

Common and Grey Seals in the Wadden Sea

TSEG-plus Report
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WADDEN SEA ECOSYSTEM No. 15

Common and Grey Seals in the Wadden Sea

**Evaluation of the Status of the Common and Grey Seal
Populations in the Wadden Sea including an Assessment as to
whether the Seal Management Plan Needs
to be Revised and Amended**

**TSEG-plus Report to the TWG/SO
March / June 2001**

**2002
Trilateral Seal Expert Group-plus
Common Wadden Sea Secretariat**

Editorial Foreword

The Seal Agreement, the first agreement of the Convention on the Conservation of the Migratory Species of Wild Animals (Bonn Convention) was concluded between the countries adjacent to the Wadden Sea – Denmark, Germany and the Netherlands – and was enacted in 1991. Pursuant to Art. 4 of the Seal Agreement, the Parties have to develop, on the basis of scientific knowledge, a conservation and management plan for the seal population. This plan has to contain a comprehensive statement of actions, which are or are to be undertaken by the Parties.

The "Seal Management Plan 1996 – 2000" (SMP) expired, after a prolongation of one year, at the end of 2001. The Senior Officials (SO) and the Trilateral Working Group (TWG) of the Trilateral Wadden Sea Cooperation asked the extended Trilateral Seal Expert Group (TSEG-plus), which consists of seal experts and representatives of the competent seal management authorities of the four Wadden Sea regions, to assess the current SMP

1996 – 2000 and develop a revised version including recommendations for the next planning period. The TSEG-plus submitted the present report "Evaluation of the Status of the Common and Grey Seal Populations in the Wadden Sea including an Assessment as to whether the Seal Management Plan Needs to be Revised and Amended" to the TWG/SO in March/June 2001.

The TSEG-plus report served as the main background document for the compilation and decision making regarding the new Seal Management Plan. On the basis of the TSEG-plus report a draft Seal Management Plan 2002 – 2006 was compiled and discussed at the TWG/SO meetings. The final "Seal Management Plan 2002 – 2006" was adopted at the Trilateral Governmental Wadden Sea Conference in Esbjerg in Denmark on 31.10.2001 and is in Annex 7.

Common Wadden Sea Secretariat
July 2002

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Executive Summary

1. The current Seal Management Plan (SMP) 1996 – 2000 will expire, after a prolongation of one year, at the end of 2001 and the Senior Officials (SO) of the Trilateral Wadden Sea Cooperation asked the Trilateral Working Group (TWG) to revise the Seal Management Plan and produce draft recommendations for the next planning period. In accordance with §18 of the Common Statement of the SO 14 in November 1999, the TWG asked the extended Trilateral Seal Expert Group (TSEG-plus) to assess the current SMP 1996 – 2000 and develop a revised version including recommendations for a new management period by 1 March 2001. After the installation of TSEG-plus after April 2000, the TSEG-plus met three times, on 12.07.2000, 08.11.2000 and 21./22.02.2001, to fulfil the tasks of the Terms of References.

2. Both species, common and Grey seals in the Wadden Sea, are taken into consideration within the Seal Management Plan.

3. It is concluded that the population of the Common seal in the Wadden Sea has continued to develop prosperously, and the average annual growth rate since 1989 has approximately been 13%. In 2000, 17,000 Common seals were counted and the present total population is estimated to about 23,500 seals in the entire Wadden Sea.

4. The survey results from 2000 seem to indicate that the lower increase in 1998/1999 has been a one-off event, and that there is no real change in the population trend. Further modeling studies have been started to investigate post-epidemic developments in reproductive rates in the entire Wadden Sea as well as in different regions. Furthermore, those studies will enable to predict population trends assuming fluctuations in pup production as well as varying mortality rates. Surveys in the years to come will show whether or not the strong population growth in the last decennium is going to continue or slow down, and if so, which population parameters will become affected.

5. The present scheme of coordinated aerial surveys has been proven to be very valuable to monitor population trends and provide indexes on growth and reproduction. It is concluded that the

monitoring should be continued and further modeling is required to obtain further data on age-specific survival and age-composition of the population, which will enable future short to mid-term population trend predictions.

6. Since the beginning of the 1980s, two major breeding sites of Grey seals have existed in the Wadden Sea area, one in the Netherlands (about 550 animals in 1999) and one in Schleswig-Holstein (colony of about 30 – 40 animals). Despite the growing numbers in the Netherlands and the stable numbers in Germany, the Wadden Sea Grey seal populations cannot be regarded as viable in the biological sense. Viable would mean that the population could survive and recover from major calamities without import of animals from elsewhere. One of the major factors preventing a real viable population to settle is the lack of undisturbed higher breeding grounds, which are not flooded during high tides. The practice of "rescuing" a large number of pups of Grey seals each year to prevent mortality is not a solution, if any. Basic population data and data on habitat requirements will be needed.

7. The information on the number of animals found dead and taken, their age-composition and possible length can be useful as an indicator related to changes in the status of the population. Therefore, the number of seals taken (dead and/or alive) should be documented. Based on the survey results, it is concluded that the momentary health status of the population must be satisfactory, otherwise the observed growth rate, close to the maximum rate possible for this species (Härkönen et al. 1999), would not have been possible.

8. It is concluded, on the basis of the information obtained from seals taken (dead and/or alive), that only the numbers and age of seals taken may be used to assess the health status of the population. It is stressed that the information on seals taken is only of value to assess the health status when population survey data on numbers, reproduction and survival are collected and moreover that the information on seals taken is collected in a standardized way, fully documented, and accompanied by data on effort and weather conditions, otherwise results are biased.

9. The conclusion from the obtained data on dead strandings and number of live seals taken is that until 1997 there had been no change in the percentage of animals obtained compared with the numbers counted during surveys. However, since 1998, the numbers of seals taken has increased both in Schleswig-Holstein and the Netherlands. Whether this trend may continue or not should be closely followed and investigated, as it might indicate possible changes in the population.

10. Infectious and non-infectious diseases are a natural factor in wild animal populations and generally regulate the population size in the absence of predators. There has been research undertaken on the presence of viruses or virus specific antibody titers in seals taken or found dead in Schleswig-Holstein and the Netherlands.

11. There is no indication of an epidemic due to a specific viral or bacterial infection of seals in the Wadden Sea. However, the results demonstrate a widespread infection of seals in the Schleswig-Holstein and Dutch Wadden Sea with a herpes virus with probably a low virulence. As low or no detectable distemper virus-specific antibodies were found, it is noted that the native seal population is highly susceptible to develop distemper when exposed to a virulent morbilli virus. A case of morbilli virus infections in Common seals was reported from the Netherlands (2001) and Schleswig-Holstein (1999), and first cases of parapox-virus infection was reported from the Wadden Sea in Schleswig-Holstein. The occurrence of the zoonotic bacteria and viruses such as parapox virus indicates that handling of seals should be done carefully and with caution.

12. Given the fact that the seal population is recovering prosperously, far beyond the minimum viable population size, and that the health status of the population is considered satisfactorily, there is no need to intervene in this wild population. In accordance with the Seal Agreement the taking of seals should be prohibited by the Parties, except for specific exceptions and according to the Ministerial Declaration of Leeuwarden 1994 and the current Seal Management Plan, the taking and releasing of seals in the Wadden Sea should therefore be reduced to the lowest level possible, and to that end guidelines should be developed in all countries.

13. It is clear that monitoring of diseases (viral, bacterial and parasitic) of animals in the wild, cannot prevent diseases. It is not possible to influence the outcome of a virus outbreak once it has started. Fortunately, there is no danger that a vi-

rus outbreak will ever annihilate the population. However, it is useful to monitor seal diseases, as these can be important additional indicators of changes in environmental circumstances.

14. There is a high risk of transferring infectious diseases between seals within a seal center and after release also to the wild population. Even transfer between other species, such as man and dogs and seals has been documented. As a consequence extreme caution should be taken in general, and seals originating from areas outside the Wadden Sea should not be taken into Wadden Sea seal centers. Higher concentrations of animals in a center will enlarge the risk of transmission of diseases. There is no way to guarantee a pathogen-free animal at the time of release, by available investigating systems.

15. If animals are found alive and apparently in need of care, animal welfare considerations justify to take actions to end the suffering of the specific animal. Again here, this should be done based on clearly written selection criteria endorsed by responsible state agencies in accordance with the Seal Agreement and the SMP.

16. Considering the population growth of the Common seal in the Wadden Sea, the TSEG/TSEG-plus expressed its concern regarding possible conflicts with the fisheries. These conflicts may comprise the following aspects: competition between seals and fisheries for fish, by-catch of seals, damage of fishing gear and catch by seals, and disturbance of seals by fisheries. Lack of information on the seal's diet and feeding strategy is one of the major problems in assessing this issue.

17. There are many indications that disturbance by recreation activities affect seal populations. To assess these effects, detailed knowledge on the seal habitat requirements, besides the need for haul-out sites, as well as knowledge on physical indicators of stress to measure disturbance in seals is necessary but not available yet. Such investigations would enable the determination of the areas, which are of great importance to the specific age and sex groups within the seal population, the sensitivity of the different age/sex groups, the designation of adequate protection for them, and whether conflicts in management can occur when considering the interest of, e.g., recreational users.

18. Though little is known on feeding behavior and dispersal of seals during winter, it is certain that the areas proposed for off-shore wind parks and the seal traveling and foraging ranges show a wide overlap, and that wind parks might affect

traveling and foraging of seals from the Wadden Sea to the open North Sea. Furthermore, it is stated that sounds and vibrations caused by underwater buildings are possibly causing disturbances to seals. Investigations on dispersal of seals in the offshore area should be initiated.

19. When man interferes with wildlife, ethical aspects should be considered. Ethical considerations concerning seals in the Wadden Sea are only relevant in relation to taking into seal stations and releasing, hunting, by-catch and scientific programs. With an increasing population, it should generally be accepted by the public that weak, abandoned and dead seals may be a normal picture.

20. The view of the responsible Dutch state agency with respect to taking of seals is based on two principles: an eco-ethical and an animal-ethical principle. The eco-ethical principle stresses that the population as a whole has to be considered and taking of seals should not hamper self-regulation, whereas the animal-ethical principle is mainly based on preventing suffering for the individual animal. The Dutch state agency view is that taking of seals is not necessary to maintain the population. However, restricted taking and releasing of seals is justifiable under the condition that unnecessary risks for the wild population are avoided.

21. Information and educational programs targeting children and the public in general should inform about conservation and management of seals as living resources and a natural asset. These programs should focus on the habitat requirements of seals, human behavior in seal areas, what to do when a dead or weakened seal is found, as well as the trilateral cooperation on the protection of seals. Rehabilitation should only be mentioned as an exception from the general management guidelines in order to satisfy human needs to nurse and help individual animals. It should be mentioned that rehabilitation has nothing to do with wildlife management in general.

22. Grey seal and Common seal are listed in Annex II of the EC-Habitat Directive, which includes animal and plant species of community interest whose conservation requires the designation of special areas of conservation. Furthermore, the Grey seal and Common seal are listed in Annex V of the Habitat Directive, which includes animal and plant species of community interest whose taking in the wild and exploitation may be subject to management measures.

Recommendations

Conservation and Management Measures: Habitats

Seals in the Eems-Dollard-region

Recommendation 1:

It is recommended to establish and manage seal reserves in the Eems-Dollard region similarly to seal reserves established and managed in other areas of the Wadden Sea.

Habitat requirements of seals

Recommendation 2:

It is recommended to redraft the joint proposal regarding "habitat use with regard to human activities in the Wadden Sea and adjacent areas" and submit it - in consultations with responsible state administrative agencies for nature conservation - to organizations (e.g. EC or others) for funding.

The partners in the Seal Agreement in close connection with the responsible administrative agencies in the area are invited to facilitate funding for this project.

It is recommended to give the highest research priority to investigations on habitat requirements of seals in relation to human activities and the feeding ecology of Common seals.

Habitats of seals in the offshore area connected with the Wadden Sea

Recommendation 3:

It is recommended to assess whether implemented measures meet the habitat requirements of seals in the offshore area connected with the Wadden Sea.

Protected habitats for seals in the Wadden Sea

Recommendation 4:

It is recommended to evaluate the existing network of seal reserves in the countries as to whether they comply with the EC Habitat Directive. In case the assessment indicates that more seal reserves are needed, it is recommended to install further seal reserves.

Excursions by boats to seal banks

Recommendation 5:

It is recommended to develop a trilateral framework for guidelines to regulate excursions by boats to seal haul-outs. These guidelines should be based on a precautionary principle. National guidelines should be based on the trilateral framework and could – if needed – consider a specification for certain haul-outs, e.g. colonies where pups are born should preferably not be visited during the whelping and lactation period. The guidelines should, e.g., include distances to seal colonies, speed of boats and provide for possibilities to assess and evaluate the impact of seal excursions on vigilance and other behavior of the seals.

Disturbing activities: fisheries

Recommendation 6:

It is recommended to identify in which areas fishery disturbances of seals might occur, assess what the nature and extent of the disturbance may be, and implement protection measures accordingly.

Recommendation 7:

It is recommended to investigate experimentally, preferably in consultation with the fishermen, which mesh size used in seal guards is necessary to prevent drowning of, particularly, young seals in this type of fishery and make such seal guards obligatory for fishing with fyke nets in all sub-regions in the Wadden Sea where this type of fishery is carried out.

Recommendation 8:

It is recommended to improve the central collection of information on drowning/entanglement of seals in fisheries in the Wadden Sea and adjacent waters, either via existing stranding networks or through establishing such a system.

Conservation and Management Measures: Pollution

Recommendation 9:

In accordance with the practice in some sub-regions, the dumping of dredged material or taking of mud or sand in or near the Wadden Sea should be made subject to an EIA, where the impact on seals and other wildlife should be included. It is recommended to develop trilateral guidelines for the EIA-procedure for this type of activities.

Conservation and Management Measures: Wardening

Recommendation 10:

It is recommended to evaluate the existing wardening systems, whether they meet the common standards according to Annex I of the Esbjerg Declaration (1991), and to improve the wardening system, if needed.

Research and Monitoring

Inventory of seal research projects

Recommendation 11:

It is recommended to report all research projects on seals or related to seals in the Wadden Sea to the coordinating institution, and to the TSEG. After completion of the project, a report on the results should be made available to the coordinating institution for further evaluation by the TSEG.

Trilateral research projects

Recommendation 12:

It is recommended to complete the ongoing drafting of the joint trilateral project on "Feeding Ecology of Common seals", including prey preference, food quality and foraging areas. The information will not only be used to understand and follow whether changes in feeding patterns and food availability may occur in the future, but most importantly do provide the necessary information to identify, in an early stage, whether seals – fishery interactions become evident, and facilitate the assessment of the extent of such a conflict, and recommend appropriate management actions.

The partners in the Seal Agreement in close connection with the responsible administrative agencies in the area are invited to provide funding for this project.

It is recommended to give the highest research priority to the feeding ecology of Common seals and to investigations on habitat requirements of seals in relation to recreational demands.

