

Advice of the Scientific Advisory Committee on Seal Rehabilitation in the Netherlands



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Advice on seal rehabilitation

Introduction

Two species of seal breed in the Netherlands, the grey seal (*Halichoerus grypus*) and the harbour seal (*Phoca vitulina*). The populations of both species have increased markedly over the past 40 years. Harbour seals have recovered from a minimum number of around 500 in 1980 to some 9,000 seals in 2016 (Figure 1). Grey seals were effectively absent from the Netherlands until 1980, but have made a remarkable recovery; the numbers counted during the annual moult increased to around 5,100 in 2016. The number of pups born each year for both species is equivalent to around 20% of the number of seals counted during the moult.

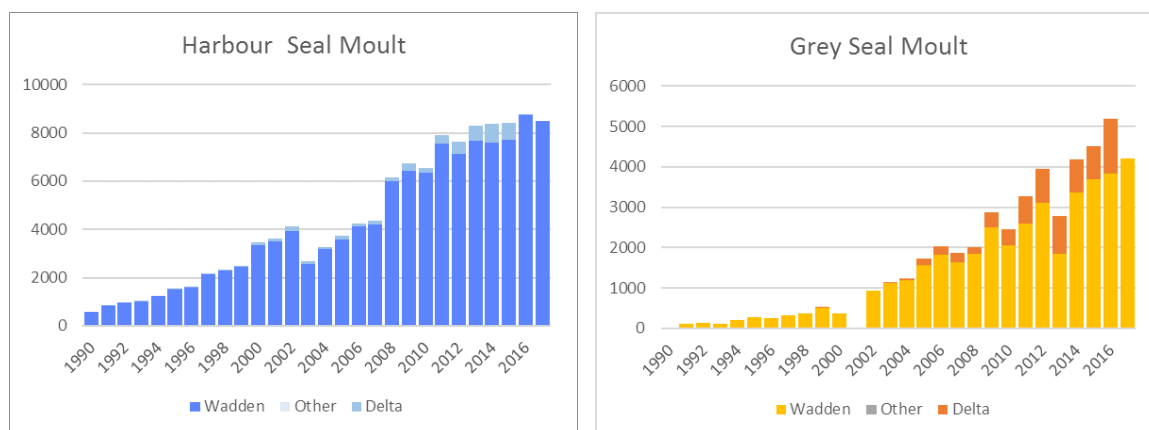


Figure 1: Dutch harbour seal (left) and grey seal (right) population count during moult (Brasseur 2018, Appendix 4).

Currently, the Netherlands has five seal rehabilitation centres with a dispensation to rehabilitate sick, orphaned or injured seals from the Dutch waters. These are: (1) A Seal (Stellendam); (2) Ecomare (De Koog, Texel); (3) Zeehondencentrum Pieterburen (Pieterburen); (4) Zeehondenopvang Eemsdelta (Termunterzijl); and (5) Zeehondenopvang Terschelling (West-Terschelling, Terschelling).

Their dispensation requires these centres to work according to the Seal Rehabilitation Guidelines and Protocol (2003). This protocol is a practical interpretation of the national and international legislation on animal welfare and nature conservation, including the Trilateral agreements for the conservation of seals in the Wadden Sea (Appendix 2).

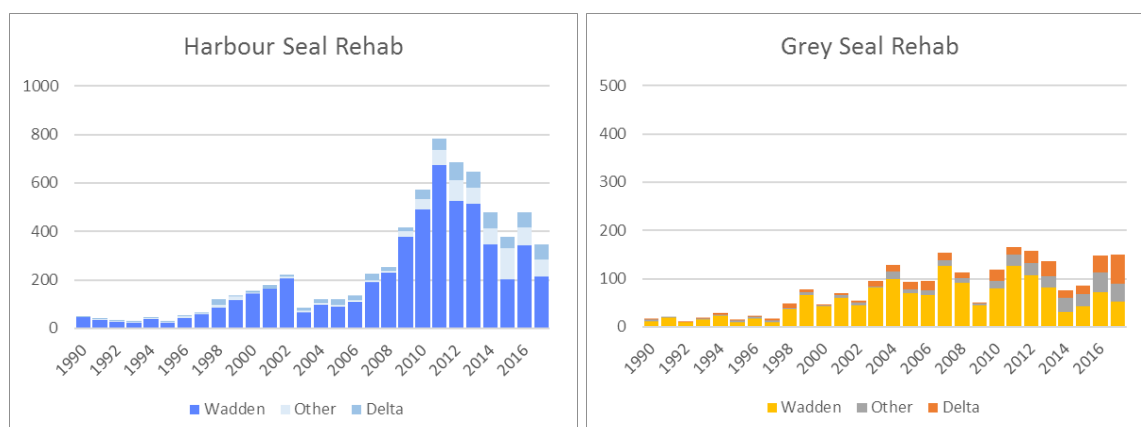


Figure 2: Dutch harbour seal (left) and grey seal (right) seal in rehabilitation centres (Brasseur 2018¹).

¹ <http://edepot.wur.nl/440805>.

The number of seals brought to the rehabilitation centres has increased from 20 in 1980 to between 500 and 1000 annually in recent years. In the 2009–2011 period, there was a sharp rise in numbers of harbour seals taken into rehabilitation. In 2011, this concerned nearly 800 harbour seals. More than 90% of the seals that are taken in are younger than 1 year old. As a result, between 2007 and 2013, over 20% of all harbour seal pups born each year in Dutch waters have been brought to centres, with a peak of 50% in 2011. Since 2014, some rehabilitation centres have become more selective in their decisions on admitting seals.

In 2015, the State Secretary of Economic Affairs requested Bas Eenhoorn, chairman of the supervisory body for the Waddenzee region (*Regiecollege Waddengebied*), to draw up a shared strategy for all organisations involved in seal rehabilitation. However, Eenhoorn concluded that there was insufficient consensus amongst centres on approaches to rehabilitation to make this possible. There was no agreement on how to balance the protection and conservation of the wild population on the one hand and the welfare of individual animals in distress on the other. Because of this, the 2003 Seal Rehabilitation Guidelines and Protocol have been interpreted in different ways. Eenhoorn's main recommendation was therefore to set up a scientific committee to formulate binding recommendations on how this balance is to be achieved (Final report of study into seal rehabilitation, 18 December 2015).

Objective

Based on the Eenhoorn Advice, the Minister of Economic Affairs² decided to install an International Scientific Advisory Committee for Seal Rehabilitation (Government Gazette 2017, 44874). The Minister requested the Scientific Advisory Committee (SAC) to answer the following questions:

1. In which situations is rehabilitation permissible and in which situations is it inadvisable? The recommendations should address both the approach that there should be minimal rehabilitation of wild animals ('in which cases is it justified?') and the approach that rehabilitation is to be accommodated from the point of view of the welfare of individual animals ('in which cases are there objections to it?').
2. What is the proper course of action in situations where rehabilitation is inadvisable?
3. What standards should rehabilitation meet, which treatment and care form part of it, and what are its limits when it does take place?
4. Which conditions should be set with regard to releasing animals back into the wild?

Working procedures of the SAC

The SAC spent six months reviewing the relevant scientific literature, consulting different international seal and seal rehabilitation experts, analysing stranding data, visiting three seal rehabilitation centres and consulting the stakeholders on its draft advice (Appendix 1). This document contains the main recommendations of the SAC. The following appendices have been used to substantiate these recommendations:

1. The working procedures of the SAC (Appendix 1).
2. An overview of current legal obligations and responsibilities concerning seal protection and rehabilitation (Appendix 2).
3. Definition of animal welfare (Appendix 3).
4. Data on the seal population and seal rehabilitation (Appendix 4).
5. Analysis of mother-pup biology (Appendix 5).
6. A literature review of the impact of rehabilitation on the wild population (Appendix 6).
7. A literature review of the impact of the environment on seals (Appendix 7).
8. An inventory of international and national practices (Appendix 8).
9. Stakeholder consultation (Appendix 9).
10. An assessment of the Council on Animal Affairs (CAA) of the preliminary advice based on their framework on animal welfare of wild animals with a short response from the SAC (Appendix 10).
11. A proposal for new seal rehabilitation guidelines and protocol (Appendix 11).

² Currently the responsibility of the Minister of Agriculture, Nature and Food Quality.

Advice of the SAC

In this advice, the SAC addressed each of the four questions of the Minister of Economic Affairs.

1) In which situations is rehabilitation permissible and in which situations is it inadvisable?

This question included the assignment to deal with this issue from two perspectives: (1) the protection and conservation of the wild population (population perspective); and (2) the animal welfare of individual animals in distress (animal welfare perspective). The SAC has done this in two steps: (1) scrutinising the issues of rehabilitation from both perspectives separately; and (2) combining both perspectives for various relevant situations in the field.

The SAC concluded that seal rehabilitation is not needed from the population perspective and is inadvisable (from this perspective) in situations where rehabilitation has negative impacts on the wild seal population. This position was already mentioned in the 2003 protocol.

However, the SAC also concluded that the rehabilitation of individual seals is permissible from an animal welfare perspective in situations where: (1) a seal is compromised as a direct result of human activities; and (2) rehabilitation of an individual seal has no net-negative effects on the individual welfare of this particular seal or other seals in the wild population.

The SAC elaborated and combined these principles in a number of real-life situations, leading to the following recommendations:

- a. *Injured animals are to be assisted or rehabilitated if the injuries have been caused by direct human activities (e.g. caught in fishing nets or boat accidents)*

According to the 2003 protocol, seals that are injured as a direct result of human activities (e.g. caught in fishing nets or hit by a boat), should be taken into rehabilitation because of the general principle that humans should mitigate or compensate direct negative implications of human behaviour on nature. The SAC recommends a graded approach to ensure that the appropriate course of action is taken. A suitably knowledgeable and qualified person, such as a specialised veterinarian or an appointed seal guardian (see 3a) should decide what course of action to follow. These are:

1. If the animal can be helped on the stranding site, for example by removing nets, this is the preferable intervention.
2. If the animal has no chance of recovery, it should be euthanised to prevent further suffering.
3. If the seal has a problem that could be solved by a period of care, leading to eventual release, it may be captured and admitted to a rehabilitation centre.

- b. *Lone seal pups/sucklings can be taken into rehabilitation after a minimum observation period of 24 hours, allowing mother and pup sufficient opportunities to reunite*

The 2003 protocol states that suckling harbour seal pups can be taken into rehabilitation if seen without a mother for a minimum observation period of two hours. This two-hour observation period was based on the assumption that harbour seals do not leave their pups alone during lactation, unless they are disturbed by humans. Research and expert judgements (see Appendix 5) have shown, however, that harbour seals may leave their pups to go out on foraging trips. These foraging trips are essential for pup survival since, in contrast to larger-bodied seal species, few harbour seal females have sufficient blubber reserves to feed their pups for the entire lactation period. The foraging trips can last up to 12 hours (and sometimes even longer). Healthy pups regularly undergo short fasting periods of up to 24 hours as part of their natural biology and are able to survive 24 hours without their mother (Appendix 5). In order to prevent unnecessary suffering of both the mother and the pups, it is essential to avoid breaking the mother-pup bond. Mother-pup pairs should be given enough time to reunite.

The SAC considers a 12-hour observation period to be unpractical because this would imply taking pups during the night, which would be very disturbing for the pups and other animals (e.g. because of using lights). A 24 hour period is more practical and in line with the current guidelines in the USA (Appendix 8).

In conclusion, the SAC advises that the minimal observation period (in the protocol) for harbour seal pups should be extended from 2 to 24 hours. The existing 24-hour observation period for grey seal pups should be maintained. After 24 hours, a seal guardian (see 3a) can decide to take a seal pup in or to extend the observation period. The 24-hour observation period has to be monitored under the guidance of a seal guardian (see 3a). If a lone pup is observed on sites with a risk of human disturbance (for instance crowded beaches), the site should be closed temporarily to prevent such disturbance during the 24-hour observation period. This approach has been very successful for monk seals at crowded beaches in Hawaii (Appendix 8). Additionally, in cases where pups are stuck in unusual places, it should be made possible to relocate lone pups in order to allow them to find their way back to the sea (harbour seal pups can swim) if this increases the possibility of the mother and pup reuniting. Such relocation was not foreseen in the 2003 protocol and should be included as an option in the new protocol.

c. *Pups in the post-weaning phase should be left alone and not taken in*

The 2003 protocol does not specify a specific procedure for weaned pups that are independent of their mothers. The natural behaviour patterns differ between harbour seals and grey seals.

Grey seal pups undergo a post-weaning fast. From the age of approximately 18 days, these pups are solitary individuals that have been left by their mother as part of their normal biology. During this period, the pups remain on breeding sites or adjacent beaches. They do not yet feed on fish and their mother does not return to feed them. This fasting period may last for more than a month and is an integral part of the developmental process of grey seal pups (Appendix 5). Therefore, being alone and losing weight is a natural phenomenon during this stage and is not a reason to take these seals into captivity.

Harbour seal pups wean and become independent of their mothers after approximately four weeks, but do not usually remain on land after weaning. Harbour seal pups undergo a post-weaning fast of about 15 days during which they swim regularly. As they develop their foraging patterns, they will be expected to lose weight. So, as is the case with grey seal pups, harbour seal pups being alone and losing weight after weaning is natural, and is not – on its own – a reason to take these seals into captivity.

The SAC concludes that weaned seal pups need rest and protection from disturbance while on land and that the capture of weaned grey or harbour seal pups can never be justified by the absence of an attendant mother or by weight loss without other factors. Rehabilitation would have a negative effect on animal welfare because the animals are unnecessarily deprived of the ability to adapt to their natural environment and their freedom to express normal behaviour. If weaned seals are stranded on crowded beaches, a certified seal guardian could set up a temporary resting area.

d. *Rehabilitation of lungworm patients should be limited*

The assumption that lungworm infection rates are high as a consequence of reduced immune function due to human induced chemical stress has been used as a justification for treating all lungworm cases in the past. The SAC could not find convincing evidence to support the assumption that the current high rates of lungworm infections are a direct effect of human behaviour (Appendix 7).

Lungworm is a common 'childhood disease' among harbour seals. After weaning, most young seals are infected as soon as they start feeding on fish. As in many other wild species, infectious childhood diseases play a role in regulating the size of the population and selecting the fittest animals, thus increasing the overall fitness of the population. Rehabilitation of all seals found with a manifest lungworm infection, which is the current practice in the Netherlands, could undermine the natural regulation mechanisms in the wild population, and potentially influence the transmission of parasites in the overall population (Appendix 6). If population size is around the carrying capacity of the habitat, taking in a pup, curing it and releasing it may result in increased competition

for limited resources and reduced wellbeing for other individuals. Consequently, from a population perspective the rehabilitation of lungworm-infected seals needs to be limited.

The SAC advises that rehabilitation of lungworm patients should be limited because of the possible negative effects on the population. Heavily affected animals with no chance of survival should be euthanised to prevent further suffering. Lightly affected seals should be observed for at least 24 hours to enable the animal to recover without treatment and prevent unnecessary stays in rehabilitation centres. In cases where the animal is heavily affected and recovery is only possible in a rehabilitation centre, rehabilitation could still be possible under the condition that more research is done on the long-term survival of these patients (see recommendation 4b). Certified seal guardians should be trained to distinguish between these situations and implement the recommendation to be more restrictive in bringing lungworm patients into rehabilitation.

The SAC acknowledges the fact that in some situations (for example on crowded beaches) a 24-hour observation period for sick animals may not be feasible because of public pressure. In these situations, the seal guardian needs to make a local assessment of the situation. This may imply that a temporary resting area is set up or that the seal is relocated (and observed) or taken in rehabilitation immediately. At the rehabilitation centres, a veterinarian needs to decide on treatment or euthanasia.

There is evidence that sick animals that have been treated in rehabilitation centres may have a high probability of becoming re-infected once released (Appendix 6), either because the animals are genetically susceptible or have developed foraging strategies which increase their exposure to parasites. The rehabilitation centres have a responsibility to study the survival rates of released lungworm patients. All released lungworm patients should be marked (for instance using flipper tags) to enable research of the post-release survival rate and a study should be set up using satellite tags to gain a better understanding of the behaviour of these animals after release. If survival rates are low, this should lead to a more restrictive policy on rehabilitating lungworm patients.

Lungworm is a most common disease of harbour seals and the disease most often given as reason for seals to be taken in. The SAC has therefore decided to describe this disease in detail. The SAC recommends also using the aforementioned principles for other diseases (except in the case of sudden mass mortality such as a phocine distemper virus (PDV) outbreak that is covered by a specific governmental guideline)³.

e. *No rehabilitation of undernourished animals when the population is near carrying capacity*

Mortality of young seals is naturally high in seal populations. Generally, 30–40% of the young seals do not survive the first year (see Appendix 4). The animals that are less fit die either from undernourishment or from undernourishment in combination with disease. This is a natural phenomenon in any wild population that is likely to become more prominent when resources limit population growth and carrying capacity has been reached. Grey seal populations that are close to their carrying capacities have pup mortality rates of around 70% or higher. Currently, the Dutch harbour seal population has stopped growing in the last three years (after 15 years of exponential growth), indicating that the population may be near its carrying capacity. If so, the numbers of seal pups starving each year is likely to be high. Rehabilitation of undernourished animals is potentially harmful to the welfare of wild and healthy individuals because the artificially fed rehabilitated animals could have an unnatural competitive advantage, and healthy ‘always wild’ animals may have to deal with extra competition for food. If there are limited food resources, pup survival will be a zero-sum game, meaning that help given to one animal is counterbalanced by the negative impact on other animals (see also Appendix 2). The SAC concludes that rehabilitation of undernourished animals is unwarranted when the population is near carrying capacity.

From an animal welfare perspective, euthanasia of severely undernourished (or severely emaciated) animals on the spot would be the preferred option to natural starvation. Euthanasia on the spot would also be preferred to capturing the animal to be euthanised elsewhere, because capturing an animal causes unnecessary extra

³ <https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/rapporten/2014/12/27/operationeel-draaiboek-zeehondensterfte/operationeel-draaiboek-zeehondensterfte5-12.pdf>

stress. However, the SAC also realises that currently euthanasia of severely emaciated seals on beaches is socially not very acceptable in the Netherlands (see also Appendix 9). The SAC therefore advises that the practical details of euthanasia (where and by whom) are elaborated in more detail by the seal task force (see 4c). For practical reasons, this may include the option of capturing these animals and euthanising them at an appropriate facility (e.g. a local veterinary clinic) under the guidance of a qualified veterinarian.

f. *No rehabilitation in closed areas*

The SAC advises to stop catching seals in closed areas and/or nature reserves to bring them into rehabilitation. The main reason for this recommendation is that catching and/or searching for compromised animals in these areas can cause disturbance to other seals or other protected animals. Active searching for compromised animals in closed areas and breeding sites should not be allowed. The SAC also advises closing all breeding sites during the breeding season to minimise human disturbance, for example in the Ems-Dollart (most other breeding sites in the Netherlands are already closed). It is essential that there are no people and dogs in these salt marshes and on these mudflats. A more active and strict enforcement of the current rules for closed areas is advised. This recommendation aims to reduce the disturbance to suckling pups and their mothers. The SAC, however, supports initiatives that allow the public to observe seals without disturbing them (for example the seal observation wall on the Punt van de Greide).

g. *The SAC advises restricting rehabilitation numbers to 5% of the yearly pup production of each species*

The current guidelines and protocol (2003) mention that during an epidemic/calamity involving large numbers of stranded seals, no more than 5% of the seal population can be released. However, no threshold for maximum release in normal years exists.

As mentioned in the introduction, the number of rehabilitated seals – and in particular of young seals – has been very high. The SAC agrees that rehabilitation on this scale is inappropriate. Seals are wild animals and the fact that 20–50% of pups (< 1 year) have spent a considerable part of their youth in a seal rehabilitation centre is unacceptable from an animal welfare perspective. In particular because this is a period in their development when it is important that they learn to live and survive in their natural environment. Rehabilitation and release on this scale may also have negative effects on the welfare of the population by disrupting natural selection or enhancing disease transmission. This should be avoided and/or minimised from a population perspective. This means that rehabilitation efforts need to be limited in future (Appendix 6). A reduction of the number of rehabilitated seals could also help to reduce the risk of transmitting diseases from animals to humans.

The SAC advises setting a maximum threshold of 5% for seals pups taken into rehabilitation as a percentage of the annual Dutch pup production of both harbour seals and grey seals. The 5% maximum threshold in this advice will be reached in the coming years. The implementation of recommendations 1a–f should already reduce the release of seal pups after rehabilitation substantially. The 5% threshold should be used as a yearly check-up and as a tool for learning. This requires that the rehabilitation centres must verify each year whether the 5% threshold was exceeded. If this threshold is exceeded, it is necessary to analyse why, and to take appropriate measures (e.g. by adjusting the protocol) to reduce rehabilitation in the following year(s). This requires the number of stranded, rehabilitated and released seals to be monitored closely every year. The 5% threshold should be reconsidered if the Dutch population size threatens to fall below 1000 harbour seals and/or grey seals.

2) *What is the proper course of action in situations where rehabilitation is inadvisable?*

During the last 15 years, the strategy of dealing with compromised seals has mainly focused on rehabilitation. The SAC advises that rehabilitation takes lower priority in a future strategy. The first priority is *to let seals be* and give seals enough time, space and opportunity for natural processes to regulate the population. They are wild animals that have managed to survive for thousands of years. Conditions for seals are currently good: the seal population has recovered and is now possibly even near carrying capacity. The idea of *let seals be* is not based on indifference on the part of the SAC, but on the opinion that in most cases this is the best strategy from a welfare and a population perspective. Table 1 summarises the preferred actions for different situations.

Table 1: Recommended actions under different situations and main arguments.

Situation	Possible action (in the preferred order)	Main animal welfare/population arguments
Seals that are injured and/or captured in nets	Release the animal from the net and set it free	Duty of care principle because suffering is caused by human behaviour (animal welfare argument)
	If medical treatment is needed: bring to a rehabilitation centre	Duty of care principle because suffering is caused by human behaviour (animal welfare argument)
	If recovery is impossible: euthanise the animal on the spot (quiet places) or elsewhere	Minimise suffering for dying animal (animal welfare argument)
Seals stuck in unusual places such as behind gates or in canals	Relocate the animal to a nearby spot with free access to the sea and if necessary create a temporary rest area	Freedom to express natural behaviour (animal welfare argument)
Lone pups (sucklings)	<i>Give 24 hours of observation and if necessary create a temporary rest area or relocate them</i>	Prevent unnecessary suffering for mother and pup (animal welfare argument)
Fasting post-weaned seals	<i>Do nothing (animal is not compromised)</i>	Freedom to express natural behaviour (animal welfare argument)
Lightly affected animals with lungworms	If still necessary after a 24-hour observation period: bring to a rehabilitation centre or extend observation period	Prevent unnecessary stress for the animal connected to catching and keeping it in rehabilitation for months (animal welfare argument)
Heavily affected animals (lungworms)	Bring to a rehabilitation centre	Rehabilitation is only option for survival (animal welfare argument)
	If recovery is impossible: euthanise the animal	Minimise suffering for dying animal (animal welfare argument)
Undernourished animals (when population is near carrying capacity)	Do nothing	Zero-sum argument – helping one animal will cause suffering for another individual (animal welfare argument)
	If severely emaciated: euthanise the animal	Minimise suffering for dying animal (animal welfare argument)
Seals in closed areas	<i>Do nothing</i>	No disturbance of other seals and other animals (population argument)
Number of pups (< 1 year) in rehabilitation exceeds 5% in year X	Adjust actions mentioned above to reduce rehabilitation in year X+1	Reduce possibilities of negative (genetic) effects of rehabilitation on the population (population argument)

3) What standards should rehabilitation meet, which treatment and care form part of it, and what are its limits when it does take place?

Many organisations and individuals are actively involved in monitoring stranded seals, helping stranded seals and rehabilitating seals in the five rehabilitation centres. The SAC greatly values the efforts and work of these organisations and volunteers. Yet the SAC also concludes that a new governance approach for the entire seal rehabilitation process is needed. This includes a more professional approach to the assessment of stranded seals on beaches and in other coastal areas, which should be carried out by specially trained seal guardians. This professional approach is essential to prevent unnecessary rehabilitation and to secure the implementation of the new guidelines and protocol. Additionally, the cooperation and alignment between the rehabilitation centres, seal volunteers and their organisations, local and provincial governments, and science and enforcement agencies needs to be strongly improved.

The SAC has identified five specific recommendations to achieve the aforementioned:

a. *The SAC advises appointing, training and certifying seal guardians to implement the new seal rehabilitation protocol in the field.*

The implementation of the new guidelines and protocol (Appendix 11) for seal rehabilitation requires a knowledge-based and careful assessment of stranded seals to determine the appropriate action for each individual. Several rehabilitation centres are working with such experts. The SAC concludes that it is essential that all centres work with experts that have been trained and are qualified according to common standards. This requires the appointment of specially trained and qualified seal guardians (*zeehondenwachten*). This concept has been inspired by the German system of seal hunters (Appendix 8). The concept of seal guardians implies that others taking seals into rehabilitation shall become illegal. The current situation is that any individual can take a seal from the wild and take it to a rehabilitation centre. The SAC advises to replace this practice by the general rule that anyone who finds a seal in (suspected) distress should contact a seal guardian, who will decide on the required action. This stricter approach can be compared to other Dutch situations where only specially trained citizens are allowed to handle wild animals, such as bird ringers, hunters and gamekeepers (see Appendix 8).

The responsibility to enforce these new rules on the beach should be transferred from the national Netherlands Food and Consumer Product Safety Authority (NVWA) to local officials (*groene BOA's*: green special investigating officers; BOA: *buitengewoon/bijzonder opsporingsambtenaar*).

The seal guardians should follow the new guidelines and protocol, be properly trained and regularly pass an exam. This training will include seal guardians conducting an initial health assessment of stranded seals, but also communicating with the public and cooperating with seal volunteers, rehabilitation centres and local authorities in the field. It is essential to evaluate the performance of seal guardians, relating their decisions in the field to the diagnosis by vets at the rehabilitation centres, as part of continuous quality management.

The SAC advises that the authority of seal guardians should be expanded, compared to the existing seal rescue volunteers, and that they should get the status of a formal official (such as a special investigating officer (BOA) or a *strandvonder* (wreckmaster); see also Appendix 8). For instance, seal guardians should be able to (temporarily) close part of a beach to prevent public disturbance (see the Waikiki beach example in Appendix 8) or monitor it for 24 hours, relocate a stranded seal to a more suitable location (if this helps the animal to recover and return to the sea) or decide/advise to euthanise the animal to prevent further suffering (on the spot or elsewhere). The practical details of euthanasia (where and by whom) need to be elaborated in more detail by the seal task force (see 4c).

The SAC emphasises that other seal volunteers will continue to play a vital role in this new approach. They could and should assist the seal guardians in observing, protecting or capturing stranded seals, and contribute to monitoring (stranded) seals and communicating with the public.

The involved government bodies (the Ministry of Agriculture, Nature and Food Quality (LNV: *Landbouw, Natuur en Voedselkwaliteit*), provinces and municipalities) should provide seal guardians, volunteer organisations and rehabilitation centres with the necessary mandate and means.

b. Standards for animal welfare at the rehabilitation centres.

In the 2003 protocol, no specific standards for animal welfare and working procedures within the rehabilitation centres were set out. On this issue, we can use the experiences of other countries. For example, the US federal government has defined standards for all relevant working procedures (for instance regarding the processing of food and medical care) and minimal facilities (e.g. size of the pools for seals) regarding seal rehabilitation.⁴ The SAC has visited three Dutch rehabilitation centres (Appendix 1) and concluded that each of these centres work with self-defined standards and protocols regarding these issues.

Yet more cooperation on these standards is necessary. The SAC advises that all rehabilitation centres define common sets of standards (or protocols) for animal welfare within the rehabilitation centres. This joint protocol/code of practice should be peer-reviewed internationally. The NVWA will remain the authority to enforce and supervise the governmental standards for animal welfare at the rehabilitation centres.

c. The SAC identifies the need for better cooperation and shared learning between all organisations involved in seal rehabilitation

Currently, five seal rehabilitation centres and two major volunteer organisations are active in seal rehabilitation in the Netherlands. Recently, some degree of cooperation between these organisations has started. The implementation of the new guidelines and protocol (2018) and the proposed new approach (with seal guardians) in the field also requires more and improved cooperation between these organisations. This is necessary to secure a consistent implementation and prevent future conflicts. The organisations could also benefit from a system that is based on exchanging experiences and shared learning. Finally, the rehabilitation centres could also benefit greatly from economies of scale by sharing certain facilities. These recommendations could entail cooperation and/or joint learning on different issues, such as training volunteers/seal guardians, educating seal veterinarians, joint monitoring of the effects of seal rehabilitation, or creating a single advisory SAC for all seal rehabilitation centres.

d. The new seal rehabilitation protocol should be evaluated and updated every five years

The 2003 protocol has not been updated for almost 15 years. The SAC recommends reviewing and – where appropriate – updating the protocol every five years (or earlier if needed) to include new societal and scientific insights and developments. A common scientific advisory board for all seal rehabilitation centres in the Netherlands could play an important role in this process. This board should enhance continuous learning, play a role in monitoring and setting the research agendas, maintain the 5% threshold (for released pups), and adjust the protocols and working procedures of seal rehabilitation and the functioning of seal guardians based on practical experience.

e. The new guidelines, protocol, and seal guardian system should be communicated for a prolonged period to the public

It is crucial that the new approach focusing on avoiding unnecessary rehabilitation is communicated to the public, including tourists and inhabitants of the Wadden Sea region and delta area. Governments, rehabilitation centres and volunteers should agree on a common communication strategy that is based on two principles: (1) leave seals alone and (2) call the local seal guardian (if needed). This new narrative will take considerable

⁴ See: http://www.nmfs.noaa.gov/pr/pdfs/health/rehab_standards.pdf

efforts for a prolonged period of time, in order for it to be understood and embraced by the general public. It would be helpful for local and national leaders to step forward as ambassadors of this new narrative. Modern means of communication and new technologies can support the new narrative. Good examples are the technologies used by the birdwatcher and bird protection communities (using webcams, tagged birds, internet platforms, etc.). The new seal narrative should be embedded in a broader ecosystem view, like the world heritage narrative of the Wadden Sea. It is important not to block the public's energy and positive intentions to help seals, but to channel this in a new direction.

