sea Secretariat. High-resolution images of clearly recognisable Alien Species should be used that may be downloaded and freely distributed by the organisations concerned.

MAILING OR NEWSLETTER

The relevant information can best be sent to NGOs in a digital mailing or online newsletter. You can choose one mailing or newsletter, followed by social media. Or you can continue with newsletters and ask NGOs to enlist themselves. For example, the former newsletter of the Common Wadden Sea Secretariat (the Wadden Sea Newsletter) could be reinstated for sending regular messages. Considering their use of media, NGOs are in the best position to act when the information is sent in the following forms:

- a digital text in the form of a press release
- a few explanatory lines on the topic that can be used for social media
- the URLs (website addresses) of recently published articles
- a separately attached high-resolution photo of the Alien Species for good recognition or other relevant images
- published videos on YouTube or Vimeo

EDUCATIONAL MATERIAL

While contacting NGOs, it might be useful to ask them whether they need educational material about Alien Species in the Wadden Sea Area. The Naturschutzgesellschaft Schutzstation Wattenmeer in Germany has educational material about Alien Species for guided tours. Schutzstation could be asked whether they are willing to sell the editable digital documents and to spread these to other NGOs. This will have a double function: training material for (new) nature guides and material for guided tours. Buying and editing existing educational material is much less expensive and time-consuming than developing entirely new material.

BUDGET

Buying and editing educational material





LIST OF WEBSITES RELATED TO ALIEN SPECIES

<http://www.waddenzee.nl/>
Waddenzee.nl is een website van de ministeries van EZ en I&M en de drie Waddenprovincies in samenwerking met Tresoar en Waddenacademie. De site vormt het portaal van alle Waddenbeheerders en wordt gecoördineerd door Rijkswaterstaat.

<https://www.beachexplorer.org/>
(Citizen Science and trilateral platform Beach Explorer.org, for reporting and identifying Alien Species, photo's are free to use)

<https://www.awi.de/forschung/besondere-gruppen/nord-seebuero/neobiota-meldestelle.html> (Neobiota Platform for reporting Alien Species in Germany)

<http://invasive-arter.dk/Menu.aspx> (Platform for reporting Alien Species in Denmark til mid 2018)

<http://www.dmp.dk/> (Platform for reporting Alien Species in Denmark from mid 2018)

https://waarneming.nl/invasive_alert_view.php ([Platform for reporting Alien Species in the Netherlands])

<https://www.awi.de/forschung.html> (Central reporting office in the North Sea office of the AWI: exchange platform for neobiota. Includes comprehensive information on Neobiota, new results, contacts with experts and a list of neobiota in the North Sea)

<http://www.waddenzee.nl/>
(Website of the Ministry of Economic Affairs and Climate Policy, the Ministry of Infrastructure and Water Management and the three Wadden provinces (Friesland, Groningen and North Holland) in collaboration with Tresoar and the Waddenacademie. The site forms the portal for all Wadden managers and is coordinated by Rijkswaterstaat.)

<http://mst.dk/natur-vand/natur/national-naturbeskyttelse/invasive-arter/hvad-goer-myndighedene/tiltag/handlingsplan-for-invasive-arter/>
(The Danish national Action Plan for Invasive Species 2017)

TWITTERACCOUNTS

Dutch organisations with active Twitter accounts:

Waddenjournaal (14,000 followers)
Waddennieuws (6,800 followers)
Waddenacademie (1,700 followers)
Rijke Waddenzee (1,800 followers)
Rijkswaterstaat (133,000 followers)
Waarneming.nl (14,000 followers)

<http://mst.dk/natur-vand/natur/national-naturbeskyttelse/invasive-arter/> (Webpage of the Agency of Nature Protection with information on alien and invasive species)

<http://mst.dk/service/publikationer/publikation-sarkiv/2016/okt/eftersoegt-dood-eller-levende/> (Invasive species and hunting in Denmark)

<http://mst.dk/natur-vand/natur/national-naturbeskyttelse/invasive-arter/hvad-kan-jeg-selv-goere/> (Information on prevention and management)

<http://mst.dk/natur-vand/natur/national-naturbeskyttelse/invasive-arter/de-invasive-arter/> (Campaign about IAS in gardens)