See also *Recommendation 2* regarding the Joint Proposal "habitat use with regard to human activities in the Wadden Sea"

Monitoring strategy through aerial surveys and counts

Recommendation 13:

a. The TSEG recommends carrying out five flights in a trilaterally coordinated way (three during the pupping and two during the moulting period) as a minimum program according to the given arguments in the TSEG-document.

b. Furthermore, the TSEG recommends that more frequent flights in one year (a few more flights in the pupping season) should only be carried out in a trilaterally coordinated way in case of emergency or because of special local/regional reasons on the basis of agreed scientific requirements.

The TSEG-plus recognized the five flights, which are recommended by the TSEG as a minimum program, and recommends that they should be prioritized with the rest of the monitoring program in the Wadden Sea in cooperation with the TMAG. It is recommended to take the consequences into account, if the seal survey program of five flights will be reduced.

Footnote by Lower Saxony:

Lower Saxony agreed, in general, to recommendation a), however, raised an administrative reservation regarding the necessity in view of the lack of financial means for implementation.

Monitoring of pollution

Recommendation 14:

The status of the Common seal population and changes thereof can be described in quantitative terms (population demographics) as well as in qualitative terms (reproductive capacity, survival and health status). It is recommended to use such a multiple index to describe the status of a population. To be able to do so, it is necessary to establish a trilaterally agreed monitoring program that includes as first priorities the research disciplines population dynamic and pathobiology. The basic program may be completed by a less intensive program of selected parameters of immunological, endocrinological, toxicological, parasitological, bacteriological and virological investigations. The TSEG should be invited to draft such a first-priority and second-priority monitoring program, including ways to obtain the necessary data and/or required samples.

Taking and Exemptions for Taking

Exemptions for taking of seals in seal stations

Recommendation 15:

Given the prosperous development of the seal population in the Wadden Sea, both in terms of growth as well as in fitness, it is strongly recommended to reconfirm the § 56 - § 61 of the Leeuwarden Declaration (LD):

" § 60 to reduce the current number of seals taken from and released to the Wadden Sea to the lowest level possibly applying guidelines for handling diseased or weakened seals or evidently abandoned pups, and to release seals based on the precautionary approach, referred to the "Statement on Seal Rehabilitation and Release, based on scientific experience and knowledge" as elaborated by seal experts."

The Dutch government is strongly urged to take the necessary action to achieve a significant reduction in the numbers of seals taken by the Pieterburen Seal Center, to design on short term strict guidelines and criteria for taking and handling diseased or weakened seals or evidently abandoned pups and to release seals on the precautionary approach, referred to in the "Statement of Seal Rehabilitation and Release", in the LD in 1994. The German "Heulerrichtlinien" could serve as a model.

Footnote by DK for the last sentence/paragraph:

Denmark strongly recommends that seals taken into the seal centers should not be released into the wild again.

Medical treatment of taken seals

Recommendation 16:

It is strongly recommended to carry out a detailed expert discussion and request their advice on the use of specific groups of medicines in seal centers, where seals are rehabilitated and released.

Footnote by DK:

Denmark is arguing that the discussion of medicine is irrelevant, because seals should not be released into the wild. If seals are released, they should not have been treated with medicine.

Keeping of seals taken into seal stations

Recommendation 17:

It is strongly recommended to prohibit the taking in of seal species other than Common and Grey seals and keep them in Wadden Sea seal centers. In addition, it is also recommended to prohibit the taking of Common and Grey seals from areas outside the Wadden Sea and keep them in Wadden Sea seal centers.

It is recommended to prohibit the release of seals being kept in other than the Wadden Sea seal centers in the Wadden Sea.

Footnote by DK:

Denmark strongly recommends that seals taken into the seal centers should not be released into the wild again.

Documentation for keeping seals in seal stations

Recommendation 18:

It is recommended to enable an independent check of the station records at a national/trilateral level by responsible state-agencies.

Documentation of taking and releasing of seals

Recommendation 19:

Based on the conclusions in the chapter on assessment of the health condition of the Common seal population, it is strongly recommended that from all animals taken, either euthanized, otherwise killed, or rehabilitated and released at least the following information has to be collected: Number of seals, age (length), sex, time and location found at, and time and location of release of rehabilitated seals.

It should be made mandatory that, in the beginning of the year, each country provides the coordinating institution with a complete list of the above-mentioned data collected in the passed year. They would provide the data to the TSEG in order to evaluate the data for their significance in relation to monitoring possible changes in the population.

The TSEG should be requested to advice on a revision of the presently used standardized annual reporting formats, as well as on possible other relevant data to be collected from seals taken.

Animal welfare aspects

Recommendation 20:

It is recommended to elaborate an independent assessment and interpretation of the relevant laws/regulations on hunting / animal welfare / nature conservation in the different countries.

Exemptions for taking of seals as mitigation measure

Recommendation 21:

It is recommended to revise the SMP to include exemptions for taking as mitigation measure.

It is recommended to include the possibility to use a management tool in single cases in order to mitigate conflicts between fisheries and seals in the Agreement Area outside the Trilateral Conservation Area. An exemption for mitigation measures should be included in the SMP. Prerequisites for each single case are the special condition, a license and the reporting to the TWG. (It is referred to the minutes of the TSEG-plus meeting on 08.11.2001)

Footnote by SH and NL:

Schleswig-Holstein and the Netherlands express their concern that such a decision would make the discussion between management and fisheries more difficult in the future.

Public Information

Recommendation 22:

It is recommended to produce a brochure including, e.g., information on the status of the seal population, the aims of the Seal Agreement and the Seal Management Plan, the views on rehabilitation, the need to guarantee the primary objective to achieve managing the Wadden Sea as a nature area with the least human interference as possible.

It is recommended that the state agencies responsible for seal management should bring this message to the public.

Grey Seals

The *Recommendations* regarding taking and exemption for taking for Common seals are also valid for the Grey seals in the Wadden Sea.

Recommendation 23:

It is recommended that the Dutch responsible agencies should seek advice from the TSEG on the necessary measures to provide Grey seals in the Dutch Wadden Sea with a similar level of protection as provided to the Common seal.

Recommendation 24:

It is recommended to raise funding for the project "Habitat use and demands, behavior and health status of Grey seals in the Wadden Sea" in order to provide the basic data to monitor the status of the different colonies of Grey seals and formulate an adequate conservation policy and management for this species.

Trilateral Seal Expert Group (TSEG)

Recommendation 25:

It is recommended that the TSEG continues to be a group which can act independently, objectively and scientifically to fulfil the tasks. The members

of the group should not be linked to organizations, which have a specific interest in promoting specific decisions/recommendations by the TSEG. They should be independent scientists and, e.g. not associated with private organizations (such as seal centers and NGOs) or administrative bodies.

However, there should be the possibility to invite additional scientists, whether or not linked to private organizations, to the meetings of the TSEG on specific questions/topics, and under certain circumstances administrative people. Especially when, e.g. guidelines for rehabilitation and release of seals are to be discussed, representatives from seal centers, such as Ecomare, Pieterburen, Norden-Norddeich and Friedrichskoog should be invited to contribute.



K.-E. Heers

1. Introduction

The Seal Agreement was enacted on October 1, 1991 as the first agreement, as defined in Article 4, of the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention). The Seal Agreement was concluded between the countries adjacent to the Wadden Sea - Denmark, Germany and the Netherlands - with the aim to cooperate closely in achieving and maintaining a favorable conservation status for the Common seal population of the Wadden Sea.

Pursuant to Art. 4 of the Seal Agreement, the first "Seal Management Plan (SMP) for the Wadden Sea Seal Population 1991-95" was adopted at the 6th Trilateral Governmental Conference on the Protection of the Wadden Sea in November 1991 (Esbjerg Declaration). The first SMP expired at the end of 1995. The "Conservation and Management Plan for the Wadden Sea Seal Population 1996 - 2000" was adopted by the Senior Officials of the Danish-German-Dutch Cooperation on the Protection of the Wadden Sea in March 1996. Both species, Common and Grey seals in the Wadden Sea, are taken into consideration within the SMP.

The Seal Management Plan 1996 - 2000 expired in 2000 and the Senior Officials (SO) of the Trilateral Wadden Sea Cooperation asked the Trilateral Working Group (TWG) to revise the Seal Management Plan and produce draft recommendations for the next planning period. The TWG installed the Trilateral Seal Expert Group-plus (TSEG-plus) after April 2000, in accordance with § 18 of the Common Statement of the SO 14 (Nov. 1999). The Terms of References (TOR) of

the TSEG-plus is given in **Annex 1**. Due to the TOR of the TSEG-plus the already existing Trilateral Seal Expert Group (TSEG) was extended with representatives of the competent seal management authorities of the four regions. According to the SMP the TSEG has the task to coordinate and supervise the implementation of the monitoring activities and the assessment of the results, to assess relevant research results and, as appropriate, give advice regarding management on request of the Trilateral Cooperation. The list of members of the TSEG-plus is given in **Annex 2**. The TSEG-plus is charged with the scientific evaluation of the status of the Common seal population in the Wadden Sea, the assessment of the current SMP 1996-2000 including an assessment as to whether the SMP needs to be revised and amended for the next planning period.

The Senior Officials noted the interim report of the Trilateral Seal Expert Group-plus (TSEG-plus) at their meeting (SO 15) in October 2000. The SO 15 meeting further noted that the full report would be available to the SO-meeting in April 2001, and that prior hereto a prolongation or amendment of the Seals Management Plan could not be considered in October 2000. The SO 15 agreed therefore to prolong the current SMP with one year.

The TSEG-plus met three times, on 12.07.2000, 08.11.2000 and 21./22.02.2001, to fulfil the tasks of the Terms of References. In the following, the draft report of the TSEG-plus is given including an executive summary and recommendations for the "Seal Management Plan 2002 - 2006".

2. Overview and Assessment of the Development of the Seal Population for the Period since the Phocine Distemper Epidemic in 1988

2.1 Development of the Common and Grey Seal populations

2.1.1 Common seal

2.1.1.1 The phocine distemper epidemic and the population development after the epidemic

The increase of the Common seal population in the entire Wadden Sea, which had started in the late 1970s (Abt 1998), was interrupted by a virus out-break in 1988 (Schwarz and Heidemann, 1994), and in 1989 only 4,400 animals were counted. It has been hypothesized that the pollution may have compromised the immune system of the animals (Swart *et al.*, 1992) and, therefore, may have aggravated the extent of the mass-mortality (de Koeijer *et al.*, 1998). In the years after the virus epidemic, the population has shown a rapid recovery. This growth can partly be attributed to improvement in the reproductive rate and a reduced juvenile mortality (Reijnders *et al.*, 1997). Possibly the initial changes in growth rate were magnified due to the demographic changes (Härkönen *et al.*, 1998). However, the continued higher growth rates indicate a true population growth.

For the overall Wadden Sea, the reproductive rate ameliorated slightly after the epidemic, from 19–20% to 19–22%. There were, however, strong local differences. According to the studies of the Joint Seal Project, in the period 1989 to 1994, the reproductive rate after the epidemic was significantly higher (about 21% compared to 13% before 1988) in the Netherlands and in Lower Saxony (21% compared to 16%). It was lower in Schleswig-Holstein (19% compared to 23%), and did not change in Denmark (average 17%). The combined sub-adult and adult mortality apparently dropped from about 12% to 7% (Ries *et al.*, 1999).

It is hypothesized that the improved reproductive rate in the Netherlands and Lower Saxony may have been the result of a selective adult female mortality during the epidemic, affecting mostly mature females, which did not reproduce due to impairment by pollution. The healthy animals remained.

The reproductive rate in the entire Wadden Sea might have been influenced by an initially skewed age-structure of the population right after the epidemic. It is assumed that nearly the entire year-class 1988 died (Schwarz and Heidemann 1994). If it were so, one would have expected an initial improvement of the reproductive rate, which would have leveled off after 4–5 years, meaning from 1994 onwards. This would have been when that year-class came to sexual maturity. However, the fluctuation in reproductive rate in that period would indicate that at least part of the year-class of 1988 must have survived. The first year mortality is now estimated at approximately 40%, which is significantly lower than the average of 65% in the 1970s (Reijnders *et al.*, 1997). Recent estimates (K. Abt, pers. comm.) indicate that the first year mortality might even be close to 30%.

2.1.1.2 Natural reproduction

One of the trilateral Targets is to achieve a natural reproduction capacity of seals. Reproduction capacity depends on factors within the population such as age, sex, fecundity, and external factors including water quality, disturbance and diseases. It is therefore difficult to express natural reproduction capacity by a simple number or range. Based upon best "experts' judgement" it will have to be assessed whether the reproduction can be regarded as natural. The production of 0.85 – 0.95 pup per mature female per year is the proposed reference for the natural reproduction capacity (Reijnders, 1978). In practice, this is difficult to monitor.

During coordinated flights in the entire Wadden Sea, a total of about 17,000 seals (2,140 in Denmark, 6,300 in Schleswig-Holstein, 5,230 in Lower Saxony and 3,330 in the Netherlands) was

counted in 2000. The total number of pups counted was 3,610. (Figure "Number of counted seals in the Wadden Sea since 1975" see in WSNL 2000 – 2.). Slight fluctuations in these numbers can be expected as a result of weather and tidal conditions, number of flights, disturbance, and changes in the population such as timing of whelping, mating and moulting. We do not know the influence of these factors, and it is therefore chosen to calculate trends in population increase in a more adequate way by assessing developments in both reproduction and survival. Between 1990 and 1998, the overall annual growth rate of the population was remarkably constant, approximately 13% per year from 1990 – 2000. In 1999, however, it only amounted to + 5.5% even though the number of pups observed increased with the same rate as in previous years. In 2000, a population growth of 13% was recorded. Though this indicates that the 1999 count was likely to be an underestimate. The count in 2000 is lower than could be expected if the population had continued to grow at the same rate as in the years 1990-1998.

Though it was then premature to draw conclusions on the lower counts, as a trend can only be made visible after a number of years, the lower counts in 1999 gave rise to consider whether a possible slowing down of the growth in the Wadden Sea seal population had occurred.

Both a lower recruitment of the former year (1998) caused by a lower pup survival or a lower pup production and less optimal survey conditions could have caused the lower annual increase.

Lower pup survival

A possible lower pup survival will be discussed in the next section.

Lower pup production

Demographic changes, i.e. a lower fecundity or a lower number of sexually mature females could cause a lower pup production. However, it is unlikely that this would cause the sudden change observed in the Wadden Sea. These parameters are not known.

Lower pup counts

The total pup count was lower in 1998 than in 1997, despite the increase in total population. However, survey conditions were indeed sub-optimal due to bad weather, in most areas in the Wadden Sea, possibly influencing the pup counts in that year. Bad weather could hamper the counts but also influence pup survival.

Given the increase of 15% respectively 16% in pup counts between 1998/1999 and 1999/2000, it is assumed that pup counts in 1998 have been

hampered by adverse weather conditions and the number of pups counted increased by around 15-16% in the last three years. This indicates that the lower counts in 1999 were presumably not caused by a change in either fecundity or number of sexually mature females.

The increase in total number of seals is again similar to the average annual increase found in the last decennium. The increase in 1999/2000 is a few percent too low to totally compensate the lower increase in 1998/1999.