4) What conditions should be set with regard to releasing animals back into the wild?

a. *Develop a common protocol for release criteria and use of medication*

The SAC recommends a common protocol for the release of seals and the use of medication at the centres. This protocol should be developed by the rehabilitation centres. This protocol should include the following elements: (1) seals should be held in rehabilitation for the shortest time possible; (2) the release of animals should not depend on fixed criteria, such as their weight, but on their general health condition; (3) seals should only receive drugs when there is a clear clinical indication; (4) a waiting time for release after drug use is required, based on the kinetics of the medication, in order to reduce the risk of AMR (antimicrobial resistance) transfer into the wild; and (5) animals must be released near the place where they were captured. The centres are to draft a standard protocol/code of practice for this, and then have it peer-reviewed internationally.

b. *A national seal research programme needs to be developed*

Although some good research has been conducted involving seals in the Netherlands in the past decades, the work of the SAC was hampered by a lack of available information. Some key examples include the fact that the survival rate of released seals is unknown and that the level of immunosuppressive substances in seals has not been measured since 2003. The SAC recommends starting a national seal research programme with governmental funding. This programme could focus on issues such as: the survival success of released seals (using satellite/GPS telemetry tags); the effects of industrial chemicals on seals; the interaction (and modelling) between individual genetics; disease status; survival and rehabilitation outcomes (this is needed to shed more light on the potential impact of rehabilitation on inbreeding and natural selection); an improved monitoring of stranded seals; and the development of specific software and apps for monitoring and identifying individual seals (e.g. by using the spot pattern on their skin). This research programme should also serve as a platform for cooperation between the various stakeholders and national and international seal scientists, and enhance innovation and learning. Rehabilitation centres are obliged to provide the authorities with annual statistics on rehabilitation (number of animals that have been taken in, diagnosis, treatment, effect, etc.).

c. *A joint Seal Agreement and Seal Task Force*

The implementation of the SAC advice requires cooperation between all governmental and societal organisations involved in seal protection and rehabilitation. This includes national, regional and local authorities, rehabilitation centres, nature protection organisations, scientists, volunteer organisations, etc. The SAC advises that these organisations sign a Seal Agreement (*Zeehondenakkoord*), which may be helpful in committing all parties to the shared targets and in defining clear common actions.

The consultation of stakeholders by the SAC has shown that there is broad support for such a Seal Agreement (Appendix 9). The SAC advises that a Seal Task Force with an independent chair is formed by the Ministry of Agriculture, Nature and Food Quality and the provinces (with the aforementioned organisations) to prepare this Seal Agreement.

Appendices of the advice of the Scientific Advisory Committee on Seal Rehabilitation in the Netherlands

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Appendix 1: Working procedures of the Scientific Advisory Committee on Seal Rehabilitation

Introduction

There are currently five centres for the rehabilitation of seals in the Netherlands. In the day-to-day practice of seal rehabilitation different opinions exist about if, when and how to rehabilitate seals, and which ones and how many. The policy principles in the trilateral Seal Management Plan and the 2003 'Guidelines on the rehabilitation of harbour seals and grey seals' (*Leidraad opvang gewone en grijze zeehonden*) should give clear guidance on this issue. However, these existing guidelines are currently interpreted in different ways, depending on the motive for rehabilitation. One possible motive focuses on the importance of rehabilitation for the population of seals and the ecosystem as a whole. Another motive focuses on animal welfare and the duty of care for individual animals. Since the initial guidelines were drafted, both the populations of grey seals and of harbour seals have increased dramatically, and new scientific information has become available on the survival rates and mother-pup relationships in both species. These developments have led to increased debate about the necessity, desirability and usefulness of seal capture and rehabilitation.

On 16 March 2016, the State Secretary sent a letter to the Dutch House of Representatives to announce the decision to request scientific recommendations on all aspects of the seal rehabilitation policy. This was followed by the decision by the Minister of Economic Affairs to install the Scientific Advisory Committee on Seal Rehabilitation (Government Gazette 2017, 44874). This committee has been requested by the Minister to answer the following questions:

1. In which situations is rehabilitation permissible and in which situations is it inadvisable? The recommendations should address both the approach that there should be minimal rehabilitation of wild animals ('in which cases is it justified?') and the approach that rehabilitation is to be accommodated from the point of view of the welfare of individual animals ('in which cases are there objections to it?').
2. What is the proper course of action in situations in where rehabilitation is inadvisable?
3. What standards should rehabilitation meet, which treatment and care form part of it, and what are its limits when it does take place?
4. Which conditions should be set with regard to releasing animals back into the wild?

The following persons were appointed as member of the Scientific Advisory Committee (SAC) for the period between 1 September 2017 and 1 March 2018:

- Prof. Em. A.N. van der Zande (chair), resident in Gouda;
- Prof. Em. J.J.M. van Alphen, resident in Leiden;
- Dr S.J. Goodman, resident in Leeds (UK);
- Dr F.L.B. Meijboom, resident in Ede;
- Prof. A.J. Stegeman, resident in Amersfoort;
- Dr D. Thompson, resident in St Andrews (UK).

The following persons were appointed as scientific secretary of the SAC

- W. Kuindersma (Wageningen Environmental Research, WUR)
- J.B. Latour (Altenburg & Wymenga)

Working procedures

The SAC decided on its own working procedures (or *modus operandi*) during the first meeting in September 2017.⁵ The main principles of its working procedures are:

- The SAC will base its advice on scientific publications and ongoing scientific studies.
- Key scientific experts (both national and international) on seals and seal rehabilitation will be invited to inform the SAC on the latest scientific insights.

⁵ Decree establishing the Scientific Advisory Committee on Seal Rehabilitation (Minister of Economic Affairs, 9 August 2017, Section 4 sub 1).

- The SAC will organise a number of working visits to Dutch seal rehabilitation centres to explore current seal rehabilitation practice and learn about the current insights regarding what they consider to be the optimal operating procedures.
- Relevant policy documents and recent letters by stakeholders on seal rehabilitation addressed to the Ministry of Economic Affairs will be used by the SAC as an additional source of information and evidence.
- The SAC is open to suggestions on scientific publications or other reliable sources of evidence (e.g. unpublished manuscripts or expert judgements) to include in its advice. Suggestions and comments can be sent to the secretariat of the SAC (j.latour@altwym.nl).
- The SAC has opened a website: <http://waddenzee.nl/themas/natuur/zeehonden/onderzoekscommissie-zeehonden>. This website will be used to inform the general public on the proceedings and working procedures of the SAC. The preliminary advice will be also published on this website (mid-January).
- Stakeholders will have the opportunity to respond to the preliminary advice of the SAC (mid-January) in early 2018. A selection of these stakeholders will be invited by the SAC to respond to this preliminary advice in person. The invitation will be to comment on the evidence base of the SAC's advice and on the logic of its recommendations.
- The final scientific advice will be sent to the State Secretary/Minister of Economic Affairs on 1 March 2018.

Scientific experts

The SAC has consulted the following scientific experts:⁶

1. Don Bowen (Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada)
2. Sophie Brasseur (Wageningen Marine Research, WUR)
3. Anders Galatius (Aarhus University, Department of Bioscience, Marine Mammal Research, Denmark)
4. Ton Groothuis (University of Groningen, Faculty of Science and Engineering, GELIFES)
5. Frances Gulland (The Marine Mammal Centre, Sausalito, California, USA)
6. Thijs Kuiken (Erasmus MC, Department of Viroscience, Rotterdam)
7. Ursula Siebert (University of Veterinary Medicine, Hannover, Germany)
8. Helias Udo de Haes (Professor emeritus of Environmental Sciences, University of Leiden)

Visits to rehabilitation centres

The SAC has visited the following seal rehabilitation centres for a technical introduction to the practicalities of seal rehabilitation.

1. Zeehondencentrum Pieterburen (Pieterburen, 20 September 2017)
2. A Seal (Stellendam, 15 November 2017)
3. Zeehondenopvang Eemdelta (Termunterzijl, 21 December 2017)

Stakeholder meeting

The SAC organised a stakeholder meeting on 14 February 2018. The following organisations attended the stakeholder meeting:

- A joint delegation of four seal rehabilitations centres (A Seal, Ecomare, Pieterburen and Terschelling) and one of the seal rescue organisations (EHBZ)
- The Dutch Wildlife Health Centre (DWHC)
- The Wadden Sea nature conservation organisations (Wadden Natuurlijk Coalition)
- A joint delegation of the Lenie 't Hart Foundation and one of the seal rescue organisations (RTZ).

A short report of the responses of stakeholders on this meeting and additional responses received by mail can be found in Appendix 9.

⁶ Reports of these consultations have been included in the reports of the meetings of the SAC.

Appendix 2: Legal situation in the Netherlands regarding seal rehabilitation

In this appendix, the Scientific Advisory Committee on Seal Rehabilitation (SAC)⁷ gives its appraisal of the most relevant legislation on human interventions and seals, citing the most relevant international, European and national provisions.

General observations

We observe that in global and European law there is no dilemma or misalignment between legislation on nature conservation and legislation on animal welfare. This is because international and European legislation on animal welfare is limited to animals in animal husbandry systems and during transport, while there is also a substantial body of legislation on nature conservation (both globally and in Europe) and animals in the wild.

The Netherlands has a long tradition of legislation on animal welfare, the latest being the Animals Act.⁸ It is important to see whether the complementarity between nature conservation legislation and animal welfare legislation is properly arranged and to see whether this complementarity is well understood by the public. Because the recent Nature Conservation Act⁹ was the last to pass the parliament, it is important to see how the legislator has envisioned this complementarity with the Animals Act. We observe a tension in the field where citizens are dealing with both laws. We suggest diminishing this tension where possible by giving clearer guidance and by investing in communication with the public. It is inadvisable to wait for Court of Appeal rulings on these issues, as happened in the Oostvaardersplassen case¹⁰ and which is also threatening to happen with regard to seal rehabilitation.

Guiding Principles in Animals Law and Nature Conservation Law

The legislator has chosen some strong similar general principles in both laws (legal systems). The *general duty of care* principle is important. Both laws give citizens (and legal bodies) the obligation of having a responsibility to care for nature and for animals. As a responsibility which is formulated as being open-ended, this principle sometimes causes confusion. What does it imply? Especially regarding interventions or in fact the necessity to indeed abstain from interventions?

A second important principle in both laws is the '*not, unless*' or *precautionary principle*. This principle implies that when in doubt about possible adverse effects or in doubt about the necessity of an intervention one should refrain from it.

A third common principle is called *respect for the intrinsic value of nature and animals, and for the autonomy of the latter*. This principle wants to address the ranking between mankind and nature and animals and implies that nature and animals are not by definition subservient to mankind. The '*hands-off*' principle for nature or animals in nature is derived from this general principle.

A fourth and more pragmatic principle has to do with pathogens causing infectious diseases in animals – both in wild animals and in animals held in captivity. Because *pathogens make no distinction between animals' legal status*, we recognise that the legislator is aware of the fact that when combating an infectious disease it is in the public interest to be able to intervene. This is especially true for zoonoses, diseases that can transmit from animals to humans or vice versa. In general, this principle is well understood and respected both in the world of nature conservation and animal welfare.

While these principles are carefully formulated and carefully aligned in both laws, there is one dilemma and perhaps misunderstanding.

Is the general responsibility to prevent animals from suffering always applicable to wild animals?

⁷ Decree establishing a Scientific Advisory Committee on Seal Rehabilitation (*Instellingsbesluit Wetenschappelijke Adviescommissie Zeehondenopvang*), Government Gazette 2017, no. 44874

⁸ Animals Act (*Wet dieren*), Bulletin of Acts and Decrees 2011, no. 345

⁹ Nature Conservation Act (*Wet natuurbescherming*), Bulletin of Acts and Decrees 2016, no. 34

¹⁰ Arnhem-Leeuwarden Court of Appeal, 11 April 2017, ECLI:NL:GHARL:2017:3122

In practice, we see a couple of typical situations where citizens are in doubt what to do when encountering a wild animal that is in pain or apparently in bad shape. People generally do understand that wild animals can experience hunger or be in pain, for example after a fight between rivals. However, when young animals are found suffering from a disease or visibly underfed, people tend to want to do something about it. Especially when this involves large numbers, people want to feed them. We know people systematically feed birds and other animals in winter. When people find an individual animal that appears to be suffering and is unable to flee (the natural response of a wild animal), and they do not understand the cause (is it natural or human induced?), they tend to take the animal and bring it to a rehabilitation centre. This generally concerns larger mammals, such as deer, badgers and seals, or smaller animals such as birds and bats.

The legislator refers to these kinds of situations in the Explanatory Memorandum (Dutch House of Representatives, legislative year 2007/2008, 31 398, no. 3, Animals Act):

(...)

The Flora and Fauna Act is the legal framework for the protection of animals living in the wild. The aim is the protection and management of such species of animals as such. In general, for animals in nature the 'hands-off' principle applies. An animal in nature has the right to live a life that is as least disturbed by human intervention as possible. Yet situations may exist where human intervention is not unthinkable or even undesirable. Such a human intervention should be based on an evident interest. The Flora and Fauna Act describes for which interests which interventions are permitted or can be permitted.

The characteristic difference between animals in captivity and animals in the wild is the controlling power of humans over the animal. For animals in captivity, this power is complete, while in nature this power is inexistent or limited. It is not possible nor is it desirable to take full responsibility for the welfare of individual animals in nature.

The proposed legislation is primarily aimed at animals in captivity. The rules and procedures in this proposal all refer to the complete power of control by humans and the responsibility this entails. Nevertheless, the proposal contains articles to protect the animal regardless of its position, whether in captivity or in the wild. Note the prohibition on animal abuse, stating that a human should not abuse an animal whether it is in captivity or in the wild.

Section 2.1(6) of the proposed Act therefore also regulates the prohibition of animal abuse regarding animals living in the wild. The same is also true for the prohibition of physical interventions in Section 2.8. In addition, the obligation to provide care to an animal in need, as described in Section 2.1(5), also applies to animals in the wild. However, this calls for human intervention, which could conflict with the 'hands-off' principle. Such situations therefore call for deliberation. As part of the management regime of the large grazers in the Oostvaardersplassen nature reserve, care may be provided once it is clear that they are going to die, easing their suffering by shooting them (Ruling by the 's-Gravenhage Court on 15 January 2007, 06/614).

As far as we have seen, the more recent Nature Conservation Act (successor to the Flora and Fauna Act) has not explicitly altered the complementarity and need for deliberation concerning the obligations following from the Animals Act and those following from the Nature Conservation Act in situations where animals in the wild appear to be suffering.

The SAC considers its advice and the resulting new protocol as an example of the deliberation as meant by the legislator. The protocol should give citizens and professionals guidance regarding the arguments used in this deliberation and also some practical rules.

Following is a list of the most relevant national and international agreements, conventions and legislation relevant for seals, both in the Wadden Sea and in general.

International legal framework

- Harbour seals (*Phoca vitulina ssp. vitulina*) and grey seals (*Halichoerus grypus ssp. grypus*) are protected in the European Union under the EU Habitats Directive¹¹, which entered into effect in 1992. In the Netherlands, the North Sea, the Wadden Sea and the Delta Water are designated as protected areas under the Habitats Directive (Natura 2000). Harbour seals and grey seals are listed in Annex V of strictly protected species that must be maintained at favourable conservation status.
- Bern Convention (Convention on the Conservation of European Wildlife and Natural Habitats)¹², Appendix III (*harbour and grey seal*)
The Convention on the Conservation of European Wildlife and Natural Habitats (Bern) aims to ensure the conservation of wild flora and fauna species and their habitats. The majority of the flora and fauna species specified in Appendix III to the Bern Convention also appear on the list of species in Annex V to the Habitats Directive.
- Bonn Convention (Convention on Migratory Species)¹³, Appendix II (*harbour seal*)
The Convention on the Conservation of Migratory Species of Wild Animals aims to protect migratory species of wild animals. For species having an unfavourable conservation status, as specified in Appendix II to the Convention, there is an obligation to make every effort to conclude agreements with range states on the conservation and management of those species.
- Wadden Sea Seals (Agreement for the Conservation of Seals in the Wadden Sea)¹⁴, Art. II.a (*harbour seal*)
The Netherlands is party to the Agreement for the Conservation of Seals in the Wadden Sea, adopted for the implementation of the Bonn Convention (see below). The system of protection provided for in this 'subsidiary agreement' is covered by the system of protection under the Habitats Directive.
- The Red List for Mammals¹⁵
This Red List provides an overview of mammals. The threat level is divided into the following categories: extinct in the Netherlands, critically endangered, endangered, vulnerable, near threatened. The status of the *harbour seal* and *grey seal* on the Red List is vulnerable.

Trilateral Wadden Sea Cooperation/Seal Agreement¹⁶

Under the umbrella of the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), a trilateral Seal Agreement has been concluded between Denmark, Germany and the Netherlands. The Seal Agreement entered into force in 1991 with the aim to cooperate closely in achieving and maintaining a favourable conservation status for the harbour seal population in the Wadden Sea. It contains provisions, amongst others, on research and monitoring, taking in seals, protection of habitats and awareness.

The Seal Agreement (Article IV) states that the Parties shall develop a conservation and management plan for the harbour seal population, based on scientific knowledge. This plan shall contain a comprehensive statement of actions, which are or are to be undertaken by the Parties to achieve the goals of the Seal Agreement. The Parties shall keep the plan under review and amend it as may be required, taking into consideration the results of scientific research in particular.

At their trilateral governmental conferences, the participating governments of Denmark, Germany and the Netherlands adopted the seal management plans. In the 2010 Joint Declaration on the Protection of the Wadden Sea, which was signed at the 11th Trilateral Governmental Wadden Sea Conference, the participating governments reconfirmed the guiding principle for the nature conservation area, that is, '*to achieve, as far as possible, a natural and sustainable ecosystem in which natural processes proceed in an undisturbed way*'. According to Article III(b), the principle aims for '*safeguarding and optimizing the conditions for flora and fauna including conservation of the feeding, breeding and roosting areas of birds, and the birth and resting areas of seals as well as the prevention of disturbances in those areas.*'

¹¹ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

¹² Convention on the Conservation of European Wildlife and Natural Habitats, 19 September 1979 (Treaty Series 1979, 175)

¹³ Convention on the Conservation of Migratory Species of Wild Animals, 23 June 1979 (Treaty Series 1980, 145 and Treaty Series 1981, 6).

¹⁴ Agreement for the Conservation of Seals in the Wadden Sea, 16 October 1990 (Treaty Series 1990, 174)

¹⁵ Government Gazette 2009, no. 13201

¹⁶ Based on: <http://www.waddensea-secretariat.org/management/seal-management>.

Initial agreements on the management of seal populations were reached at the 7th Trilateral Governmental Conference on the Protection of the Wadden Sea (Leeuwarden, 1994). It was determined that from a biological and wildlife management point of view, rehabilitation and releasing seals is no longer necessary. Therefore, the ministers agreed *'to reduce the current number of seals taken from and released to the Wadden Sea to the lowest level possible by applying guidelines for handling diseased or weakened seals or evidently abandoned pups, and to release seals based on the precautionary approach (...) only a very limited number of persons in each country shall be authorized to decide on the handling of diseased or weakened seals or abandoned pups, including taking and releasing of the animals, and only such animals may be taken which have a chance to survive (...)'* (Leeuwarden Declaration § 60).

These guidelines have been reaffirmed at subsequent trilateral governmental conferences. The current Seal Management Plan (SMP) is valid for the period 2012–2016. Since the grey seal population increased significantly in recent years and its requirements in terms of habitat protection are similar to those of the harbour seal, it has been included in the SMP. The objectives of the SMP are to achieve and maintain a:

- comprehensive conservation and management of both harbour and grey seal populations in the Wadden Sea through common, coordinated measures of the responsible authorities;
- public understanding and awareness of the Wadden Sea seal populations as an entity and as an integrated part of the ecosystem.

In accordance with the management plan, seal reserves have been established in the entire Wadden Sea which are closed for all activities during the period when seals are giving birth and nursing, from May to September. The numbers of seals counted in the Wadden Sea are published every year under the aegis of the Trilateral Seal Expert Group (TSEG), in close cooperation with the Common Wadden Sea Secretariat (CWSS), as part of the Trilateral Monitoring and Assessment Programme formulated in the Wadden Sea Plan.

National legal framework

Nature Conservation Act (*Wet natuurbescherming*, Wnb)¹⁷

The Wnb and underlying regulations (Nature Conservation Decree (*Besluit natuurbescherming*) and Nature Conservation Regulation (*Regeling natuurbescherming*)) govern the protection of wild flora and fauna species and their immediate habitats.

- Article 1.11 includes a general duty of care for animals living in the wild and their immediate habitats. That duty of care means that anyone who knows, or has reason to believe, that their actions or omissions could have adverse effects on animals living in the wild (a) shall refrain from such actions; or (b) if that cannot be required, shall take measures necessary to prevent those effects; or (c) if the effects cannot be prevented, shall reduce those effects as far as possible or neutralise them. Account should be taken of the specific circumstances when carrying out the duty of care. The extent to which man has control over the animal in the given situation is important in this regard. From the point of view of animal welfare and a political and social perspective, there may be a need to capture and rehabilitate injured animals or animals in need.
- Deliberately killing or capturing grey seals and harbour seals living in the wild or deliberately damaging or destroying the permanent breeding sites or resting places of seals is prohibited. (Article 3.10)
- The Minister of Agriculture, Nature and Food Quality is empowered to grant dispensations or exemptions for the rehabilitation and care of ill or injured animals of the porpoise, common dolphin, harbour seal, grey seal, bottlenose dolphin, Atlantic white-sided dolphin and white-beaked dolphin species in a rehabilitation centre, and for conducting scientific research. (Article 3.10(2), in conjunction with Article 3.8(1) of the Nature Conservation Act, in conjunction with Article 1.5(1) of the Nature Conservation Decree.¹⁸)
- The former Minister for Agriculture announced in 2016 to the House of Representatives that he, together with the provinces, intends to reconsider the exception relating to sea mammals, based on the results of the evaluation of seal rehabilitation by the Scientific Advisory Committee on Seal Rehabilitation.
- Article 3.22a of the Nature Conservation Regulation¹⁹ states that an exemption from the prohibition on the deliberate capture of an ill or injured animal may be granted to any person for the purpose of transporting the animal by means of an animal ambulance.

¹⁷ Staatsblad (Bulletin of Acts and Decrees) 2016, no. 34

¹⁸ Staatsblad (Bulletin of Acts and Decrees) 2016, no. 383

¹⁹ Staatscourant (Government Gazette) 2016, no. 55791 and Staatscourant 2017, no. 39658

- The Nature Conservation Regulation also provides that an exemption from the prohibition on the deliberate capture of an ill or injured harbour seal or grey seal shall be granted to any person for the purpose of transporting the animal other than by means of an animal ambulance. (Article 3.22a)
- The abovementioned exemptions under Article 3.22a of the Nature Conservation Regulation apply only if the animal is transferred, within twelve hours, to sanctuaries that are in compliance with the undermentioned Protocol for the rehabilitation of prohibited animal species, threatened non-native animal species and threatened native species, which is an Annex to the Policy Rules on the quality of the rehabilitation of animal species. The Policy Rules on the quality of the rehabilitation of animal species are discussed below.

Animals Act (*Wet dieren*)²⁰

Article 2.1 of the Animals Act also includes a general duty of care for animals. The obligation to provide animals in need with the necessary care applies to captive animals and wild (non-captive) animals (Article 2.1, paragraph 6). This requires human intervention, which may be inconsistent with the principle that a wild animal is entitled to a life that is disturbed as little as possible by human interference (hands-off principle). A balance is therefore needed.

Besides this, the Animals Act also applies for wild animals (e.g. seals) that are (temporarily) kept in captivity.

Policy Rules on the quality of the rehabilitation of animal species²¹

The Policy Rules on the quality of the rehabilitation of animal species provide the assessment framework for the Minister of Agriculture, Nature and Food Quality with regard to granting dispensations to sanctuaries under the Nature Conservation Act for the capture, holding and, if appropriate, release back into the wild of protected species of animals occurring naturally in the Netherlands or those that do not occur naturally here. This policy framework also applies to dispensations under the Animals Act.

The protocol in the annex to the Policy Rules contains the quality criteria that sanctuaries must meet.

Guideline for the rehabilitation of harbour seals and grey seals²²

National policy framework for dealing with the rehabilitation of harbour seals and grey seals in Dutch coastal waters. The drafting of this guideline was prompted by the desire to implement and comply with the various agreements between countries bordering the Wadden Sea, namely Germany, Denmark and the Netherlands.

Protocol on the beaching of live large cetaceans²³

The Ministry of Economic Affairs published a Protocol on the beaching of live large cetaceans on 27 June 2013 (revised in december 2017). This was done following the beaching of a live humpback whale on the Noorderhaaks sandbar off Texel on 12 December 2012. The subsequent events made it clear that there was a need for clarity regarding the responsibilities of the agencies involved and the division of tasks in the event of a beaching of a live large cetacean.

²⁰ Staatsblad (Bulletin of Acts and Decrees) 2011, no. 345

²¹ Staatscourant (Government Gazette) 2015, no. 42940 and Staatscourant 2016, no. 69148

²² Guideline for the rehabilitation of harbour seals and grey seals (*Leidraad opvang gewone en grijze zeehonden*), Ministry for Agriculture, Nature and Fisheries, March 2003

²³ <https://www.rijksoverheid.nl/documenten/rapporten/2017/12/22/leidraad-stranding-levende-grote-walvisachtigen>

Appendix 3: Animal Welfare

Author: Franck Meijboom

Animal welfare is an important yet complex concept, also with regard to seal rehabilitation. This complexity is reflected in ongoing academic discussion at many levels, including discussions on the content of the concept, its relation to concepts such as domestication and wildness, and on parameters used to measure welfare and to make it operational (e.g. Dawkins 2008; Duncan 2006; Korte et al. 2007; Mendel 2017).

The Scientific Advisory Committee (SAC) is aware of the following.

- a. The concept of animal welfare cannot be used without making conceptual, methodological and normative choices.
- b. These choices have an influence on the outcome of the scientific assessment and on the assessment or assessment method itself.
- c. Some of the traditional animal welfare guidelines fall short in the context of seal rehabilitation.

Therefore, this appendix outlines the choices made by the SAC with regard to animal welfare.

Animal welfare: more than a biological concept

Animal welfare is a multi-layered concept that can be conceptualised in different ways and on many levels (cf. Stafleu et al. 1996). On the one hand, 'animal welfare is an evaluative concept, like product quality and building safety' (Haynes 2011, p. 112) and refers to fundamental philosophical and public views. On the other hand, animal welfare refers to scientific and measurable parameters. This dynamic relationship between science and ethics is not something that need be regretted. Only in the interplay between science and ethics can animal welfare be defined and become measurable and applicable (see e.g. Fraser 2003; Haynes 2011; Ohl & van der Staay 2012; Rollin 2006; Stafleu et al. 1996). Therefore, the discussion about seal welfare is about what welfare means, but also about why we should be concerned with seal welfare. With regard to the latter, the SAC acknowledges in line with Dutch legislation (Animals Act, Section 1.3) that seals have an intrinsic value because they are sentient beings. This capacity of sentience is a necessary precondition to take welfare into consideration.

Context specific considerations

Animal welfare as such is already a complex concept. However, in the context of seal rehabilitation, welfare is further complicated in two ways.

First, seals are (generally) not held in captivity and are non-domesticated animals that live in a natural environment. A number of animal welfare guidelines were formulated for contexts in which humans keep animals in captivity and focus mainly on preventing (unnecessary) discomfort. For instance, the well-known Five Freedoms that have been formulated by the British Farm Animal Welfare Council (FAWC), based on the original version by the Brambell Committee (1965), aim to prevent discomfort for farm animals under our direct control. Consequently, the 'freedom from hunger and thirst', for example, can result in care for sufficient food and the monitoring of consumption patterns of an individual animal being cared for.

However, for animals living in nature that are not under our direct control this welfare concept is complicated. For instance, persistent hunger can become a welfare issue for wild animals, but the situation is different from that of animals held in captivity in three ways. These wild animals are endowed by evolution with the ability and capability to adapt and to search for and find food. They are not directly dependent on us for their survival. Additionally, as humans, we often have very few options to intervene, for instance due to limited access or lack of adequate ways to help. Finally, respecting nature and/or the integrity of the seal can be a strong argument to be hesitant to intervene, even in cases where animal welfare is threatened. Therefore, an animal welfare concept has to be able to deal with the dimension of seals as wild animals.

Second, animal welfare is traditionally defined with a focus on individual animals. This focus has strong reasons: an individual animal may suffer or can experience positive emotions. However, in making welfare operational,

this focus has its limitations. In the context of seals, we are confronted with problems of assessing both individual and group welfare.

Towards a working definition: welfare as a dynamic concept

- Animal welfare goes beyond preventing negative emotions. Positive emotions matter in the overall spectrum of experiencing welfare (cf. Duncan 2006). Welfare is more than preventing, for instance, unnecessary pain, but also includes the animal's ability to flourish, for example to play or to show explorative behaviour.
- Animal welfare is not a fixed state, but has a dynamic character that is linked to the animal's capacity of adaptation as an important determinant of welfare (cf. Korte et al. 2007; McEwen & Wingfield 2003). As a consequence, negative emotions are not by definition negative with regard to the experienced welfare. It depends on the animal's ability to deal with the challenges at stake. For instance, the mental or physical experiences linked to hunger are very relevant in biological terms, for example to learn to find and consume food. Whether hunger is a welfare problem depends on the animal's adaptation to deal with (periods of) hunger and its capacity to find food.

Based on the above elements, the SAC uses the following as its working definition:

Animal welfare depends upon the seal's capability and acquired ability to adapt to its environment in order to achieve a state that it perceives as positive.

Although this working definition is described from the seal's perspective, it still leaves room for the role of human action and/or inaction. Human interference can have an influence on a seal's capability and acquired ability to adapt to its environment. Furthermore, it is important to note that this working definition provides a framework to discuss animal welfare. It is not yet a complete framework for discussing whether and when a seal should be rehabilitated.

Literature

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Appendix 4: Aspects of seal population status and Dutch rehabilitation statistics

Authors: David Thompson & Simon Goodman

The necessity for, and the effects of, taking seals into captivity for the purposes of rehabilitation, are controversial and emotive issues. In order to establish a firm base, of reliable information to allow a constructive and informed debate the Scientific Advisory Committee of Seal Rehabilitation advising the ministry of Economic affairs in the Netherlands identified a series of questions concerning both harbour and grey seals in the Netherlands. This Appendix summarises available information on relevant aspects of the seal populations and the scale, extent and ecological consequences of rehabilitation:

Minimal population size:

The current protocol claims a population that consist of 500 - 1.000 harbour seals is sufficient for its long term survival, is this valid?

- Under the IUCN Red List criteria, a population with less than 1000 mature individuals is classed as Vulnerable. In a harbour or grey seal population approximately 60% of the seals will be mature. Although this proportion will vary depending on the age structure of the population it does suggest that a total population of less than 1600 seals should be classed as vulnerable. A population of 500 seals would be expected to have approximately 300 mature individuals and would be close to the IUCN criteria (250 mature adults) for classifying a population as Endangered.
- Assessing whether a specific population is sufficient for long term survival is hard to answer in a “scientific” context as the decision is primarily related to the level of risk that population managers are willing to accept. A larger population will be less susceptible to extinction due to random variation or unexpected removals of animals. BUT the extent to which this matters depends largely on the factors driving the population dynamics.
- The imposition of a minimum target population is mainly an administrative measure designed to trigger certain management actions. If the populations were to decline, the size of the population limit will determine how much time is available for the management actions to halt and hopefully reverse the decline. For example, a population of 1000 seals suffering a 10% p.a. decline will fall below 50 individuals in around 28 years. A population starting at 5000 will take 44 years to fall below 50.
- At present the population of harbour seals is much greater than 1000 and the grey seal population is at least double that and rapidly increasing, so the 500-1000 animal threshold is not relevant at present.