<https://www.nobanis.org/marine-identification-key/>,
<http://mst.dk/natur-vand/natur/national-naturbeskyttelse/invasive-arter/de-invasive-arter/> (Identification of invasive Alien Species)

<http://www.aquaticinvasions.net> (International Journal of Research on Biological Invasions in Aquatic Ecosystems)

<https://www.nobanis.org> (NOBANIS: European Network on Invasive Alien Species)

<https://neobiota.bfn.de/> (Neobiotica.de Gebietsfremde und invasive Arten in Deutschland)

<http://www.aquatic-alien.de> (Aquatic alien species in German inland and coastal waters)

http://www.jaegerforbundet.dk/media/5974/folder_d%C3%B8dslisten-low.pdf (Leaflet with list of invasive Alien Species in Denmark)

<https://www.facebook.com/oceanliteracy/> Ocean Literacy on Facebook

COLOFON

November 2017

The communication plan 'Invasive Species in the Wadden Sea Area' has been produced on behalf of the Working Group on Alien Species of the Trilateral Wadden Sea Board. This plan forms part of the Alien Species Management and Action Plan.

The communication plan 'Invasive Species in the Wadden Sea Area' is a co-creation of:

Wing
Communicatiebureau de Lynx

PHOTOGRAPHY (COVER)

Crassostrea gigas [beachexplorer.org]

Sargassum muticum [beachexplorer.org]

Rosa rugosa (Pixabay)

Nyctereutes procyonoides (Alamy)



HELP US ERADICATE THE JAPANESE ROSE AND SAVE OUR NATIVE BEACH PLANTS

From ...to ... [date] eradication of the non-native plant 'Japanese rose' (*Rosa rugosa*) will take place in your neighbourhood in [xxx]. This foreign plant is so successful that native species are starting to disap-

pear. During this period heavy machine activities will take place to clear the dune sides of the widely spread rose species. We need your help to prevent the further spread of this non-native species.

(Rosa rugosa in dune landscape (photo: Saxifraga-Jan van der Straaten))



Eradication of *Rosa rugosa* in Sweden [photo: <http://sandlife.se>]



How to recognise Japanese rose

Names: beach rose, Japanese rose, Turkestan rose
Latin name: *Rosa rugosa*

The Japanese rose has large dark pink, light pink or white flowers. The different colours might occur on the same plant. The leaves have deep nerves, which gives them a wrinkled appearance. The rose hips are much larger (3.5 cm) and broader than native species, which have more elongated hips. The stem is covered with many thorns of different sizes.



Rosa canina

Native alternatives

Dog rose (*Rosa canina*) and eglantine (*Rosa rubiginosa*) are native rose plants in Europe. They have pink and white flowers and elongated rose hips. The thorns are red and curved. Both species are a perfect alternative for the Japanese rose to plant in your garden. These native species belong to our European landscape and will not displace other native plants.

WHY DO WE ERADICATE? TO SAVE NATIVE PLANTS

The Japanese rose is not native to our European landscape. The species spreads very fast and plants that are native to our dune landscape cannot compete with it and therefore disappear. For this reason, the non-native rose species forms a threat to the unique vegetation of the UNESCO World Heritage Site The Wadden Sea Area.

WHAT IS THE PROBLEM WITH JAPANESE ROSE? IT SPREADS RAPIDLY

In the past, Japanese rose was planted against dune erosion. Nowadays, the rose is still planted widely by local people because of its beautiful flowers and lovely smell. *Rosa rugosa* originally grows in Asian dune landscapes, very similar to our Wadden coast. Birds and mammals love the rose hips, and their droppings help it spread rapidly. Japanese rose is now becoming a big problem, because it forms dense thickets and displaces native plants.

WHAT TO DO IF YOU HAVE A JAPANESE ROSE? CALL US, WE'LL REPLACE IT WITH ROSA CANINA

A Japanese rose in your garden will multiply rapidly in the neighbourhood. When you have a Japanese rose in your garden, please let us know: phone number xxxx/email address. We will remove the Japanese rose free of charge and replace it with the native species dog rose (*Rosa canina*), a beautiful wild rose native to our European landscape.



PACIFIC OYSTER

Crassostrea gigas

Competes with the blue mussel for food and space, spreads the herpesvirus and causes damage to hulls.



WARTY COMB JELLY

Mnemiopsis leidyi

Reproduces fast and eats plankton and fish eggs in large quantities.