2.1.1.3 Pup survival

Pup survival is difficult to measure. Of the number of pups born in 1998, the percentage of sick animals and animals found dead in the season 1998-1999 increased compared to such ratio in other years. The lack of data expressing the searching effort for dead or sick animals as well as the environmental circumstances could have influenced the observed increase, thereby hampering the assessment of a possible change. Based on the practice in Schleswig-Holstein, it is assumed that at least for that area, the change in animals found dead is likely to be a reflection of an increased mortality potentially leading to a lowered recruitment. Therefore, the increase in animals found dead or moribund should be investigated in a standardized way as it could help in assessing a lower pup survival and the consequences thereof for the population growth.

2.1.1.4 Conclusions

According to calculations based on hunting data, the seal population in the entire Wadden Sea amounted to 18,000 and 38,000 animals around 1900 (Reijnders, 1992). This is considered a reference range. He considered the higher end of the range to be the more likely estimate. Although the population of the Wadden Sea is recovering prosperously, it should be realized that its present estimated size of about 23,500 seals, when correcting the numbers counted in August 2000 (Ries et al, 1998; Tougaard, 1989), is still less than half of the estimated maximum reference size. Whether it will continue to grow at its present rate will depend on the pressure of factors, such as pollution, disturbance, food and habitat limitation.

In conclusion: The survey results from 2000 seem to indicate that the lower increase in 1998/1999 has been a one-off event, and that there is no real change in the population trend. Further modeling studies have been started to investigate post-epidemic developments in reproductive rates in the entire Wadden Sea as well as in different regions. Furthermore, those studies will enable the

prediction of population trends assuming fluctuations in pup production as well as varying mortality rates. Surveys in the years to come will show whether or not the strong population growth in the last decennium may continue or slow down, and if so, which population parameter will become affected. It is obvious that continued effort is necessary to obtain essential population data to monitor development and improve modeling based on adequate series of aerial surveys.

2.1.2 Grey seal

Since the 1960s, groups of Grey seals have regularly been observed on outer sands in the Wadden Sea. Since the beginning of the 1980s, two major breeding sites have existed in the Wadden Sea area, one in the Netherlands and one in Schleswig-Holstein. Recently, more areas have been colonized for mere haul-out and in some cases even for breeding. It seems that currently only the Danish Wadden Sea has not been colonized. Outside the breeding season, Grey seals show a much wider distribution and haul-out on a large number of sandbanks in and around the whole Wadden Sea.

2.1.2.1 Grey seal colonies in the Dutch Wadden Sea

Grey seals have colonized the Dutch Wadden Sea from 1980 onwards. The colony started on an outer sandbank near the island Terschelling, outside the boundaries of the "Staatsnatuurmonument Waddenzee", a Dutch conservation area. In the early 1990s, because of gradual erosion of that sandbank, the colony moved to a larger sandbank inside the Wadden Sea between the islands Terschelling and Vlieland. This site is included in the "Staatsnatuurmonument Waddenzee" and is especially protected. Access for the public is forbidden between May 15th and September 15th. Maximum numbers are counted between February and April (Reijnders *et al.*, 1995). In 1999, 550 animals were counted (P.J.H. Reijnders, J. van Dijk and D. Kuiper, unpubl. results). Births within this colony have been recorded since 1985. During the first 5 years, about 5 pups were observed each year. In the beginning of the 1990s, the number of observed pups rose to approximately 30 a year, and in the season 1998/1999, 64 pups were counted on one day. It has been estimated that at least 100 were born in that season (Reijnders, van Dijk and Kuiper, unpubl. results). In some years bad weather washed the animals off the sandbank and in the 90s animals were frequently taken off the sandbank as a preventive measure. Due to these factors, only a minimum count can be given and

large fluctuations in actual animals observed will occur because of those events (see table 1).

Three factors dominate the growth of this colony: immigration, re-introduction and birth. The largest contribution to the increase has been caused by immigration from other areas, such as the Farne Islands. To a small extent, the colony is reinforced by the release of animals rehabilitated at the seal stations Pieterburen and Ecomare (Reijnders *et al.*, 1995). Stock growth cannot be explained by birth alone, because normal death rates and the possible migration of some released animals as well as by pups born in the colony have to be taken into account.

Lately, other areas in the Dutch Wadden Sea have been used as haul-out sites by larger groups of Grey seals. There are two sites in the westernmost part of the Wadden Sea, southwest and southeast of the island of Texel. Numbers fluctuate between 10 - 20 in one area, and between 5 and 50 in the other.

Year	Adults	Pups
1979	2	0
1980	7	0
1981	8	0
1982	16	0
1983	31	0
1984	43	0
1985	60	2
1986	59	2
1987	66	5
1988	66	6
1989	80	6
1990	90	6
1991	120	9
1992	178	21
1993	220	25
1994	218	32
1995	275	20
1996	315	40
1997	320	-
1998	350	41
1999	550	64
2000	380	43

Table 1:
Counted numbers of Grey seals in the colony between Terschelling and Vlieland in the Dutch Wadden Sea between February and April. (source: Alterra, Texel)

2.1.2.2 Grey seal colony in Schleswig-Holstein, Germany

Since 1967, a group of about 40 Grey seals has regularly been observed on the outer sands near Amrum and Theeksand in Schleswig-Holstein. The colony is located within the zone I of the Schleswig-Holstein National Park and therefore protected by law (Vogel and Koch, 1992). Since

1983, births of Grey seal pups have been observed, whereas the first successful raising of young animals was recorded in 1988. Today, the small colony of about 30 to 40 animals is situated on Jungnamensand, an unstable sandbar close to a frequented shipping route. During the moulting period in 1998 numbers peaked to more than 100 individuals, which is disproportionately high in relation to the observed number of births (Harwood & Prime 1978). The average number of animals observed during moult in the years 1990-1998 is 64. Numbers do not show a clear trend. Pup production has been stable, and also the size of the colony during the breeding season is more or less stable, whereas the annual maximum number documented in the Schleswig-Holstein National Park is apparently increasing mainly in the summer (moulting and summer population). The increase is not caused by the local reproduction, but is more likely to be associated with influx from elsewhere in the Wadden Sea and perhaps the North Sea (Abt *et al.*, submitted).

Breeding season	Counted live pups; Number of births	Dead pups	Adults counted during breeding season	Adults counted in spring
88/89	9	0	16	26
89/90	3	1	20	51
90/91	7	1	10	47
91/92	6	1	13	57
92/93	10	1	28	54
93/94	7	3	12	56
94/95	5	2	7	88
95/96	11	3	17	53
96/97	11	4	14	73
97/98	9	0	18	100
98/99	11	2	19	-
99/00	13	3	?	?

Table 2:
Registered numbers of Grey seals in the Schleswig-Holstein Wadden Sea (source: FTZ-Büsum)

2.1.2.3 Grey seals in Lower Saxony, Germany

Grey seals haul-out in the Lower Saxony part of the Wadden Sea on the Kachelotplate near Juist. The seals are counted only during the surveys for the Common seals in summer. Up to 13 individuals could be registered. Another group is observed on an outer sandbank close to the island of Borkum. In winter 1999 – 2000, more than 100 animals were counted there.

As an exception, occasional births have been registered in the Wadden Sea of Lower Saxony.

Recently, the seal station in Norden-Norddeich started to rehabilitate and release Grey seal pups. However, these could have been washed away from colonies in the Netherlands, Schleswig-Holstein and the United Kingdom.

2.1.2.4 Grey seals on Helgoland, Germany

As early as the 1970s, Grey seals were sighted sporadically at Helgoland in the German Bight. These were mostly weak animals. Since 1989, Grey seals have regularly been seen on Helgoland, which consists of two islands. The first birth of a Grey seal on Helgoland was registered in 1996. During the 1999/2000 breeding season, five pups were recorded on the islands, two on the main island and three on "die Düne". The current winter population of Grey seals on the islands of Helgoland numbers at least to 16 seals including one mature male, five mature and pup producing females, and their pups, and two juveniles of each gender. Actual numbers are likely to be somewhat higher, as seals tend to change haul-out sites often. Sometimes the seals lie between boulders, making it difficult to observe them. Helgoland may gain importance as a safe breeding site with a significantly reduced pup mortality, as other sites are eroded by tidal currents and winter storms (Graner 2000).

2.1.2.5 Conclusions

Despite the growing numbers in the Netherlands and the stable numbers in Germany, the Wadden Sea Grey seal populations cannot be regarded as viable in the biological sense. Viable would mean that they could survive major calamities without needing animals to reinforce the population. Until 1998, the growth of the Dutch colony could still be attributed to immigration from Great Britain. One of the major factors preventing a real viable population to settle is the lack of undisturbed higher breeding grounds, which are not flooded during spring tides. Currently, winter storms in combination with high tides are threats possibly affecting pup survival. The practice of "rescuing" a large number of pups each year to prevent mortality does not seem to be a long-term solution, if any. In light of the current number of Grey seals, a structural solution should be considered. Suitable areas should be protected from human interference, possibly in a flexible way, on the basis of necessity. In order to achieve proper conservation, basic population data and more detailed data on habitat requirements should be available on the Grey seals in the Wadden Sea.

2.2 Assessment of the health condition of the Common seal population

2.2.1 Number of taken seals and their condition

2.2.1.1 Experience and data from Schleswig-Holstein

Because information for the Dutch Wadden Sea on the number of seals stranded and taken, and on the condition of those animals has not yet been analyzed, the following assessment is based on practice, experience and data from Schleswig-Holstein: Numbers and condition of dead stranded and taken seals are monitored here as potential indicators of changes in Common seal population parameters.

In Schleswig-Holstein, the seal monitoring scheme includes enumeration of dead stranded seals registered by seal hunters and nature wardens. Seal wardens (in Schleswig-Holstein called: seal hunters) also manage live strandings, i.e. decide upon if and in which way seals are taken from the wild. Until spring 1999, all dead strandings as well as killed seals were subjected to post-mortem examinations, including measurements of length, girth, and weight. Thereafter, only a subsample of seals has been collected for this purpose, but recovery and enumeration of strandings continues. The effort made in registering dead and moribund strandings can be regarded as fairly stable since 1988. In 1998, there was a remarkable increase in the number of dead stranded and taken seal pups. The following year showed a decline in the population growth rate. This is an attempt to relate these phenomena to changes in various monitoring parameters.

Number of dead strandings

Numbers of juvenile (0-year-class) as well as all-age dead strandings are expressed as a percentage of the respective population counts. It is seen that the percentages had been fairly stable until 1997, but increased steeply in 1998. This increase may be attributed to exceptional weather conditions in the summer of 1998 in two ways: 1) high stranding rates due to strong westerly winds and 2) elevated pup mortality (and, of course, a combination of both). The low pup count in 1998 and the lowered rate of increase in 1999 together may suggest that recruitment of the 1998 year-class was in fact worse than in previous years. It is known that summer storms can cause separation

of pups from their mothers (Boness et al. 1992, Can J. Zool. 70), and thereby increase pup mortality. Yet it is not entirely clear if the dead stranding percentage remains at a higher level after 1998. If so, additional causes of increased mortality, such as food limitation, would need to be considered.

Number of taken seals

The percentage of numbers of taken 0-age-class seals in relation to the aerial counts seems to have increased somewhat already in the years before 1998. This could, of course, be related to a subtle rise in the tendency to take live stranded seals, possibly induced by their increased numerical presence. A substantial increase in 1998 parallels the situation in the dead strandings. The 1999 and 2000 figures seem to pursue the trend of increasing numbers of taken seals. It is possible that the increase in the relative abundance of taken pups is related to a – locally – rising proportion of pups in bad health condition.

Condition of dead stranded and killed juveniles

The condition index (girth : length or weight : length) of pups is not different in 1998 from 1989–95 and 1996–97. Dead stranded and killed pups were pooled for this preliminary analysis, but reveal similar results when regarded separately. The same holds when only animals found after the lactation period, i.e. from Sep to Dec, are considered. (This may be more sensible than including orphaned seals found during the nursing period, which received little or no maternal care.) Probably, the condition of dead stranded and killed juveniles has little validity in detecting changes in population parameters because dead and moribund pups tend to be in poor condition anyway, regardless of their relative abundance.

Condition of dead stranded 1+ seals

The condition index of seals in the 1+ age-class (girth : length) seems to have dropped slightly since 1997, but this is not statistically significant. It remains to be seen if the presumed trend continues, and if this is biologically relevant in terms of food availability.

2.2.1.2 Number of found dead, taken and released Common and Grey seals in the Wadden Sea 1996 – 1999

The reporting on trilateral standardized formats, of annual exemptions and the numbers of taken and released seals to the coordinating institution has been troublesome, due to the belated reporting. Particularly the delayed and retarded delivery of data has proven to be a handicap for the TSEG

as well as for the TSEG-plus to review these data and conclude on possible changes in the population. However, the information on the number of animals taken, their age-composition and possible length, can be useful as an indicator for a change over time in seals taken and that would in turn be related to changes in the status of the population. The available information on "Number of found dead, taken and released Common and Grey seals in the Wadden Sea 1996 – 1999" is given in Annex 3.

The TSEG-plus stated that it would be very helpful for the assessment of the health status and mortality of the Common and Grey seal population if all different regions were collecting and assessing the data of stranded dead seals and live taken ones in a harmonized way, as outlined above. In some areas, the effort to register or collect dead seals, however, could be increased, e.g. in a pilot program. It should be aimed for that every dead seal reported is at least registered.

Based on the above given conclusions, it is strongly recommended to collect at least the following information from all animals taken, either euthanized, otherwise put down, or rehabilitated and released: Number of seals, age (length), sex, time and location found, and time and location of release of rehabilitated seals.

It should be made mandatory that each year, each country provides the coordinating institution with a complete list of the above-mentioned data in the beginning of the next year. They will provide the data to the TSEG in order to evaluate the data for their significance in relation to monitoring possible changes in the population. The TSEG should be requested to advice on a revision of the presently used standardized annual reporting formats, as well as on possible other relevant data to be collected from seals taken.

2.2.2 Virological, immunological and bacteriological aspects

Long-term collection of data on the health of seals is, only in combination with accurate population data assessed via aerial surveys, an important indicator of environmentally caused changes within the population.

2.2.2.1 Schleswig-Holstein

Investigations on the health status in Common seals in Schleswig-Holstein have been performed since the die-off in 1988/89. These investigations include necropsies, histology, microbiology, immunohistochemistry, electron microscopy and serology, and have been performed on wild seals, new-

born seals (Seehundstation Friedrichskoog) and fresh seal carcasses. Here data, collected between 1996 and 2000, are presented.

Virology

Morbilli virus and Herpes virus:

So far, no evidence for infection due to morbilli virus or herpes virus infection was found at necropsical and histological investigations. The immunohistochemical investigation for morbilli virus antigen yielded negative results. Serological tests for morbilli virus antibodies revealed negative or low virus specific titers. Animals of the seal center were tested at the time of admission into the center and before their release into the Wadden Sea for morbilli virus infection. None of the animals showed seroconversion. Only in two carcasses, found at the North Sea strand in 1999, increased morbilli virus specific antibody titers (1:240 and 1:480) were observed, indicating a previous morbilli virus infection. The animals were not from Pieterburen (lacking microchip and flippertag) and therefore it can be assumed that they had not been vaccinated. Many seals exhibited low antibody titers for herpes virus. However, herpes virus-specific lesions were absent in all animals.