Are there scientific reasons to question this assumption for harbour seals and are there any scientific reasons to use other numbers for the population of grey seals?

- Grey and harbour seals have similar demographic characteristics, both are annual breeders that produce a single pup, they have similar ages of maturity and similar life history schedules. Both species have been shown to be capable of increasing at around 12% p.a. which is generally accepted as the maximum rate of increase for a phocid seal population. There are therefore no reasons to assign a different minimum population target on the basis of population dynamics.

Population structure:

Are there any scientific reasons to consider the Dutch populations of grey and harbour seals as separate populations or should they be considered to being part of bigger international populations (which one)? If the latter applies here, what are the consequences for the minimal population?

- Grey seals in the Netherlands are not considered to be a discrete population. They appear to form a relatively small part of a mixed North Sea population. In 2016 the Netherlands breeding population produced approximately 3% of the total pup production for North Sea or 7% of the pup production in the

central and southern North Sea. The closest major breeding sites outside the Wadden Sea are the large colonies on the English East coast, 250 to 600km distant.

- The rapid growth of the breeding population in the Netherlands was apparently driven by and still includes a major component of immigration from the UK grey seal population (Brasseur et al. 2015). To date, published studies of the genetic structure of grey seal populations have compared samples from the UK, Baltic, North Atlantic and West Atlantic but have not included samples from the Wadden Sea (e.g. Klimova et al. 2014).
- Outside the breeding season, there is significant movement of tagged individuals between haulout sites in the Netherlands and both breeding and non-breeding haulout sites along the UK east coast and in France (Brasseur et al. 2015).
- In 2014 the ICES Working Group on Marine Mammal Ecology re-examined the management units designated for grey seals in the OSPAR Maritime area including the Greater North Sea region. They concluded that in light of the considerable movement of grey seals between the different areas and regional subunits of the North Sea there was no evidence to suggest that grey seals on the North Sea coasts of Denmark, Germany, the Netherlands or France are independent from those in the UK. Therefore the Working Group recommended that assessment units at a large spatial scale would be appropriate and recommended a single North Sea unit for monitoring and assessing MSFD quality indicators for grey seals.
- Harbour seals in the Netherlands are not considered to be a discrete population. Olsen et al (2017) genotyped harbour seals from 18 different localities throughout the UK and mainland Europe including the Dutch Wadden Sea. Results suggested that the European harbour seal population could be divided into four geographically distinct genetic clusters. In the North Sea there appear to be a north eastern cluster including Shetland, Orkney and the Scottish East coast and a southern North Sea cluster including the south and east coasts of England, north coast of France and the Dutch Wadden Sea, that population would presumably also include the Dutch Delta population. This structure is similar to those described in earlier studies by Goodman (1998) and Stanley et al. (1996) suggesting little interchange between harbour seals in the southern North Sea with those in Norway or Scotland. Given the lack of differentiation at that spatial scale, it is unlikely that there is any structure within the Wadden Sea population.
- Unlike the grey seal case, the Wadden Sea harbour seal population represents a large component (~85% in 2015) of this southern North Sea population (SCOS, 2016).
- As the Netherlands' populations of both species represent regional components of larger more extensive populations the low management targets may be acceptable. This becomes a question of regional policy objectives and is not really a conservation issue. Management strategies and specific management actions may be required at finer geographical scales in response to specific legislation (e.g. Natura 2000) and under specific international agreements (e.g. trilateral Wadden Sea). There may therefore be requirements for setting specific thresholds for triggering management and conservation actions for local sub-populations.

If the actual population size is lower than the minimal population size, does this imply that rehabilitation is necessary from an ecological point of view?

- If a population decline is detected and triggers management actions it is likely that seal rescue and rehabilitation would be proposed as a measure to halt the decline.
- From an ecological viewpoint, rehabilitation is likely to be of marginal importance to population recovery.
 - o In general the numbers of animals being rehabilitated will be small relative to the wild population. However, under some circumstances the numbers of seals rehabilitated can reach significant proportions as detailed below for the Wadden Sea (Brasseur 2018).
 - o Rehabilitated seals may have low survival rates because the majority of animals involved are pups. Post-weaning pup mortality is high in both grey and harbour seals (ref) but there is little evidence for when this extra mortality occurs. If the enhanced pup mortality applies to the released seals their effect on population trends will be small. Conversely, if the rehabilitated seals have been protected in some way from the enhanced mortality their impact on population trends will be higher.

- Many of the young rehabilitated seals are likely to have been in poor nutritional state, presumably because of a failure to establish effective foraging strategies. It is likely that a proportion of these animals will fail to thrive post release.

Nevertheless, rehabilitation has been used in the harbour seals in the Wadden Sea decades ago (perhaps not explicitly) and in the recovery of Hawaiian monk seals. The Hawaiian monk seal is an example of where rehabilitation and translocation were and continue to be used as conservation tools (see Norris et al. 2017) – main points of relevance here are:

- (1) there was minimal risk of exposing seals to novel infectious diseases as a result of translocation; (2) individuals translocated with limited foraging experience rapidly adapted to their post-release environment; and
- (3) translocation for the purpose of mitigating prey limitation is a viable and important conservation tool for Hawaiian monk seals.

Rehabilitation statistics in the Netherlands

The committee identified a specific set of questions relating to the current status of seal populations and the levels, trends and likely impacts of rehabilitation in the Netherlands, and commissioned Dr. S. Brasseur (Seal Ecologist at Wageningen Marine Research) to carry out a preliminary analysis of the available information to address the following list of questions:

- 1. What are the numbers of seals rescued per year in the period between 1990 and 2016, and how does this relate to the numbers counted?**
- 2. How many were orphaned pups, how many diseased animals or animals with trauma?**
- 3. What are the differences in the stranding data on sick/rescued and dead harbour and grey seals between the Dutch Wadden Sea and the Delta and what are possible explanations for these differences?**
- 4. Are there any peaks in the number of dead or sick seals and what are the explanations for these?**

The full report has been published (Brasseur, 2018) and is briefly summarised below.

The harbour seal population in the Wadden Sea has undergone a protracted period of rapid growth since the 1970's, punctuated by two major mortality events due to phocine distemper virus outbreaks in 1988 and 2002. The growth rates between epidemics approaches the maximum expected for an unconstrained phocid seal population of 12% p.a.. However, over the last five years the overall population index, based on the counts during the annual moult, shows clear indications that the growth has slowed and perhaps stopped. This is most likely due to the population reaching some carrying capacity. The much smaller grey seal population is now increasing rapidly having become re-established in the region in the 1980s.

Data on live and dead strandings of seals and records of numbers of seals taken into rescue centres have been submitted to a public internet site (waarneming.nl) by seal rehabilitation centres Ecomare and Pieterburen and Jaap van der Hiele. These data provide an insight into the magnitude and distribution of both dead and live stranded harbour and grey seals along the Dutch coasts. (Brasseur, 2018)

A preliminary overview is presented, comparing the stranding data for the period 1990-2016 to the seal counts from annual aerial surveys of the Wadden Sea and the Delta regions. The data are then further subdivided to allow comparison between smaller sub-regions including the areas along the coasts of North and South Holland and Lake IJssel where seals are found stranded even though they are rarely seen hauled out on land.

The number of animals taken into rescue centres greatly exceeds the number of seals found dead. In the peak year 2011, almost 1000 grey and harbour seals were taken into seal centres, while just over 250 were reported dead. Though the dead animals are representative of both adult and juvenile age classes, over 90% of the animals taken in are young of the year. In several years the number of seals taken into the centres represented more than 50% of the total number of pups counted in the wild. This holds especially for the Delta region and for grey seals. The apparent intensity of rescue efforts is also far from uniform. For example, relative to the size of the local population, the numbers of animals taken from the Dollard region were much higher than elsewhere.

The study also shows that the stranding of seals do not follow the distribution found during the aerial survey results. Locally in the Delta region, for example the numbers of dead stranded seals is much higher than expected given the local seal population estimates, suggesting unusually high mortality rates.

The numbers of seals brought into rescue centres has declined. However, despite the recent drop in numbers of seals brought in, the numbers of animals taken into care and released after treatment could potentially affect the wild population.

As detailed in by Brasseur (2018) the long term growth of the Wadden Sea harbour seal population has slowed and perhaps stopped. This is most likely due to the population reaching some carrying capacity. This has two direct implications of importance to the seal rehabilitation issue:

- Although there is no direct information on the mechanisms of density dependent control in harbour seals, there is strong evidence that the slowdown in population growth in both in the UK and Canadian grey seal populations is caused by a large increase in post weaning pup mortality. Estimates in both populations suggest that 70% or more of the pups born each year will die. If the same mechanism operates in the harbour seal populations in the North Sea there may be a large increase in the number of compromised harbour seal pups.
- The slow down suggests that the population may now be close to or at its carrying capacity. Carrying capacity may itself vary and could be influenced by the rapid increase in grey seal populations in the southern North Sea. Irrespective of the mechanism, the slow down suggests some form of potentially severe resource limitation is acting which means that a proportion of the population will be unable to thrive. Releasing animals that have failed to thrive back into the population could have two consequences. The released animals may again fail to establish an effective foraging strategy and again starve; or the resources given to them during the rehab may carry them over the critical period and they may go on to thrive.

In either case, the finite resources available mean that this is a zero sum game and the release of a seal that would have died will put extra demands on the resources available to the rest of the harbour seal population. Clearly, on an individual rehab seal level this will be unlikely to have any significant effects on other seals. However, if a significant proportion of the natural pup mortality is circumvented and large numbers of seals are returned there could be significant impacts on the welfare of both the rehabilitated seals and those that are subjected to increased competition.

Release of grey seals may have a similar impact if they are directly competing for the same resources as the harbour seals.

It seems unlikely that wild seals have so far suffered from the effects of extra competition for natural resources as result of releasing seals after treatment. Particularly if the reason the seal was rehabilitated was that it was under nourished suggesting poor foraging success, but the potential knock on effects on the welfare of the wild population should be taken into consideration.

The release of large numbers of rehabilitated seals into the population may affect the genetic composition of the seal populations in the long term, as animals that would otherwise have died because of poor foraging success and/or a weak immune system are placed back into the population, under the scenario where there is a genetic contribution to these fitness traits. This is dealt with in detail in Appendix 6.

There is a need for continued and additional monitoring of population trends, demographic parameters and effects of rehabilitation, but the data presented here suggest that the Dutch populations of harbour and grey seals can thrive without human interference.

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Appendix 5: Aspects of the breeding behaviour of grey and harbour seals relevant to seal rehabilitation

Authors: David Thompson and Simon Goodman

The press coverage and public relations output associated with seal rescue and rehabilitation invariably includes expressions such as abandoned or orphaned to describe pups found alone on shore. Both of these terms need to be used appropriately as they are themselves emotive and usually used incorrectly.

Orphaned pups: Lone pups, especially those found in unusual locations away from the breeding sites, will often be referred to as orphaned. This is used as justification for taking them into captivity. However, in reality orphaned pups are likely to be extremely rare. To be orphaned the pup's mother must have died (N.B. the father is irrelevant here as males play no part in provisioning or raising pups) and there is information to allow the probability of such an event to be estimated.

Grey seals:

In grey seal populations that have been intensively studied in the UK and Canada, the estimated annual survival rates of reproductive age females are extremely high, around 0.99 (Smout et al 2010, den Heyer et al 2014, 2016). This means that only one percent of breeding females are likely to die over a calendar year. Grey seal lactation lasts only 18 days on average, so if adult female mortality is evenly spread over the year this would mean that, on average, approximately one pup in every 2000 could be expected to be orphaned. Even if all of the adult female mortality was concentrated into the lactation period, on average only one in a hundred pups would be expected to be orphaned.

Harbour seals:

There are no useful data on short term mortality rates in adult female harbour seals. However, as argued in Appendix 3, the similarities in demographic parameters means that survival and fecundity rates must be similar to those seen in grey seal populations growing at similar rates. Apart from two PDV epidemic events in 1988 and 2002, the rapid population growth in the Wadden Sea has been close to the hypothetical maximum for a phocid seal population. The adult survival rates in the rapidly increasing Canadian grey seal population was very high so again, there is little scope for high adult female mortality and we can safely assume that there will be very few orphaned harbour seals pups.

The fact that after weaning seal pups are completely independent of their mothers means that applying the term *Orphaned Pup* to any weaned pup is meaningless.

Abandoned pups: Phocid seals have a short concentrated period of maternal care. They give birth to relatively large offspring which then suckle intensively on high energy milk for a short period. Lactation usually lasts 18 days in grey seals and around 28 days in harbour seals. In both species the pups are weaned at this very young age and the females then mate and leave the breeding site. All pups are therefore independent of their mothers at a very early age, as part of their normal life cycle.

Grey seals:

Weaned grey seal pups will usually remain at the breeding site undergoing a protracted post weaning fast that can last several weeks, during which they have no contact with their mother. Post breeding adult females spend long periods at sea, often several hundred kilometres from the breeding site and are not known to return to their pup (Bonner, 1981). Grey seal pups may occasionally move to other haulout sites during this post weaning fast, but in most cases remain close to their birth site (see below).

Harbour seals

Harbour seal pups do not undergo a terrestrial PWF. Harbour seal pups usually start swimming and diving during lactation and will likely disperse away from their natal sites after weaning. Harbour seal pups undergo a post weaning fast of about 15 days during which they are swimming regularly (Muelbert and Bowen 1993). Muelbert and Bowen (1993) showed that tracked pups sometimes began to catch prey during the later stages of lactation. Little is known about the behaviour of mother pup pairs after weaning. Tracks of pups tagged with Argos satellite transmitters at various sites in Scotland, showed a proportion of seals moving large distances

away from their capture sites in the period immediately after their estimated weaning dates, while others stayed within a few kilometres for several months (Lander et al. 2002; Hanson et al. 2013). There is no published information on maternal behaviour after weaning.

The term *Abandoned Pup* should not therefore be applied to any weaned pup. Furthermore, the absence of an attending adult female after the expected weaning date should not be used as a criterion for catching or otherwise intervening in the life of a pup.

True abandonment during suckling/lactation

In both species, there will be a proportion of breeding females that abandon their pups during lactation. The age, size and nutritional state of the pups at the time of abandonment will influence their chances of surviving long enough to establish a successful foraging pattern. Determining that a pup has been abandoned is not a trivial task. The natural patterns of mother pup interactions for the two species are described briefly below.

Pre weaning attendance patterns

Grey seals:

In some cases Grey seal pups are abandoned by their mothers during lactation. Until recently, grey seals typically pupped on off-shore islands or along remote, difficult to access sections of mainland coasts with little or no human disturbance. Under those circumstances it is unlikely that members of the general public would have access to breeding grey seals except under some form of supervision. Most such sites are protected from disturbance and removing animals should be tightly controlled. However, as seen on the UK east coast, new, large and rapidly increasing grey seal breeding colonies have become established on easily accessed sections of the mainland coast. As a consequence interactions between breeding grey seals and members of the public have increased. This situation may arise in the Netherlands. It is therefore important that sensible criteria are applied to assess the status of pups during and immediately after the breeding season.

At present the Guideline for the rehabilitation of harbour seals and grey seals (2003) suggests that pups should be observed for twenty-four hours and any pup not seen with its mother during that time can be assumed to be abandoned. This implicitly assumes that until weaning, grey seal pups are always attended by their mothers and that any pup seen without an attendant female must have been abandoned.

This is not always the case. Several authors (e.g. Fogden, 1971; Bonner, 1981; Anderson & Harwood, 1985; Kovacs, 1987) have shown this is not an absolute rule for grey seals and that the attendance patterns and lactation/suckling behaviour at a particular breeding site is variable and may be influenced by the habitat. For instance, females breeding at some distance from the sea usually spend more time on-shore than females breeding on beaches (e.g. Kovacs, 1987). For example, at Froan in Norway, lactating females spent around 90% of their time in the sea, usually close by (10-30m away) but actively diving (Smiseth & Lorentsen, 1995).

Harbour seals: (Groothuis 2017)

At present the Guideline for the rehabilitation of harbour seals and grey seals (2003) suggest that a pup should be watched for two hours. If it is not attended by its mother during that time it can be assumed to be abandoned and can be captured to be taken into a rehabilitation centre. It is unclear what information was used to define this criterion in the first place. Osinga (2015) reported that harbour seal mothers never leave their pups. This view has been reiterated in previous reports from the Pieterburen Seal Centre. However, we could not find any published data supporting these statements.

Several reports indicate that mothers may leave their pups temporarily. This has been related to maternal foraging trips to sustain the high energy costs of milk production (e.g. Bowen, Oftedal, & Boness 1992). Such foraging trips have been described in the population of the Sable Island (Nova Scotia, Canada; Bowen 1999; Boness, Bowen, & Oftedal 1994; Bowen 2001), with females leaving their pups alone on the haulout sites. The duration of the period that females spent inshore with young pups was positively related to female body size, suggesting that the species' small size may demand that they feed to maintain lactation (Thompson, Miller, Cooper, & Hammond 1994).

According to the reports of the Seal Strandings Workshop, Suzdal, (2012) (personal communication Seal Conservation Society), the following data are relevant: At Sable Island harbour seal mothers often left their pup on the beach while they went on foraging trips – survey data from 25 pairs in 1991 found that the pups were

alone on the beach in 40% of surveys when the females were not seen. Bowen et al (1999) found that mothers in 1995-96 spent less time on shore and more time at sea than did their pups, i.e. the pups were sometimes left alone onshore. The authors suggest that larger haul-out group size may provide a reference point for the pup when it enters the water without its mother. Groups also provide greater vigilance and therefore greater safety for lone pups. Therefore the authors suggest that mothers pupping singly or in small groups may take their pups with them.

Bekkby & Bjørge (2001) VHF-tracked two mother-pup pairs in Norway, and found that one pup always accompanied its mother on foraging trips while the other was often left at the haul-out site. Mothers leaving and reuniting with pups was observed at the relatively large breeding colony (minimum of 45 mother-pup pairs) at Mt Desert Island, Maine (Wilson, 1978). The specific observation site is part of a breeding colony where mother-pup pairs haul out after the first post-natal week, and mothers are regularly observed to 'park' their pups here, and return again to reunite with them. None of 3 pups VHF-tracked before weaning accompanied their mother on foraging trips (Corpe & Wilson, 1996). In most years there are 7–15 pups and 20–30 adults at this site. Lone Pups follow other seals into the water and to neighbouring ledges as the tide ebbs and flows, although they sometimes sleep deeply through a tide and may be left alone on a rock until the tide and other seals return. Leaving and reuniting with pups is also observed at the nearby estuarine site at Ballykinler. There are usually 7–10 pups and >50 adults at this site.

The duration of abandonment can easily exceed the 2 hrs of the current Seal Rehabilitation Protocol (2003). In the Ems Dollard the duration of up to almost 8 hrs has been reported which is still considered to be an underestimation.

Groothuis (2017) reported the behaviour of adult female seals after their pups had been captured and taken away. Their observations indicate that mothers returned to the pup capture site for several days showing erratic locomotion behaviour that can be interpreted as searching for their pups. In many mammal species the mother-offspring bonds are strong and established early after birth by a process called imprinting. It is to be expected that taking a pup away generates substantial stress in both mother and pup, and the observations of protracted searching behaviour supports that view.

According to Groothuis (2017) there is no indication in the literature that abandonment for more than 2 hrs has a negative impact on pup survival. Invited seal experts (Gulland, Bowen, Goodman, Thompson, Siebert, Galatius) all agreed that the duration of abandonment can last up to 12 hours (one complete tidal cycle). In Sansolito California a period of 24 hours (two tidal cycles) is used as a minimal observation period to exclude all risks of taken seals pups in while the mother is foraging and to prevent activities during the night. In California it has been observed that pup seals can easily overcome such a 24 hour period. As detailed below a fasting grey seal pup will lose around 0.5kg per day. Harbour seals are much smaller and would be therefore expected to lose less, approximately 0.3 – 0.4 kg per day maximum. Unless a pup is in an extremely emaciated state it is unlikely to starve in less than a day (Lang *et al.* 2005).

Post weaning behaviour.

Grey seals:

Grey seal pups invariably undergo a post-weaning fast (PWF) on land, usually close to their birth site. During that time they do not feed themselves and are not suckled by their mothers that have departed to forage at sea. This PWF therefore depletes energy reserves acquired during the suckling period. The duration of the PWF is highly variable between seals and at different sites. Noren et al (2008) estimated a mean fasting duration of 21.1 days but it varied between 9 and 131 days. The duration of the fast appears to be linked to body composition, i.e. the proportion of fat reserves. Pups will therefore lose a substantial amount of weight during the PWF. Measured weight loss ranged from 0.4 to 0.6 kg ^{d⁻¹} resulting in a 21.2%–27.7% loss of weaning mass after 24 d of fasting. This mass loss is normal for healthy grey seal pups.

The PWF is not simply a period of resting. Several characteristics of body composition, mainly those associated with diving capabilities, increase during the fast. By the end of the PWF haemoglobin, red blood cell concentration, mass-specific blood volume and myoglobin levels all increase and are similar to those of yearling seals (Noren et al. 2005)

The effects of these changes during the PWF are apparent in the behaviour of seals after going to sea, and are related to the age but not the mass at departure. Pups that were smaller and less capable divers when they left the colony improved their diving capacities rapidly, once they were at sea. (Bennett et al. 2010). Minimum survival time correlated positively with departure mass. In the short term, the probability of post-weaning survival to age 1 increased with body condition at weaning (Hall et al 2001). In the longer term, Bowen et al (2015) found that the probability of female survival to recruitment varied among cohorts and increased nonlinearly with body mass at weaning.

Harbour seals

Harbour seal pups do not undergo a terrestrial PWF. Muelbert and Bowen (1993) showed that tracked pups began to catch prey during the later stages of lactation. Little is known about the behaviour of mother pup pairs after weaning. Tracks of pups tagged with Argos satellite transmitters at various sites in Scotland, showed a proportion of seals moving large distances away from their capture sites in the period immediately after their estimated weaning dates, while others stayed within a few kilometres for several months (Lander et al. 2002; Hanson et al. 2013). There is no published information on maternal behaviour after weaning.

Implications for rehabilitation decisions.

Grey seals

As a consequence of the typical behaviour patterns of grey seals during the breeding season, it is unlikely that a significant number of healthy pre-weaned pups will be found ashore at sites other than on the breeding colonies. After leaving the breeding site, pups will almost always be weaned and it is unlikely that any adult will interact benignly with them.

Up until the end of the PWF pups are fairly sedentary and quite approachable. They will often either stand their ground or move away a small distance when approached by people. After the PWF they become much less approachable and will usually flee to the water to escape approaching humans. However, as with most aspects of behaviour this response is variable.

A grey seal pup hauled out on a public beach that is easily approached is likely to be a compromised individual. However, it may simply be resting. The rates of mass loss after the PWF are unlikely to be greater than during the PWF, i.e. 0.4 to 0.6 kg.d⁻¹. It is therefore unlikely that immediate intervention will be necessary unless the seal is clearly emaciated, wounded or ill.

Harbour seals

Unlike the terrestrial breeding grey seal, harbour seals breed on transient tidal sites in the Wadden Sea. Both natural and human induced disturbances may make seals move from breeding sites (Schaef *et al.*, 1999). There is therefore a higher likelihood that displaced seal pups will come ashore in areas visited by the general public. The most important implication of the information presented above is that a two hour observation period, even if it is universally enforced, is not long enough to confirm that a pup has been abandoned. Catching a pup is an extremely stressful process. If it is carried out prematurely and unnecessarily it will harm the pup, causing the traumatic stress of capture and causing the distress for both adult and pup due to rupturing the mother-pup bond.

As with grey seals, a post weaned harbour seal pup hauled out on a public beach that is easily approached is likely to be a compromised individual. However, it may simply be resting. The rates of mass loss are unlikely to be greater than those observed in grey seals during the PWF, i.e. 0.4 to 0.6 kg.d⁻¹. It is therefore unlikely that immediate intervention will be necessary unless the seal is clearly emaciated, wounded or ill.

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Appendix 6: The potential impacts of rehabilitation-release on the seal populations of the Dutch Wadden Sea

Authors: Simon Goodman & David Thompson

Overview

In wild or naturally regulated animal populations the likelihood that an individual will thrive and reproduce, or fail and die will depend on a combination of how well adapted they are to current environmental conditions and on the outcomes of chance events. The ability of an individual to deal with life challenges will therefore be influenced by both their genetic make-up and the environmental conditions experienced during their development. In wild populations deaths due to disease, starvation, predation, and injury are normal occurrences, which constitute the filter of natural selection through which all populations pass. For many predators the majority of this mortality occurs in juveniles. For example, in 'healthy' grey seal populations that are close to carrying capacity, over 70% of all pups are likely to die before reaching sexual maturity, i.e. before the age of six (den Heyer & Bowen 2016; SCOS 2017). Even in rapidly increasing grey seal populations approximately half of pups will fail to survive to breed (SCOS 2017).

From a biological perspective, it could be argued that rehabilitating and releasing large numbers of seal pups that may otherwise have died, has potential to change patterns of natural selection and other population processes such as disease transmission (Moore et al. 2007). In the long run this could be detrimental to overall population welfare since it may allow deleterious genetic variants, which would otherwise have been removed due to selection, to persist in the population, or increase the overall burden of disease. In principle this could render the population less able to adapt to future environmental challenges and lower population average fitness. Demonstrating such effects directly is challenging, and requires large historical sample and data archives (Forcada & Hoffman 2014). However, population genetic and epidemiological mathematical models can give insights into the mechanisms of these potential impacts and identify under what circumstances their effects are likely to occur. In this appendix we summarise the theoretical and empirical evidence for how the release of rehabilitated seals could impact on population status, acting through potential influences on population inbreeding levels, modifying patterns of natural selection and amplifying disease transmission.

1. Could rehabilitation lead to a more genetically inbred seal population?

Genetic inbreeding depression is a phenomenon where by individuals which are the offspring of close relatives (e.g. sibling-sibling or first cousin matings), or which have a high degree of co-ancestry between their maternally and paternally derived genetic material due to small effective population sizes in past generations, have reduced fitness or viability compared to more outbred individuals (Chapman et al. 2009). These effects can arise because recessive deleterious mutations have a higher chance of occurring in a homozygous (2 copies of the same genetic variant (allele) at a locus) form in inbred individuals, and therefore the deleterious effects being manifested in the phenotype (physical form). Alternatively, alleles may not be recessive deleterious, but heterozygotes (with 2 different variants at the same locus) may have higher fitness compared to homozygotes, an effect known as heterosis (Chapman et al. 2009). Inbreeding effects have long been known from the animal and plant breeding literature, but over the last 2 to 3 decades have also been documented extensively in natural populations (Chapman et al. 2009). For natural populations, where direct measurement of inbreeding values through pedigrees is usually not possible, inbreeding effects are typically inferred from heterozygosity-fitness correlations. Here an association is made at the population level from a statistical model comparing a measure of fitness (e.g. birth weight, disease resistance, juvenile survival, reproductive success) and heterozygosity (or related measure) of individuals at panels of genetic markers (Chapman et al. 2009). Heterozygosity is a genetic statistic used to summarise genetic variability, and can be thought of as the proportion of individuals with a heterozygous genotype in a population, or the proportion of heterozygous loci an individual has.

Heterozygosity-fitness correlations have been found in numerous pinniped species, including Californian sea lions (Acedo-Whitehouse et al. 2003, 2006), Antarctic fur seals (Forcada & Hoffman 2014), harp seals (Kretzmann et al. 2006), grey seals (Bean et al. 2004) and western-Atlantic harbour seals (Coltman et al. 1998) for traits such as disease susceptibility, female breeding recruitment, birth weight and juvenile survival. In the Wadden Sea harbour seal population recent studies using microsatellites and genome wide single nucleotide polymorphisms (SNPs), estimated that heterozygosity accounted for up to 49% of the total variation in lung worm infections for stranded animals (Rjiks et al. 2008; Hoffman et al. 2014).

This general concept of lower genetic fitness being associated with reduced genetic variation, and the strong inverse relationship between heterozygosity and lung worm burdens in the Wadden Sea, suggest that more inbred, 'lower genetic quality', individuals may be more likely to strand (Jensen et al. 2017). Elsewhere it has been demonstrated that in harp seals (*Pagophilus groenlandicus*), that more inbred individuals are less likely to respond positively to rehabilitation attempts (Kretzmann et al. 2006). The Wadden Sea harbour seal population has the lowest levels of genetic variation among harbour seals in the North Sea (Swart et al. 1996; Goodman 1998; Olsen et al. 2014), and recently concern has been raised that rehabilitation and release could impact on the population genetics of Wadden Sea seals, by helping inbred individuals to survive who might otherwise die, potentially maintaining or increasing inbreeding levels within the population (Jensen et al. 2017).

Jensen et al. (2017) employed widely used population modelling software called 'Vortex' (Lacy & Pollack 2014), to simulate the demographic development and population genetics of the Wadden Sea harbour seal population over a period of 100 years, and to examine the impact of different levels of seal rehabilitation under different levels of inbreeding for stranded animals. The aim was to evaluate if there were conditions under which seal rehabilitation and release could drive an increase in the overall inbreeding level of the Wadden Sea harbour seal population. They found that under levels of rehabilitation-release experienced in the Wadden Sea, small increases in population inbreeding levels could potentially occur (see Fig. A6-1), and that under the assumption of the most extreme (but potentially unrealistic) level of inbreeding in rehabilitated pups – that a decline in population size could occur.

It should be emphasised that Jensen et al. (2017) is a simulation study, with many underlying assumptions where there may be uncertainty about the correct parameterisation. These include how to account for population structure in the Wadden Sea, survival rates of rehabilitated seals, the fitness effects of inbreeding, and not accounting for immigration into the Wadden Sea population from elsewhere in the North Sea (which is known to occur and which could counteract inbreeding effects). The study should therefore be treated a little cautiously, but in principle it shows that releasing large numbers of inbred individuals into a population could under some circumstances drive an increase in population inbreeding level. However, exactly how strong this effect would be, and how important with regard to population dynamics in the real world remains to be demonstrated. Since the last Phocine Distemper Virus epizootic in 2002 the harbour seal population has been growing rapidly and may be reaching its present carrying capacity (Brasseur et al. 2018), so currently there may be no strong detrimental effects from inbreeding. However, the manifestation of inbreeding effects can depend on the environmental context and stressors affecting the population (Brock et al. 2015). A population at carrying capacity may experience more environmental stress so it is conceivable that inbreeding effects may become more relevant in future. The study by Hoffman et al. (2014) indicating that inbreeding strongly influences the incidence of lung worm in Wadden Sea harbour seals shows that the potential for inbreeding to impact on the population does exist, and more empirical research is needed to understand exactly how this might link with future population dynamics.