ASIAN OYSTER DRILL

Urosalpinx cinerea

Reproduces fast and is a predator for the blue mussel



JAPANESE SEA WEED

Sargassum muticum

Can grow 10 cm per day, competes with native sea life for space, sunlight and phytoplankton. It gets entangled in the propellers of boats.

UNKNOWN ALIEN SPECIES

- At least 2 new alien species are found per year
- Economic and ecological risk unknown

DID YOU SPOT ONE TODAY?

➤ TAKE A PICTURE

➤ SEND PICTURE + LOCATION TO xxxxxxx@xxxxxxx.eu

OUTLINE COURSE SUSTAINABLE SHIPPING 2018



The course Sustainable Shipping is a two-day course that covers the compulsory STCW¹ and prevention of pollution at sea. The course provides all the essential information that seafarers need to manage the adaptation of the sector to an innovative and sustainable maritime industry. The certificate provides you with an advantage in the maritime market and selling point for clients.

GENERAL OBJECTIVES OF THE COURSE

Those who have successfully completed the course will be able to demonstrate knowledge and understanding of the importance of preventing pollution to the marine environment. This knowledge and understanding shall included, but is not limited to the following topics:

- concept of sustainable shipping
- role of regulations, procedures and technical installations to protect the environment
- the future: innovation to a sustainable and environmental-friendly maritime industry
- complexity and diversity of the marine environment
- risk of introducing and spreading Alien Species through shipping
- impact of shipping on the environment and biodiversity
- solutions for various sustainable shipping challenges, such as ballast water and biofouling
- marine environmental awareness and personal responsibility.

WHO IS THE COURSE INTERESTING FOR?

Sea staff and shore staff of maritime business who wish to:

- work on their pro-active performance to risk management and sustainability at sea
- be up to date with developments regarding challenges for sustainable shipping
- have knowledge of participating in an Environmental Management System (EMS) such as ISO 14001.

IN TRANSIT TO A SUSTAINABLE MARITIME INDUSTRY

Over the next few years many developments will take place in the maritime industry. The industry has a vital role to play in creating a sustainable and low-carbon economy. Awareness to the impact of shipping on the environment is therefore essential. Various companies have

1 International Convention on Standards of Training, Certification and Watch keeping for Seafarers

included sustainability and ISO 14001 certification as an integral part of the company's policy. Many regulations, technical installations and operational procedures are being designed to minimise the effects of shipping on the marine environment. Having knowledge about and a pro-active approach to this subject will play an increased part of the curriculum of every co-worker in the maritime industry. As the International Maritime Organization (IMO) composed the STCW, this course is especially based on the IMO Model Course (MC 1.38).²

SHIPPING AND ALIEN SPECIES

One of the main vectors for introducing and spreading Alien Species is shipping. Alien Species pose a risk for

the economy, infrastructure, safety, biodiversity and public health. Over the next few years, regulations in the maritime industry will be changed to minimise the rate of introductions and spread of Alien Species by shipping. For instance, in September 2017, the Convention for Ballast Water³ came into force. Within five years, the entire shipping sector will have to comply with the regulations and technical modifications on ballast water. Another technical challenge to the sector is the prevention and clearing of biofouling. Besides being an important vector for Alien Species, it decreases the hydrodynamic properties of a ship, resulting in increased fuel consumption and costs. Technical innovations in the area of biofouling are still in their infancy and further changes to regulations are expected in the future. These aspects also form an essential part of your curriculum.

COURSE PROGRAMME

Topics day 1

- Introduction
- Marine environment
- Importance of the oceans and marine ecology
- Introduction and spread of Alien Species in shipping
- Documentary: Invaders From the Sea (BBC Worldwide, 30 min. introduction)
- Ballast water, regulations and ballast water treatment systems
- Biofouling, regulations and present techniques

Topics day 2

- Environmental challenges
- Emissions
- Discharges to the sea
- Pollution prevention
- Sustainability and future challenges
- Personal involvement

2 <http://www.imo.org/en/OurWork/HumanElement/TrainingCertification/Documents/list%20of%20IMO%20Model%20Courses.pdf>

3 <http://www.imo.org/en/OurWork/Environment/BallastWaterManagement/Pages/BWMConventionandGuidelines.aspx>