Other viruses:

In the summer of 2000, proliferative lesions of the skin and mucosa of the oral cavity were observed in young Common seals from the seal station Friedrichskoog shortly after their arrival in the seal station. Examination of suspensions prepared from the skin lesions by electron microscopy led to the detection of parapox virus particles. The presence of the parapox virus was confirmed by PCR. According to the literature this is the first report of a parapox virus-infection with a presumable virus of maritime origin in Common seal from the German North Sea.

Bacteriology

Bacteriological investigations (culture and serology) revealed a large variety of potential pathogenic bacteria including *Brucella sp.*, *Clostridium perfringens*, *Corynebacterium pseudotuberculosis*, *Escherichia coli*, *Escherichia coli var. haemolytica*, *Erysipelothrix rhusiopathiae*, *Staphylococcus epidermidis*, α - β -haemolytic streptococci, *Vibrio sp.* However, pneumonia, septicaemia, arthritis, abscesses and various other diseases of Common seals were caused by different bacteria most and frequently by β -haemolytic streptococci. An identification of these β -haemolytic streptococci was conducted by detailed microbiological investigations including sero-grouping, biochemistry and polymerase chain reaction. The β -haemolytic cul-

tures were being identified as *Streptococcus phocae* and *Streptococcus dysgalactiae* subspecies *dysgalactiae* Serovar L. The molecular typing of the β -haemolytic bacteria by pulsed field gel electrophoresis allowed a characterization of the *Streptococcus phocae* and the *Streptococcus dysgalactiae*. This might be useful in epidemiological studies and could help to estimate the virulence of individual bacterial clones of this species.

Parasitology

Parasites are a common finding in seals. The organ with the highest incidence of parasitic infestation are lungs, intestine and stomach followed by heart and skin. Pulmonary *nematodes* (*Otostrongylus circumlitus*, *Parafilaroides gymnuris*) are often found in younger seals in moderate to severe numbers. The parasitic burden of the lungs is commonly associated with secondary bacterial pneumonia. The pneumonic lesions are thought to be the cause of death in numerous cases. Parasites of the intestine and stomach occurred in mild or moderate numbers and were associated with mild gastritis and enteritis, only. Therefore, the gastrointestinal parasites (*Corynosoma semerme*, *Anisakis simplex*, *Pseudoterranova decipiens*, *Contracaecum osculatam*) are usually considered to be of minor importance for the animal status of health. Parasites (*Dipetalonema spirocauda*) of the heart and ectoparasites (*Echinophthirus horridus*) were only found occasionally. The severity of the parasitic infestation of the respiratory tract of young seals appears to have increased since the mid nineties, while the severity of parasitic infestation of the digestive tract seems to have decreased in the same time span. Based on a current investigation of the parasites of seals, these data will be analyzed in more detail.

Immune system

Specific research on the immune system has only started in 2001.

Conclusion

In summary, there is no indication of an epidemic due to a specific viral or bacterial infection of seals in the Wadden Sea of Schleswig-Holstein. However, the results demonstrate a widespread infection with the herpes virus with a probably low virulence. The fact that the vast majority of investigated seals showed low or no detectable distemper virus-specific antibodies allows the conclusion that this naïve seal population is highly at risk when exposed to a virulent morbilli virus to develop distemper. Therefore, from the scientific point of view the investigations on the health sta-

tus of seals should be continued because there have been new cases of morbilli virus infection in Common seals reported from the Netherlands (pers. comm. Thijs Kuiken) and first cases of parapox virus infection from the Wadden Sea in Schleswig-Holstein. The occurrence of the zoonotic bacteria *Brucella sp.* and *Erysipelothrix rhusiopathiae* and viruses such as parapox virus indicates that handling of seals should be done carefully and with caution.

2.2.2.2 The Netherlands

Investigations on seals taken in the Dutch Wadden Sea have revealed the presence of the herpes virus influenza B-virus and the parapox virus, and recently of the morbilli virus (e.g. Osterhaus et al. 2000; Harder & Osterhaus 1997; Osterhaus et al. 1994). The main pathological agent at the seal center in Pieterburen over the past three years has been *Parafilaroides gymnuris*. The results from autopsies and other investigations of seals taken have not yet been analyzed and no conclusion on occurrence of diseases can therefore be made.

2.2.2.3 General conclusions

Diseases in the wild

It is clear that monitoring of diseases (viral, bacterial and due to parasites) of animals in the wild cannot prevent diseases. It is not possible to influence the outcome of a virus outbreak once it has started. Luckily, there is no danger that a virus outbreak will ever annihilate the population.

However, it is useful to monitor seal diseases, as these can be important indicators of changes in environmental circumstances.

Diseases in seal centers

There is a high risk of transferring infectious diseases between seals within a center and to the wild population after release. Even transfer between other species, such as man and dogs and seals has been documented. As a consequence extreme caution should be taken in general, and seals originating from areas outside the Wadden Sea should not be taken into Wadden Sea seal centers. Higher concentrations of animals in a center will enlarge the risk of transmission of diseases. By available investigating systems, there is no way to guarantee a pathogen-free animal at the time of release.



K.-E. Heers

3. Assessment of Potential Conflicts in the Wadden Sea

3.1 Current and potential conflicts between fisheries and the Common seal population

3.1.1 Introduction

Considering the population growth of the Common seal in the Wadden Sea the TSEG/TSEG-plus has again expressed its concern regarding possible conflicts with the fisheries. These conflicts may comprise the following aspects:

- a. Competition between seals and fisheries for fish;
- b. By-catch of seals;
- c. Damage of fishing gear and catch by seals;
- d. Disturbance of seals by fisheries.

3.1.2 Assessment of conflicts

a. Competition between seals and fisheries for fish

In all regions, the lack of data on the seals' diet and feeding strategy prevent the actual assessment of this conflict. However, in Lower Saxony and in the Netherlands, fishermen seem to be aware of a possible conflict in the near future. The lack of data leads to much speculation concerning diet and amount of fish taken by the seals. Though in no way there is proof of seals affecting the catch. Shooting of seals as a management exception has been suggested as fisheries mitigation measure.

b. By-catch of seals

Each year, in the Dutch area, a number of seals found dead are diagnosed to have drowned. In some cases marks in the pelage indicate entanglement in fyke nets. Seals are supposed to be prevented from entering fyke-nets by mounting large meshed netting in the entrance (obligatory "seal guards"). However, more detailed information on the efficiency of this measure lacks. Though there are some accounts of seals caught

in trawls, this is almost never officially recorded.

In Lower Saxony, only non-commercial fyke net fishing takes place in the Wadden Sea National Park. The permission for fyke net fishing in specific areas inside the core zone of the National Park is only granted with the restriction that the fyke net has seal guards or a similar construction at the opening to prevent other animals than fish from entering the fyke net. There is no information on by-caught animals. The reply from Schleswig-Holstein and Denmark make clear that fishermen there do not consider this a problem.

c. Damage of fishing gear and catch by seals

Denmark: "Seals specialized in taking catch from fishing gear (fyke nets and gill nets), will normally cause damage to gear and catch. In the Danish Wadden Sea, the problem is not significant and the number of incidents is very limited compared to e.g. other Danish waters (the Limfjord, Kattegat and Rødsand). The number of incidents is 1-2 from the river Ribe. As a consequence of the growing seal population it is likely that the problem will increase in the near future".

The main conflicts occur in the rivers, outside the Conservation Area as well as in the Limfjord and the Kattegat (not in the Wadden Sea). Last year (1999), there was one application by a professional fisherman from Ribe to shoot two seals in the River Ribe, and in the future, a few applications per year are expected. In case such a management tool (making an exception for shooting seals) is also in use in the Wadden Sea, it is expected to stop illegal shooting of seals (without a license). In Denmark, by law, it is not possible to pay compensation, and other strategies to solve the problem, such as the modification of gear, were not successful.

Denmark is not asking for an open hunting season, but to have a management tool in the whole Danish area to handle problems of fishermen with seals besides the conservation instruments. In case of the possibility to mitigate the loss of catches in fyke and gill nets, this approach would lead to more trust between fishermen and the Danish government, which is desirable. It would not help the

problem in reality but would have a positive psychological effect.

Such conflicts are not occurring in the other Wadden Sea regions.

d. Disturbance of seals by fisheries

In the Netherlands, mainly shrimp fisheries may pass close by to seal haul-out sites. Often this does not seem to cause the seals to flush. It is unknown whether still some stress is exerted and whether habituation occurs. In summer, cockle fishers walk on the sandbanks to explore suitable fishing sites. There is no information on occurrence of disturbance of seals. This is also the case for the lugworm fishers who collect the worms manually at low tide.

There is no information on this problem in Lower Saxony. In Schleswig-Holstein and Denmark, disturbance by fisheries is not considered a management issue.

3.1.3 Action/Considerations by the TSEG/TSEG-plus

a. Competition between seals and fisheries for fish

As mentioned in the Wadden Sea Seal Management Plan for 1996-2000, lack of information on the seals' diet and feeding strategy is one of the major problems of the seal specialists to assess this issue. Without even an indication on possible temporal, local or "dietary" overlap between seals and fisheries, it is impossible to assess the magnitude of the problem or advise on management measures to be taken if a conflict arises. It should be noted that the collection of data to support any management decision would take several years. In light of the current occasional call for seal regulation coming from the fishermen, the TSEG/TSEG-plus believes that it is unwise to wait until the conflict escalates to start investigations.

b. By-catch of seals

In the Netherlands, where the problem is indicated, the question is whether obligatory "seal guards" are implemented correctly and if so, whether this measure is efficient with respect to size.

In Denmark and Schleswig-Holstein, by-catch of seals is not reported. However, experiences in the Netherlands show that this does not imply that there is no by-catch.

Though by-catch does not seem to affect the population at the moment, a more detailed inventory on the implementation of seal guards should be made in the Netherlands and Lower Saxony, and a general overview in the other areas.

There are few records from Dutch fishermen on seals by-caught in other fishing gear. It is possible that these are simply not reported. This should be investigated.

To avoid and determine the number of seal by-catch in fishery activities the establishment of a network to collect central information on by-catch from outside (and inside) the Wadden Sea should be considered, as it is listed as an action in the Seal Management Plan 1996 – 2000.

c. Damage of fishing gear and catch by seals

Until now, Denmark has been the only country where just outside the Wadden Sea Conservation Area damage of fishing gear and catch by seals has been recorded.

The amount of requests to shoot seals in this way does not seem alarming. There will be no biological consequences in case of issuing very few permits to take individual seals evidently damaging fishing gear and catches. Some experts expect that in case the number of given permits are extended, shyness of seals in the area will/may be a consequence. However, clear records of these instances (number of fishermen who are effected by the concerned problem) should be kept in order to monitor the situation.

d. Disturbance of seals by fisheries

Though not supported by thorough scientific data this seems to be a minor problem as obviously only few haul-out areas are disturbed. Possibly an inventory can be made of these occurrences in the different areas. Effects of disturbance of seals in the water remain unknown. Though the effects of disturbance of seals by fisheries are considered a second major item by the TSEG/TSEG-plus, the disturbance of seals in general is a major item and goes beyond the scope of the fishery's problem to suggest detailed research only for fisheries interactions.

3.2 Current and potential conflicts between recreation and the Common seal population

There are many indications that disturbance can affect animal populations in general (Sapolsky 1990). Among seals a relatively high pup mortality rate, a high incidence of infected umbilicus of pups (Drescher 1979) and a theoretical model show that a so-called bottleneck for the pup survival can occur (Reijnders 1981).

However, except for animals actually leaving an area, it is not possible to demonstrate whether animals are disturbed or not, thus proving a causal relationship between disturbance and these effects.

Up till now, the indications were serious enough and animals have been protected from disturbance as a precautionary measure in the different states. Though the details of the measures can differ from country to country, this protection includes in all states relatively large areas (periodically) closed to the public. This protection is mostly necessary in the summer when the animals reproduce and moult. During the past 11 years, the Common seal population using the Wadden Sea to haul-out and breed has grown exponentially from about 4,000 to 17,000 animals.

The growing population implies that the area needed by the seals also grows. In light of the multi-purpose use of the Wadden Sea, especially the growing recreational value of the area, enlargement of the protected areas to the disadvantage of recreation seems undesirable. On the other hand, the knowledge lacks to advise on other measures than the precautionary one.

The TSEG/TSEG-plus agrees that the lack of knowledge can be broken down into two topics:

First of all, detailed knowledge on the seal habitat is limited to haul-out sites. Limited telemetry data shows that seals spend most of their time in the water and the aquatic habitat of the animals ranges far beyond the haul-out site. It will be imperative to define this aquatic habitat to give more specific advice on protected areas.

Secondly, a physical indicator of stress to measure disturbance in seals lacks. This would enable the determination whether animals are disturbed in an existing situation. This indicator can also be used when researching effects of disturbance in specific management cases.

The first tool will enable us to determine the areas, which are of great importance to the specific age and sex groups within the seal population (i.e. pregnant or suckling females, sub-adults, adult males), and whether conflicts in management can occur when considering the interests of, for example, recreational users.

The second tool will enable us to determine the sensitivity of the different age/sex groups and designate adequate protection for them. This also enables monitoring the effect of implemented protection measures and correct these if proven necessary. This will prove a strong management tool as the protection of the seal population can be optimized while minimizing the closed areas

for recreation. Furthermore, the knowledge on habitat requirements of the seals can be used to produce different instruments for management, e.g. assessment of the carrying capacity (for seals) of the area.

3.3 Assessment of potential conflicts between offshore wind parks and seals

Several regions of the German coastline are considered suitable locations for large offshore wind parks, consisting of numerous gigantic towers with propeller blades of about 50 m. These will be located within and outside the 12-nautical-mile-zone (EEZ) some 20-30 km from the coast in the open sea. The Key-Planning areas in the EEZ in the North Sea are the areas between north of Helgoland and the line of the island of Amrum and Sylt (off Schleswig-Holstein) as well as Borkum-Riff (off Lower Saxony).

Within the German territorial zone, five offshore windmill parks have been planned until now. Here, the coastal states (Schleswig-Holstein and Lower Saxony) are responsible for the further permission and approval procedure. In the territorial zone off Schleswig-Holstein, a strip of only about 7 km between the 15-km-line and 22-km-line (12 sea miles) north of Helgoland, bordered by the EU-Bird Area in the east and by the VTS in the west, will be the only potential planning area for wind parks. For this area, about five applications had been made for different or overlapping locations until December 2000 (see northeast of Helgoland).

In the territorial zone off Lower Saxony, an offshore wind park of about 2,500 ha is planned, e.g. near the Weser navigable water between the lighthouses Tegeler Plate and Alter Weser (planning status unclear at the moment).

In Denmark, an offshore windmill park is planned 40 km off the coast at Horns Rev in the North Sea. The public hearing for the EIA is ongoing but still not yet finally approved. However, the establishment of the park and the start of operation are expected for 2001.

Furthermore, sounds and vibrations caused from underwater buildings possibly cause disturbances to seals. In Denmark, a study is going on to investigate the effects of such sounds and vibrations on seals. In case negative effects are demonstrated, measures should be taken in order to prevent these disturbances in migrating and foraging areas of the seals.

Several studies examine benthic and pelagic

organisms at the proposed sites in order to assess potential effects of building and running offshore wind parks. It is considered that it is necessary to include detailed assessments of possible effects of these activities on seal populations.