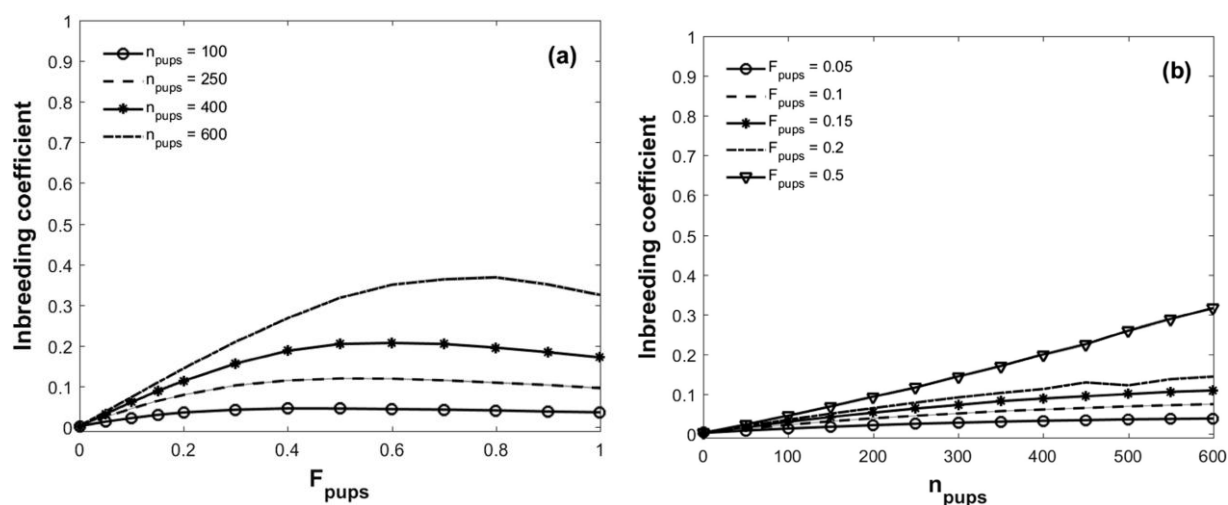


Fig A6-1. Final inbreeding coefficient of the entire Wadden Sea population (FIT) after 100 years, as (a) a function of inbreeding coefficient of pups (F_{pups}), and (b) number of pups released (n_{pups}). Legends indicate the values held constant. From Jensen et al. 2017.

2. Could rehabilitation influence the effects of natural selection on the population?

The term natural selection relates to the differential survival and reproduction of individuals with respect to their genotype, i.e. where traits contributing to fitness have an inherited genetic component. Individuals with alleles better adapted to their environment will on average leave more offspring compared to other individuals. Over time the frequency of beneficial genetic variants should be expected to increase in the population, while variants conferring a disadvantage should decrease. The speed at which these changes happen will depend on the difference in fitness arising from different genetic variants, and the spatio-temporal pattern of environmental conditions which favour or disfavour those variants. Selection can be 'directional' (favouring the increase or decrease of a particular allele), or 'balancing' – either where heterozygotes have higher fitness compared to homozygotes, or frequency dependent (where the fitness of an allele depends on its frequency) (Maynard-Smith 1989). Directional selection will ultimately decrease variation at the loci concerned, while balancing selection can maintain variation.

There are many examples of natural selection in wild populations related to disease susceptibility or survival in response to environmental challenges or resource availability (e.g. de Assunção-Franco et al. 2012; Browning et al. 2014; Acedevó-Whitehouse et al. 2018; Grant & Grant 2006; Linnen et al. 2009). For seals in the present context, if there were genetic contributions to disease susceptibility or the ability to acquire food and avoid starvation, then less 'fit' individuals may be more likely to strand. Without rehabilitation, these individuals may be more likely to die, removing the less adapted alleles they carry from the gene pool. Therefore rehabilitation and release of stranded pups could theoretically reduce the effectiveness of natural selection (Moore et al. 2007), leading to increased genetic load, reduced population fitness, and lower adaptability.

Harding et al. (2005) developed a theoretical model for an analogous situation in relation to the evolution of resistance to Phocine Distemper Virus (PDV) in harbour seals. The team examined the case of a hypothetical autosomal dominant mutation which conferred resistance to PDV, but the model also allowed genetically susceptible individuals to survive infection with a given probability and develop acquired immunity (supporting survival of diseased individuals via rehabilitation could be considered analogous to this latter class, although rehabilitation was not modelled directly in this study). In the case of genetic only resistance, there was rapid evolution of PDV resistance and reduced epizootic mortality under recurrent PDV outbreaks, with the rate of evolution related to the frequency of epizootics. For simulations with both genetic resistance and adaptive immunity for some susceptibles, the rate of evolution was reduced and epizootic mortality remained higher longer – but disease resistance still evolved over time (see Fig A6-2).

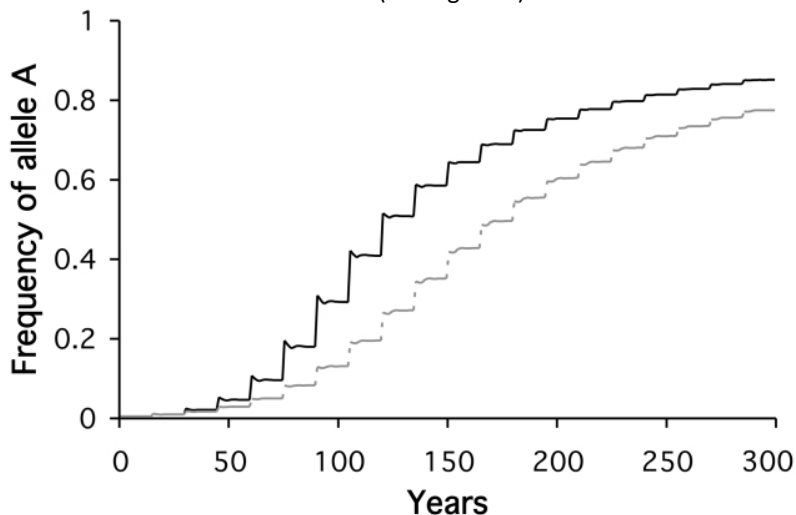


Figure A6-2. Effect of acquired immunity on the rate of spread of a disease resistance allele. A population with heritable immunity only (solid line) has a higher rate of spread of a disease-resistance allele compared with a population with acquired immunity of genetically susceptible epizootic survivors (dashed line). From Harding et al. 2005.

At present there is no direct empirical evidence that rehabilitation does interfere with natural selection on seals in the Wadden Sea, but the above example illustrates that in principle it could be possible.

Alternatively if genetically 'susceptible' individuals remained vulnerable to the challenges (disease and/or starvation) which caused them to strand initially, then they may ultimately die anyway from the same causes after release from rehabilitation. If this happened prior to reproduction, then impacts on natural selection may be small. However, presently it is difficult to evaluate this possibility due to the paucity of data on survival rates of rehabilitated seals in Wadden Sea. This scenario may raise questions about the ethics of rehabilitation if it does not ultimately change the fate of individuals.

Natural selection in relation to inbreeding behaves in a different manner since heterozygosity is not strongly heritable, and is thus less sensitive to selection. Maintaining inbred individuals in a population therefore can increase the genetic load on population and lead to downward population dynamics in some cases (Forcada & Hoffman 2014).

In conclusion, the release of rehabilitated animals could in principle slow down natural selection in some cases, but probably would not halt it. How important these effects are is difficult to say at this time, and are likely to be circumstance specific depending on the nature of the challenge to the population and relative genetic contributions to fitness.

3. Could rehabilitation influence the prevalence and dynamics of infectious diseases within the seal population?

There are potential concerns that rehabilitation could introduce diseases into wild seal populations or modify the dynamics of already circulating diseases (Moore et al. 2007, Jensen et al. 2017). For example highly infectious diseases such as seal pox or leptospirosis could be acquired in captivity and potentially transferred into the wild (Hastings et al. 1989; Stamper et al. 1998), but often these infections are common in the wild, and so some 'rehab acquired' infections (e.g pox virus) may not be of great significance. Rehabilitation could also be a route for the spread of antimicrobial resistant bacteria into the environment (Stoddard et al. 2009). So long as best-practice biosecurity measures are in force disease transfer risks are likely to be relatively small, although impacts from novel unknown infections cannot be totally excluded.

In some cases however, release of large numbers of rehabilitated seals might have potential to influence the transmission and prevalence of already circulating pathogens, with lung worms in harbour seals being one such example. Lung worms are common in all pinniped species. A large proportion of Wadden Sea harbour seal pup rehabilitation cases are due to lung worm infections (*Otostrongylus circumlitus*, *Parafilaroides gymnrus*), which are a normal juvenile disease, with 100% incidence (Borgsteede et al. 1991; Claussen et al. 1991; Lehnert et al. 2007, 2010; Ulrich et al. 2016). Most pups in the wild clear the lung worm infection and go on to lead healthy lives. The higher the number of parasites an individual carries, the more severe the disease symptoms. Individuals stranding due to lung worms, are generally those with the highest, debilitating burdens, which may ultimately be fatal under natural conditions (Dailey 1970; Hoffman et al. 2014). There appears to have been a disproportional increase in the numbers of strandings due to lung worm infections in Wadden Sea harbour seal pups (Osinga et al. 2012), but the causes of this trend are not clear at present.

The distribution of parasite burdens in a population typically follow a negative binomial distribution where most individuals have small numbers of parasites, and a few individuals have very high burdens (Shaw & Dobson 1995; Grenfell et al. 1995). These few individuals with high parasite burdens may have higher disease transmission risks compared to individuals with lower burdens (Anderson & May 1978a, b; Woolhouse et al. 1997; Stein 2011). As we have seen in section 1, there is a very strong genetic inbreeding influence on lung worm burdens (Hoffman et al. 2014), so those with the highest burdens are likely to be the genetically most susceptible. Similar links between genetics and susceptibility to helminthic (parasitic worm) diseases have also been observed in other wild populations (e.g. Coltman et al. 1999).

For helminth infections in general, studies in humans, domestic and wild animals show that individuals are likely to be re-infected if re-exposed once treatment ceases (Jia et al. 2012; Gulland 1992; Craig et al. 2008; Pedersen & Fenton 2015). Rehabilitated juvenile harbour seals are likely to face similar risks post release when they are no longer receiving antihelminthic treatment, and so genetically susceptible individuals may again develop high burdens. Therefore if they do not subsequently die, highly susceptible individuals could potentially influence disease transmission risks in the wider population.

Full understanding of helminth parasite disease dynamics in the Wadden Sea seal population is limited by the lack of survival data for rehabilitated seals and sparse epidemiological data on lung worm infections in the population. However, the epidemiological theory and data from other species outlined above provides some support for the hypothesis that release of susceptible individuals from rehabilitation could contribute to the overall disease burden of some infections. There is increasing recognition that human actions can directly

influence the transmission dynamics of wildlife nematodes and sometimes in unintuitive ways (Weinstein & Lafferty 2015; Pedersen & Fenton 2015). Therefore it is recommended that the importance of this potential impact could be evaluated further through a specific epidemiological model of lung worm dynamics in Wadden Sea seals.

A corollary of the host epidemiological effects, is that rehabilitation of diseased individuals also has potential to influence selection on pathogen virulence. Under natural conditions highly virulent pathogens may kill hosts quickly, reducing their effective transmission rates. Thus pathogens may evolve to be less virulent over time to optimise their transmission probability in the long term. Rehabilitation could interfere with this host-pathogen co-evolution, potentially maintaining more virulent pathogen strains in the population (Moore et al. 2007; Pedersen & Fenton 2015), since the most virulent strains will not be removed by killing their host prematurely. However, empirical evidence for this scenario in Wadden Sea seal populations is not available.

Conclusions

So does rehabilitation matter in relation to population dynamics/status? The above questions have largely been considered from a theoretical perspective, and the empirical evidence to address them directly in the Wadden Sea seal population is presently mostly lacking. With the potential exception of some disease transmission, the population scale effects are likely to be small, and since rehabilitation is not currently needed to support population numbers (the population has grown rapidly and may now be approaching current carrying capacity – see Appendix 3; Brasseur et al. 2018), it could be argued that the debate reduces to an ethical perspective on whether one should aim to maximise the welfare of the population, or individuals. In the former case, it would be recommended to minimise interventions in the population and ensure that as far as possible natural processes are allowed to follow their course (including allowing diseased or starving individuals to die). In the latter case maintaining natural processes becomes secondary and it might be considered that all individuals requiring rehabilitation due to starvation, disease and injury would receive it.

Recommendations for further research

This short review focused on the population genetic and epidemiological theory which suggests that release of large numbers of rehabilitated seals could influence population level processes and welfare under some circumstances. However empirical evidence to directly evaluate the significance of such impacts in the Wadden Sea seal population is generally not available. Therefore recommendations for further research include:

- Conduct further population genetic modelling to build on the existing work by Jensen et al. (2017) and Harding et al. 2005.
- Conduct a combined population dynamics-epidemiological model to evaluate whether rehabilitation and release of susceptible individuals could influence the dynamics of seal lung worm transmission in the Wadden Sea.
- Conduct controlled studies to evaluate the survival rates of rehabilitated seals, incorporating evaluation of individual genomics and parasite burdens. The existing archives of samples and data held by some rehabilitation centres and research institutes will provide important resources to support such an effort.

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Appendix 7: Environmental pollution by persistent organic pollutants and heavy metals

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Foreign chemicals found in seals in the 20th century

Harbour seals and grey seals are predators and as such at the top of the food web of the Wadden Sea. Consequently, environmental pollutants present in other organisms in this ecosystem, in particular those they eat, naturally accumulate in seals (Wu et al., 2017). Due to the blubber reserves that seals create when food is abundant, and which pups build up during lactation by sucking from their mothers, fat-soluble industrial substances known as persistent organic pollutants (POPs) can be easily accumulated in their bodies. These POPs include classes of chemicals such as polychlorinated biphenyls (PCBs), dichlorodiphenyltrichloroethane (DDT), brominated flame retardants and dioxins.

In periods when a negative energy balance exists – such as when food is scarce, when a female is lactating, or when a young animal is still learning how to catch its prey – fat reserves will be mobilised and pollutants may be released in the body. PCBs and other POPs have been associated with immunotoxicity in marine mammals, potentially rendering them more vulnerable to infection by pathogens (De Swart et al., 1994; Kannan et al., 2000; Hall et al., 2006; Mos et al., 2006). Mos and colleagues also found indications for an effect of biological pollutants (such as pathogens released in the effluents) on the immune system of seals. Moreover, POPs have been associated with reproductive failure in marine mammals (Helle et al., 1976; Reijnders, 1986; Roos et al., 2012) and alteration of the expression of important genes (Noel et al., 2017). High levels of heavy metals in the body are harmful to the liver, kidneys and nervous system.

Recent studies of chemicals in seals and marine biota

Unfortunately, no recent longitudinal study is available on the levels of chemical pollutants in the blubber of seals from the Wadden Sea. Kajiwata and colleagues (2008) studied PCB and DDT levels in seals stranded in the Dutch Wadden sea between 1993 and 2003 (the year of the last phocine distemper epidemic) and observed no significant downward trend. This is in contrast to a marked decrease of these pollutants in seals observed in the 1973–1988 period. Moreover, they concluded that PCB levels in these stranded seals were comparable to those observed in a previously performed experiment where seals were fed PCB-contaminated herring and where PCB levels in seals were indicative of immunosuppression (De Swart et al., 1994). A drawback of this study on PCB and DDT in stranded seals is the small sample size (27 animals in total in 1993–2001 and 18 in 2002) and risk of sampling bias. In addition, although it is a chapter of a PhD thesis indicated as having been submitted, it has not been published in a peer-reviewed journal, which somewhat reduces its weight as evidence for a robust POP trend in seals. No study focusing on seals in the Dutch part of the Wadden Sea has been published at any later date.

Kakuschke and colleagues (2010), who performed a pollution study on harbour seals in the German Elbe estuary, concluded that elevated concentrations of several metals and PCBs existed in this part of the Wadden Sea as compared to other parts. This is consistent with the Elbe being the river associated with highest industrial pollution of those ending in the Wadden Sea. Nevertheless, it is clear that levels of heavy metals (as exemplified by mercury (Hg) measured in seal teeth) have dropped markedly in European seals since the 1960s (Ozersky et al., 2017). Furthermore, Roos et al. (2012) reported a marked drop in levels of PCB and DDT between 1968 (110 mg/kg and 192 mg/kg resp.) and 2012 (8 mg/kg and 2.8 mg/kg resp.) in grey seals in Sweden. In contrast to the observation of Kajiwata et al., these researchers show a constant downward trend. Remarkably, PCB levels they measured around the year 2002 were comparable to those observed by Kajiwata et al. in harbour seals.

Other marine systems and biota

More information is available from the Wadden Sea as an ecosystem. In 2009, Bakker et al. published results showing that major reductions in input and concentration of metals (Cd, Cu, Hg, Pb, Zn) in the Wadden Sea occurred mainly in the late 1980s into the 1990s. The Elbe region is an exception, where levels of cadmium,

mercury, lead and zinc – albeit the latter only in blue mussels – decreased in the 1994–1998 period. The nickel concentrations in sediment tend to increase in the eastern Wadden Sea. In the Ems-Dollart, nickel concentrations in blue mussel increased by a factor of 4 between 1990 and 2007. The OSPAR Background Assessment Concentration in sediments was exceeded by cadmium (factor 1–3), mercury (factor 1–5) and lead (factor 1–2), mainly in the southwestern regions. Zinc and nickel exceeded the background concentration in the northeastern regions (factor 2). Although the targets have not yet been fully met, progress has been made over the past five years.

The OSPAR Background Assessment Concentration in blue mussel are exceeded for mercury (factor 2–3) and lead (factor 2–5) in some regions. The target for these metals has not been reached yet. The target for cadmium has been reached over the past five years. Regarding POPs, they concluded that PCBs are still widespread, but concentrations have decreased considerably over the past 20 years. Nevertheless they still exceed agreed background levels manyfold. Lindane and DDTs further decreased, though being sensitive to erosion of old deposits, for example due to extreme floods, the concentrations tend to fluctuate. Hexachlorobenzene (HCB) is at a basic level in all subareas of the Wadden Sea. A recent report on contaminants in bird eggs in the Wadden Sea (Mattig, 2017), concluded that contaminant levels in eggs of oystercatchers and common terns are clearly lower than 35 years ago, but the decrease mainly took place in the 1990s. It is unclear whether there is still change, or that the levels are currently fluctuating around an equilibrium. For the common tern eggs, the limit values of Hg, PCB, HCB and DDT were exceeded at all investigated sites in 2015. For the oystercatcher, the results of PCB and DDT exceeded the limit values in all places.

Fish and shellfish in the North Sea are regularly examined for the presence of pollutants (Van Leeuwen et al., 2013). Here too, a major drop in pollutants has taken place since the 1970s. Nowadays exceeding maximal acceptable levels (for humans) is very exceptional and marked changes in levels have not been observed in the past 10–15 years. The intermediate assessment of OSPAR (OSPAR, 2017), examining fish and shellfish for PCB, concluded that more than 25 years after polychlorinated biphenyls (PCBs) were banned, the majority of PCB concentrations in fish and shellfish have decreased to acceptable ecological concentrations in most assessment areas (including the North Sea). With the exception of the most toxic PCB congener (CB118), the concentrations of PCBs in fish and shellfish are below the level at which they could present an unacceptable risk to the environment. Mean concentrations of CB118 in biota are above this level in 8 of the 11 areas assessed, so adverse effects on marine organisms may still be possible in these areas. PCBs remain in the sediment for long periods and have the potential to accumulate in biota and biomagnify up food chains. Due to past industrial uses and the persistence of PCBs in the environment, it will take several more decades before concentrations are close to zero, the ultimate aim of the OSPAR Hazardous Substances Strategy. However, minimum acceptable levels for seals might be lower than for humans, since seafood is their only food and they will continue to be vulnerable to biomagnification of POPs.

In conclusion

In conclusion, high levels of pollutants were observed in seals in the 1970s and 1980s, after which these levels dropped, reflecting a reduction of pollutants in their habitat. However, levels measured in some seals in 2002 were still in the range with potential to cause immunosuppressive effects. Since then, there has been no monitoring of contaminants in seals in the Dutch Wadden Sea. The levels of pollutants in the ecosystem have remained more or less constant during the past 10–15 years and are still above agreed background levels. In grey seals in Sweden, however, a further drop in PCB and DDT was observed in the past few decades, which might reflect a delayed reduction of the levels of these pollutants in seals, as compared to other parts of the ecosystem, due to the longevity of seals. Because the levels of pollutants have certainly not increased, it is unlikely that the increase in the level of observed lungworm infections in seals in the last decade is the result of chemical pollution. However, levels associated with suppression might still be present and regular testing of seals for pollutants is highly recommended, since seals can serve as a good indicator for environmental pollution, as they are at the top of the food chain.

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Appendix 8: National and international practices

This appendix describes seal rehabilitation practices in the Netherlands, Germany, Denmark, and in California and Hawaii in the United States, and the Dutch practices of bird guardians, bird ringers and green wardens (BOA: *bijzondere opsporingsambtenaar*) and *strandvonders* (wreckmasters). These examples have been used by the Special Advisory Committee (SAC).

Seal rehabilitation and volunteers in the Netherlands

The Netherlands currently has five seal rehabilitation centres with a dispensation under the 2017 Nature Conservation Act (*Wet natuurbescherming*). Stranded pups are generally brought in to a rehabilitation centre and are not euthanised at the stranding sites (Seal Conservation Society, 2012: 4). An approved veterinarian usually takes decisions on euthanasia within the rehabilitation centres. There are multiple (and overlapping) networks and organisations of volunteers that find and help (stranded) seals. Currently, anyone is allowed to help a distressed animal as long as the animal is transferred to an approved rehabilitation centre within 12 hours.

A stranded seal can be reported by members of the public or by a local volunteer. Members of the public are encouraged to call the rehabilitation centres or animal rescue organisations. Experienced volunteers will then be brought in to help. Some volunteers actively search for stranded pups along the shoreline and have also been reported to enter seal reserves to look for pups believed to be stranded (Seal Conservation Society, 2012: 12)

Seal hunters in Germany

In Germany, seal rehabilitation guidelines are formulated by the states (Lower Saxony and Schleswig-Holstein). In general, rehabilitation focuses on mother-pup separation caused by human behaviour. In Germany, the public is not allowed to pick up seals. Professional seal hunters are appointed by the state and are in charge of handling (stranded) seals. In most cases they are called by holiday-goers who have found dead seals, sick seals or separated pups. Only seal hunters are allowed to pick up stranded seals and decide what to do with them. There are various options: observation, transport to a seal centre for rehabilitation or mercy killing. Seal hunters can also establish a temporary protection zone for such seals. They also inform the public to leave these seals alone and guard these areas if necessary. The formal authorities (ministries, national park or municipality) support this approach. The decision on what to do in a specific situation can sometimes be tricky and requires a lot of experience and knowledge. The seal hunters have a lot of knowledge on both animal behaviour and local circumstances. In Schleswig-Holstein, experienced veterinarians associated with the University of Veterinary Medicine Hannover and rehabilitation experts from the seal centre in Friedrichskoog regularly train them. The seal hunters benefit from these advanced training sessions because the existing guidelines allow room for interpretation, so expertise is required for decision-making.

Mercy killing in Denmark

Denmark has a different approach to stranded sick or orphaned seals. Denmark ended seal rehabilitation in 1995 after the decision taken at the 7th Trilateral Governmental Conference on the Protection of the Wadden Sea (Leeuwarden, 1994). At this conference, it was decided to reduce the current number of seals taken from and released into the Wadden Sea to the lowest level possible. Denmark has decided to stop releasing rehabilitated seals mainly based on concerns related to returning significant numbers of pups back into the wild after a period in a human environment (Seal Conservation Society, 2012: 13). Wildlife rangers assess the condition of a stranded pup and decide either on euthanasia (by shooting it on the spot) or to leave it alone. In 2007–2010, between 60 and 130 stranded pups (aged < 1 year) were found every year and an estimated 47–70% of them were euthanised (Seal Conservation Society, 2012: 13-14). Occasionally pups are taken into permanent captivity, because releasing them back into the wild is not allowed.

Rehabilitation of harbour seals in California²⁴

The Marine Mammal Centre in California covers responses to live stranded animals over a coastline of 1000 miles (about 1600 kilometres) and treats some 1000–2000 marine mammals every year. Around 100 harbour

²⁴ Oral communication by Frances Gulland, Third committee meeting 20-21 December 2017 in Termunterzijl.

seals (mostly pups) are taken in every year from the total population of approximately 100,000 animals. One of the reasons this number is so low is that many harbour seals are born in protected areas and national parks. They are usually not brought into rehabilitation, because it is strictly forbidden to disturb these and other animals there, including endangered shorebirds, and it is illegal to pick them up.

Most harbour seals that are taken in, are born on populated beaches (e.g. around San Francisco Bay). These islands and beaches have always been birth sites for harbour seals and gradually became populated by humans. Harbour seals tend to give birth where they were born themselves. This now causes conflicts between humans and seals. If a mother leaves her pup alone for more than a few hours, the pups are often picked up by local inhabitants who assume these pups have been abandoned, and who then bring them to the rehabilitation centre. The policy of the centre is to discourage all persons that pick up seals too easily. In harbour seal pupping season, the centre does a public radio broadcast locally each day, called 'Leave Seals Be'. Many of these seals will die and the people are informed that picking them up contributes to this.

Most of the 100 harbour seals that are brought in are pre-weaned with an umbilical cord. If the pup does not have an umbilical cord, the rehabilitation centre observes a 24-hour waiting period to see whether the mother will return. This waiting period is no problem because pups aged 2–3 weeks old are able to swim and to survive for 24 hours without their mothers.

When all pups are weaned and usually are infected with lungworms, the waiting period is even extended to 36 hours, unless there are clear signs of injuries. The idea behind this waiting period is that most of these stranded sick seal do not need treatment and will swim away within 36 hours. The ones that are heavily infected can be treated, but the chance that they will become re-infected is very high. In practice, about 80% of the lungworm patients that are brought in will die.

The centre has an active public information programme entitled 'Leave Seals Be' to inform people that seals are better off when they are not taken in.

Hawaiian monk seals

The Hawaiian monk seal is a critically endangered species. One of its problems is the poor juvenile survivorship. A major problem for these seals is predation by sharks; other causes of mortality are entanglement and poor nutrition due to changes in food web structure. Less than one in five monk seals survives to reproductive age (Norris et al., 2011: 342). The first priority for recovery has been to enhance female juvenile survival rates. One of the measures that was taken was the capture of young female monk seals to mitigate the effects of food limitation and predation (by sharks). The seals were held in captivity up to almost 300 days. The captive-holding period proved successful, as most weanling seals gained significant weight. After a short acclimation period, these animals were able to forage normally after release. Unfortunately, none of the six released seals survived to the age of 2 years old. However, the conclusion was that a more suitable release location where fewer sharks were foraging could improve results and another captive feeding programme could be more successful in the future (Norris et al., 2011).

Other measures that have been initiated to improve the population of Hawaiian monk seals have been the translocation of weaned pups from sites where survival rates are low to sites with higher survival rates (Lowry et al., 2011) and the protection of newborn pups on beaches. A good example of the latter is the case of a monk seal that was born on a very crowded beach in Waikiki in front of a hotel.²⁵ The birth site was closed by placing tape around it so people could not get too close, and volunteers sat outside the taped area explaining the situation to the public. The seal nursed the pup for four weeks there. Tourists enjoyed seeing this and the hotel loved it. There was a webcam put up with live coverage on social media. It had over 100,000 followers and received a lot of media attention.

Bird guardians (*vogelwachten*) and bird ringers (*vogelringers*) in the Netherlands

Wild birds receive a lot of attention from the public and amateur ornithologists, comparable to that received by mammals and seals. The bird-watching community in the Netherlands has a long history of being well

²⁵ Oral communication by Frances Gulland, Third committee meeting 20-21 December 2017 in Termunterzijl.

organised. At local level there are and were bird protection societies, in which enthusiasts pursue their hobby, but which also contribute to bird conservation as a non-governmental organisation (NGO). Locally there are also some rehabilitation centres where people can bring an injured bird. Nationally, the bird watchers are well organised as well, both in conservation activism (*Vogelbescherming Nederland* (VBN), i.e. the Netherlands Society for the Protection of Birds, which is the BirdLife International partner in the Netherlands), conservation and rehabilitation projects (like the rehabilitation programme for the white stork) and monitoring, surveillance and research programmes (Sovon Vogelonderzoek Nederland²⁶). In all situations where bird watchers are allowed to do things that average citizens are not allowed to do, formal permits are issued. These permits are only issued after a strict education, training and assessment programme. Good examples are permits for bird ringers (they catch, ring and release birds) and for catching birds in historical duck catching devices (duck decoys: *eendenkooien*). Killing wild birds is even more strictly regulated, with only specialists involved, such as official gamekeepers, swan hunters and other hunters.

In the bird-watching community there is a strong degree of social control since everything is being monitored, often on camera. More and more webcams are used not only to enjoy seeing birds nesting but also to protect the nests and birds. In addition to the social control, local green wardens (*groene BOA's*) supervise the compliance of citizens and amateurs with legislation and permit conditions. Although these green wardens are employed by local landowners (both NGOs and private and local authorities), they do also have formal powers in the legal Dutch system (see below).

Green wardens and *strandvonders*

In the Netherlands, there are certain special investigating officers (BOA: *buitengewoon/bijzonder opsporingsambtenaar*) who are authorised under the Dutch legal system, but who are employed by other employers than the police force. They operate under the jurisdiction of a special branch of the public prosecutor's office known as the National Public Prosecutor's Office for Financial, Economic and Environmental Offences (FP: *Functioneel Parket*). These BOAs have a restricted mandate for a specific number of laws. A substantial number of them are referred to as *groene BOA's* (i.e. green special investigating officers, or green wardens) because they are mandated for environmental ('green') laws in the field of nature conservation and the environment. Gamekeepers, forest wardens, rangers and animal welfare inspectors are often special investigating officers and are authorised to draw up an official report (*proces-verbaal*), identical to those drawn up by police, on illegal acts of citizens, with legal consequences such as fines or being arrested. In the Netherlands, the green wardens are part of a close-knit inspection and supervision network in Dutch forests and nature reserves, and on country estates and on beaches. There are currently about 400 special investigating officers.

The municipalities in the Netherlands also employ many special investigating officers, and this includes a special category referred to as *strandvonders* (wreckmasters). The 1934 Dutch Receivership of Wrecks Act (*Wet op de strandvonderij*) deals with the objects and persons (dead bodies) related to shipwrecks that have been found stranded on beaches. This law states that the mayor is appointed as *strandvonder*, although the mayor may appoint deputy *strandvonders*. Interestingly, this includes the possibility to appoint amateur deputies. These *strandvonders* and their deputies are the eyes and ears of the municipalities on the beaches; it is very conceivable that the scope of these officials be broadened to include not only inanimate objects or dead individuals and animals, but also stranded living animals, such as seals. The *strandvonders* are required to register their finds.

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Appendix 9: Stakeholder consultation

The Scientific Advisory Committee (SAC) consulted stakeholders, requesting them to respond to a draft version of the advice. Stakeholders were asked to respond in writing and in person at the stakeholder consultation on 14 February 2018 in Leeuwarden.

This appendix consists of: (1) an overview of the most relevant changes to the preliminary advice of 6 February 2018, based on stakeholder responses; (2) a short report of the stakeholder consultation of 14 February 2018; and (3) the written comments of the stakeholders on the preliminary report of 6 February 2018.