During summer, an unknown percentage of the Wadden Sea seal population forages in the adjacent North Sea regions; during winter Leopold et al. (1997) estimated that at least 20% of the population is to be found in this regions. Though little is known on foraging behavior and dispersal of seals during winter, it is certain that the areas proposed for wind parks and the seal traveling and

foraging ranges show a wide overlap, and that wind parks might affect traveling and foraging of seals from the Wadden Sea to the open North Sea. This implies that plans for using these areas for wind parks or any other purpose need to consider the wintering range of the seals in the North Sea and possible effects of disturbance on the seal population.

Therefore, it is suggested that a detailed study on dispersal of seals should be initiated with high priority, this should include using modern techniques to understand the aquatic habitat use of that area.

4. Assessment of Ethical and Educational Aspects with Respect to Seal and Man

When man interferes with wildlife, ethical aspects should be considered. Ethical considerations concerning seals in the Wadden Sea are only relevant in relation to taking seals into seal stations and releasing, hunting, by-catch and scientific programs. With an increasing seal population, it should generally be accepted by the public that weak, abandoned and dead seals are normal events. Ethical consideration should be applied regarding taking animals into stations in relation to stress and animal welfare in general.

Information and educational programs targeting children and the public, in general, should inform about conservation and management of seals as living resources and a natural asset. These programs should focus on the habitat requirements of seals, human behavior in seal areas, what to do when a dead or weakened seal is found, as well as the trilateral cooperation on the protection of seals.

Rehabilitation should only be mentioned as an exception from the general management guidelines in order to satisfy human needs to nurse and help individual animals. It should be mentioned that rehabilitation has nothing to do with wildlife management in general.

The view of the responsible Dutch state-agency with respect to taking of seals is based on two principles: an eco-ethical and an animal-ethical principle. The eco-ethical principle will emphasize that the population as a whole has to be considered and taking of seals should not hamper self-regulation, whereas the animal-ethical principle is mainly based on preventing suffering for the individual animal. The Dutch state-agency view is that taking of seals is not necessary to maintain the population. However, a restricted taking and releasing of seals, in order to avoid unnecessary risks for the wild population, is considered justifiable.

5. Assessment on the Prolongation, Amendment or Revisions of the SMP and the Amendment of the Seal Agreement

5.1 Main findings of the assessment

The primary objective in the trilateral agreed management policy for the Wadden Sea is to achieve a natural and sustainable ecosystem in which natural processes proceed in an undisturbed way. The Seal Agreement, enacted in Oct. 1991, and concluded between Denmark, Germany and the Netherlands, states that "The Parties shall closely cooperate with a view to achieving and maintaining a favorable conservation status for the seal population", which leads to the eco-target to achieve a viable population, with normal (natural) reproduction and behavior.

5.1.1 Common seal

Viewing in that context the developments in the Common seal population between 1996 – 2000, it is concluded that the population has continued to develop prosperously, and the average growth rate since 1989 has approximately been 13%. In 2000, 17,000 seals were counted and the present total population is estimated to amount to around 23,500 seals in the entire Wadden Sea.

The present scheme of coordinated aerial surveys has been proven to be very valuable to monitor population trends and provide indexes on growth and reproduction. Further modeling is required to obtain further data on age-specific survival and age-composition of the population, which will enable the prediction of future short to mid-term population trends.

The assessment of the health condition of the population is indirectly possible via survey results providing data on reproduction and mortality amongst pups and adults, and via information on number of seals taken and their condition. Based on the survey results, it is concluded that the health status of the population must be satisfactory, otherwise the observed growth rate, close to the maximum (intrinsic) rate possible for this species, would not have been possible.

On the basis of information obtained from seals taken (dead and/or alive), it is concluded that only the number and age of seals taken may be used to assess indirectly the health status of the population. The conclusion from the obtained data on dead strandings and number of live seals taken, is that until 1997 there had been no change in the percentage of animals obtained compared with the numbers counted during surveys. However, since 1998, the numbers of seals taken has increased both in Schleswig-Holstein and the Netherlands. Whether this trend may continue or not should be closely followed and investigated, since it may be a consequence of possible changes in the population.

It is stressed that the information on seals taken should be collected in a standardized way, fully documented, and accompanied by data on effort and weather conditions otherwise results are biased and wrongly interpreted.

Given the facts that the seal population is recovering prosperously, that it is far beyond the minimum viable population size, and that the health status of the population is considered satisfactorily, there is no need to intervene in this wild population. In accordance with the Seal Agreement the taking of seals should be prohibited by the Parties except for specific exceptions. According to the Ministerial Declaration of Leeuwarden 1994 and the current Seal Management Plan the taking and releasing of seals in the Wadden Sea should therefore be reduced to the lowest level possible, and to that end guidelines should be developed in all countries.

If animals are found alive and apparently in need of care, animal welfare considerations justify taking actions to end the suffering of the specific animal. Again here, this should be done on clearly written selection criteria elaborated and endorsed by responsible state agencies.

Infections and non-infections diseases are a natural factor in wild animal populations and generally regulate the population size in the absence of predators. There has been research on the pres-

ence of viruses or virus specific antibody titers in seals taken or found dead. The conclusions are that a herpes-virus infection with low virulence is present in seals in the Schleswig-Holstein and Dutch Wadden Sea. The majority of seals investigated in the Schleswig-Holstein and the Dutch Wadden Sea have low or no detectable distemper virus-specific antibodies, which renders the population sensitive to a possible virulent morbilli virus. The finding of two seals in 1999 in Schleswig-Holstein with high antibody titers and a few cases of morbilli-viruses in 2001 in seals from the Dutch Wadden Sea warrants further monitoring of the health condition of the seals taken.

There is no indication of an epidemic due to a specific viral or bacterial infection of seals in the Wadden Sea. However, the results demonstrate a widespread infection with a herpes virus with a probably low virulence. The fact that the vast majority of investigated seals showed low or no detectable distemper virus-specific antibodies allows the conclusion that this native seal population is at risk when exposed to a virulent morbilli virus to develop distemper. New cases of morbilli virus infection in Common seals are reported from the Netherlands and first cases of parapox virus infection from the Wadden Sea in Schleswig-Holstein. The occurrence of the zoonotic bacteria *Bruceella sp.* and *Erysipelothrix rhusiopathiae* indicates that handling of seals should be done carefully and with caution.

5.1.2 Grey seal

Despite the growing numbers in the Netherlands and the stable numbers in Germany, the Wadden Sea Grey seal populations cannot be regarded as viable in the biological sense. Viable would mean that the population could survive and recover from major calamities without needing animals from elsewhere. Until 1998, the growth of the Dutch colony could still be attributed to immigration from Great Britain. One of the major factors preventing a real viable population to settle is the lack of undisturbed higher breeding grounds, which are not flooded during spring tides. Currently, winter storms in combination with high tide can affect pup survival. The practice of "rescuing" a large number of pups each year to prevent mortality does not seem to be a long-term solution, if any. In light of the currently increasing number of Grey seals, a structural solution should be considered. Suitable areas should be protected from human interference, possibly in a flexible way, on the basis of necessity. In order to achieve proper

conservation, basic population data and more detailed data on habitat requirements should be available on the Grey seals in the Wadden Sea.

5.2 Considerations regarding the Habitat Directive and the Bern Convention

5.2.1 The EC Habitat Directive

The Grey seal and the Common seal are covered by the EC Habitat Directive (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora). The aim of the Directive is to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States to which the Treaty applies. Conservation means a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favorable status. The conservation status will be taken as 'favorable' when:

- population dynamics data on the species concerned indicate that they are maintaining themselves on a long-term basis as a viable component of its natural habitats;
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- there is and will probably continue to be a sufficiently large habitat to maintain its populations on a long-term basis.

The Grey seal and The Common seal are listed in Annex II of the Directive, which includes animal and plant species of community interest whose conservation requires the designation of special areas of conservation. Furthermore, the Grey seal and Common seal are listed in Annex V of the Directive, which includes animal and plant species of community interest whose taking in the wild and exploitation may be subject to management measures.

5.2.2 The Bern Convention

Grey and Common seal are covered by the Bern Convention (Convention on the conservation of European Wildlife and Natural Habitats, 19.IX.1979). The aims of the Convention are to conserve wild flora and fauna and their natural habitats, especially those species and habitats

whose conservation requires the cooperation of several states, and to promote such cooperation. Particular emphasis is given to endangered and vulnerable species, including endangered and vulnerable migratory species.

According to Article 7, each Contracting Party shall take appropriate and necessary legislative and administrative measures to ensure the protection of the wild fauna species (including seals) specified in Appendix III. Any exploitation of wild fauna specified in Appendix III of the convention shall be regulated in order to keep the populations out of danger. Measures to be taken shall include:

- closed seasons and/or other procedures regulating the exploitation;
- the temporary or local prohibition of exploitation, as appropriate, in order to restore satisfactory population levels;
- the regulation as appropriate of sale, keeping for sale, transport for sale or offering for sale of live and dead wild animals.

According to the Article 9, each Contracting Party may make exceptions from the provisions of Articles 4, 5, 6, 7 and from the prohibition of the use of the means mentioned in Article 8 provided that there is no other satisfactory solution and that the exception will not be detrimental to the survival of the population concerned.

5.3 Additional hot spots for the future

Aspects related to management of seals that may become relevant issues in the future in the mid or longer term are:

- assessment of the carrying capacity of the Wadden Sea for the Common and Grey seals;
- possible consequences of climate change for the Common and Grey seal populations (abundance, distribution, haul-out-behavior, foraging);
- assessment of means and acceptance to regulate seal numbers.

5.4 Status of the implementation of the current SMP

The current "Conservation and Management Plan for the Wadden Sea Seal Population 1996 – 2000" was prolonged till the end of 2001. The information on the implementation of the current SMP (current state) in the different sub-region of the Wadden Sea were given by the Parties and compiled in the table of **Annex 4** "Evaluation of the Conservation and Management Plan for the Wadden Sea Seal Population 1996 – 2000".



K.-E. Heers

6. Assessment of the SMP 1996 – 2000 and Recommendations for the SMP for the Time-period 2002 – 2006

The current Seal Management Plan 1996 – 2000 will expire, after a prolongation of one year, at the end of 2001, and the Senior Officials (SO) of the Trilateral Wadden Sea Cooperation asked the Trilateral Working Group (TWG) to revise the Seal Management Plan and produce draft recommendations for the next planning period. A draft Seal Management Plan should be approved at the next Ministerial Conference in Esbjerg, October 2001.

In accordance with § 18 of the Common Statement of the SO 14 in November 1999, the TWG asked the extended Trilateral Seal Expert Group (TSEG-plus) to assess the current SMP 1996–2000 and develop a revised version including recommendations for a new management period by 1 March 2001.

The following draft recommendations have been prepared by the TSEG-plus for further consideration and approval. The overall structure is in line with the structure of the Seal Agreement and the current SMP. For each item, a short assessment statement is given first in line with the status of implementation of the SMP 1996 – 2000 (see also Annex 4), followed by the recommendation for the SMP of the new management planning period 2002 – 2006.

6.1 Common Seal

Conservation and Management Measures: Habitats

Seals in the Eems–Dollard–region

Bilateral discussions on a Dutch–German nature statutory order to provide for protection of necessary resting places for seals are being held:

Recommendation 1

Establish and manage seal reserves in the Eems Dollard region similar to seal reserves established and managed in other areas of the Wadden Sea.

Habitat requirements of seals

A joint proposal regarding "habitat use with regard to human activities in the Wadden Sea" submitted to the EU failed in 1999. The proposal should be resubmitted. The implementation and results of such a joint project is stated as especially important for further management in the future:

Recommendation 2

It is recommended to redraft the joint proposal regarding "habitat use with regard to human activities in the Wadden Sea and adjacent areas" and submit it – in consultations with responsible state administrative agencies for nature conservation – to organizations (e.g. EC or others) for funding.

The partners in the Seal Agreement in close connection with the responsible administrative agencies in the area, are invited to facilitate funding for this project.

It is recommended to give the highest research priority to the feeding ecology of Common seals; and, investigations on habitat requirements of seals in relation to recreational demands.

Habitats of seals in the offshore area connected with the Wadden Sea

Identification of zone(s) of importance for seals outside but connected with the Wadden Sea and the guarantee of appropriate management measures have not been further developed:

Recommendation 3

It is recommended to assess whether implemented measures meet the habitat requirements of seals in the areas adjacent to the Wadden Sea.

Protected habitats for seals in the Wadden Sea

Regarding the establishment of protection schemes for seals. (here it is referred to the EC Habitat Dir.):

Recommendation 4

It is recommended to evaluate the existing network of seal reserves in the countries as to whether they comply with the EC Habitat Directive.

In case the assessment indicates that more seal reserves are needed, it is recommended to install further seal reserves.

Excursions by boats to seal banks

Organized excursions by boats to seal haul-outs are carried out in all sub-regions in the Wadden Sea. The impact of these excursions on seals' behavior and distribution are only partly known and they are generally only build on visual observations, if standards are developed:

Recommendation 5

It is recommended to develop a trilateral framework for guidelines to regulate excursions by boats to seal haul-outs. These guidelines should be based on a precautionary principle. National guidelines should be based on the trilateral framework and could – if needed – consider a specification for certain haul-outs, e.g. colonies where pups are born should preferably not be visited during the whelping and lactation period. The guidelines should, e.g., include distances to seal colonies, speed of boats and provide for possibilities to assess and evaluate the impact of seal excursions on vigilance and other behavior of the seals.

Disturbing activities: fisheries

Some types of fishery in and close to seal areas are not yet prohibited in all sub-regions:

Recommendation 6

It is recommended to identify in which areas fishery disturbances of seals might occur, assess what the nature and extent of the disturbance may be, and accordingly implement protection measures.

In the Netherlands, obligatory seal guards in fyke nets prevent drowning of seals. The devices are not completely efficient because seals still drown in these nets:

Recommendation 7

It is recommended to investigate experimentally, preferably in consultations with fishermen, which mesh size used in seal guards, is necessary to prevent drowning of, particularly, young seals in this type of fishery and make such seal guards obligatory for fishing with fyke nets in all sub-regions in the Wadden Sea, where this type of fishery is carried out.

Exact and sufficient information on accidental by-catch of seals in fisheries in waters of and adjacent to the Wadden Sea are lacking:

Recommendation 8

It is recommended to improve the central collection of information on drowning/entanglement of seals in fisheries in the Wadden Sea and adjacent waters, either via existing stranding networks or through establishing such a system.

Conservation and Management Measures: Pollution

It is unclear whether negative effects of dumping dredged material, or taking of mud or sand in or near the Wadden Sea, affects seals or seal banks. However, these activities are principally not allowed in core zones of the Danish, Schleswig-Holstein and Lower Saxon parts of the Wadden Sea:

Recommendation 9

In accordance with practice in some sub-regions, the dumping of dredged material or taking of mud or sand in or near the Wadden Sea should be made subject to an EIA, where the impact on seals and other wildlife should be included. It is recommended to develop trilateral guidelines for the EIA-procedure for this type of activities.

Conservation and Management Measures: Wardening

Wardening systems are existing in all four sub-regions:

Recommendation 10

It is recommended to evaluate the existing wardening systems, whether they meet the common standards according to Annex I of the Esbjerg Declaration (1991), and to improve the wardening system, if needed.

Research and Monitoring**Inventory of seal research projects**

Centrally collected information on all seal related research projects carried out in the Wadden Sea is currently practically non-existent, and hampers the exchange of information:

Recommendation 11

It is recommended that all research projects on seals or related to seals in the Wadden Sea are

reported to the coordinating institution, and communicated to the TSEG. After completion of the project, a report on the results should be made available to the coordinating institution for further evaluation by the TSEG.

Trilateral research projects

The recommended drafting of a joint trilateral feeding ecology project in cooperation with fishery research groups has been partly undertaken and is nearly completed. The implementation and results of such a joint project is stated as especially important for further management in the future:

Recommendation 12

Complete the ongoing drafting of the joint trilateral project on "Feeding Ecology of Common Seals", including prey preference, food quality and foraging areas. The information will not only be used to understand and follow whether changes in feeding patterns and food availability may occur in the future, but most importantly do provide the necessary information to identify, at an early stage, whether seals – fishery interactions become evident, and facilitate the assessment of the extent of such a conflict and recommend appropriate management actions.

The partners in the Seal Agreement in close connection with the responsible administrative agencies in the area are invited to provide funding of this project.

It is recommended to give the highest research priority to the feeding ecology of Common seals; and, investigations on habitat requirements of seals in relation to recreational demands.

See also *Recommendation 2* regarding the Joint Proposal "habitat use with regard to human activities in the Wadden Sea"

Monitoring strategy through aerial surveys and counts

The monitoring of population trends through an agreed coordinated scheme of aerial surveys has been successfully carried out in all areas.

The TSEG proposed a monitoring schedule for aerial surveys in the future (see Annex 5); the TSEG-plus discussion is summarized in Annex 6:

Recommendation 13

a. The TSEG recommends carrying out five flights in a trilaterally coordinated way (three during the pupping and two during the moulting period) as a

minimum program according to the given arguments in the TSEG-document.

b. Furthermore, the TSEG recommends that more frequent flights in one year (a few more flights in the pupping season) should only be carried out in a trilaterally coordinated way in case of emergency or because of special local/regional reasons on the basis of agreed scientific requirements.

The TSEG-plus recognized the five flights, which are recommended by the TSEG as a minimum program and recommends that it should be prioritized with the rest of the monitoring program in the Wadden Sea in cooperation with the TMAG. It is recommended to take the consequences into account, if the seal survey program of five flights will be reduced.

Footnote by Lower Saxony:

Lower Saxony agreed, in general, to the recommendation a), however, raised an administrative reservation regarding the necessity in view of the lack of financial means for the implementation.

Monitoring of pollution

The TSEG elaborated a proposal to the TMAG to include relevant seal parameters in the TMAP and/or concomitant ecological research concerning pathology, immunology and toxicology. The establishment of a tissue bank to acquire and store samples for future analysis was proposed additionally. However, these proposals have neither been included in the TMAP nor been carried to a stage of a project otherwise:

Recommendation 14

The status of the Common seal population and changes thereof, can be described in quantitative terms (population demographics) as well as in qualitative terms (reproductive capacity, survival and health status). It is recommended to use such a multiple index to describe the status of a population. To be able to do so, it is necessary to establish a trilaterally agreed monitoring program that includes as first priorities the research disciplines population dynamic and pathobiology. The basic program may be completed by a less intensive program of selected parameters of immunological, endocrinological, toxicological, parasitological, bacteriological and virological investigations.

The TSEG should be invited to draft such a first priority and second priority monitoring program including ways to obtain the necessary data and/or required samples.

Taking and Exemptions for Taking

Exemptions for taking of seals in seal stations

Based on the findings on population trends (growth) as well as on the condition of the populations (reproduction, health, survival), it is concluded that the statements in § 56 - § 61 of the Leeuwarden Declaration (LD) have become even more valid which implies that the current numbers of seals taken from and released to the Wadden Sea should be reduced to the lowest level possible. It is concluded that in all countries, except the Netherlands, state agency guidelines have been developed for handling seals that resulted in a (drastic) reduction on the numbers of animals taken and released. Particularly the taking of seals in the Pieterburen Center is disproportionately higher compared to other seal stations in the Dutch, German and Danish Wadden Sea. This is obvious from the data provided by the respective countries:

Recommendation 15

Given the prosperous development of the seal population in the Wadden Sea, both in terms of growth as well as in fitness, it is strongly recommended to reconfirm the § 56 - § 61 of the Leeuwarden Declaration (LD):

" § 60 to reduce the current number of seals taken from and released to the Wadden Sea to the lowest level possibly applying guidelines for handling diseased or weakened seals or evidently abandoned pups, and to release seals based on the precautionary approach, referred to the "Statement on Seal Rehabilitation and Release, based on scientific experience and knowledge" as elaborated by seal experts."

The Dutch government is strongly urged to take the necessary action to achieve a significant reduction in the numbers of seals taken by the Pieterburen seal center, to design on short term strict guidelines and criteria for taking, handling diseased or weakened seals or evidently abandoned pups, and to release seals on the precautionary approach, referred to in the "Statement of Seal Rehabilitation and Release", in the LD in 1994. The German "Heulerrichtlinien" could serve as a model.

*Footnote by DK for the last sentence/paragraph:
Denmark strongly recommends that seals taken into the seal centers should not be released into the wild again.*

Medical treatment of taken seals

It is concluded that LD § 60.2 (i): "the seal has not been treated with specific groups of medicine to be further specified." has not been discussed, despite efforts of the TSEG and the coordinating institution:

Recommendation 16

It is strongly recommended to carry out a detailed expert discussion, and request their advice, on the use of specific groups of medicines in seal centers, where seals are rehabilitated and released.

Footnote by DK:

Denmark is arguing that the discussion of medicine is irrelevant, because seals should not be released into the wild. If seals are released, they should not be treated with medicine.

Keeping of seals taken into seal stations

Regarding LD § 60.2 (iv) and LD § 60.4

"the seal has not been kept in a center where species of animals alien to the Wadden Sea, or marine mammals not resident in the Wadden Sea, are held;" and

"seals shall not be transported between sub-regions of the Wadden Sea;"

Alien is in LD § 60.2 (iv) and LD § 60.4 defined as "from areas not belonging to the Wadden Sea".

Contrary to the agreement: Seals from outside the Wadden Sea have been taken in, e.g. in the Seal Center in Pieterburen, and, in addition, seals have been transported between sub-regions of the Wadden Sea:

Recommendation 17

It is strongly recommended to prohibit the taking in of seal species other than Common and Grey seals and keep them in Wadden Sea seal centers. In addition, it is also recommended to prohibit the taking of Common and Grey seals from areas outside the Wadden Sea and keep them in Wadden Sea seal centers.

It is recommended to prohibit the release of seals being kept in other than the Wadden Sea seal centers into the Wadden Sea.

Footnote by DK:

Denmark strongly recommends that seals taken into the seal centers should not be released into the wild again.

Documentation of keeping of seals in seal stations

In all seal stations, the standards for veterinarian expertise, writing a station diary, specialized supervision and standards are therefore presumably fulfilled. However, the control is usually only internally organized:

Recommendation 18

It is recommended to enable an independent check of the station records at a national/trilateral level by responsible state-agencies.

Documentation of taking and releasing of seals

The reporting on trilateral standardized formats, of annual exemptions and the numbers of taken and released seals to the coordination institution has been very slow and partly incomplete. Particularly the delayed and reluctant delivery has proven to be a handicap for the TSEG and TSEG-plus to review these data and conclude on possible changes in the population.

The information on numbers of animals taken, their age-composition and possible length, can be useful as an indicator for a change over time in seals taken, and that could in turn be related to changes in the status of the population:

Recommendation 19

Based on the conclusions in the chapter on assessment of the health condition of the Common seal population, it is strongly recommended to at least collect the following information from all animals taken, either euthanized, otherwise killed, or rehabilitated and released:

Number of seals, age (length), sex, time and location found at, and time and location of release of rehabilitated seals.

It should be made mandatory that, in the beginning of each year, each country provides the coordinating institution with a complete list of the above-mentioned data collected in the passed year. They will provide the data to the TSEG in order to evaluate the data for their significance in relation to monitoring possible changes in the population.

The TSEG should be requested to advice on a revision of the presently used standardized annual reporting formats, as well as on possible other relevant data to be collected from seals taken.

Animal welfare aspects

The relevant laws/regulations on hunting/animal welfare/nature conservation in the different countries should be addressed:

Recommendation 20

It is recommended to elaborate an independent assessment and interpretation of the relevant laws/regulations on hunting/animal welfare/nature conservation in the different countries.

Exemptions for taking of seals as mitigation measure

Denmark asks to issue permits to take individual seals evidently damaging fishing gear and catches. It is pointed out that only commercial fishermen under special requirements are concerned in the requested management tool, and in each single case a license from the ministry would be a prerequisite for shooting the seal, followed by a reporting to the TWG. The Danish request is not based on a conservation problem, but a request for better management of seals-related fishery conflicts. In Denmark, by law, it is not possible to pay compensation to the concerned fishermen for damage by wildlife. (the TSEG-plus discussion is summarized in Annex 6):

Recommendation 21

It is recommended to revise the SMP to include exemptions for taking as mitigation measure.

It is recommended to include the possibility to use a management tool in single cases in order to mitigate conflicts between fisheries and seals in the Agreement Area outside the Trilateral Conservation Area. An exemption for mitigation measures should be included in the SMP. Prerequisites for each single case are the special condition, a license and the reporting to the TWG. (It is referred to the minutes of the TSEG-plus meeting on 08.11.2001)

Footnote by SH and NL:

Schleswig-Holstein and the Netherlands express their concern that such a decision would make the discussion between management and fisheries more difficult in the future.

Public Information

The publication of a common brochure (poster or leaflet) to inform the general public about the conservation status of the seal population, of the aims of the Seal Agreement, the Seal Management Plan and of measures taken to achieve the objectives of the Agreement has not been realized in the last period (1996-2000). Such a brochure should also include the information that the

seal population as a natural asset has to be respected, that with an increasing seal population more weakened, abandoned and dead animals may be found, and that in the future possibly more interactions between seal and man may occur:

Recommendation 22

It is recommended to produce a brochure including, e.g. information on the status of the seal population, the aims of the Seal Agreement and the Seal Management Plan, the views on rehabilitation, the need to guarantee the primary objective to achieve managing the Wadden Sea as a nature area with the least human interference as possible.

It is recommended that the state agencies responsible for seal management should bring this message to the public.

6.2 Grey Seals

The *Recommendations* regarding taking and exemption for taking of Common seals are also valid for the Grey seals in the Wadden Sea.

The required efforts, particularly, to ensure that Grey seal colonies are protected as reserves and to establish such reserves on beaches (incl. wardening) are not all fulfilled in the Netherlands:

Recommendation 23

It is recommended that the Dutch responsible agencies should seek advice from the TSEG on the necessary measures to provide Grey seals in the Dutch Wadden Sea a similar level of protection as provided for the Common seal.

A project proposal on investigating habitat use and demands, behavior and health status of Grey seals in the Wadden Sea has been drafted by the TSEG and agreed upon by the TMAG/TWG, however, finances have not yet been provided:

Recommendation 24

It is recommended to raise funding for the project "habitat use and demands, behavior and health status of Grey seals in the Wadden Sea" in order to provide the basic data to monitor the status of the different colonies of Grey seals and formulate an adequate conservation policy and management for this species.

6.3 Trilateral Seal Expert Group (TSEG)

The Trilateral Seal Expert Group (TSEG) has the task to coordinate and supervise the implementation of monitoring activities and the assessment

of the results, assess relevant research results and, as appropriate, give advice regarding management on request of the trilateral cooperation.

In detail the tasks of the TSEG are to:

- analyze (chronic and sudden) developments in the Common and Grey seal populations (e.g. oil pollution, higher mortality) and accordingly provide through the CWSS management advice to the responsible authorities;
- coordinate, supervise and execute monitoring activities as identified in the SMP and assess the results;
- formulate, in cooperation with the CWSS, concrete plans to achieve the objectives of the SMP (work plan), in particular the identified required efforts and objectives;
- coordinate and supervise, in consultation with the CWSS, the implementation of the SMP;
- evaluate progress in the implementation of the SMP and advise on interim management measures to enhance execution of the planned actions;
- elaborate and submit proposals to the responsible authorities to initiate and implement research activities as identified in the SMP and assess relevant research results;
- evaluate the current SMP and formulate, in cooperation with the CWSS and further experts, an outline for the new SMP.

Recommendation 25

It is recommended that the TSEG continues to be a group which can act independently, objectively and scientifically to fulfil the tasks. The members of the group should not be linked to organizations, which have a specific interest in promoting specific decisions/recommendations by the TSEG. They should be independent scientists and, e.g. not associated with private organizations (such as seal centers and NGOs) or administrative bodies.

However, there should be the possibility to invite additional scientists, whether or not linked to private organizations, to the meetings of the TSEG on specific questions/topics, and under certain circumstances administrative people. Especially when e.g. guidelines for rehabilitation and release of seals are to be discussed, representatives from seal centers, such as Ecomare, Pieterburen, Norden-Norddeich and Friedrichskoog should be invited to contribute.

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Terms of References for the TSEG-plus

Objective and Members

The Trilateral Seal Expert Group (TSEG) extended with a representative of the competent seal management authorities of the four regions is charged with the scientific evaluation of the status of the Common seal population in the Wadden Sea including an assessment as to whether the Seals Management Plan (SMP), which expires by the end of 2000, needs to be revised and amended.

Tasks

The working group shall, in particular,

- Provide an overview and assessment of the development of the seal population for the period since the phocine distemper epidemic in 1988, including an assessment of the health condition of the population on the basis of the number of taken seals and their condition as well as virological, ethical and educational aspects;
- Provide an assessment of the potential conflicts between fisheries and seals as well as between recreation and seals on the basis of the population development;

- Assess, on the basis of an evaluation of the implementation of the SMP and in light of the assessment of 1-2, whether the current SMP should be prolonged, amended or revised respectively whether the Seal Agreement should be amended; this assessment should include the stipulations of the Habitat Directive and Danish viewpoints expressed in Annex 5 of the Common Statement;
- Provide, if appropriate, recommendations for amendments of the SMP.

Timetable

The report of the working group shall be delivered to the TWG by September 1, 2000 at the latest. According to the decision of the TWG/SO in September/October 2000 the full report should be available to the SO-meeting in April 2001. A prolongation or amendment of the Seal Management Plan, which expires in 2000, cannot be considered before that, and therefore it was agreed to prolong the current SMP with one year.