1. Most relevant changes to the preliminary advice of 6 February 2018

- The recommendation on euthanasia on beaches and the use of firearms has been altered for practical reasons and due to public opinion. The practical details of euthanasia (where and by whom) need to be elaborated in more detail by the seal task force
- The animal welfare and population arguments on which all the recommendations are based have been specified in Table 1 of the main advice.
- A remark has been added on the 24-hour observation period that there is no obligation to take in seal pups after a 24-hour observation period, but it is made possible if the seal guardian decides it is the best option for an individual animal (either because it has been really abandoned by its mother or is sick and only has a good chance of recovery at a rehabilitation centre).
- No general relocation of pups as a means to restore mother-pup bonds but a focus on pups trapped in unusual places with relocation as a possibility to enable pups to find their way back to the sea.
- Clarification on the use of the 5% threshold as part of a learning cycle to emphasise it should not be used as an annual quota and the addition that this threshold maybe revised if the Dutch seal population dips below 1000 animals.
- We have added the recommendation under 4a that the release of seals should take place where seals have been taken in.
- A statement has been included that all centres have an obligation to provide adequate data on the number of seals in rehabilitation and released.
- The recommendation that the practical implications of this advice should be determined by a seal task force with relevant stakeholders and an independent chair has been added to the recommendation on the joint seal agreement (4c).
- The recommendation on lungworm patients should also be applied to most other diseases.
- Quality management of the judgement of seal guardians, by giving feedback using the diagnosis of veterinarians, has been included.
- The statement on the closure of breeding sites (e.g. in the Ems-Dollart) has been explained in more detail. The main issue is that these areas need to be closed with a focus on preventing people and dogs from walking in the salt marshes and on the mudflats. It is not our intention to ban people from watching seals from a safe distance.
- Appendix 11 has been added to the advice (in the draft this appendix was referred to as appendix 9). This appendix provides a translation of the SAC advice on a new protocol and guidelines for seal rehabilitation. The guidelines and protocol have been written as modifications to the 2003 guidelines and protocol.

Some remarks on comments that have not been used to alter the advice:

The population is still compromised due to environmental stress

- Although the seal population is still under environmental stress, the SAC does not see these problems reflected in the current size and growth of the population. The harbour seal population has increased between 1990 and 2012 at an annual rate of about 12%, which is considered to be very close to the biological maximum growth rate. The population also recovered from the PDV outbreaks. After 2012 the

population levelled off, most likely because of the interaction probably caused by the growing grey seal population.

The advice denies people's need to help animals in distress

- The SAC acknowledges the fact that people can feel a need to help animals in distress but considers this human motive to rehabilitate seals should never prevail over the individual welfare of the animal or the effects of rehabilitation on the population. People should, however, still be able to help animals in distress by monitoring seals, by assisting seal guardians with observation or capture, by being trained to become a seal guardian, or by assisting with the care in a seal rehabilitation centre.

2. A short report of the stakeholder consultation on 14 February 2018 in Leeuwarden²⁷

Attending: André van der Zande (chair), Jacques van Alphen, Simon Goodman, Frank Meijboom, Arjan Stegeman, David Thompson (all SAC members), Wiebren Kuindersma (secretariat), Joris Latour (secretariat), Emilie Van Zijl (policy advisor at the Ministry of Economic Affairs), Anco Hoogerwerf (Province of Groningen – observer).

Absent: Arjan Stegeman

Wadden Natuurlijk Coalition

Barbara Schoute (Natuurmonumenten), Marco Glastra (Groninger Landschap), and Michiel Firet (Staatsbosbeheer)

- In general, we agree with the principles of the advice and the animal welfare aspects in it. We appreciate this advice is based in science, while we look at how these sound principles can be implemented in practice, between the general public, seal volunteers and organisations like ours, that advocate protection of the natural state of the Waddensea. Good implementation requires a change in perspective on seal rehabilitation, from both the public and the seal volunteers. In addition, we have questions on the Delta (from our colleagues from the Coalition Delta Natuurlijk). The situation is different there due to the relative easy access to beaches, recreational pressure and heavily used industrial sites such as the Maasvlakte. How will this work there? Are municipalities aware of their role for example?
- One of our questions is what to do with pups after 24-hour observation. Should they be picked up? And if so, why do that when dying pups is a natural phenomenon?
- We think the 5% maximum for young pups being taken in rehabilitation is a real improvement compared with the current situation that between 20 and 50% of the pups have been taken in every year. We wonder how this will be calculated within the year. We also realise this will require a major cultural change.
- One of the advices is to close breeding sites in the Eems - Dollard. In areas such as Punt van de Reide, it will be difficult to close the dike because the Water board owns it, besides that the Groninger Landschap has taken multiple measures to reduce disturbance by the public, for example by placing a seal observation wall. We think it is also valuable that people can watch the seals from here. We would rather like to optimise the situation than close this site completely.
- In the Dutch Waddensea we have a good zoning system for nature protection and watersports. Also in this zoning system there are places where boats sail close to closed areas. It seems not necessary to change that situation.
- We think it is a very good advice. We would like to emphasize that we need a practical managerial approach rather than a legal approach. Suggestions that we have are: (1) to include this in the discussion on the new Wadden Management Authority and (2) to work out the BOA permissions for the Seal Guardians. There is also a possible link with the Programme “Naar een Rijke Waddenzee”, for example

²⁷ Send to all attending stakeholders and members of the SAC. Responses have been processed.

on the idea to leave dead animals for educational purposes. Maybe the SAC can also elaborate some on the zoning issues. What is the impact of this advice for tourism? We would like a dynamic zoning that can be applied if necessary.

- The Wadden Coalition is willing to be part of a taskforce to work out the advices of this committee in practice, and advise the SAC to also keep contact with the Delta Coalition.
- We have heard the reaction of the SAC on their focus on the scientific advice. We do conclude that this scientific advice need a good practical implementation and hope that the SAC will advise the ministry in that direction.

Response of the SAC:

- We are a scientific committee so we cannot go into detail on the practicalities of its implementation. Our advice is to form a task force to prepare a seal agreement and work out these details.
- After 24 hours, a trained and qualified seal guardian should take the decision whether to take the pup in or not. Therefore, this advice does not imply that after a 24-hour observation period the animal must be taken in, although this is allowed. From a population perspective, there may not be reasons to take them into rehabilitation, but we think it should be made possible for reasons concerning an individual animal's welfare.
- The SAC does not recommend closing breeding areas for the public in the sense that they will not be able to see them, but to prevent animals from being picked up by the public. A seal-watching wall is a very interesting measure that we also support.

Dutch Wildlife Health Centre (DWHC)

Attending: Jooske IJzer and Andrea Gröne

- Although we do not consider the Dutch Wildlife Health Centre (DWHC) to be a real stakeholder, we are wildlife disease experts who also deal with seal health issues. Nowadays, however, the DWHC only investigates a few seals annually, about 10 wild seals a year. The main reason for this is that there is no funding for systematic seal monitoring, including post-mortem investigation.
- Our impression of the advice is that it is science-based and provides a good overview of the current state of affairs.
- An additional remark might be that we suggest a system of quality control to support seal guardians in their decisions. They need feedback on their decision-making. With regard to diseases in general, including those affecting seals (lungworms etc.), you cannot always or generally cannot see from the outside what is really going on. It is a good idea for dead seals (e.g. euthanised animals) to be subjected to a post-mortem investigation in order to give feedback to the seal guardians. This feedback by veterinarians is already practised in Germany.
- Diseases in seals comprise more than just lungworm infestation.
- To be able to identify peak strandings, a long-term monitoring programme should be introduced to provide insight into normal stranding rates. A limited number of seals could be subjected to post-mortem investigations every year. Any identified peak strandings could also be subjected to targeted investigation. Such a monitoring programme could also provide a tissue bank as basis for e.g. toxicological investigation into PCBs in seals.

Response of the SAC:

- We have included a focus on research and monitoring in our advice. This needs to be worked out in practice, for example by a task force.

A Seal, Ecomare, EHBZ, Zeehondencentrum Pieterburen and Zeehondenopvang Terschelling

Attending: Machteld Geut, Karola van der Velde & Jan Dirk Wolters (A Seal), Pauline Folkerts & Mariette Smit (Ecomare), Albert Dijkstra & Arnout de Vries (EHBZ), Niek Kuizenga & Ana Rubio Garcia (Pieterburen), Tiny Toma, Ayke Luscuere & Guus Schweigmann (Terschelling)

- The four seal rehabilitation centres and the EHBZ have prepared a joint response to the draft advice. We greatly value your advice. There are still some serious concerns, however, since the 'how' (the implementation) is not described in the advice. This still leaves some questions and there are points that allow different interpretations. It is therefore debatable if it eventually will lead to a better situation on the beaches. However, we do support the work done and would like to support further developments to arrive at a solid guideline.
- One issue we have is related to the advice of shooting dying animals on the beaches. You refer to the situation in Germany, but there is also a lot of criticism of shooting animals on the beaches there. Although we do think that the concept of seal guardians should mean that the EHBZ should be professionalised, this should not include letting them euthanise or shoot animals.
- Shooting an animal is not a good practice that is accepted by the public. In addition, in the Netherlands the public is even less familiar with shooting seals than in Germany. This leaves us feeling uncomfortable. It may be a better solution to bring seals that need to be euthanised to a nearby vet. It may be possible to select a few veterinarians in the various areas to perform this task, who could consult the vet at the rehabilitation centre for back-up in the decision-making process.
- The proposal on the seal guardians remains a bit unclear. Will they be paid professionals or trained volunteers? There is a network currently active called the EHBZ that cooperates with all rehabilitation centres and follows their standards. Why not train/support the current EHBZ volunteers? All active EHBZ volunteers received training and are currently being trained by the rehabilitation centres. The EHBZ, and especially the centres, also do not want to work with amateurs. The current network has an average response time of 30 minutes and has an extensive training programme. This could be a perfect basis to professionalise into the scope of the seal guardian system.
- In the current situation, anyone can take in a seal. It is a good thing that this will be restricted to certain officials. Many of the problems arise from the fact that anyone is allowed to take in a seal and even keep it for 12 hours, before they are required to bring it to an official rehabilitation centre. We therefore strongly advise including seals in a list, set out in legislation, as has been done for other animals (see e.g. Article 3.2.2a of the Nature Conservation Regulation), allowing only a select group of specialists to take in (and decide on taking in) seals.
- Currently we are forced to take in seals because they are being brought to us and we cannot do anything about it. We are hostage to this situation. We are also forced to take in animals because of the public pressure combined with media attention.
- We think the authorities should be responsible for the communication of the protocol. This should include a communication campaign that will have to proceed for multiple years at national, provincial and local levels.
- How does the SAC want to implement the 5% maximum in practice?
- We are willing to participate in a task force to work out the details of the SAC advice.

Response of the SAC:

- The intended task force should discuss most of your remarks as they are about the practical implication of our advice.
- The seal guardians are, in our view, something completely new. However, we do think that some seal volunteers could become seal guardians if they pass the exam.
- The 5% threshold should be seen as part of a learning cycle. The rehabilitation centres should monitor it and if the percentage is higher than 5% in a certain year, measures should be taken to reduce rehabilitation in the following years.

Stichting Lenie 't Hart Zeehondenfonds / RTZ

Attending: Johannes Tonkens (Stichting Lenie 't Hart), Theo de Wijs (RTZ).

- Unfortunately, Lenie 't Hart is sick and was unable to join us today.
- We have some concerns with the advice as already explained in our written response.
- The SAC assumes that seals are wild animals that live in a wild untouched environment and that animals should be able to survive in the wild. However, the Wadden Sea is not untouched, but heavily affected by human-induced pressures.

- The SAC ignores the individual welfare of animals in distress and the effect this has on people. Dutch law even prescribes that you are obliged to help every individual animal in distress.
- The scientific evidence you have presented is not enough for decision-making. You claim carrying capacity has been reached. This has, however, not been proven. It is a quick assumption. Additionally, the 24-hour observation period was not based on observations.
- You consider the lungworm disease to be a regular child disease. Our opinion (and there is a lot of scientific literature on this) is that it is caused by environmental stress. This causes seals to be more susceptible to lungworms.
- We are also missing an issue in the advice. In practice, we now see that seals that have been rescued in the Southwest Delta are being brought to Pieterburen because A Seal is full. After that, they are being released in the Wadden Sea. They should be released in the Rhine–Meuse–Scheldt delta.
- No one wants to take a pup away from its mother, but why impose this strict 24-hour observation period? You need to look at the individual situation. Some pups are found on dykes or other places where the mother will not find it again. In addition, how are we going to implement a 24-hour observation period if a seal is stranded on the beach of Scheveningen? This will not be possible.

Response of the SAC:

- With regard to the high pressure by the PCBs and other environmental stress factors, we do think it is relevant and we also advise to begin PCB monitoring again, both in the environment and in seals. However, the growth of the population in recent years has been up to 12%. That is the largest growth we have seen in any population of harbour seals across the globe. This is the main evidence we used.
- You claim that the Animals Act (*Wet dieren*) requires everyone to help an individual animal in distress. We have also considered the Nature Conservation Act (Wnb) and related legislation. Based on our interpretation of both laws, we concluded that not all animals can be taken in, although some could be. We think that if you find an animal in distress, you should take the effects of rehabilitation on the population into account.
- The 24-hour observation period is based on a broad range of scientific research and the opinions of international seal experts. The idea is that we give the seal a chance to find its mother again or to return to the sea on its own.
- Regarding the lungworm patients, we do not oppose taking them in to rehabilitation but we do want more research and learn more about this condition and its effects on survival and the population. You claim that in the last five years there has been an increase in lungworm disease. We are not sure what caused that. However, if you look at the major changes in the environment, we mostly see the rise in the grey seal population. It may be a host for the lungworms, but that is not yet certain.
- There is evidence that the release of lungworm patients back into the population has negative effects on the population through inbreeding. This should be studied in more detail.
 - The SAC agrees that releasing seals from the Southwest Delta in the Wadden Sea does not make sense.
- We do not claim that carrying capacity has been reached, but for the harbour seal populations there are some indications that it might already have been reached or is close to carrying capacity.

3. Written comments of the stakeholders on the preliminary report of February 6 2018

“Coalitie Wadden Natuurlijk” (Email from Froukje Krist, received at the 8th of February 2018)²⁸

Herewith two questions from our side:

1. The Committee proposes not rehabilitating orphaned seal pups until 24 hours of observation have passed. This is a considerable improvement on current practice (rehabilitation after two hours of observation) and reduces the chance that the relationship between mother and pup will be broken unnecessarily. However, the question remains whether the Committee recommends actually rehabilitating a pup who is left alone for 24 hours and actively organising this. If so, on what basis is this recommendation made and what would be the added value? Another way of putting it is that a certain number of deaths among orphaned seal pups is a natural phenomenon.

²⁸ Translated from Dutch original text.

2. Regarding the Eems-Dollard estuary, the Committee recommends completely closing the area where the maternity colony is located. Before a seal viewing wall was erected here, there was a lot of disruption because everyone was free to walk over the dike. With the installation of the wall, an attempt has been made to guide the flow in the right direction. The long distance walking route along the foot of the dike was rerouted on site. A certain amount of use of the dike due to its primary barrier function is unavoidable (for inspection and management purposes). Many people can now experience seals up close here, without disturbing the seals, apart from a few incidents. In view of this situation and the historical background, our question to the Committee is what they have in mind in this regard. A further optimisation of the current situation (improved supervision, prohibiting people from accessing the outside of the dike, additional measures to guide visitors), or the actual closing of Punt van Reide? The latter does not seem to be very feasible or enforceable, if at all. Our request to the Committee is that a working visit be made on site before the Committee gives its final opinion.

Municipality of Goeree – Overflakkee (email by Joël Eichler on the 9th of February, 2018)²⁹

We are satisfied with the results of the research and have only a few small questions/comments. Given the nature of the points, we do not see any reason to schedule a meeting with the Committee. We have had contact with the representatives of Aseal and have discussed our points with them. They will raise them during their meeting with the Committee.

Our main point concerned the Environmental Special Investigating Officer (*Groene BOA*): We find the developments around this Environmental Special Investigating Officer particularly interesting. Because of the various options that are made possible by deploying an Environmental Special Investigating Officer, we are open to this being implemented. However, it is important that it becomes workable. In this context, it is crucial that sufficient options are given to the First Aid for Marine Mammals team (*Eerste Hulp Bij Zeezoogdieren*, EHBZ). The recommendation distinguishes between environmental special investigating offices, seal guardians and seal volunteers. As far as I am concerned, seal guardians and seal volunteers should be able to operate together within the EHBZ, similar to what is happening now. The environmental special investigating officer would then formally supervise the beachings, but would not have to be present everywhere, because we are very confident in the EHBZ's abilities.

For the rest, we support the questions put forward by Aseal.

Seal rehabilitation centres Aseal, Ecomare, Pieterburen and Terschelling and the EHBZ (i.o.) (email by Niek Kuizinga received at February 12th, 2018)

With this letter we like to express our great appreciation for the work put into the draft advice on the future of seal rehabilitation in The Netherlands. We agree with a change of focus from rehabilitation per se, to restrictive rehabilitation and prevention, largely based on scientific data and aligned with scientific research. Particularly concerning the latter we would like to emphasize that currently hard conclusions are not easily drawn on several aspects of the best policy for seal rehabilitation, due to a lack of scientific data or information, as also the SAC has so clearly stated. The idea of a nationwide and institutionalised "seal guard" network is a promising concept that we nevertheless would like to further discuss, as its practical implementation leaves us with open questions.

With reference to Mr. Eenhoorn's conclusion (no agreement between the centres; guidelines and protocol (2003) have been interpreted in different ways) we feel that is of supreme importance that our centres need to be involved very closely in the shaping and implementation of the new seal governance framework. We therefore appreciate that the committee gives us the opportunity for input at the February 14th meeting, to further discuss this.

²⁹ Translated from Dutch original text.

The volunteers of Eerste Hulp Bij Zeezoogdieren (EHBZ i/o) and the foundations Ecomare, A Seal, Seal rehabilitation Terschelling and Seal centre Pieterburen (after consulting with the Sealcentre Pieterburen Veterinary Ethical Scientific Advisory Committee; “VESAC”) have the following remarks in preparation for the February 14th meeting:

- We strongly agree with a change of focus: monitoring and prevention first, rehabilitation as a last resort in well-defined cases. The goal should be that humans interfere with wildlife only if they can do so in a professional, responsible and humane manner.
- It must be emphasized that this change of focus is expected to lead to public discussion. The outcry is understandable because this reflects the inherent tensions between animal protection and wildlife conservation perspectives. Therefore, this is only possible if accompanied by an adequate public information and consultation policy, adequate legal (including law enforcement), political and financial support and by solid scientific endorsement and support. The latter is needed both to fill in current gaps in our knowledge needed for taking appropriate action and for creating sufficient support from the general public.
- The implementation of the plan must therefore be accompanied by a parallel research agenda for which funding should be made possible. This agenda should at least cover:
 - Transparent and well justified criteria for rehabilitation and monitoring its success
 - Field studies on seal behaviour and ecology
 - Zoning of high-risk zones for ‘conflicts’ between humans and seals
 - Infectious disease and AMR monitoring
 - Identification and implementation of additional major areas of scientific research aiming at sustainable and healthy seal populations in the Dutch coastal waters
 - Close collaboration with other countries that have partially overlapping seal populations is crucial in establishing the research agenda.
 - Nursing grounds of seals, including and especially the Dollard, being so vulnerably close to the shore, should indeed be closed off during the pupping season.
- The future “sealguard” (we prefer the term Seal Ranger) and rehabilitation centre activities should always go ‘hand-in glove’ with scientific research. There is great trust and willingness amongst all parties to further strengthen collaborations with existing scientific partners like University of Groningen, Wageningen Marine Research, NIOZ, Utrecht University and Stiftung Tierärztliche Hochschule Hannover, and to create new national and international collaborations based on specific scientific expertises. Working methods will comply with a standardized protocol/code of practice, subject to international peer review. Parties are confident to jointly draft such protocols and standard operating procedures.
- The principle of a centrally organised “seal guard” system is endorsed.
- Such a network is practically already in place by parties involved, but so far lacks active connection with executive officials as well as government support. Parties would be willing to reorganize the existing network to a “seal guard” system with active involvement of executive officials. However, a number of practical implementation issues, like the notion of such “seal guards” carrying firearms and/or performing euthanasia on a public beach raise serious ethical and legal questions.
- We are willing to invest time and efforts into the establishment in the new “seal guards” initiative, since such a new system will require the establishment and implementation of new training modules with new standard operating procedures. Among parties knowledge of the field situation is well established, but they would greatly welcome input and involvement of governmental and other expertise bodies.
- Parties have already actively initiated a policy of a restricted course, but are aware that stronger and active science-based endorsement and enforcement is required. The currently existing network, that may form the scaffold of the “seal guard” system, lacks a formal status. We therefore encourage the proposition to render illegal, all active involvement by non-expert and non-authorized seal rehabilitation volunteers.
- The Netherlands shares its coastal seal habitat with those of other countries with overlapping seal populations, which currently all have their own policy. We would therefore encourage and recommend the alignment of the trilateral and other international cooperation on seal management and rehabilitation.

The Dutch Wadden Islands Alliance (Samenwerkingsverband De Waddeneilanden) (email by J.B. Wassink & W.R.H. van Schoonhoven, received at February 13th, 2018)³⁰

Thank you very much for sending us the advisory report of the Scientific Advisory Committee on Seal Rehabilitation (Wetenschappelijke Adviescommissie Zeehondenopvang) in the Netherlands and asking the Dutch Wadden Islands Alliance (Samenwerkingsverband De Waddeneilanden) to respond to it. We would hereby like to respond to the report in writing.

Having read about the development of the seal population as set out in your report, we recognise the importance of making sound agreements about seal rehabilitation. Naturally, we can agree to laying down quality requirements for such rehabilitation. Before giving a final response to your report, we would like to hear the responses from the seal rehabilitation centres.

We would like to be kept informed of the follow-up to the decision-making procedure, both regarding implementation and the recommendations issued. This applies, among other things, to the Seal Agreement (Zeehondenakkoord) to be drawn up.

Lenie 't Hart Seal Fund (Lenie 't Hart Zeehondenfonds) and Marine Mammals Rescue Team Foundation (Stichting Reddingsteam Zeedieren, RTZ), (Email by L. 't Hart, received at the 12th of February, 2018)³¹

Please find enclosed, on behalf of the Lenie 't Hart Seal Fund and the RTZ, our response to the draft recommendation of the Scientific Advisory Committee on Seal Rehabilitation regarding the rehabilitation of seals in the Netherlands.

The draft recommendation, like the 2003 Guidelines on the Rehabilitation of Common and Grey Seals, is based on a number of principles or assumptions.

The central idea of the draft recommendation is that seal rehabilitation should be kept to a minimum. The arguments put forward by the Committee for this are as follows:

- The Wadden Sea is a nature conservation area. Human intervention in the form of rehabilitation and subsequent release of seals is not in line with this principle.
- Intervention can have a negative impact on the population.
- Intervention can have a negative impact on the welfare of the animal that is rehabilitated.

These principles are very similar to those in the 2003 Guidelines. There is, however, an important difference. One of the principles of the 2003 Guidelines was that seals that are in distress, for whatever reason, and that cannot help themselves independently, are entitled to help. This is also in line with current legislation, as the Animals Act (Wet Dieren) states that people have a duty to care for animals that are in need of help. This principal has been abandoned in the draft recommendation. The Committee assumes that seal animal welfare should be seen in the context of wild (non-domesticated) animals living in a natural environment. The welfare of these animals is determined by the ability of an animal to adapt itself to its environment in such a way as to achieve a condition that it perceives as positive (Appendix 3). For animals in a natural (i.e. wild) environment, a different concept of welfare is required than for domestic animals. The draft recommendation is based on the assumption that the welfare of animals living in the wild is guaranteed as long as they are not hindered by unnatural factors and can exhibit their natural behaviour. Occasional discomfort (disease, lack of food, social isolation) are natural among animals living in the wild. As long as the animal can adapt or adjust to its situation, there is no welfare problem. On this basis, the Committee takes minimum rehabilitation of seals as its point of departure.

In its recommendation, the Committee does not take into account the fact that there is no such thing as a completely natural system in the Wadden Sea. The Wadden Sea is surrounded by dikes, its estuaries are closed off and it suffers from high levels of pollutants. Numerous human activities take place that have a negative

³⁰ Translated from Dutch original text.

³¹ Translated from Dutch original text.

impact on seal populations, including port construction, sand mining, fishing, dredging of trenches causing unnatural currents, discharge of chemical substances, oil and gas extraction and the construction of offshore wind farms. Shipping, air traffic and recreation are interfering with haul-out locations (resting spots), which is affecting their reproductive success (Geelhoed & van Polanen Petel, 2011). Therefore, there is no completely natural environment and seals may have difficulty in showing their natural behaviour or remaining free from contaminants. This means that animal welfare is not automatically assured in the Wadden Sea or the Zeeland delta. There is therefore no strict distinction between an entirely natural environment and a man-made environment. This is also evident from the places where seals are found in a state of need, which are often harbour basins, recreational beaches, land reclamation works or dike toes.

The recommendation also ignores the natural need of humans to help animals in need. The fact that we are concerned about seals is demonstrated by the fact that seal populations are closely monitored and that scientific research into the species is being carried out. Many people find seals appealing animals. The seal is the symbol of the Wadden Sea. Thanks in part to the efforts of Lenie 't Hart, the seal has been given a face over the past 45 years. The public will not accept a seal in distress being left to its fate. For this reason, dozens of volunteers have joined forces in the RTZ Marine Rescue Team Foundation and First Aid for Marine Mammals (Eerste Hulp Bij Zeezoogdieren, EHBZ), to help seals in distress in response to reports from the public. Every year, the seal rehabilitation visitor centres attract hundreds of thousands of visitors who care about the fate of the seal. All of this means that seals cannot simply be seen as wild animals.

It is human nature to want to help animals that appear to be in distress. Animal welfare workers work to help thousands of birds hit by cars or aircraft, weakened hedgehogs, attacked deer, orphan kittens and discarded dogs that are being helped in Dutch animal shelters. With these animals, there is seldom, if ever, any discussion about the usefulness or necessity of rehabilitation. It is seen as commendable volunteer work and something that people in the Netherlands can be proud of. Why, then, does this not apply to the rehabilitation of seals? The argument of wild animals living in a natural environment is only partially valid, as indicated above. In its draft recommendation, the Committee maintains an unnecessarily harsh separation between domestic animals and wild animals.

The draft recommendation furthermore deviates from the 2003 protocol currently in force on several points. It is strongly based on scientific evidence. There are, however, a number of scientific aspects that fall short or are interpreted in a one-sided manner.

– *Orphaned seal pups must first be observed for 24 hours before any decision is taken to rehabilitate them.*

In the current protocol (2003), a period of two hours applies. We understand that new insights may have been gained in this regard. However, the 24-hour period is not based on scientific research. Observations carried out in the Dollard, where investigations were carried out at an artificial inlet that is not representative of the Dollard, have shown that seal pups can be left alone by the mother for a number of hours (in exceptional cases up to eight hours). However, insufficient research has been done into the behaviour of orphan seal pups in other parts of the Wadden Sea, which would be needed to make a good judgement about orphaned seal pups along the entire Dutch coast. A 24-hour observation period is unrealistic and will lead to unnecessary mortality among pups.

Furthermore, strict application of a time criterion is unnecessary. The location and condition of an orphaned seal pup can also be a reason to intervene. For example, a pup might be found far away from the location where births take place, or the pup might be in a dangerous situation, such as an area on the beach with stray dogs or large groups of people.

– *Weaned pups should not be rehabilitated.*

The draft recommendation states that grey seals can fast for up to one month and that this is part of their development. After the suckling period, common seals must also get used to caring for themselves, which may result in weight loss. According to the draft recommendation, finding an emaciated pup is not a reason for rehabilitation. Weaned pups should stay in their natural environment. If pups are stranded in places where there are a lot of people, they should be moved to a quieter area, or a section of the beach should be screened off.

Here too, we believe that it is important to look at the condition of the animal and the situation on site. From the point of view of animal welfare and compassion, it is reasonable to offer help to a pup who is very

emaciated, and who will often have additional problems as a result. Appendix 5 to the SAC recommendation also recognises that weaned pups of the common seal that are found in places where there are a lot of people and that can easily be approached often have additional problems ('compromised individuals'). Depending on the situation (strongly emaciated, injured, ill) the decision can be made to rehabilitate.

– No rehabilitation of emaciated animals as long as the population is within the natural carrying capacity of the Wadden Sea.

The draft recommendation assumes that the Wadden Sea has reached its maximum carrying capacity for seals. This is derived from the fact that the population has not grown since 2014/2015 (see Appendix 4). The argument is given that rehabilitation of malnourished individuals may have a negative effect on the wild population, as this population may subsequently have to compete with a fit, well-rested and well-fed seal.

The statement that the Wadden Sea has reached its maximum carrying capacity for seals has not been substantiated. The fact that the populations are no longer growing is not necessarily a consequence of a maximum carrying capacity having been reached. Moreover, the stagnation in the development of the number of seals only applies to the common seal in the Wadden Sea. Its numbers are still growing in the Zeeland delta. The population of grey seals in the Wadden Sea is also still growing. In some parts of the Wadden Sea, such as off the Danish coast, the population size of the common seal is even decreasing. (Jensen L.F., Teilmann J., Galatius A., Pund R., Czeck R., Jess A., Siebert U., Körber P. & Brasseur S., 2017).

In a presentation held on 10 February 2018 by Geert Aarts of the Wageningen University and Research Centre (WUR), during the Mammal Days (Zoogdierdagen) of the Dutch Mammal Society (Zoogdierverseniging), he stated that it is not clear whether the Wadden Sea has reached its maximum carrying capacity for seals. Nor is it known which mechanism, if any, is the basis for this. Food may be a limiting factor, but this has not been demonstrated. There are many possible explanations, including deterioration of environmental factors due to human activities. In any case, the argument regarding carrying capacity cannot be used to keep seal rehabilitation to a minimum, as is done in the draft recommendation. In the event that the carrying capacity in a certain part of the Wadden Sea is exceeded, this is more likely to lead to migration along the coast. Brasseur (2017) showed that regular exchanges take place between populations throughout the North Sea area. The fact that the Pieterburen Seal Rehabilitation and Research Centre (Zeehondencentrum Pieterburen) releases seals originating from, for example, the Delta region into the Wadden Sea is in conflict with the carrying capacity hypothesis.

– Seals infected with lungworm are only rehabilitated in case of slight infection

The SAC is not convinced that infection with lungworm is the result of 'human-induced chemical stress'; on the contrary, it is a disease normally suffered by young seals. Rehabilitation of lungworm patients undermines the natural selection process.

In the past, it has been shown that pollution of the Wadden Sea had an effect on the immune system of seals. There is no new scientific research addressing the levels of chemicals such as POPs, PCBs and DDT stored in the fat layer (Appendix 7). The available research does not indicate a decreasing trend of levels of toxic compounds in seals since 2002 below the level at which they could have toxic effects. Current levels are still so high that effects on the immune system of seals are to be expected.