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H. H. Dietz

Number of Found Dead, Taken and Released Common and Grey Seals in the Wadden Sea Area 1996 – 1999

1. Common Seals

- 1.1 Number of seals found dead in the Wadden Sea Area
- 1.2 Number of taken pups in the Wadden Sea Area
- 1.3 Number of taken non-pups in the Wadden Sea Area
- 1.4 Number of live pups found alone ("Heulervermeidungsstrategie")
- 1.5 Number of seals born in captivity

2. Grey Seals

- 2.1 Number of seals found dead in the Wadden Sea Area
- 2.2 Number of taken pups in the Wadden Sea Area
- 2.3 Number of taken non-pups in the Wadden Sea Area
- 2.4 Number of live pups found alone ("Heulervermeidungsstrategie")
- 2.5 Number of seals born in captivity

The given data per country - Denmark, Germany (Schleswig-Holstein, Hamburg and Niedersachsen) and The Netherlands - respectively per station - DK: Fiskeri-og Søfartsmuseet, Esbjerg, SH: Seehundaufzuchtstation Friedrichskoog, Nds: Aufzuchtstation Norden/Norddeich, NL: Ecomare, Texel and Zeehondencreche Pieterburen - are delivered by the responsible authorities of the Wadden Sea states until February 2001, and compiled in the following tables by the Common Wadden Sea Secretariat.

The Dutch data are still inconsistent and should be revised.

Remarks:

no info = information not yet delivered
unknown = information not available

Common Seals

1.1 Number of Common Seals found dead in the Wadden Sea Area

DK	1996	1997	1998	1999
Pups	2	3	6	15
Non-pups	8	8	25	7
TOTAL	10	11	31	22
SH				
Pups	44	107	224	
Non-pups	44	61	85	
TOTAL	88	168 + 3 = 171	309	281
HH				
Pups	1	5	14	9
Non-pups	3	1	2	9
TOTAL	4	6	16	18
Nds				
Pups	30	65	51	63
Non-pups	18	4	4	23
TOTAL	48	69	55	86 + 30 = 116
NL - Ecomare				
Pups	-	-	-	-
Non-pups	7	5	10	10
Ecomare-TOTAL	7	5	10	10
NL- Pieterburen				
Pups				
Non-pups				
Pieterb. - TOTAL	No info	No info	No info	No info
NL-TOTAL				

Common Seals

1.2 Number of taken pups in the Wadden Sea Area

DK – Esbjerg	1996	1997	1998	1999
1. Pups euthanized in the area or in the station	-	13	26	34
2. Pups raised + died	-	-	-	-
3.1 Pups raised + alive, not released	1	-	-	-
3.2 Pups raised + alive, released into the wild	-	-	-	-
3.3 Pups raised + alive, delivered to a zoo	-	-	-	-
TOTAL	1	13	26	34
SH – Friedrichskoog				
1. Pups euthanized in the area or in the station	11	45	109	97
2. Pups raised + died	-	1	2	1
3.1 Pups raised + alive, not released	-	-	-	-
3.2 Pups raised + alive, released into the wild	17	27	15	18
3.3 Pups raised + alive, delivered to a zoo	-	-	-	-
TOTAL	28	73	126	116
HH				
1. Pups euthanized in the area or in the station				
2. Pups raised + died				
3.1 Pups raised + alive, not released				
3.2 Pups raised + alive, released into the wild				
3.3 Pups raised + alive, delivered to a zoo				
TOTAL	-	-	-	-
Nds – Norden/Norddeich				
1. Pups euthanized in the area or in the station	10	42	22	6
2. Pups raised + died	5	-	-	5
3.1 Pups raised + alive, not released	2	-	-	-
3.2 Pups raised + alive, released into the wild	19 (+3 from 1995)	23	29	52
3.3 Pups raised + alive, delivered to a zoo	-	-	-	-
TOTAL	36	65	51	63
NL – Ecomare				
1. Pups euthanized in the area or in the station	-	-	-	-
2. Pups raised + died	3	-	-	-
3.1 Pups raised + alive, not released	-	-	-	-
3.2 Pups raised + alive, released into the wild	3	4	5	5
3.3 Pups raised + alive, delivered to a zoo	-	-	-	-
Ecomare-TOTAL	6	4	5	5
NL – Pieterburen				
1. Pups euthanized in the area or in the station				
2. Pups raised + died	2	2	1	9
3.1 Pups raised + alive, not released				
3.2 Pups raised + alive, released into the wild	22	29	41	40
3.3 Pups raised + alive, delivered to a zoo				
Pieterburen-TOTAL	24	31	42	49
NL-TOTAL	30	35	47	54

Common Seals

1.3 Number of taken non-pups in the Wadden Sea Area

DK – Esbjerg	1996	1997	1998	1999
1. Non-pups euthanized in the area or in the station		8	20	10
2. Non-pups raised + died		-	-	-
3.1 Non-pups raised + alive, not released		-	-	-
3.2 Non-pups raised + alive, released into the wild		-	-	-
3.3 Non-pups raised + alive, delivered to a zoo		-	-	-
TOTAL	-	8	20	10
SH – Friedrichskoog				
1. Non-pups euthanized in the area or in the station		3		18
2. Non-pups raised + died		-		-
3.1 Non-pups raised + alive, not released		-		-
3.2 Non-pups raised + alive, released into the wild		-		-
3.3 Non-pups raised + alive, delivered to a zoo		-		-
TOTAL	-	3	unknown	18
HH				
1. Non-pups euthanized in the area or in the station				
2. Non-pups raised + died				
3.1 Non-pups raised + alive, not released				
3.2 Non-pups raised + alive, released into the wild				
3.3 Non-pups raised + alive, delivered to a zoo				
TOTAL	-	-	-	-
Nds – Norden/Norddeich				
1. Non-pups euthanized in the area or in the station	-	-	-	5
2. Non-pups raised + died	-	-	-	-
3.1 Non-pups raised + alive, not released	-	-	-	-
3.2 Non-pups raised + alive, released into the wild	-	4	4	1
3.3 Non-pups raised + alive, delivered to a zoo	-	-	-	-
TOTAL	0	4	4	6
NL – Ecomare				
1. Non-pups euthanized in the area or in the station			-	-
2. Non-pups raised + died			-	-
3.1 Non-pups raised + alive, not released			-	1
3.2 Non-pups raised + alive, released into the wild			1	3
3.3 Non-pups raised + alive, delivered to a zoo			-	-
Ecomare-TOTAL	-	-	1	4
NL- Pieterburen				
1. Non-pups euthanized in the area or in the station				
2. Non-pups raised + died	4	4	2	10
3.1 Non-pups raised + alive, not released				
3.2 Non-pups raised + alive, released into the wild	11	13	26	62
3.3 Non-pups raised + alive, delivered to a zoo				
Pieterburen-TOTAL	15	17	28	72
NL-TOTAL	15	17	29	76

Common Seals

1.4 Number of live pups found alone ("Heulervermeidungsstrategie")

DK	1996	1997	1998	1999
1. Pups taken immediately				
2. Pups remaining on a sandbank				
3. Pups taken after waiting period				
4. Other handling (please specify)				
DK-TOTAL	unknown	unknown	unknown	unknown
SH				
1. Pups taken immediately	22	-	-	115
2. Pups remaining on a sandbank	12	10	10	4
3. Pups taken after waiting period	22	73	126	26
4. Other handling (please specify)	30 motherbank	12 motherbank	12 motherbank	10
SH-TOTAL	86	95	148	155
HH				
1. Pups taken immediately				
2. Pups remaining on a sandbank		<10	<10	3
3. Pups taken after waiting period				
4. Other handling (please specify)				
HH-TOTAL	unknown	<10	<10	3
Nds				
1. Pups taken immediately		65	51	
2. Pups remaining on a sandbank				
3. Pups taken after waiting period	36			
4. Other handling (please specify)				
Nds-TOTAL	36	65	51	unknown
NL- Ecomare				
1. Pups taken immediately	6	4		5
2. Pups remaining on a sandbank				
3. Pups taken after waiting period				
4. Other handling (please specify)				
Ecomare-TOTAL	6	4	unknown	5
NL- Pieterburen				
1. Pups taken immediately				
2. Pups remaining on a sandbank				
3. Pups taken after waiting period	24	31	42	50
4. Other handling (please specify)				
Pieterburen-TOTAL	24	31	42	50
NL-TOTAL	30	35	42 ?	55

Common Seals

1.5 Number of seals born in captivity

DK Esbjerg Museum	1996	1997	1998	1999
1. Dead or euthanized	2			
2.1 Raised and not released			1	
2.2 Raised and released i to the wild				
2.3 Released and delivered to a zoo		3		1
TOTAL	2	3	1	1
SH Friedrichskoog				
1. Dead or euthanized	2	4		
2.1 Raised and not released	2	1		
2.2 Raised and released i to the wild				
2.3 Released and delivered to a zoo				
TOTAL	4	5	0	0
HH: no seals born in captivity				
Nds: no seals born in captivity				
NL-Ecomare				
1. Dead or euthanized				
2.1 Raised and not released				
2.2 Raised and released i to the wild	12	10	10	9
2.3 Released and delivered to a zoo				
TOTAL	12	10	10	9
NL-Pieterburen: no seals born in captivity				

Grey Seals

2.1 Number of Grey Seals found dead in the Wadden Sea Area

DK	1996	1997	1998	1999
Pups				
Non-pups				
TOTAL	0	0	0	0
SH				
Pups	0	1	5	2
Non-pups	2	0	1	1
TOTAL	2	1	6	3
HH				
Pups				
Non-pups				
TOTAL	unknown	-	-	-
Nds				
Pups		1	2	1
Non-pups		-	-	-
TOTAL	unknown	1	2	1
NL - Ecomare				
Pups	-	-	-	-
Non-pups	2	2	2	1
Ecomare-Total	2	2	2	1
NL- Pieterburen				
Pups				
Non-pups				
Pieterburen-Total	No info	No info	No info	No info
NL-TOTAL				

Grey Seals

2.2 Number of taken pups in the Wadden Sea Area

DK - Esbjerg	1996	1997	1998	1999
1. Pups euthanized in the area or in the station				
2. Pups raised + died				
3.1 Pups raised + alive, not released				
3.2 Pups raised + alive, released into the wild				
3.3 Pups raised + alive, delivered to a zoo				
TOTAL	0	0	0	1
SH - Friedrichskoog				
1. Pups euthanized in the area or in the station				1
2. Pups raised + died				
3.1 Pups raised + alive, not released				
3.2 Pups raised + alive, released into the wild			1	1
3.3 Pups raised + alive, delivered to a zoo				
TOTAL	0	0	1	2
HH				
1. Pups euthanized in the area or in the station				
2. Pups raised + died				
3.1 Pups raised + alive, not released				
3.2 Pups raised + alive, released into the wild				
3.3 Pups raised + alive, delivered to a zoo				
TOTAL	unknown	-	-	-
Nds - Norden/Nordeich				
1. Pups euthanized in the area or in the station				
2. Pups raised + died				
3.1 Pups raised + alive, not released	1			
3.2 Pups raised + alive, released into the wild		1	2	3
3.3 Pups raised + alive, delivered to a zoo				
TOTAL	1	1	2	3
NL - Ecomare				
1. Pups euthanized in the area or in the station				
2. Pups raised + died		1		
3.1 Pups raised + alive, not released				
3.2 Pups raised + alive, released into the wild	13	3	3	13
3.3 Pups raised + alive, delivered to a zoo				
Ecomare-TOTAL	13	4	3	13
NL- Pieterburen				
1. Pups euthanized in the area or in the station				
2. Pups raised + died		2	1	4
3.1 Pups raised + alive, not released				
3.2 Pups raised + alive, released into the wild	9	7	22	29
3.3 Pups raised + alive, delivered to a zoo				
Pieterburen-TOTAL	9	9	23	33
NL-TOTAL	22	13	26	46

Grey Seals

2.3 Number of taken non-pups in the Wadden Sea Area

DK - Esbjerg	1996	1997	1998	1999
1. Non-pups euthanized in the area or in the station		1	2	1
2. Non-pups raised + died				
3.1 Non-pups raised + alive, not released				
3.2 Non-pups raised + alive, released into the wild				
3.3 Non-pups raised + alive, delivered to a zoo				
TOTAL	0	1	2	1
SH - Friedrichskoog				
1. Non-pups euthanized in the area or in the station				
2. Non-pups raised + died				
3.1 Non-pups raised + alive, not released				
3.2 Non-pups raised + alive, released into the wild				
3.3 Non-pups raised + alive, delivered to a zoo				
TOTAL	0	0	0	0
HH				
1. Non-pups euthanized in the area or in the station				
2. Non-pups raised + died				
3.1 Non-pups raised + alive, not released				
3.2 Non-pups raised + alive, released into the wild				
3.3 Non-pups raised + alive, delivered to a zoo				
TOTAL	unknown	-	-	-
Nds - Norden/Norddeich				
1. Non-pups euthanized in the area or in the station				
2. Non-pups raised + died				
3.1 Non-pups raised + alive, not released				
3.2 Non-pups raised + alive, released into the wild				
3.3 Non-pups raised + alive, delivered to a zoo				
TOTAL	-	-	-	-
NL - Ecomare				
1. Non-pups euthanized in the area or in the station				1
2. Non-pups raised + died				
3.1 Non-pups raised + alive, not released				
3.2 Non-pups raised + alive, released into the wild				4
3.3 Non-pups raised + alive, delivered to a zoo				
Ecomare-TOTAL	-	-	-	5
NL- Pieterburen				
1. Non-pups euthanized in the area or in the station				
2. Non-pups raised + died	0	4	2	0
3.1 Non-pups raised + alive, not released				
3.2 Non-pups raised + alive, released into the wild	1	2	4	10
3.3 Non-pups raised + alive, delivered to a zoo				
Pieterburen-TOTAL	1	6	6	10
NL-TOTAL	1	6	6	15

Grey Seals

2.4 Number of live pups found alone ("Heulervermeidungsstrategie")

DK	1996	1997	1998	1999
1. Pups taken immediately				
2. Pups remaining on a sandbank				
3. Pups taken after waiting period				
4. Other handling (please specify)				
TOTAL	0	0	0	0
SH				
1. Pups taken immediately				1
2. Pups remaining on a sandbank	4			
3. Pups taken after waiting period			1	
4. Other handling (please specify)				
TOTAL	4	0	1	1
HH				
1. Pups taken immediately				
2. Pups remaining on a sandbank				
3. Pups taken after waiting period				
4. Other handling (please specify)				
TOTAL	unknown	-	-	-
Nds				
1. Pups taken immediately		1	2	3
2. Pups remaining on a sandbank				
3. Pups taken after waiting period				
4. Other handling (please specify)				
TOTAL	unknown	1	2	3
NL- Ecomare				
1. Pups taken immediately	13			13
2. Pups remaining on a sandbank				
3. Pups taken after waiting period				
4. Other handling (please specify)				
Ecomare-TOTAL	13	unknown	unknown	13
NL- Pieterburen				
1. Pups taken immediately				
2. Pups remaining on a sandbank				
3. Pups taken after waiting period	10	5	30	51
4. Other handling (please specify)				
Pieterburen-TOTAL	10	5	30	51
NL-TOTAL	23	5 ?	30 ?	64

2.5 Number seals born in captivity

No Grey seal was born in captivity in the Wadden Sea area between 1996 and 1999.

Evaluation of the Conservation and
Management Plan for the Wadden Sea Seal
Population 1996 – 2000

Evaluation of the Conservation and Management Plan for the Wadden Sea Seal Population 1996 – 2000

According to Art. 4. of the Agreement on the Conservation of Seals in the Wadden Sea, which entered into force on October 1, 1991.