It has not been demonstrated that the rehabilitation of lungworm patients undermines the natural selection process. The cause of the increased infection with lungworm is unknown (Osinga, 2015). This requires more research before a good judgement can be made.

We have a strong impression that the Committee does not allow sufficient room for the other seal rehabilitation approach, which is based on individual animal protection and does justice to animal welfare, even though this has been promised by the Minister. We see a clear inclination towards a type of nature conservation that looks only at the conservation of species and not at the intrinsic value of each animal. We trust that the Minister will reconsider this, since she promised, during the General Consultation on Animal Welfare, that she believes in the intrinsic value of animals and that everyone cares about animal welfare. Should the Scientific Advisory Committee on Seal Rehabilitation nevertheless stick to its recommendation, we will take the necessary steps to convince the Minister, via public opinion, to disregard this recommendation.

Sources:

Geelhoed SCV & T. van Polanen Petel, 2011. 'Zeezoogdieren op de Noordzee' [Marine Mammals in the North Sea]; Background document accompanying Natuurverkenning 2011 [Nature Exploration 2011]. Wageningen, Wettelijke Onderzoekstaken Natuur & Milieu [Statutory Research Tasks Unit for Nature and the Environment], WOt working paper 258.

't Hart, Pieter, 2007. Zeehondenjacht in Nederland 1591 – 1962 [Seal Hunting in the Netherlands 1591 – 1962]. Thesis at VU University Amsterdam. Amsterdam. Self-published.

Jensen L. F., Teilmann J., Galatius A., Pund R., Czeck R., Jess A., Siebert U., Körber P. & Brasseur S., 2017. Marine mammals. In: Wadden Sea Quality Status Report 2017. Eds.: Kloepper S. et al., Common Wadden Sea Secretariat, Wilhelmshaven, Germany. Last updated on 21 December 2017. Downloaded on 12 February 2018. qsr.waddensea-worldheritage.org/reports/marine-mammals

Osinga, N, 2015. Comparative biology of common and grey seals along the Dutch Coast. Thesis at Leiden University.

Dutch Wildlife Health Centre (Email by Jooske IJzer, received at the 12th of February, 2018)

Regarding:

- evaluation of the assessment decisions taken by the future “Seal Guardians”:

will a form of an evaluation-system be designed?

- the committee states that the rehabilitation centres have the responsibility to enable study of survival rates of lungworm patients.

How will the initial diagnosis of “lungworm infection” be securely made?

How will additional and/ or other potential pathologies be excluded?

Does this responsibility also extend to animals in rehabilitation due to other disease causes?

Does this responsibility also extend to non-survivors?

- The document partially strongly focusses on lungworm infection. However, other potential stranding/ disease causes, including anthropogenic influences (bycatch, ingested fishhooks) also require investigation in order to weigh the actual presence and impact lungworm infections in seals. Therefore, we suggest to investigate and evaluate all disease causes in seals.

- The advised governmental national seal research programme:

we think erection of a national database of seal strandings will be a useful tool to gain evidence-based insight into seal stranding patterns. Data delivery to such a central database may potentially be part of the suggested “Seal Agreement Charter”.

- The advised governmental national seal research programme:

suggested, amongst other points, is improved monitoring of stranded seals. Is this applicable to live and dead seals alike?

Seal Rehabilitation centre Eemsdelta (email by Rosalie Janac received on February 13, 2018)³²

First of all, I would like to say that, at first glance, it is a good and reasonably realistic advisory report.

Unfortunately, we have not yet been able to read everything very thoroughly, as we all have a job or our own company, and we do this work on the side. However, based on what we have read, the most valuable question for now is:

1.) Do all pups who are found alone, and who are still nursing, need to be observed for 24 hours?

This is quite a long period. It is still doable for the grey seal... but it really is quite long for the common seal. The Dollard (where many results of the research are from) is a unique area, where we do indeed see that mother seals leave their pups by themselves. However, a kilometre further on, the circumstances are quite different. This 24-hour observation period is possible in case of doubt, but we think that it is always important to look carefully at the individual animal, the condition and behaviour of the pup, the period in the season (incidentally, this also applies to grey seals), but also at the location of the pup.

If a pup is already severely emaciated or dehydrated, these mere 24 hours can be crucial, no matter where the animal is located.

The location will also largely determine whether a seal pup should go to a seal rehabilitation centre. Over 20 years of fieldwork and observations have shown us that, in many places outside Punt van Reide, it is necessary to take a pup to the seal rehabilitation centre. An example of this is if farmers find a pup near the dike near Bierum or Uithuizen. There are simply no mother seals there. We know this from years of experience. This also applies to locations closer to Punt van Reide. Here in Termunterzijl, behind the dike, we never see any mother seals who have come to nurse their young, even though we are only a stone's throw from Punt van Reide.

How are we to act in the above cases? We believe that the behaviour of the seals at Punt van Reide in the Dollard should not be the only consideration. The Dollard is larger than just Punt van Reide, and the Wadden Sea is larger still, with different behaviours.

³² Translated from Dutch original text.

If you still have any questions about this location, or if you are just curious about this beautiful place, you are of course warmly invited to come have a look and ask questions.

Lenie 't Hart Seal Fund (Lenie 't Hart Zeehondenfonds) and Marine Mammals Rescue Team Foundation (Stichting Reddingsteam Zeedieren, RTZ), (Email by L. 't Hart, received at the 16th of February, 2018)³³

First of all, we would like to emphasise that we would like to see the Committee also look at the welfare of the individual animal, as stated in the Minister's instructions. The Committee's current recommendation is based too much on the interests of the population as a whole.

The instructions are to consider both the approach that wild animals should be rehabilitated as little as possible (and in which cases rehabilitation is nonetheless required) and the approach that rehabilitation should be provided for reasons of welfare for individual animals (and in which cases there are objections to it). We believe that the composition of the Committee is not sufficiently diverse to do justice to both approaches and believe that it would be desirable to set up a second committee to further elaborate this aspect.

For example, we think it is completely undesirable for animals to be shot on the beach. Animals found on the beach should be taken in and examined in case of doubt about their state of health.

We would also like to draw your attention to the following literature:

K. C. Harding, M. Fujiwara, Y. Axberg and T. Harkonen, 2005. Mass-dependent energetics and survival in Harbour Seal pups. Functional Ecology 2005 19, 129–135

This study is relevant to the minimum weight that rehabilitated pups should have at the time of release. The release weight should not be below 25 kilos to ensure a sufficient survival rate.

There are also several dissertations that deal with the effects of pollution on the immune system of seals.

Ross, Peter S., 1995. Seals, pollution and disease: environmental contaminant-induced immunosuppression. Thesis at Utrecht University.

Swart, R.L. de, 1995. Impaired immunity in seals exposed to bioaccumulated environmental contaminants. Thesis at Erasmus University. Rotterdam

Rijks, J.L., 2008. Phocine distemper revisited. Multidisciplinary analysis of the 2002 phocine distemper virus epidemic in the Netherlands. Thesis at Erasmus University Rotterdam

Rijks' thesis deals with toxicology. Specifically, the levels of toxic compounds in the fat layer of seals. PCB and DDT levels were still so high in 2002 that they could be correlated with immune suppression. After this time, very little research has been carried out into this matter. It is quite possible that seals in the Wadden Sea still suffer from weakening of the immune system.

Research into the biology and behaviour of seals outside the Dollard:

*Wieren, S.E. van, 1981. Broedbiologie van de gewone zeehond *Phoca vitulina* in het Nederlandse waddengebied. National Institute for Nature Management (Rijksinstituut voor Natuurbeheer). Texel.*

*Doornbosch, G. Gedrag van zeehonden *Phoca vitulina* in het stroomgebied van de Oude Lauwers (Oostelijke Waddenzee) in 1978. National Institute for Nature Management (Rijksinstituut voor Natuurbeheer). Texel.*

Van Wieren and Doornbosch describe the natural behaviour of seals on sandbanks in the Wadden Sea, where mother seals and pups are constantly in close proximity to each other. In our opinion, the behaviour of seals

³³ Translated from Dutch original text.

(mother seals with pups) at the water inlet in the Dollard has evolved over time as a result of the specific situation there, which is that this is one of the few, if not the only, suitable birthplaces in the Wadden Sea that is not flooded at high tide. The behaviour developed here cannot simply be declared applicable to seals in other parts of the Wadden Sea or North Sea. However, the behaviour observed here did play a role in drawing up the protocol.

In the recommendation, Bowen cites the situation on Sable Island (Canada) (see Appendix 5), where it is observed that mother seals leave their pups alone for several hours. The situation on Sable Island is similar to that of the Dollard water inlet, where seals can rest on land during periods of high water. The behaviour of seals on Sable Island can therefore not be used to draw up guidelines for the Dutch situation.

We also read in the recommendation that further research will be done with transmitters. Fitting animals with transmitters can influence their behaviour and performance in various ways. This will have an impact on the outcomes of the research and can also have an impact on animal welfare.

Hazekamp, Anja A. H. , Roy Mayer & Nynke Osinga, 2010. Flow simulation along a seal: the impact of an external device. European Journal of Wildlife Research (2010) 56:131–140.

Appendix 10: Assessment of the Council on Animal Affairs (CAA) of the preliminary advice based on their framework on animal welfare of wild animals with a short reponse by the SAC

The Scientific Advisory Committtee (SAC) requested the Council on Animal Affairs (CAA; i.e. in Dutch the RDA: *Raad voor Dierenaangelegenheden*) to check the draft version of the advice. This appendix includes the CAA letter to the SAC and a more detailed CAA working paper. The SAC has used this letter and the working paper to make the following changes in the draft advice:

The SAC has included the reasoning why the observation period is 24 hours in stead of 12 hours, emphasising the:

- desirability not to take in a pup in the dark, because of the extra disturbance when using strong lights and the increased risk of an unsuccessful and traumatic attempt to capture a wild animal;
- uniformity with the already existing 24-hour criterion in the Netherlands for the grey seal;
- uniformity with the 24-hour norm accepted in the United States;
- desirability to be as restrictive as possible and giving the seal the best possible chance to recover on its own;
- experience in the United States that seal pups are used to dealing with fasting periods of up to 24 hours.

In Table 1, the SAC has included an extra column outlining how which animal welfare or population arguments have been used for each recommendation on whether or not to rehabilitate seals in specific situations.

The human health perspective has been included more explicitly by underlining that with the new advice only trained professionals or volunteers will be allowed to handle animals. The advice is expected to lead to fewer seals being taken in, which would also reduce the risk of human health issues.

Letter: Advice following CAA's review for the SAC on Seal Rehabilitation

The Hague, 8 February 2017

Our reference: CAA.2018.027

Dear Mr Van der Zande,

On 8 January 2018, you requested the Council on Animal Affairs (CAA) to compare the draft advice of the Scientific Advisory Committee (SAC) on Seal Rehabilitation with the CAA assessment framework.

The CAA has been pleased to deal with your request. The CAA has not reviewed the substance of your advice; your draft advice has been compared with the CAA assessment framework "*Wegen van Welzijn*" [Weighing the Welfare of Animals in the Wild], which was published on 9 November 2017.

The CAA has arrived at the following conclusions and would like you to consider the following to improve the advice:

- The draft advice is thorough. The SAC has tried in several ways to obtain relevant data and current scientific knowledge and explicitly include this in its advice. The assessment purely concerns the available information and current scientific knowledge.
- The SAC balances the values and interests that reflect its remit. Not all the values and interests from the Council's assessment framework are explicitly stated in the draft advice, as is the case with public health and social impact.
- To improve the advice, the CAA would like to give you the following points for consideration:
 - In the submitted draft advice, the proposal for changing the observation period is substantiated in the appendix. The CAA considers that, on the basis of the knowledge gathered, it should perhaps be stated more clearly in the advice why the recommended observation period of 24 hours has been chosen (the California case), rather than the 12-hour period mentioned in the appendix as recommended by various experts.
 - Clarification of recommendations 1d, 1f, 1g and 4a on how the welfare of individual animals has been taken into account, and how the recommended interventions affect the welfare of individual animals, possibly in relation to the working definition of animal welfare applied by the Committee.
 - Clarification of how the interventions proposed in the advice reflect the conditions from nature legislation. Specific interests based on nature legislation could perhaps be discussed more explicitly in the advice (e.g. the Birds and Habitats Directives).
 - In the light of cooperation with other Northern European countries and the ecological carrying capacity of different areas, describe (e.g. under 4c) how the proposed recommendations can have an international impact in the future (e.g. cooperation, research and scientific knowledge).

We hope that our response will contribute to the further improvement of your advice. The CAA will be pleased to give you any further explanation. We wish the SAC on Seal Rehabilitation every success in the completion of its advice.

Working paper for the review of the draft advice of the SAC on Seal Rehabilitation

1. Background and approach

On 8 January, the Scientific Advisory Committee (SAC) on Seal Rehabilitation submitted a request in writing to the Council on Animal Affairs (CAA) for the review of their (draft) advice, based on the recently published CAA advisory report "*Wegen van Welzijn van dieren in de Natuur*" [The Welfare of Animals in the Wild]. The Committee would like to receive a technical assessment from the CAA on the compatibility of its recommendations with the normative assessment framework in that advisory report. It is the Committee's intention to use this review to further tighten up the internal consistency of the advice, and to include it in an appendix to the advice. The Committee is aiming for a length of approximately three pages with, for example, a tick-off table in which the qualitative criteria from the advice are compared with the CAA assessment framework mentioned above.

Questions for the SAC on Seal Rehabilitation

The Committee has been instructed to issue scientific advice on seal rehabilitation. The advice must address the following questions:

1. In which situations is seal rehabilitation acceptable and when is it inadvisable? The experts are asked to consider both the approach that wild animals should be rehabilitated as little as possible (and in which cases rehabilitation is nonetheless required) and the approach that rehabilitation should be provided for reasons of welfare for individual animals (and in which cases there are objections to this).
2. What action should be taken in situations where rehabilitation is inadvisable?
3. What standards should rehabilitation meet, which treatment and care form part of it and what are the limits when it does take place?
4. What conditions should be set with regard to releasing animals back into the wild?

Definition and approach

The CAA will review the (preliminary) advice of the SAC on Seal Rehabilitation by comparing it with its own assessment framework, published recently in the advisory report "*Wegen van Welzijn van dieren in de Natuur*". This assessment framework is a product of the entire Council. It has also been used by Prof. Rory Putman, and a previous version has been used for the consideration of aspects of animal welfare in Oostvaardersplassen and for cases in Scotland. The CAA will also use its own "Conceptual Model for Animal Welfare" in its advice. The CAA will not review the substance and recommendations of the SAC on Seal Rehabilitation, repeat them or check them (for scientific completeness, correctness, etc.). Neither will the Council give its own opinion on the advice on seal rehabilitation in the Netherlands. The CAA will only issue a qualitative (technical) assessment of the presented draft advice. The "Draft Advice of the Scientific Advisory Committee on Seal Rehabilitation in the Netherlands" of 6 February 2018 has been used for this review.

One of the explicit questions put to the Committee concerns the approach of making available rehabilitation from the perspective of the welfare of the individual animal. Because the concept of animal welfare has different dimensions and can therefore lead to confusion – as is indicated by the Committee in its advice – the Council takes the liberty to consider this concept in more detail from the animal's perspective (see Appendix 4). On the basis of a number of key points from the CAA assessment framework, the CAA conceptual model and recommendations formulated at an earlier stage by CAA, the Council gives an overview of what it believes are relevant aspects of animal welfare. This will hopefully support the Committee in the follow-up process.

2. Qualitative review based on the CAA assessment framework

The CAA has compared the (draft) advice of the SAC on Seal Rehabilitation with its own assessment framework (see Appendix 3). The CAA has identified the following points to consider with regard to each aspect:

Scientific knowledge

The CAA assessment framework includes the section "Scientific knowledge" (relevant and current), aiming to provide objective and realistic courses of action. The question put to the SAC on Seal Rehabilitation focuses on preparing scientific advice. In this section, the CAA analyses how scientific knowledge is reflected in the advice:

- The SAC on Seal Rehabilitation has attempted to trace the relevant data and current scientific knowledge in several ways. Relevant literature has been studied and additional (field) studies have been organised. Several national and international experts have been approached for input by telephone and for presentations to the Committees, and a list of national and international best practices has been drawn up. In the CAA's opinion, this is a thorough approach.
- On the basis of this scientific knowledge, the Committee has arrived at a number of recommendations in response to questions from the Minister. The CAA considers that, on the basis of the knowledge gathered about the observation period, it should perhaps be stated clearly in the advice why the recommended observation period of 24 hours has been chosen (the California case), rather than the 12-hour period mentioned in the appendix as recommended by various experts.

Public moral values

The assessment of objective and realistic alternative courses of action requires information about public moral values (social and ethical opinions, intuitions, principles and facts). In this section, the CAA analyses how public moral values are reflected in the advice.

- The advice states that the Committee has answered, in two stages, the question of how to act from the perspective of the protection and conservation of the wild population and the question of how to act from the perspective of the welfare of individual animals in need. These perspectives were first investigated separately (to be found in two concise answers in the advice), after which the Committee combined these perspectives for a number of relevant situations in the field (to be found in seven different described situations).
- The advice states that there are different opinions at the existing seal sanctuaries about how and when seals should be rehabilitated, and that existing protocols are being interpreted in different ways. The main difference that has been identified is the question of how to act from the perspective of the wild population on the one hand and the welfare of individual animals on the other. These perspectives originate from different social and ethical opinions, but have not been further analysed or elaborated as such.
- The different opinions of the seal sanctuaries and the different interpretations of the protocols have not been analysed in any further detail. It is stated, however, that all parties involved in rehabilitating seals recognise the need for scientifically based protocols.
- Other social opinions of parties, organisations or stakeholders have not been included in the advice. However, the different opinions and ideas of national and international experts have been included in the advice, as a result of the approach to finding out about scientific knowledge. The Committee has also visited three seal sanctuaries, and a consultation round with stakeholders on the preliminary advice is still to follow. This means different social and ethical opinions of stakeholders are being addressed.
- According to the CAA assessment framework, public moral values are part of a full assessment. The CAA cannot specifically deduce from the preliminary advice how public moral values have influenced the prepared recommendations, other than that the Committee has tried to consider the issue from two different perspectives, as required by the Minister.

Relevant interests and values

The CAA assessment framework distinguishes different values from three domains (human-animal-environment/ecosystem), which have to be considered in a final assessment. The CAA analyses below whether and how these values are reflected in the advice in terms of these three domains (see also Appendix 4 for further substantiation).

- With regard to the “human” domain, the autonomy (human/animal) value is mentioned in an appendix to the advice. The values public health, inherent dignity, public opinion and social impact are not explicitly mentioned in the advice (only zoonoses are briefly mentioned in Appendix 2).
- With regard to the “animal” domain, the values welfare (including health), legal framework, intrinsic value (in appendix) and health of the animal population are mentioned in the advice. Animal welfare is a stratified concept that can cause confusion due to different interpretations and abstraction levels. The SAC acknowledges this and has given an explanation in an appendix to the advice about which choices have been made by the Committee in terms of animal welfare. A working definition has also been formulated. Furthermore, there is a specific appendix for the legal framework. Economic value,

cultural value, relational value, biodiversity and instrumental value are not explicitly mentioned in the advice.

- With regard to the “environment/ecosystem” domain, the pollution value is mentioned in the advice (e.g. use of medication and antibiotics; Appendix 7 deals with “Environmental Pollution by Poly-Organic Pollutants and Heavy Metals”). The landscape and landscape management value is not explicitly mentioned in the advice.
- Not all the values and interests from the Council’s assessment framework are mentioned in the advice. This is not essential in terms of issuing scientific advice, but it is important in the ultimate decision-making. The Council recommends that the SAC also address the abovementioned aspects in the next stages of the (integral) considerations.

Fundamental moral questions and potential moral dilemmas

The CAA assessment framework explicitly identifies fundamental moral questions/fundamental assumptions relevant to the assessment. Potential moral dilemmas that are not resolved by the assessment are also addressed. The CAA analyses below whether such questions and dilemmas are considered in the advice:

- The advice does not explicitly mention fundamental moral questions and potential moral dilemmas.
- It does mention a dilemma in an appendix in an explanation of the legal framework: does the general duty of care to prevent animal suffering always apply to wild animals? (This is not explicitly referred to as a moral dilemma.) The Committee gives an in-depth explanation of this dilemma in its advice, stating also how this dilemma is being addressed.

Completion of the assessment framework and flow chart

The CAA advisory report mentions three steps as a tool to start on the assessment framework and flow chart. Steps 1 and 2 are about *whether or not* we should intervene, and step 3 is about *what* we should do. The CAA analyses below for each step whether it can be identified in the advice:

1) Is there a situation where the interests of animals are at risk of clashing with our own or other interests?

- The knowledge present has been identified and listed.
- According to the advice, the interests of individual seals may clash with:
 - the interests of other individual seals;
 - the interests of seal populations;
 - the interests of other animals;
 - the interests of people.
- The standard solutions come from the existing rehabilitation protocol. According to the advice, the welfare of individual animals can be put at risk as a result of these solutions.

2) What are the different interests and values, and how have these been balanced?

- The legal framework is identified. The interests based on nature legislation are discussed in the advice. The interests derived from the Birds and Habitats Directives could be defined more clearly, which also applies to other satisfactory solutions, the conservation status, compelling public interests and conservation objectives for common and grey seals on the basis of the Natura 2000 protection of habitats.
- The relevant interests and values from the CAA assessment framework have been discussed separately above. Not all the values and interests form an explicit part of the consideration(s) in the advice.
- The advice takes into account our responsibility by identifying for each situation whether or not animals have become ill or injured as a direct result of human activities or human actions. It is stated that people should mitigate or compensate negative implications of their actions. Examples are also given of disruption by people, as well as information about chemical stress on animals and our responsibility in this respect.
- The final assessment of interests, values and choices in this respect is the responsibility of the policy/Minister. The Committee indicates that it believes it is necessary to make amendments to the current protocol, and makes suggestions to that effect.

3) What are the possible interventions?

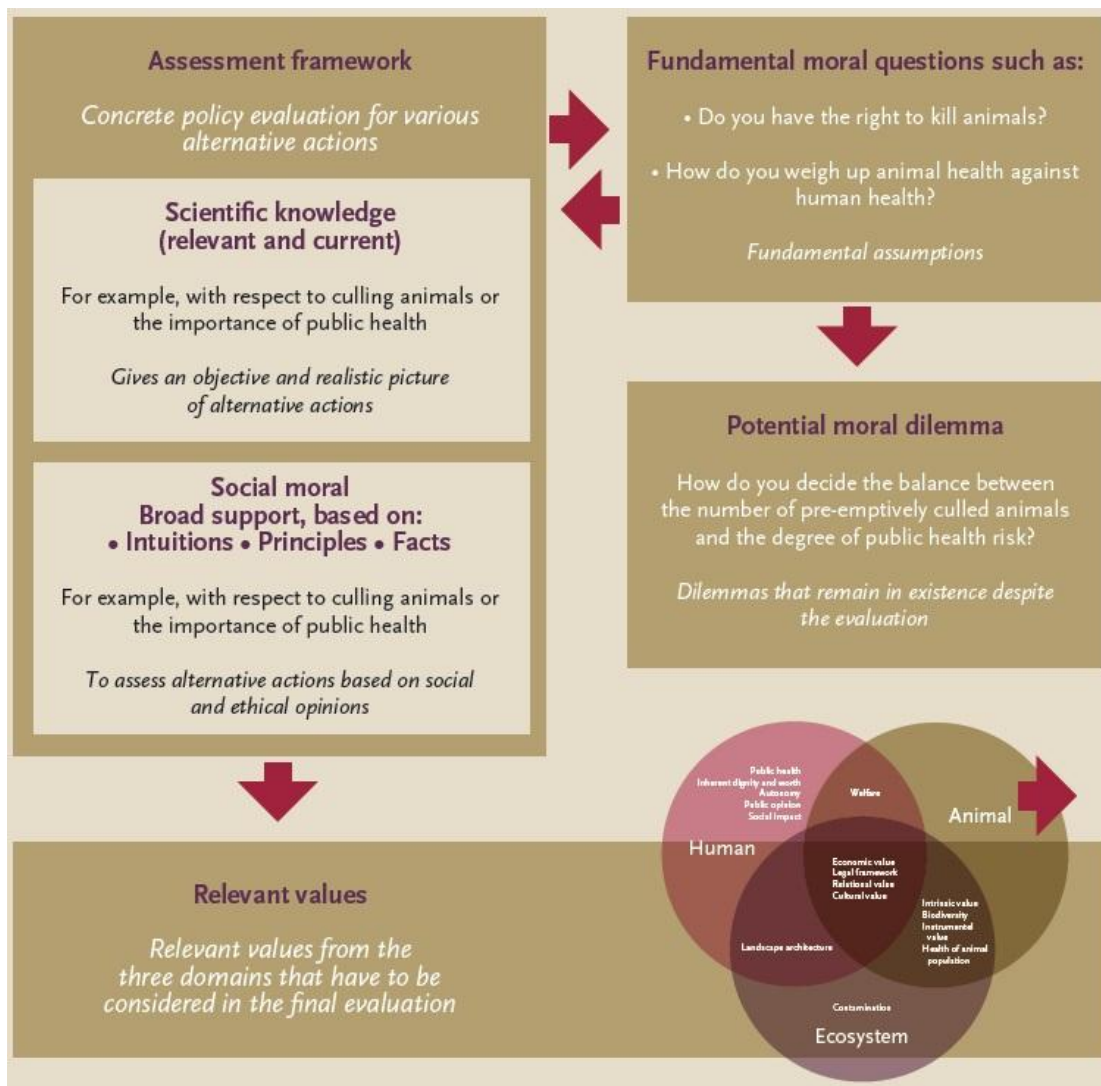
- The advice mentions different interventions/measures (possibly as an amendment to the current protocol) for seven different situations in which seals can find themselves.
- For some situations, several interventions/measures are mentioned, in order of preference. The advice does not state clearly for each different situation which alternatives have been investigated and how they have been balanced in order to arrive at the ultimate intervention advice. The CAA recommends including this explicitly.
- With regard to some interventions/measures, it has been stated explicitly how the intervention affects the welfare of the individual animals involved. This is not the case for all the interventions (1d, 1f, 1g and 4a). CAA advises to state explicitly for each intervention what the effects are on the welfare of the individual animals involved, and how this has been a factor in considerations about the choice of interventions/measures, possibly in relation to the working definition of animal welfare applied by the Committee.
- In the recommendations for each situation, it is not stated explicitly how they reflect the conditions from nature legislation. The CAA recommends establishing this link.

Following these three questions and the decision that an intervention is necessary, a flow chart³⁴ and assessment framework are completed twice for each intervention, in accordance with the method of the RDA assessment framework: first for the individual seal, then for the population. Depending on the answers given during the process, the following questions are asked (see Appendix 3):

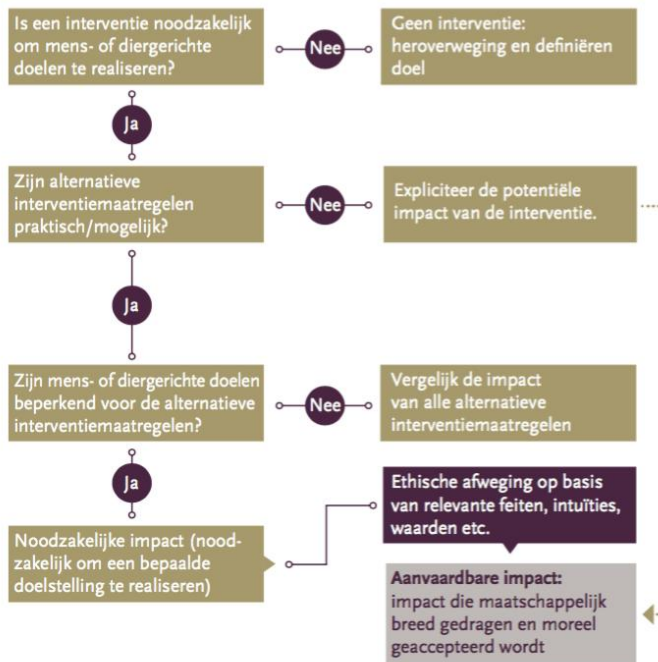
- Is an intervention necessary in order to achieve human- or animal-oriented objectives?
- Are alternative intervention measures practical/possible?
- Do human- or animal-oriented objectives have a limiting effect on the alternative intervention measures?
- Impact/ethical consideration.
 - In the advice, it is not explicitly made clear for each intervention whether the flow chart has been used as such and whether the questions have been followed.
 - Human- and animal-oriented objectives that necessitate an intervention or have a limiting effect on interventions are referred to implicitly in the advice (e.g. welfare of individual animals, leaving the population in peace and legislation).
 - The Committee states that it considered interventions from two different perspectives (population/individual welfare) first, after which these two perspectives were combined. The ultimate advice mainly deals with the combination of the perspectives, which means that possible details for consideration from the two individual perspectives are not always traceable (e.g. for each individual intervention).

³⁴ The flow chart from the RDA advisory report "*Wegen van Welzijn*" is generally and principally intended for a number of situations where it is not immediately clear whether human intervention is necessary and where animal suffering is not an immediate issue. In specific situations where animal suffering and adaptability is more of an issue, the specific application from the RDA advisory report "*Duty of Care, Naturally*" can be followed (see Appendix 5).

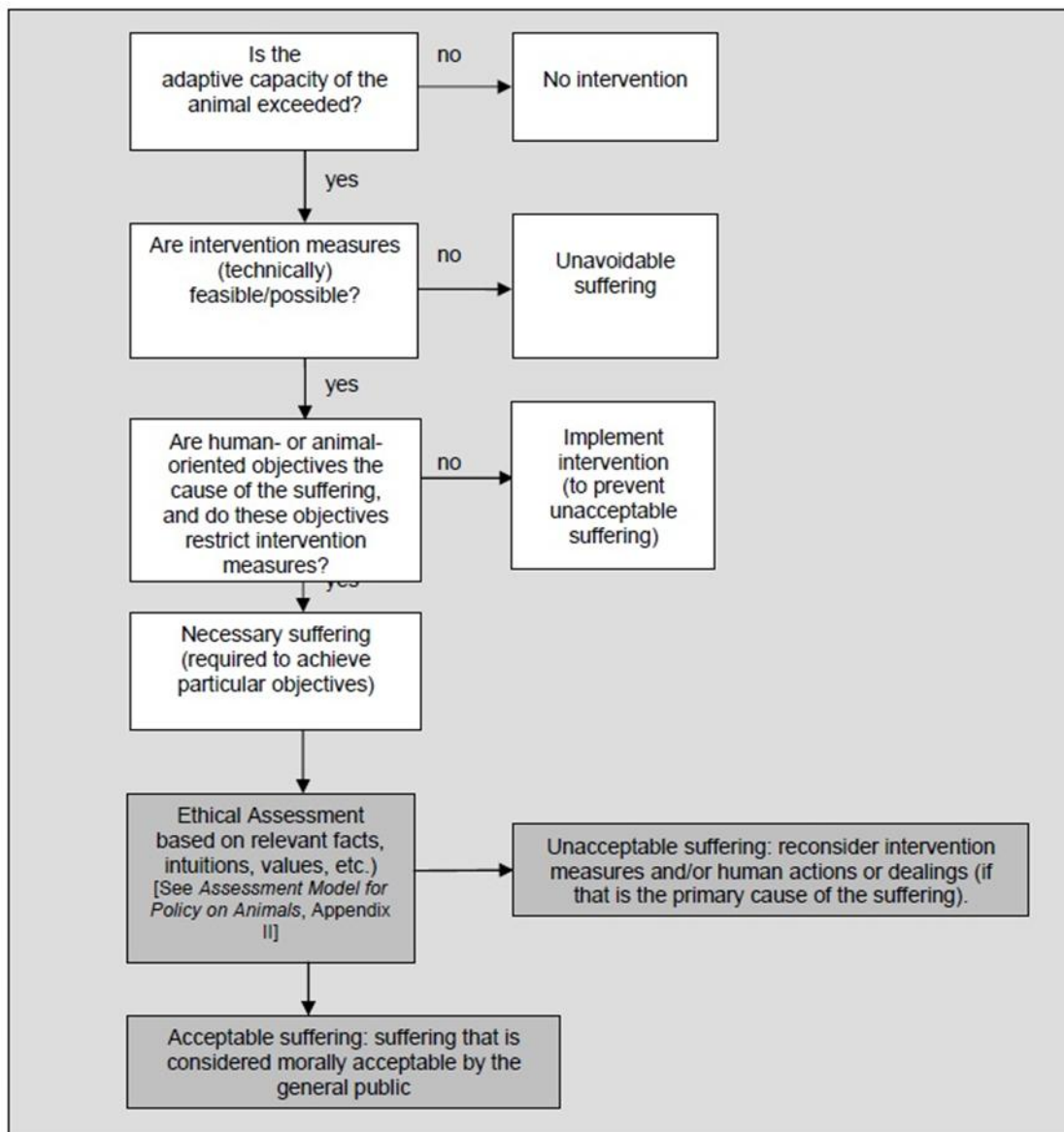
CAA assessment framework and flow chart



Stroomschema



Flow chart for Duty of Care, Naturally



Appendix 11: Proposal for new seal rehabilitation guidelines and protocol

This appendix provides a translation of the SAC advice on a new protocol and guidelines for seal rehabilitation. The guidelines and protocol have been written as modifications to the 2003 guidelines and protocol. All additions and changes to the original guidelines and protocol (LNV, 2003) have been underlined or ~~striked out~~. Please note that this appendix has been based on an English translation of the original Dutch guidelines and protocol. This appendix has been written after the stakeholdermeeting and has not been reviewed by stakeholders.

2018–2022 principles

1. Removing and treating ill, weakened or abandoned seals (pups) and releasing them upon recovery is not required for the maintenance of the seal population in Dutch coastal waters. Furthermore, doing so carries certain risks. These risks include the introduction of pathogens in the natural population, interference with natural selection, a deterioration of the general situation and a decline in resistance in seal populations. There is also a risk that pathogens will be transmitted to the human population. Therefore there should be no active searching for ill, weakened or abandoned seals. A seal's home is the sea, not a rehabilitation centre.
2. Individual seals may get into trouble in various ways. If the animal concerned cannot overcome a problem independently and its condition is seriously compromised, Dutch law mandates that there is a general duty of care. The disturbance of the animal this entails should be weighed against the positive effect the intervention may have on the animal. Ill, weakened, injured or abandoned seals should be left wherever they are discovered and reported to qualified, government-appointed persons (seal guardians) or institutions.
3. The seal guardian will decide what is to be done in each individual case and at the location where the seal was found, on the basis of the criteria specified by the government (see the rehabilitation protocol below). Where needed they will consult a veterinarian (connected with a rehabilitation centre). The decision must be based upon the greatest possible diligence and restraint in the interest of the individual animal. An animal being able to live in the wild has an intrinsic value (as recognised by the Nature Conservation Act) which should be respected to the greatest extent possible.
4. Seals in need who are not reasonably expected to independently function in the wild again, following rehabilitation and care, should be euthanised by qualified people.
5. Seals may only be taken into rehabilitation if, based on their health condition, it is expected that they can be released after a reasonable period (within a maximum of six months) and lead a normal life again. Strict conditions should apply to rehabilitation, so the risk of introducing exotic pathogens into the wild seal population must be excluded wherever possible. These conditions are set out in the rehabilitation protocol.
6. Releasing the animals requires the approval of the competent authority, the Ministry of Agriculture, Nature Management and Fisheries. Approval will be granted only if the following conditions are met:
 - 6.1. The seal's condition must be sufficiently good and the seal must be free from pathogens that may harm the wild population or are demonstrably exotic. Adequate preventive measures must be taken to counter pathogens.
 - 6.2. Seals must not have been treated with certain medicines or vaccines (specifics pending the result of action taken as announced in the Trilateral Seal Management Plan 2002–2006).
 - 6.3. They must not have stayed at a rehabilitation centre accommodating seals from other populations or other marine mammals, unless these are accommodated separately under strict hygienic conditions.

7. Rehabilitated seals must be released as soon as possible, at the latest six months after they were taken into rehabilitation.
8. Rehabilitated seals are to be released in the vicinity of the location where they were found.
9. Seals born in captivity may not be released without a dispensation as set out in Section 75 of the Flora and Fauna Act.
10. In the event of a calamity (such as an oil spill or other large-scale environmental pollution), all required protective and rescue measures should immediately be taken. These may diverge from the principles set out here, as determined by the Minister of Agriculture, Nature Management and Food Quality.
11. In the event of an epidemic or calamity involving large numbers of stranded seals, no more than 5% of the total seal population in Dutch coastal waters may be released following rehabilitation, unless explicitly decided otherwise by the Minister of Agriculture, Nature Management and Food Quality. If the population threatens to dip below 1000, the minister can create an exception to this rule. This will be preceded by international (trilateral) consultation.
12. (new) No more than 5% of the Dutch pup populations (i.e. seals aged < 1 year) of harbour seals and grey seals may be released in a year (with the possibility of an exception if the overall population threatens to dip below 1000). At the end of each year it must be verified for both species whether the threshold has been exceeded. If so, extra measures to further reduce rehabilitation below 5% must be implemented in the following year.
13. (new) The current protocol should be evaluated and updated every five years to include new societal and scientific developments, as well as evaluating and updating it whenever this is required to reduce the number of pups (aged < 1 year) in rehabilitation centres to below 5% (see 11). A common scientific advisory board for all seal rehabilitation centres should play an important role in this process and could also enhance continuous learning and adjustments to seal rehabilitation protocols and seal guardian working procedures.

2018–2022 protocol

Walking or sailing in an area of the Wadden Sea or the Southwest Delta that is closed off in accordance with the Environmental Protection Act is in principle not permitted without a dispensation or license as required by this Act. Taking seals from closed areas is not allowed. ~~[deleted exceptions]~~ Exemptions apply to the authorised crew of state (patrol) boats, area managers and participants in excursions or mudflat hiking trips for which clearance to enter the area has been sought. In these specific cases, persons who find ill seals should decide from case to case using their conscience whether aid should be provided. Only the authorised crew of state (patrol) boats may remove seals from these areas. Outside of the closed areas, assigned seal guardians are the only authorities that can decide to take a seal from the stranding site into rehabilitation or relocate them to another site. ~~[deleted exceptions]~~ If desired, a patrol boat of the ministry of Agriculture, Nature Management and Food Quality can request another central government vessel to take a seal on board, for instance in the framework of SIW cooperation with regard to the Wadden Sea.

Bearing in mind the aforementioned principles, the following specific requirements apply with regard to the health status of seals who are taken in for rehabilitation with the goal of eventually releasing them.

1. Seals outside of closed areas qualify for assistance³⁵ or rehabilitation if they:
 - 1.1. are injured due to human behaviour.
 - 1.2. have clinical symptoms of a life-threatening disease, and it can be reasonably assumed that rehabilitation will lead to recovery to the point that the seal can function independently in the wild. In order to determine that the animal cannot recover in its natural environment an observation period of at least 24 hours must be maintained.
 - 1.3. are sucklings that were prematurely separated from their mother and can reasonably be expected to be unable to survive in the wild independently. In order to determine whether a seal is in this category, it is important to determine the species, to estimate its age, and – provided the circumstances wherever it is found allow for it – to adhere to a minimum observation period in order to establish that the animal was in fact abandoned by its mother prematurely. If it should not be possible to adhere to such an observation period, the decision should always be the responsibility of the veterinarian of the rehabilitation centre in question.
 - 1.4. These criteria apply to:
 - 1.4.1. grey seals (*Halichoerus grypus*):
 - 0 to 1 week old (white coat, fresh umbilical cord); mother absent for over 24 hours.
 - 1 to 3 weeks old (white coat, no fresh umbilical cord); weight under 40 kg and mother absent for over 24 hours.
 - 1.4.2. harbour seals (*Phoca vitulina*):
 - born prematurely (white coat); mother absent for over 24 hours [*was 2 hours*].
 - 0 to 1 week old (fresh umbilical cord); mother absent for over 24 hours [*was 2 hours*].
 - 1 to 4 weeks old (no fresh umbilical cord) clear emaciation, mother absent for over 24 hours [*was 2 hours*].
2. (new) Seals that do not qualify for rehabilitation are:
 - 2.1. all weaned seals.
 - 2.2. all sucklings that have been alone for less than 24 hours. Assistance could be limited to minimising human disturbance by setting up temporary resting areas.
 - 2.3. seals that do not have free excess to the sea but are not physically compromised. Assistance should be limited to relocating the animals to a spot with free and undisturbed access to the sea.
 - 2.4. undernourished seals when the population is near carrying capacity.
3. For a decision on euthanasia, each rehabilitation centre should act in accordance with a common euthanasia protocol for all rehabilitation centers. The general, accepted criteria for euthanasia that apply to seals are:
 - 3.1. clinical symptoms of a life-threatening disease or injury, where it is reasonably assumed that rehabilitation will not lead to recovery to the point that the seal can function independently in the wild;
 - 3.2. a congenital defect of which it may reasonably be assumed that the cause is hereditary. Such defects should not be remedied by means of an operation;
 - 3.3. severe emaciation.
4. Final responsibility for decisions regarding dependence, the nature of the assistance offered and the diagnosis of hereditary defects rests with the veterinarian attached to the rehabilitation centre.
5. (new) Rehabilitation centres are only allowed to accept seals that are taken in by preselected and certified seal guardians who work in accordance with the seal protocol. Persons other than seal guardians may no longer take in seals and any instances should be reported to the responsible authorities immediately. Seal rehabilitation centres that repeatedly accept these seals without reporting this to the authorities could lose their dispensation.
6. If requested, the rehabilitation centre should be able to produce the opinion of a practising veterinarian on an encountered animal.

³⁵ Assistance may involve moving the animal to another location, setting up a temporary resting area or freeing it from fishing nets etc.

7. Each animal will be provided with a permanent identity marker by the qualified organisation taking it into rehabilitation so as to preclude cases of mistaken identity, and standard registrations will be recorded (location, time, finder, sex, weight, species, weather conditions, effort, release date and location). The standardisation of transponders is obligatory.
8. Rehabilitation centres may only accommodate seals originating in the rescue area described in the dispensation granted to the centre in question.
9. Centres accommodating harbour seals and grey seals from Dutch and adjacent coastal waters are not permitted to accommodate seals from other populations.
10. Once the maximum rehabilitation capacity has been reached at a rehabilitation centre and there is a need for further accommodation, the other authorised centres should be the first ports of call.
11. Quality assurance in the field of hygiene should be evident from a hygiene protocol (mandatory for the rehabilitation centre) detailing: the allocation of tasks to authorised and qualified staff; cleaning and disinfection plans for the transport routes and the spaces in which seals are kept; the required checks; criteria for the fish that will be fed to the seals; and quarantine measures.
12. Medication
A complete record must be kept of all medication administered to each seal, during which period, and for the treatment of which ailment. The list of approved medicines is to be specified within the trilateral framework and will then apply to all seals accommodated in accordance with this rehabilitation protocol.
13. Release
Releasing seals from rehabilitation can only be done using boats designated by competent authorities. Records must be kept of which seals have been released, and where and when they were released. A percentage of animals (still to be specified, based on research criteria) must be fitted with radio-tracking equipment to allow monitoring of behaviour and survival patterns.
14. Provision of information
The data from the previous year as collected in accordance with points 4, 5, 9, 10 and 11 must be submitted to the Ministry of Agriculture, Nature Management and Fisheries before 31 January of each year. These data will also be made available in the trilateral context. On request, feedback on the gathered data from the three Wadden Sea countries can be sent to the rehabilitation centres and other interested parties. The authorities responsible for the policy must be informed immediately so they can take any required measures if (interim) research findings should show evidence of a particular negative trend or other causes of concern. If the provision of information is not fulfilled before the end of March of the following year, the dispensation may be revoked (new).
15. (new) All rehabilitation centres must work in accordance with the guidelines, the protocol and the common standards. If not, the dispensation for seal rehabilitation can be withdrawn by the legal authority.

Advies van de Wetenschappelijke Adviescommissie Zeehondenopvang in Nederland

28 februari 2018

(vertaling van het in de Engelse taal opgestelde advies)

Wetenschappelijke Adviescommissie Zeehondenopvang:

em. prof. dr. A.N. van der Zande, woonachtig te Gouda, tevens voorzitter;
em. prof. dr. J.J.M. van Alphen, woonachtig te Leiden;
dr. S.J. Goodman, woonachtig te Leeds (VK);
dr. F.L.B. Meijboom, woonachtig te Ede;
prof. dr. A.J. Stegeman, woonachtig te Amersfoort;
dr. D. Thompson, woonachtig te St Andrews (VK).

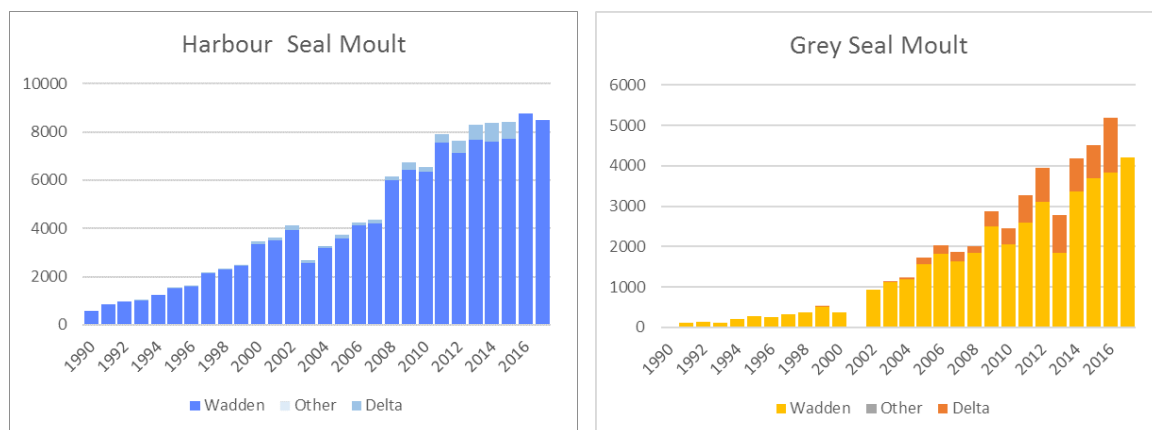
Wetenschappelijk secretaris van de WAZ:

drs. W. Kuindersma (Wageningen Environmental Research, WUR);
drs. ir. J.B. Latour (Altenburg & Wymenga).

Foto voorblad: Sophie Brasseur WMR

Inleiding

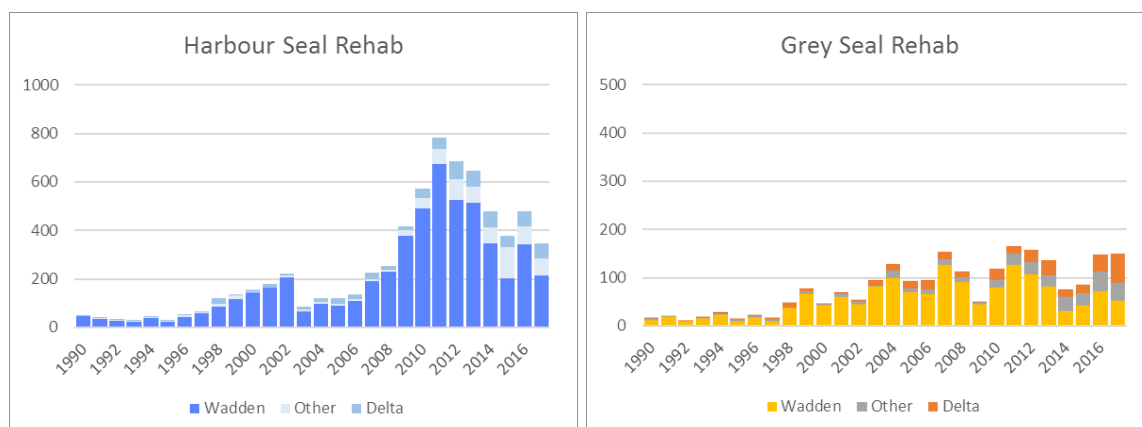
In Nederland komen twee soorten zeehonden voor, de grijze zeehond (*Halichoerus grypus*) en de gewone zeehond (*Phoca vitulina*). De populaties van beide soorten zijn de afgelopen 40 jaar aanmerkelijk toegenomen. Na een dieptepunt van 500 exemplaren in 1980 heeft de populatie gewone zeehonden zich hersteld tot circa 9.000 in 2016 (Grafiek 1). Grijze zeehonden kwamen voor 1980 feitelijk niet meer in Nederland voor, maar hebben sindsdien een opmerkelijk herstel laten zien. Het aantal exemplaren dat tijdens de rui wordt geteld, is gestegen tot circa 5.100 in 2016. Het aantal pups dat ieder jaar door beide soorten wordt geworpen, bedraagt ongeveer 20% van het aantal getelde aantal zeehonden.



Afbeelding 1: Omvang populatie Nederlandse gewone zeehonden (links) en grijze zeehonden (rechts) tijdens rui (Brasseur 2018, bijlage 4)

In Nederland zijn momenteel vijf opvangcentra voor zeehonden met een ontheffing om zieke, verweesde of gewonde exemplaren uit de Nederlandse kustwateren op te vangen. Dit zijn: 1. A Seal (Stellendam); (2) Ecomare (Texel); (3) Zeehondencentrum Pieterburen; (4) Zeehondenopvang Eemsdelta (Termunterzijl) en (5) Zeehondenopvang Terschelling.

Op grond van de ontheffing moeten deze centra zich houden aan de Leidraad opvang gewone en grijze zeehonden en het bijbehorende protocol (2003). Dit protocol vormt een praktische vertaling van de nationale en internationale wetgeving inzake dierenwelzijn en natuurbescherming, waaronder de Trilaterale Overeenkomsten ter bescherming van de zeehonden in de Waddenzee (bijlage 2).



Afbeelding 2: Aantal Nederlandse gewone zeehonden (links) en grijze zeehonden (rechts) in opvangcentra (Brasseur 2018)³⁶

³⁶ <http://edepot.wur.nl/440805>.

Het aantal zeehonden dat in de opvangcentra is opgenomen, is gestegen van 20 in 1980 tot 500 à 1.000 in de afgelopen jaren. Gedurende de periode 2009-2011 steeg het aantal gewone zeehonden in de opvangcentra sterk. In 2011 werden bijna 800 gewone zeehonden opgenomen. Meer dan 90% van de opgenomen zeehonden is jonger dan 1 jaar. Bijgevolg werd van alle gewone zeehonden, die in de Nederlandse kustwateren tussen 2007 en 2013 jaarlijks geboren werden, meer dan 20% van de pups in centra opgenomen, met een piek van 50% in 2011. Sinds 2014 zijn sommige opvangcentra selectiever geworden bij het opnemen van zeehonden.

In 2015 verzocht de staatssecretaris van Economische Zaken aan de heer Eenhoorn, voorzitter van het Regiecollege Waddengebied, om een gemeenschappelijke strategie te ontwikkelen voor alle organisaties die bij de opvang van zeehonden betrokken zijn. Eenhoorn concludeerde echter dat er tussen de centra onvoldoende overeenstemming bestond over de aanpak van de opvang om een dergelijke strategie mogelijk te maken. Er bestond geen overeenstemming over hoe de bescherming en het behoud van de wilde populatie enerzijds in evenwicht kon worden gebracht met het welzijn van individuele hulpbehoevende dieren anderzijds. Hierdoor zijn de Leidraad opvang zeehonden en het bijbehorende protocol (2003) op diverse manieren geïnterpreteerd. Eenhoorns belangrijkste advies was om een wetenschappelijke commissie in te stellen die bindende aanbevelingen zou moeten doen over de wijze waarop dit evenwicht zou kunnen worden bewerkstelligd (Eindverslag verkenning zeehondenopvang, 18 december 2015).

Doelstelling

De toenmalige staatssecretaris van Economische Zaken³⁷ besloot naar aanleiding van het advies-Eenhoorn een internationale Wetenschappelijke Adviescommissie Zeehondenopvang in te stellen (Stcrt 2017, 44874). De staatssecretaris verzocht de wetenschappelijke adviescommissie (WAZ) antwoord te geven op de volgende vragen:

5. In welke situaties is opvang toelaatbaar en wanneer wordt opvang ontraden? Het advies moet zowel ingaan op de benadering dat wilde dieren zo min mogelijk moeten worden opgevangen (in welke gevallen is opvang wel nodig?) als op de benadering dat er ruimte moet worden geboden aan opvang vanuit dierenwelzijn van het individuele dier (in welke gevallen zijn er bezwaren tegen opvang?).
6. Hoe moet er gehandeld worden in situaties waarbij opvang wordt ontraden?
7. Waar dient de opvang aan te voldoen, welke behandeling en verzorging maakt deel uit van de opvang en wat zijn de grenzen van opvang wanneer besloten wordt tot opvang?
8. Welke voorwaarden dienen er gesteld te worden aan het terugzetten van de dieren?

Werkwijze van de WAZ

De WAZ heeft haar advies gedurende zes maanden voorbereid. Zij heeft de relevante wetenschappelijke literatuur onderzocht, internationale experts op het gebied van zeehonden en zeehondenopvang geraadpleegd, drie opvangcentra bezocht en overleg gepleegd met de belanghebbenden over het ontwerpadvies (bijlage 1). Dit document bevat de voornaamste aanbevelingen van de WAZ. De bijlagen dienen ter onderbouwing van de adviezen. De hoofdtekst van het advies wordt vergezeld van de volgende Engelstalige bijlagen:

12. de werkwijze van de WAZ (bijlage 1);
13. een overzicht van de huidige wettelijke verplichtingen en taken betreffende de bescherming en opvang van zeehonden (bijlage 2);
14. definitie van dierenwelzijn (bijlage 3);
15. gegevens over de zeehondenpopulatie en de zeehondenopvang (bijlage 4);
16. biologische analyse van moeder-puprelatie (bijlage 5);
17. literatuuroverzicht van het effect van opvang op de wilde populatie (bijlage 6);
18. literatuuroverzicht van de invloed van het milieu op zeehonden (bijlage 7);
19. een inventaris van de internationale en nationale praktijken (bijlage 8);
20. raadpleging van belanghebbenden (bijlage 9);
21. beoordeling van het voorlopig advies door de Raad voor Dierenaangelegenheden (RDA) op basis van het door de RDA opgestelde kader voor het welzijn van wilde dieren, met een korte reactie van de WAZ (bijlage 10);
22. voorstel voor een nieuwe leidraad en een nieuw protocol voor de opvang van zeehonden (bijlage 11).

³⁷ Deze portefeuille valt inmiddels onder de verantwoordelijkheid van het ministerie van Landbouw, Natuur en Voedselkwaliteit.

Advies van de WAZ

In dit advies gaat de WAZ in op elk van de vier vragen die door de staatsecretaris van Economische Zaken werden gesteld:

1) In welke situaties is opvang toelaatbaar en wanneer wordt opvang ontraden?

De commissie werd gevraagd antwoord te geven op deze vraag vanuit twee verschillende oogpunten: (1) de bescherming en instandhouding van de wilde populatie (populatieperspectief) en (2) het dierenwelzijn van individuele hulpbehoevende dieren (dierenwelzijnsperspectief). De WAZ heeft dit in twee stappen gedaan: 1) door de opvangaspecten vanuit ieder perspectief afzonderlijk te onderzoeken en 2) door een combinatie van beide perspectieven op een aantal relevante praktijksituaties toe te passen.

De WAZ concludeert dat de opvang van zeehonden vanuit het oogpunt van de populatie niet noodzakelijk is en (vanuit dit perspectief) moet worden ontraden in situaties waarin opvang negatieve effecten heeft op de populatie wilde zeehonden. Dit standpunt werd ook al ingenomen in het protocol van 2003.

De WAZ concludeert echter ook dat de opvang van individuele zeehonden is toegestaan vanuit het oogpunt van dierenwelzijn in situaties waarin: (1) een zeehond problemen ondervindt als direct gevolg van menselijke activiteiten en (2) opvang van een individuele zeehond netto geen negatieve effecten heeft op het welzijn van de desbetreffende zeehond of andere zeehonden in de wilde populatie.

De WAZ heeft deze principes uitgewerkt en gecombineerd in een aantal werkelijk bestaande situaties. Hieruit volgen de volgende aanbevelingen:

- h. *Gewonde dieren moeten worden geholpen of opgevangen als de verwondingen rechtstreeks veroorzaakt zijn door menselijke activiteiten (bijv. verstrengeling in visnetten of bootongelukken).*

Volgens het protocol uit 2003 moeten zeehonden die gewond zijn geraakt als rechtstreeks gevolg van menselijk handelen (bijv. verstrengeling in visnetten of aanvaring door boten) worden opgevangen vanuit het algemene beginsel dat mensen de negatieve gevolgen van menselijk gedrag op de natuur moeten beperken of compenseren. De WAZ adviseert hierbij een stapsgewijze benadering te hanteren om te garanderen dat gepaste maatregelen worden genomen. Een voldoende deskundige en gekwalificeerde persoon, zoals een gespecialiseerde dierenarts of een aangestelde zeehondenwachter (zie 3a), moet hierbij besluiten wat de gepaste aanpak is. De verschillende opties daarbij zijn als volgt:

- 4. Als het dier ter plaatse kan worden geholpen door hem bijvoorbeeld uit het net te bevrijden, dan heeft dit de voorkeur.
- 5. Als het dier geen kans maakt op herstel, dient het uit zijn lijden te worden verlost.
- 6. Als de zeehond een probleem heeft dat kan worden opgelost door tijdelijke verzorging, waarna hij weer kan worden vrijgelaten, mag hij worden gevangen en meegenomen naar een opvangcentrum.

- i. *Verlaten pups/zuigelingen kunnen worden opgevangen na een minimale observatieperiode van 24 uur om moeder en pup voldoende gelegenheid te bieden elkaar weer te vinden.*

Het protocol uit 2003 bepaalt dat zuigelingen van gewone zeehonden in aanmerking komen voor opvang als de moeder gedurende een minimale observatieperiode van twee uur afwezig is. Deze observatieperiode van twee uur was gestoeld op de veronderstelling dat gewone zeehonden hun pups gedurende de zoogperiode niet alleen laten, tenzij zij door mensen worden gestoord. Onderzoek en experts (zie bijlage 5) hebben echter laten zien dat gewone zeehonden hun pups soms alleen laten om te gaan foerageren. Dit foerageergedrag is essentieel voor het overleven van de pups, aangezien vrouwelijke gewone zeehonden - in tegenstelling tot groter gebouwde zeehondensoorten - zelden over voldoende vetvoorraden beschikken om hun pups gedurende de gehele zoogperiode te voeden. Deze foerageertochten kunnen 12 uur duren (en soms zelfs langer). Gezonde pups maken regelmatig vastenperioden van maximaal 24 uur door, die onderdeel vormen van hun normale biologische ontwikkeling. Zij zijn in staat om 24 uur zonder hun moeder te overleven (bijlage 5).

Om onnodig lijden van zowel moeder als pups te voorkomen, is het belangrijk om de band tussen moeder en pup niet te verbreken. Gescheiden moeders en pups moeten voldoende tijd krijgen om elkaar weer te vinden. De WAZ acht een observatieperiode van 12 uur niet praktisch omdat pups in dit geval 's nachts moeten worden meegenomen, wat zeer storend is voor zowel de pups als voor andere dieren (o.a. vanwege het gebruik van kunstlicht). Een observatieperiode van 24 uur is beter in de praktijk en sluit ook aan bij de huidige richtlijnen in de Verenigde Staten (bijlage 8).

De WAZ adviseert daarom om de minimale observatieperiode (in het protocol) voor de pups van gewone zeehonden te verlengen van 2 uur tot 24 uur. De bestaande observatieperiode van 24 uur voor pups van grijze zeehonden moet gehandhaafd blijven. De observatieperiode van 24 uur moet plaatsvinden onder toezicht van een zeehondenwachter (zie 3a). Na 24 uur kan een zeehondenwachter (zie 3a) besluiten om een pup op te nemen of om de observatieperiode te verlengen. Als een verlaten pup wordt aangetroffen op een plek met een groot risico op menselijke verstoring (bijvoorbeeld een druk strand), dan moet het gebied tijdelijk worden afgesloten om verstoring tijdens deze periode van 24 uur te voorkomen. Deze aanpak is op drukke stranden in Hawaï zeer succesvol gebleken in het geval van monniksrobber (bijlage 8). Wanneer pups op lastige plekken geïsoleerd raken, moet het daarnaast mogelijk zijn verlaten pups te verplaatsen om hen de mogelijkheid te bieden naar zee terug te keren (de pups van gewone zeehonden kunnen zwemmen) als hierdoor de kans dat moeder en pup elkaar terugvinden wordt vergroot. Een dergelijke verplaatsing was in het protocol van 2003 niet voorzien en moet daarom als optie worden opgenomen in het nieuwe protocol.

j. *Pups moeten na het spenen met rust worden gelaten en niet worden opgenomen.*

Het protocol van 2003 bevat geen specifieke procedure voor gespeende pups die al onafhankelijk zijn van hun moeder. Wat dat betreft bestaan er natuurlijke verschillen in de gedragspatronen van gewone en grijze zeehonden.

De pups van grijze zeehonden maken na het spenen een vastenperiode door. Vanaf het moment dat zij ongeveer 18 dagen oud zijn, zijn deze pups zelfstandige dieren die door hun moeder worden verlaten als onderdeel van hun normale biologische ontwikkeling. Gedurende deze periode blijven de pups op de zandplaten van de werp- en zooggebieden of op naburige stranden. Zij eten op dat moment nog geen vis, maar krijgen ook geen voeding meer van hun moeder. Deze vastenperiode kan meer dan een maand duren en vormt een integraal onderdeel van het ontwikkelingsproces van grijze zeehonden (bijlage 5). Het feit dat zij gedurende deze periode alleen zijn en gewicht verliezen, is dan ook een natuurlijk verschijnsel voor deze levensfase en vormt geen reden om hen op te vangen.

De pups van gewone zeehonden zijn na het spenen (ongeveer na vier weken) onafhankelijk van hun moeder, maar blijven nadien meestal niet op zandplaten liggen. Deze pups ondergaan na het spenen een vastenperiode van circa 15 dagen, waarin zij regelmatig zwemmen. Terwijl zij hun foerageerpatronen ontwikkelen, is het normaal dat zij gewicht verliezen. Net als bij de pups van grijze zeehonden is het natuurlijk dat zij na het spenen alleen zijn en gewicht verliezen. Dit is op zichzelf dus geen reden om hen op te nemen.

De WAZ concludeert dat gespeende zeehondenpups zolang zij aan land verblijven rust nodig hebben en beschermd moeten worden tegen verstoringen, alsmede dat de beslissing om een gespeende pup van grijze of gewone zeehonden op te nemen nooit alleen kan worden gebaseerd op de afwezigheid van de moeder of op gewichtsverlies, zonder ook andere factoren in aanmerking te nemen. Opvang zou een negatief effect hebben op hun welzijn omdat deze dieren hiermee zonder noodzaak de mogelijkheid wordt ontnomen om zich aan te passen aan hun natuurlijke omgeving, evenals de vrijheid om hun normale gedrag te vertonen. Als gespeende zeehonden op een druk strand aanspoelen, kan een bevoegde zeehondenwachter een tijdelijk rustgebied instellen.

k. *De opvang van zeehonden met longwormen moet worden beperkt.*

De aanname dat hoge percentages longworminfecties worden veroorzaakt door een verminderd weerstandsvermogen ten gevolge van door mensen gecreëerde chemische belasting, vormde in het verleden aanleiding om alle gevallen van longworminfectie te behandelen. De WAZ heeft echter geen overtuigend

bewijs gevonden waaruit blijkt dat de huidige hoge percentages longworminfecties een direct gevolg zijn van menselijk handelen (bijlage 7).

Longwormen zijn een normale 'kinderziekte' onder gewone zeehonden. Nadat zij gespeend zijn, raken de meeste jonge zeehonden besmet zodra zij vis beginnen te eten. Net als bij veel andere wilde diersoorten vervullen kinderziekten een rol bij het reguleren van de populatiegrootte en het selecteren van de sterkste dieren, waardoor de algehele gezondheid van de populatie wordt verbeterd. Door alle zeehonden met een waarneembare longworminfectie op te vangen, zoals momenteel gebruikelijk is in Nederland, kunnen de natuurlijke reguleringsmechanismen van de wilde populatie worden ondermijnd. Dit kan mogelijk ook gevolgen hebben voor de overdracht van parasieten binnen de complete populatie (bijlage 6). Als de omvang van de populatie al tegen de maximale draagkracht van de habitat aan zit, kan het opnemen, verzorgen en vrijlaten van een pup leiden tot een toegenomen strijd om beperkte hulpbronnen en een lager welzijn voor andere wilde niet opgevangen exemplaren. Vanuit het oogpunt van de populatie moet de opvang van zeehonden met longworminfecties derhalve worden beperkt.

De WAZ adviseert om de opvang van longwormpatiënten te beperken vanwege de mogelijk negatieve effecten op de populatie. Ernstig zieke dieren die geen kans hebben om te overleven, dienen uit hun lijden te worden verlost. Zeehonden met minder ernstige symptomen moeten ten minste 24 uur worden geobserveerd om het dier de mogelijkheid te bieden zich zonder behandeling te herstellen en onnodige opvang te voorkomen. In gevallen waarin het dier ernstig ziek is en herstel alleen mogelijk is in een opvangcentrum, kan tot opvang worden overgegaan op voorwaarde dat er verder onderzoek wordt gedaan naar de overlevingskansen op lange termijn van deze patiënten (zie advies 4b). Gediplomeerde zeehondenwachters moeten worden getraind om onderscheid te maken tussen deze situaties en om de aanbeveling op te volgen selectiever te zijn bij het opnemen van longwormpatiënten.

De WAZ onderkent dat een observatieperiode van 24 uur voor zieke dieren in bepaalde gevallen (bijvoorbeeld drukke stranden) mogelijk niet haalbaar is vanwege de publieke druk. In deze gevallen dient de zeehondenwachter een afweging te maken op basis van de lokale omstandigheden. Dit kan betekenen dat er een tijdelijk rustgebied wordt ingesteld of dat de zeehond (onder observatie) wordt overgebracht naar een andere locatie of direct naar de opvang wordt gebracht. In de opvangcentra moet een dierenarts vervolgens beslissen tussen behandeling of euthanasie.

Er zijn aanwijzingen dat zieke dieren die in opvangcentra zijn behandeld een grote kans hebben om na vrijlating opnieuw te worden besmet (bijlage 6), hetzij doordat zij daar genetisch ontvankelijk voor zijn, hetzij doordat zij foerageerstrategieën hebben ontwikkeld waardoor zij vaker aan parasieten werden blootgesteld. De opvangcentra hebben de verantwoordelijkheid om de overlevingspercentages van vrijgelaten longwormpatiënten te onderzoeken. Alle vrijgelaten longwormpatiënten moeten worden gemerkt (bijvoorbeeld met een label aan een van hun vinnen) om onderzoek naar de overlevingskansen na vrijlating mogelijk te maken. Ook moet er onderzoek worden ingesteld met behulp van satellietzenders om een beter inzicht te krijgen in het gedrag van deze dieren na vrijlating. Als blijkt dat de overlevingspercentages laag zijn, moet dit aanleiding zijn voor een restrictiever beleid ten aanzien van de opvang van longwormpatiënten.

Longworm is een veelvoorkomende aandoening onder gewone zeehonden en de voornaamste reden voor opname in opvangcentra. De WAZ heeft daarom besloten een uitgebreide beschrijving te geven van deze ziekte. De WAZ adviseert om de bovengenoemde principes ook toe te passen bij andere ziekten (behalve in het geval van plotselinge massasterfte onder zeehonden zoals bij een uitbraak van het PDV virus, daarvoor is een speciaal draaiboek van de overheid beschikbaar)³⁸.

- I. *Geen opvang van ondervoede dieren wanneer de populatie tegen de grenzen van haar draagkracht aan zit*

³⁸ <https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/rapporten/2014/12/27/operationeel-draaiboek-zeehondensterfte/operationeel-draaiboek-zeehondensterfte5-12.pdf>

Het sterftecijfer van jonge zeehonden is van nature hoog in zeehondenpopulaties. Over het algemeen overleeft 30-40% van de jonge zeehonden het eerste jaar niet (zie bijlage 4). De minder sterke dieren sterven door ondervoeding of door ondervoeding in combinatie met ziekte. Dit is een natuurlijk verschijnsel in alle wilde populaties dat sterker wordt wanneer de populatiegroei wordt beperkt door de beschikbaarheid van hulpbronnen en de draagkracht wordt bereikt. Bij populaties van grijze zeehonden die tegen de grenzen van hun draagkracht aan zitten, liggen de sterftecijfers onder pups op 70% of hoger. De afgelopen drie jaar is de populatie van Nederlandse gewone zeehonden gestopt met groeien (na 15 jaar exponentiële groei), wat erop wijst dat de populatie zijn draagkracht bijna heeft bereikt. Als dit klopt, zal het aantal pups dat de komende jaren sterft waarschijnlijk hoog zijn. De opvang van ondervoede dieren is mogelijk schadelijk voor het welzijn van wilde en gezonde exemplaren omdat de kunstmatig gevoede dieren een onnatuurlijk concurrentievoordeel kunnen hebben, terwijl "altijd wilde" gezonde dieren mogelijk met extra concurrentie bij het vinden van voedsel te kampen krijgen. Als het voedselaanbod beperkt is, wordt overleven voor pups een nulsomspel, wat betekent dat de hulp die aan één dier wordt geboden, leidt tot negatieve gevolgen voor andere dieren (zie ook bijlage 2). De WAZ concludeert dat de opvang van ondervoede dieren niet verantwoord is wanneer de populatie tegen de grenzen van haar draagkracht aan zit.

Vanuit het oogpunt van dierenwelzijn zou euthanasie ter plaatse van ernstig ondervoede (of sterk uitgemergelde) dieren een betere optie zijn dan natuurlijke verhongering. Euthanasie ter plaatse heeft ook de voorkeur boven het vangen van het dier met het oog op euthanasie, omdat dit onnodige stress met zich meebrengt. De WAZ beseft echter dat euthanasie van sterk vermagerde zeehonden op het strand momenteel sociaal moeilijk aanvaardbaar is in Nederland (zie ook bijlage 9). De commissie adviseert daarom om de praktische details van euthanasie (waar en door wie) te laten uitwerken door de taskforce zeehonden (zie 4c). Om praktische redenen kan de aanpak ook de optie omvatten om de dieren te vangen en hen op een geschikte locatie (bijv. bij een plaatselijke dierenarts) uit hun lijden te verlossen onder toezicht van een gekwalificeerde dierenarts.

m. *Geen opvang in gesloten gebieden*

De WAZ adviseert om te stoppen met het vangen van zeehonden in gesloten gebieden/natuurreservaten om hen naar de opvang te brengen. De voornaamste reden voor dit advies is dat het vangen van en/of zoeken naar hulpbehoevende dieren in deze gebieden storend kan zijn voor zeehonden of andere beschermde dieren. Het actief zoeken naar hulpbehoevende dieren in gesloten gebieden en voortplantingsgebieden moet niet worden toegestaan. Daarnaast adviseert de WAZ om alle werp- en zooggebieden tijdens de voortplantingstijd af te sluiten om menselijke verstoring zoveel mogelijk te beperken, bijvoorbeeld in de Eems-Dollard (de meeste werp- en zooggebieden in Nederland zijn overigens al afgesloten). Het is belangrijk dat mensen en honden geen toegang hebben tot deze kwelders en zandplaten. De aanbeveling luidt om de huidige regels voor gesloten gebieden actiever en strenger te handhaven. Met dit advies wordt beoogd de verstoring van zuigelingen en hun moeders te beperken. De WAZ is overigens wel voorstander van initiatieven die het publiek de mogelijkheid bieden zeehonden te observeren zonder hen te storen (zoals de zeehondenkijkwand bij de Punt van Reide).

n. *De WAZ adviseert om het aantal opgevangen zeehonden voor beide soorten te beperken tot 5% van de jaarlijks geboren jongen.*

De huidige leidraad en het bijbehorende protocol (2003) stelt dat in geval van een epidemie/calamiteit waarbij grote aantallen zeehonden worden opgevangen, niet meer dan 5% van de totale zeehondenpopulatie kan worden vrijgelaten. Er is echter geen bovengrens vastgesteld voor normale jaren.

Zoals in de inleiding al werd vermeld, was het aantal opgevangen zeehonden - en met name jonge zeehonden - de afgelopen jaren zeer groot. De WAZ meent dat opvang op deze schaal niet gepast is. Aangezien zeehonden wilde dieren zijn, is het feit dat 20-50% van pups (<1 jaar) een aanzienlijk deel van hun jeugd in opvangcentra doorbrengt vanuit het oogpunt van dierenwelzijn onaanvaardbaar, vooral omdat dit een periode in hun ontwikkeling is waarin zij moeten leren om in hun natuurlijke omgeving te leven en te overleven. Bovendien kan grootschalige opvang en vrijlating ook negatieve effecten hebben op het welzijn van de populatie doordat de natuurlijke selectie wordt verstoord en er meer ziektekiemen worden overgedragen. Vanuit het oogpunt van de populatie moet dit worden vermeden/beperkt. Dat betekent dat de schaal van de opvang in de

toekomst moet worden beperkt (bijlage 6). Daarnaast zal een beperking van het aantal opgevangen zeehonden ook helpen om het risico van ziekteoverdracht van dieren naar mensen te verkleinen.

De WAZ adviseert om de bovengrens voor de opvang van zeehondenpups vast te stellen op 5% van alle pups van gewone en grijze zeehonden die per jaar in Nederland geboren worden. Deze aanbevolen bovengrens van 5% dient in de komende jaren tot stand te worden gebracht. Indien de adviezen 1a t/m 1f worden opgevolgd, zou het aantal na opvang vrijgelaten pups al aanzienlijk worden verminderd. De bovengrens van 5% kan daarbij dienen als jaarlijkse controle en als leerinstrument. Dit betekent dat de opvangcentra ieder jaar moeten vaststellen of de limiet van 5% al dan niet is overschreden. Indien de limiet is overschreden, moet worden onderzocht waarom dat is gebeurd en moeten er gepaste maatregelen worden getroffen (bijv. aanpassing van het protocol) om het aantal opgevangen exemplaren in het volgende jaar (c.q. jaren) te verminderen. Dit vergt dat het aantal gestrande, opgevangen en vrijgelaten zeehonden ieder jaar nauwkeurig moet worden bijgehouden.

De limiet van 5% moet opnieuw worden beoordeeld op het moment dat de Nederlandse populatie van gewone en/of grijze zeehonden tot onder de 1.000 exemplaren dreigt te dalen.

2) Hoe moet er gehandeld worden in situaties waarbij opvang wordt ontraden?

In de afgelopen vijftien jaar was de strategie voor hulpbehoevende zeehonden vooral op opvang gericht. De WAZ adviseert om opvang in de toekomstige strategie een lagere prioriteit te geven. De eerste prioriteit moet zijn om *zeehonden met rust te laten* en hun voldoende tijd, ruimte en gelegenheid te geven om hun populatie door natuurlijke processen te laten reguleren. Het zijn wilde dieren die gedurende duizenden jaren hebben weten te overleven. De omstandigheden voor zeehonden zijn momenteel gunstig, de zeehondenpopulatie heeft zich hersteld en heeft mogelijk zelfs de grenzen van haar draagkracht bereikt. Het idee om *zeehonden met rust te laten* komt niet voort uit onverschilligheid bij de WAZ, maar uit de overtuiging dat dit in de meeste gevallen de beste strategie is vanuit het oogpunt van hun welzijn en van de populatie. Tabel 1 geeft een samenvatting van de voorkeursmaatregelen in verschillende situaties.

Tabel 1: Aanbevolen maatregelen in verschillende situaties, w.o. maatregelen indien opvang ontraden wordt

Situatie	Mogelijke maatregelen (naar volgorde van voorkeur)	Voornaamste argumenten (dierenwelzijn/populatie)
Zeehonden die gewond zijn en/of in een net verstrengeld zitten	Het dier uit het net halen en vrijlaten	Zorgplicht, aangezien het lijden is veroorzaakt door menselijk handelen (dierenwelzijn)
	Als medische behandeling nodig is: overbrengen naar opvangcentrum	Zorgplicht, aangezien het lijden is veroorzaakt door menselijk handelen (dierenwelzijn)
	Als herstel niet mogelijk is: ter plaatse (rustige plek) of elders euthanasie plegen	Lijden van het dier zoveel mogelijk beperken (dierenwelzijn)
Zeehonden die vastzitten op ongebruikelijke plaatsen zoals achter een hek of in een sloot	Het dier overbrengen naar de dichtstbijzijnde plek met vrije toegang naar zee en zo nodig een tijdelijk rustgebied creëren	Vrijheid om natuurlijk gedrag te vertonen (dierenwelzijn)
Verlaten pups (zuigelingen)	24 uur observeren en waar nodig een tijdelijk rustgebied instellen of overplaatsen	Onnodig lijden van moeder en pup voorkomen (dierenwelzijn)
Vastende gespeende zeehonden	Niets doen (dier is niet in gevaar)	Vrijheid om natuurlijk gedrag te vertonen (dierenwelzijn)
Dieren met lichte klachten door longwormen	Voor zover nodig na 24 uur observatie: overbrengen naar opvangcentrum of observatieperiode verlengen	Voorkomen van onnodige stress voor het dier die gepaard gaat met het vangen en het maandenlang opvangen (dierenwelzijn)

Dieren met ernstige klachten (longwormen)	Overbrengen naar opvangcentrum	Opvang is enige kans op overleven (dierenwelzijn)
	Indien herstel niet mogelijk is: euthanasie plegen	Lijden van het dier zoveel mogelijk beperken (dierenwelzijn)
Ondervoede dieren (wanneer populatie tegen de grenzen van haar draagkracht aan zit)	Niets doen	Nulsomspel: hulp aan het ene dier betekent lijden voor het andere dier (dierenwelzijn)
	Indien sterk uitgemergeld: euthanasie plegen	Lijden van het dier zoveel mogelijk beperken (dierenwelzijn)
Zeehonden in gesloten gebieden	Niets doen	Andere zeehonden/dieren niet storen (populatie)
Aantal pups (<1 jaar) in opvang overschrijdt 5% in jaar X	Bovengenoemde maatregelen aanpassen om opvang in jaar X+1 te verminderen	Mogelijkheden van negatieve (genetische) effecten van opvang op de populatie beperken (populatie)

3) Waar dient de opvang aan te voldoen, welke behandeling en verzorging maakt deel uit van de opvang en wat zijn de grenzen van opvang wanneer besloten wordt tot opvang?

Een groot aantal organisaties en personen is actief betrokken bij het monitoren van gestrande zeehonden, de hulp aan gestrande zeehonden en de opvang van zeehonden in de vijf opvangcentra. De WAZ heeft grote waardering voor de inspanningen en het werk van deze organisaties en vrijwilligers. De commissie concludeert echter ook dat er een nieuwe aanpak nodig is voor het gehele opvangproces van zeehonden. Dit vergt onder andere een meer professionele aanpak bij de beoordeling van gestrande zeehonden door speciaal getrainde zeehondenwachters op stranden en in andere kustgebieden. Deze professionele aanpak is essentieel om onnodige opvang te voorkomen en een goede toepassing van de nieuwe leidraad en het nieuwe protocol te garanderen. Daarnaast moeten de samenwerking en coördinatie tussen de opvangcentra, vrijwilligers en hun organisaties, de lokale en provinciale overheid, wetenschappers en handhavingsinstanties sterk worden verbeterd.

De WAZ heeft vijf specifieke aanbevelingen opgesteld om bovengenoemde doelstellingen te verwezenlijken:

f. *De WAZ adviseert om gespecialiseerde zeehondenwachters aan te stellen, op te leiden en te certificeren teneinde het nieuwe opvangprotocol voor zeehonden in de praktijk uit te voeren.*

De uitvoering van de nieuwe leidraad en het nieuwe protocol voor de opvang van zeehonden (bijlage 11) vereist een deskundige en zorgvuldige beoordeling van gestrande zeehonden om te bepalen wat de beste aanpak is voor ieder afzonderlijk geval. Diverse opvangcentra werken al op een vergelijkbare manier. De WAZ concludeert dat het essentieel is voor alle centra om met experts te werken die op basis van gemeenschappelijke normen zijn opgeleid en gekwalificeerd. Dit betekent dat speciaal opgeleide en gekwalificeerde zeehondenwachters moeten worden ingezet. Dat idee is ingegeven door het Duitse systeem van zeehondenwachters (bijlage 8). De invoering van zeehondenwachters betekent dat het overbrengen van zeehonden naar een opvangcentrum door anderen illegaal wordt. Momenteel kan iedereen nog een zeehond uit de vrije natuur meenemen naar een opvangcentrum. De WAZ adviseert om deze praktijk te vervangen door de toepassing van de algemene regel dat iedereen die een (vermoedelijk) hulpbehoevende zeehond aantreft, contact moet opnemen met een zeehondenwachter die vervolgens besluit wat de gepaste stappen zijn. Deze strengere aanpak valt te vergelijken met andere situaties in Nederland waarbij uitsluitend speciaal opgeleide personen met wilde dieren mogen omgaan, zoals vogelringers, jagers en jachtopzieners (zie bijlage 8).

De verantwoordelijkheid voor de handhaving van deze nieuwe regels op het strand moet daarbij worden verplaatst van het landelijk niveau (NVWA) naar plaatselijke opsporingsambtenaren ("groene BOA's").

De zeehondenwachters moeten de nieuwe leidraad en het nieuwe protocol toepassen, een gepaste opleiding krijgen en regelmatig een vakbekwaamheidstoets afleggen. Tijdens de opleiding leren zeehondenwachters om een eerste beoordeling uit te voeren van de gezondheidstoestand van gestrande zeehonden, maar ook om met het publiek te communiceren en samen te werken met vrijwilligers, opvangcentra en lokale overheden. Het is essentieel dat de beslissingen van de zeehondenwachters op het strand vervolgens worden geëvalueerd op basis van de uiteindelijke diagnoses van de dierenartsen in de opvangcentra binnen het kader van doorlopend kwaliteitsmanagement.

De WAZ adviseert om de zeehondenwachters uitgebreidere bevoegdheden te geven dan de huidige opvangvrijwilligers en hun een formele ambtenarenstatus te verlenen (zoals BOA's of strandvonders; zie ook bijlage 8). Zeehondenwachters zouden bijvoorbeeld (tijdelijk) een deel van het strand moeten kunnen afzetten om overlast door het publiek te voorkomen (zie het voorbeeld van Waikiki in bijlage 8) of om het dier 24 uur te observeren, een gestrande zeehond naar een geschiktere locatie overbrengen (als het dier hierdoor kan herstellen en naar zee kan terugkeren), of te besluiten/adviseren om euthanasie te plegen om het dier verder lijden te besparen (ter plaatse of elders). De praktische details van euthanasie (waar en door wie) moeten worden uitgewerkt door de taskforce zeehonden (zie 4c).

De WAZ wil daarbij benadrukken dat ook andere vrijwilligers in deze nieuwe aanpak een belangrijke rol blijven spelen. Zij kunnen de zeehondenwachters helpen om gestrande zeehonden te observeren, te beschermen en te vangen, alsook hen helpen bij het monitoren van (gestrande) zeehonden en bij de communicatie met het publiek.

De betrokken overheden (ministerie van LNV, provincies en gemeenten) dienen de zeehondenwachters, evenals de vrijwilligersorganisaties en de opvangcentra, de nodige bevoegdheden en middelen te verlenen.

g. Normen voor dierenwelzijn in de opvangcentra.

In het protocol van 2003 werden geen specifieke normen voor dierenwelzijn of interne werkprocessen in de opvangcentra vastgesteld. Op dit punt kan gebruik worden gemaakt van de ervaringen in andere landen. Zo heeft de federale overheid in de Verenigde Staten bijvoorbeeld normen opgesteld voor alle relevante werkprocessen (zoals voedselbereiding en medische zorg) en de minimumvoorzieningen voor de opvang van zeehonden (omvang van de bassins, enz.)³⁹. De WAZ heeft drie Nederlandse opvangcentra bezocht (bijlage 1), waar zij constateerde dat elk van deze centra met door henzelf opgestelde normen/protocollen werken.

Nauwere samenwerking met betrekking tot deze normen is echter noodzakelijk. De WAZ adviseert om de opvangcentra gemeenschappelijke normen (of protocollen) voor dierenwelzijn voor deze centra te laten opstellen. Dit gezamenlijk protocol/deze gedragscode zou door middel van internationale collegiale toetsing (*peer review*) moeten worden beoordeeld. De NVWA blijft hierbij de bevoegde autoriteit voor handhaving van en toezicht op de overheidsvoorschriften voor dierenwelzijn in opvangcentra.

h. De WAZ constateert de noodzaak van betere samenwerking tussen en gemeenschappelijk leren door de bij de opvang betrokken organisaties.

Momenteel zijn vijf opvangcentra en twee grote vrijwilligersorganisaties (EHBZ, RTZ) in Nederland actief op het gebied van zeehondenopvang. Recentelijk is er een zekere mate van samenwerking tussen de verschillende organisaties tot stand gekomen. Daarbij komt dat de invoering van de nieuwe leidraad en het nieuwe protocol (2018), inclusief de voorgestelde nieuwe aanpak in het veld (met zeehondenwachters) meer en betere samenwerking tussen deze organisaties vereist.

Dit is noodzakelijk om een consequente toepassing te waarborgen en toekomstige conflicten te voorkomen. Deze organisaties zouden ook baat kunnen hebben bij een systeem dat is gebaseerd op de uitwisseling van

³⁹ Zie http://www.nmfs.noaa.gov/pr/pdfs/health/rehab_standards.pdf.

ervaringen en gezamenlijk leren. De opvangcentra zouden ten slotte ook sterk kunnen profiteren van schaalvoordelen door bepaalde voorzieningen te delen. Deze aanbevelingen zouden kunnen leiden tot samenwerking en/of gezamenlijk leren op verschillende gebieden, zoals de training van vrijwilligers/zeehondenwachters, de opleiding van in zeehonden gespecialiseerde dierenartsen, de gezamenlijke monitoring van de effecten van opvang of de oprichting van één gezamenlijke wetenschappelijke adviescommissie voor alle opvangcentra voor zeehonden.

- i. Het nieuwe protocol voor zeehondenopvang zou elke vijf jaar moeten worden geëvalueerd en geactualiseerd.*

Het protocol van 2003 is in bijna 15 jaar nooit geactualiseerd. De WAZ adviseert om het protocol iedere vijf jaar (of eerder, indien nodig) opnieuw te beoordelen en waar nodig te actualiseren om nieuwe maatschappelijke en wetenschappelijke inzichten en ontwikkelingen daarin te verwerken. Een gemeenschappelijke wetenschappelijke adviesraad voor alle opvangcentra voor zeehonden in Nederland kan bij dit proces een belangrijke rol spelen. Deze raad zou permanent leren moeten bevorderen en een rol moeten spelen bij de monitoring en het samenstellen van de onderzoeksagenda's, de handhaving van de bovengrens van 5% (voor vrijgelaten pups), aanpassing van de protocollen en werkprocessen voor de opvang van zeehonden, en het functioneren van de zeehondenwachters op basis van de praktische ervaringen daarmee.

- j. Over de nieuwe leidraad, het nieuwe protocol en het nieuwe systeem van zeehondenwachters dient gedurende een langere periode voorlichting te worden verstrekt aan het publiek.*

Het is uiterst belangrijk dat de nieuwe aanpak - waarbij de nadruk ligt op het voorkomen van onnodige opvang - wordt uitgelegd aan het publiek, inclusief toeristen en inwoners van de Waddenzee en de Zuidwestelijke Delta. Overheden, opvangcentra en vrijwilligersorganisaties zouden een gemeenschappelijke communicatiestrategie moeten afspreken die gebaseerd is op twee principes: (1) Laat zeehonden met rust en (2) Bel de plaatselijke zeehondenwachter (indien nodig). Er zullen gedurende langere tijd aanzienlijke inspanningen moeten worden gepleegd om dit nieuwe verhaal aan het grote publiek te vertellen. Daarom zou het handig zijn als bekende lokale en landelijke opniemakers zich op gaan werpen als ambassadeurs van dit nieuwe verhaal. De nieuwe boodschap kan verder worden ondersteund met moderne communicatiemiddelen en nieuwe technologie. Een goed voorbeeld hiervan is de technologie die gebruikt wordt door ornithologen en vogelbeschermingsverenigingen (webcams, tags, internetplatforms, enz.). Het nieuwe zeehondenverhaal moet onderdeel worden van een breder natuurverhaal, zoals het idee van de Waddenzee als werelderfgoed. Het is hierbij ook belangrijk om de positieve bedoelingen en acties van mensen om zeehonden te helpen niet te frustreren, maar om hier een nieuwe invulling aan te gaan geven.

5. Welke voorwaarden dienen er gesteld te worden aan het opnieuw in het wild vrijlaten van de dieren?

- c. Ontwikkeling van een gemeenschappelijk protocol voor vrijlating en de toediening van geneesmiddelen.*

De WAZ adviseert om een gemeenschappelijk protocol op te stellen voor het vrijlaten van zeehonden en de toediening van geneesmiddelen in de opvangcentra. Dit protocol zou door de opvangcentra moeten worden uitgewerkt. Het protocol dient de volgende punten te bevatten: (1) zeehonden moeten zo kort mogelijk in de opvang blijven; (2) vrijlating moet niet afhankelijk zijn van vaste criteria zoals hun gewicht, maar van hun algehele gezondheidstoestand; (3) aan zeehonden moeten alleen geneesmiddelen worden toegediend wanneer daar een duidelijke klinische noodzaak voor bestaat; (4) er moet een wachttijd worden toegepast voordat dieren worden vrijgelaten na het gebruik van geneesmiddelen, gebaseerd op de kinetische effecten van de medicatie, om het risico van de overdracht van AMR (antimicrobiële resistentie) naar de natuur te beperken; en (5) dieren moeten worden vrijgelaten in de buurt van de plek waar zij gevangen zijn. De centra moeten hiertoe een standaardprotocol/gedragscode opstellen, die door middel van internationale collegiale toetsing wordt beoordeeld.

- d. Er moet een nationaal onderzoeksprogramma betreffende zeehonden worden ontwikkeld.*

Hoewel er de afgelopen decennia in Nederland al een aantal goede onderzoeken naar zeehonden zijn gedaan, werd de WAZ bij haar werk gehinderd door een gebrek aan beschikbare informatie. Een aantal belangrijke voorbeelden daarvan: het overlevingspercentage van vrijgelaten zeehonden is niet bekend; de niveaus van immunosuppressieve stoffen in zeehonden zijn al sinds 2003 niet meer gemeten. De WAZ adviseert om een nationaal, door de overheid gefinancierd onderzoeksprogramma voor zeehonden op te starten. Dit programma zou zich kunnen richten op onderwerpen zoals de overlevingskansen van vrijgelaten zeehonden (door middel van telemetrische metingen met satellietzenders/GPS), de effecten van industriële chemicaliën op zeehonden, de interactie tussen individuele genetische profielen (inclusief modellering), ziektestatus, overlevingspercentage en resultaten van de opvang (noodzakelijk om meer inzicht te verkrijgen in het potentiële effect van opvang op inteelt en natuurlijke selectie), verbetering van de monitoring van gestrande zeehonden en de ontwikkeling van specifieke software en apps voor het monitoren en identificeren van individuele zeehonden (bijv. op basis van het vlekkenpatroon op hun huid). Dit onderzoeksprogramma zou ook moeten dienen als platform voor samenwerking tussen de verschillende belanghebbenden en (inter)nationale wetenschappers op het gebied van zeehonden, en kan bijdragen tot innovatie en leren. Opvangcentra zijn verplicht om de bevoegde instanties ieder jaar opvangstatistieken te verschaffen (aantal opgenomen dieren, diagnoses, behandelingen, resultaten, enz.).

c. Een gemeenschappelijk Zeehondenakkoord en een Taskforce Zeehonden.

De uitvoering van het WAZ-advies vereist samenwerking tussen alle overheidsinstellingen en maatschappelijke organisaties die betrokken zijn bij de bescherming en opvang van zeehonden. Dit omvat nationale, regionale en lokale overheden, opvangcentra, natuurbeschermingsorganisaties, wetenschappers, vrijwilligersorganisaties, enz. De WAZ adviseert al deze partijen om een Zeehondenakkoord te sluiten teneinde afspraken te maken over de gemeenschappelijke doelstellingen en duidelijke gemeenschappelijke acties vast te stellen.

De stakeholder consultatie door de WAZ heeft laten zien dat er een breed draagvlak bestaat voor een dergelijk Zeehondenakkoord (bijlage 9). De WAZ adviseert het ministerie van LNV en de provincies om (samen met de genoemde organisaties) een taskforce met een onafhankelijke voorzitter op te zetten om dit akkoord op te stellen.