Seal Agreement	Required effort (SMP 1996-2000)	Implementation in 1996 – 2000, state of the art
<p>1. PURPOSE AND OBJECTIVE</p> <p>"The Parties shall cooperate closely with a view to achieving and maintaining a favorable conservation status for the seal population."</p> <p>Seal Agreement Art. III</p>	<p>To achieve these general objectives it will be necessary</p> <ul style="list-style-type: none"> - to achieve and maintain a comprehensive conservation and management of the seal population of the Wadden Sea through common, coordinated measures of the responsible authorities; and - to achieve and maintain a public understanding and awareness of the Wadden Sea seal population as an entity and as an integrated part of the ecosystem. 	<p>Triilateral Research:</p> <p>in the Wadden Sea" submitted to the EU failed in 1999. The proposal will be resubmitted in 2001.</p> <p>Seals from outside the Wadden Sea have been taken in Wadden Sea rehabilitations centers and this increased an unnecessary risk.</p>
<p>1.1 AGREEMENT AREA: The concerned Agreement Area is the Triilateral Cooperation Area.</p>		

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 – 2000	Implementation in 1996 – 2000, state of the art
2. CONSERVATION AND MANAGEMENT MEASURES			
Habitats			
<p>1. The Parties shall take appropriate measures for the protection of habitats. They shall pay due regard to the necessity of creating and maintaining a network of protected areas also in the migration areas of the seals in the Agreement Area and of ensuring the preservation of areas which are essential to the maintenance of the vital biological functions of seals.</p>	<p>It will be necessary to identify, maintain, extend and create seal interest zones / reserves of an appropriate size in the trilateral Wadden Sea Cooperation Area and in adjacent areas and to take appropriate measures, i.e.:</p>	<p>THE NETHERLANDS AND GERMANY Take appropriate measures, i.e. establishing seal reserves in the Eems-Dollard-region, in the disputed area.</p>	<p>THE NETHERLANDS AND GERMANY No extra seal reserves in the disputed area have yet been established. However, in the framework of the Dutch-German Ems Dollard Environmental Protocol concluded in 1996 the Permanent Dutch-German Trans-boundary Waters commission, sub-committee H has endorsed the action plan for water management and nature protection in the Ems-Dollard Estuary in 1998. This action plan stipulates that the seal resting places at Hond and Paap in the disputed area must be protected on a common basis. Currently a draft Dutch and German nature protection statutory order is being developed. It is anticipated that the orders will be enacted in 2001 after having been subject to a public hearing procedure. The orders will provide for the necessary resting-places for seals in the area.</p>
		<p>THE NETHERLANDS Extensive areas in the Dutch WS are safeguarded by the Nature Conservation Act. In these areas it is not allowed to disturb, catch or kill animals, e.g. it is not allowed to disturb resting animals, e.g. it is not allowed to disturb resting seals. In general, resting seals should not be approached closer than 1500 meters. Certain smaller parts of the nature reserves have been temporarily closed for public, in virtue of the Nature Conservation Act, section 17. Most of these areas are closed during certain months in spring and summer (only breeding and nursing season of seals). It is not permitted to enter these areas without a special license.</p>	
		<p>GERMANY <u>Niedersachsen</u> The law on which the NP 'Wadden Sea of Lower Saxony' (NP WSOLS) is based, has been revised and is under revision right now. The seal reserves and regulations, based on the law by the Federal Ministry of Traffic, are still in force.</p>	
		<p><u>Schleswig-Holstein</u> The SH Wadden Sea NP has been enlarged from 272,000 to 441,000 ha. The area of core zones has increased from 84,500 to 161,700 ha (+52 %). It is aimed to implement a speed limitation for boats and ships in the whole enlarged area, i.e. up to the 3 and 12 sm-line respectively.</p>	
		<p>DENMARK Implemented.</p>	

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 - 2000	Implementation in 1996 - 2000, state of the art
	<ul style="list-style-type: none"> - to ensure that the existing seal reserves cover the main birth, nursery and resting areas of seals and ensure that there is an adequate number of seal reserves; - to ensure that at present and in the future, in view of expected increases in populations, assignments of seal reserves are based on well defined criteria of critical habitats. 	<p>TRILATERALLY Define habitat requirements for the different age groups in relation to environmental conditions i.e. exposition, geomorphology and disturbance levels in the Wadden Sea.</p>	<p><u>Trilateral Research</u> Joint Proposal regarding "seals and recreational demands in the Wadden Sea" including habitat requirements, to the EU failed in 1999. It will be resubmitted to 2001.</p>
	<ul style="list-style-type: none"> - to identify and if necessary maintain, extend and create a seal protection zone of an appropriate size outside the Trilateral Conservation Area Wadden Sea related to appropriate measures and ensure that this zone covers the foraging area offshore particularly during winter. 	<p>TRILATERALLY Identify the zone of importance/special interest for seals offshore connected with the Wadden Sea, and relate it to appropriate measures.</p>	<p>Not yet done.</p>
<p>2. The Parties shall preserve habitats and seals present from undue disturbances or changes resulting, directly or indirectly, from human activities.</p>	<ul style="list-style-type: none"> - to ensure that the seal reserves are created in such a way that disturbance is limited to a minimum; 	<p>TRILATERALLY AND NATIONAL LEVEL Try establishing core zones for seals (free from human use and disturbance), which should be closed the entire year. At least one of such a zone should be established in each country, to check whether they are useful or not.</p>	<p>THE NETHERLANDS No core zone for seals are closed the entire year.</p> <p>GERMANY <u>Niedersachsen</u> Large areas of the NP WSoLS are free of use (according to mussel and shrimp fishery), or the use is restricted by the boat traffic regulation ("Befahrungsregelung"). Special seal reserve areas in all parts of the Wadden Sea are established. They are closed from 01.05-01.10 resp. 01.04.-01.10 (combined seal/bird reserve). A seal reserve closed the entire year was not established, so that the usefulness could not be tested.</p> <p><u>Schleswig-Holstein</u> In the SH Wadden Sea NP one seal protection zone is closed the entire year. It is the area of the "Jungnamensand" and "Knobsände", which is used by common and grey seals.</p> <p>DENMARK Core zones are established in Denmark as well as buffer zones around the seal reserves.</p>

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 – 2000	Implementation in 1996 – 2000, state of the art
	<p><u>GERMANY</u> Consider the extension of the seal reserves according to the Shipping Regulation in terms of space and time.</p> <p><u>Schleswig-Holstein</u> Improve the control and supervision of the regulated excursions by boats to seal banks.</p>	<p><u>GERMANY</u> The actual shipping regulations are satisfying. Practically all important seal banks are situated in seal protection areas, which are closed for shipping from 1.5. – 1.10. with the exemption of marked shipping routes.</p> <p><u>Schleswig-Holstein</u> A study from 1996, conducted on instruction of NPA, showed that disturbances by regulated excursions are very rare, as long as the boats stick to the agreed routes. Although the boats come quite close to the seal banks (50 – 300 m), the animals visually usually do not react, because they got used to these regular events. Between ship owners, captains and NPA a yearly meeting takes place, where problems are discussed and new information is given. NPA has developed special information materials for the regulated excursions, which are presented on board.</p>	<p><u>Niedersachsen</u> A study from 1999 gave the basis for developing such standards in Lower Saxony. A first contact with ship owners has been carried out. It is planned to start a 'round table' talk in autumn 2000 to develop commonly agreed standards at first for Lower Saxony.</p> <p><u>THE NETHERLANDS</u> The so called "Robbentochten" (Seal-excursions) are allowed. The boats must follow the instructions for the shipping lanes, as indicated on the so called "Hydrografische kaarten voor de Waddenzee". The instructions are a consequence of the Nature Conservation Act. Standards have not been developed.</p> <p><u>THE NETHERLANDS</u> By 1-7-1999 the minimum altitude was incorporated in law (Wet Luchtvaart, AVMB 14 Januari 1999). The minimum flight altitude is 450 meter (1500 feet). There is an exception for indicated corridors. At adverse weather conditions the minimum flight attitude is 300 meters (1000 feet).</p> <p><u>GERMANY:</u> <u>Niedersachsen</u> Regulation on flight altitude is done by federal law. Minimum flight altitude is 600 m (3000 feet) (private flights).</p> <p><u>Schleswig-Holstein</u> A minimum flight altitude of 600 m (3000 feet) for private flights was implemented by law (Luftverkehrsordnung). For military jets it is 900 m (4000 feet). During NATO-exercises this is not valid.</p> <p><u>DENMARK</u> A general minimum flight altitude of 1,000 feet is implemented concerning international important wetlands. There are ongoing negotiations with the Aviation Authority to implement the Esbjerg Declaration ED 19.3 in the Wadden Sea.</p>
	<p><u>NATIONAL LEVEL</u> to ensure a minimum flight altitude of 1500 to 2000 feet in the Wadden Sea area and to establish flight corridors in less vulnerable parts of the area (see ED 19.3).</p> <p>- to reduce the disturbance by air traffic;</p>		

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 - 2000	Implementation in 1996 – 2000, state of the art
	<p>- to prohibit disturbing activities in seal reserves at least in the time between 15.05. to 01.09;</p>	<p>NATIONAL LEVEL Prohibit fishery (mussel-seed, cockle and where necessary shrimp) in and close to seal areas, at least from 15.05. to 01.09.</p>	<p>THE NETHERLANDS Fisheries are permitted in the parts of the nature reserves, which have been closed for public, in virtue of the Nature Conservation Act, section 17. A permit for shrimp-fishery in the Dutch Wadden Sea, as required by the Nature Conservation Act, is being prepared. Cockle- and mussel fisheries have already been granted such permits.</p> <p>GERMANY: <u>Niedersachsen</u> Cockle fishery: Prohibited inside the NP WSoLS. Mussel fishery: Restricted according to the NP Law and the mussel management plan (in force since 1999). Shrimp fishery: No restrictions.</p> <p><u>Schleswig-Holstein</u> Cockle fishery is prohibited by the NP Law. Mussel fishery is forbidden in the core zones of the NP, in which all important seal banks are situated, until 2016 (mussel fishery program). The shrimp fishery is not restricted except to a zero-use-zone south of the Hindenburgdamm between Sylt and Föhr.</p> <p><u>DENMARK</u> Implemented.</p>
	<p>- to reduce the number of seals caught as by-catch and ensure that seals do not drown in fyke nets.</p>	<p>NIEDERSACHSEN Introduce obligatory "seal guards" for fishing with fyke nets.</p>	<p><u>Niedersachsen</u> Only non-commercial fyke net fishing takes place in the NP WSoLS. The permission for fyke net fishing on specific areas inside the core zone of the NP WSoLS is granted only with the restriction that the fyke net has gatebars or a similar construction at the opening to prevent other animals than fish from entering the fyke net.</p> <p>THE NETHERLANDS Seal guards in fyke nets are obligatory, however, have been proven not to be adequate.</p>
<p>3. The Parties shall have regard to the protection of habitats from adverse effects resulting from activities carried out outside the Agreement Area.</p>	<p>- to avoid and determine the number of seal-by-catches in fishery activities.</p>	<p>TRILATERALLY Consider to establish a network to collect centrally information on by-catches from outside the Wadden Sea and to avoid the number of seal-by-catches in fishery activities and regulate bottom net fishery if necessary.</p>	<p><u>DENMARK</u> Part of the Danish stranding network. By-catch is a limited problem because set-net fishery is not applied in the Wadden Sea.</p> <p>THE NETHERLANDS The extent of possible problem/threat is unknown.</p> <p><u>Schleswig-Holstein and Niedersachsen</u> The extent of possible problem/threat is unknown.</p>
<p>4. The Parties shall explore the possibility of restoring degraded habitats and of creating new ones.</p> <p>Seal Agreement, Art. VI</p>	<p>-</p>	<p>-</p>	<p>-</p>

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 - 2000	Implementation in 1996 - 2000, state of the art
<p>Pollution</p> <p>The Wadden Sea States are determined to do their utmost to further reduce pollution of the North Sea from whatever source with the aim of conserving and protecting the Agreement Area.</p> <p>To this end they shall:</p> <p>a. endeavor to identify the sources of such pollution;</p> <p>Seal Agreement, Art. VIII a</p>	<p>It will be necessary</p> <p>a. to reduce the pollution from whatever source, i.e.</p> <ul style="list-style-type: none"> - to continue to commonly implement the decisions of the North Sea Conferences; - to continue to coordinate efforts in the framework of the North Sea Conferences to further reduce the pollution of the Wadden Sea and North Sea. <p>b. if possible to use seals as an indicator of the condition of the environment.</p>	<p><u>TRILATERALLY</u></p> <p>The necessary measures are and / or will be outlined in the decisions of the North Sea Conferences.</p>	<p>For details it is referred to the QSR report 1999 and OSAPAR-reports.</p>
	<p><u>TRILATERALLY</u></p> <p>Seal parameters should be implemented in the framework of the Trilateral Monitoring and Assessment Program (TMAP).</p>	<p>Discussion within TSEG in 1996, parameters were identified. Relevant seal parameters regarding pollution were not included in the common package of TMAP.</p>	
<p>c. to ensure that dumping of dredged material, or taking of mud and sand in or near the Wadden Sea will have no negative effects on seals resp. seal banks.</p>	<p><u>NATIONAL LEVEL</u></p> <p>Ensure and regulate that dumping of dredged material, or taking of mud and sand in or near the Wadden Sea will have no negative effects on seals resp. seal banks.</p>	<p><u>THE NETHERLANDS</u></p> <p>Dredging and dumping are subject to application and approval. The possible impact on seals is unclear.</p> <p><u>GERMANY:</u></p> <p>Niedersachsen</p> <p>Dumping of sand, mud and dredged material is generally not allowed in the core zones of the NP WSOLS. Most of the important seal banks are situated inside the core zones.</p> <p>Schleswig-Holstein</p> <p>The new NP Law forbids in principle dumping of dredged material and taking of mud and sand in the core zones. All important seal banks are situated in these core zones.</p> <p><u>DENMARK</u></p> <p>Dredging and dumping are subject to application and approval. The activities are not allowed within SPAs (entire Danish Wadden Sea)</p>	

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 – 2000	Implementation in 1996 – 2000, state of the art
Wardening	<p>4. The Parties shall take appropriate action to suppress illegal hunting and taking of seals.</p> <p>Seal Agreement, Art. VI, 4</p> <p>It will be necessary</p> <ul style="list-style-type: none"> - to ensure the enforcement of the provisions of the agreement by an adequate management and wardening system, which should – concerning all seal matters – be coordinated at state administrative agencies: 	<p><u>NATIONAL LEVEL</u></p> <p>Establish wardening of the Wadden Sea guided by the common standards according to Annex I of the Esbjerg Declaration (ED), which should – concerning all seal matters – be coordinated at one appropriate state administrative agencies:</p>	<p><u>THE NETHERLANDS</u></p> <p>Wardening in the Dutch Wadden Sea is carried out by the responsible state agencies, to that end three patrol boats are operating in the area and the crews are the only seal wardens. A Code of Conduct with regards to taking of seals by governmental vessels was drawn up and issued to all governmental vessels in the Wadden Sea. In addition, seal rescue centers are allowed to take in seals under special permits. However, no instructions or criteria for taking are given and /or controlled.</p> <p><u>GERMANY:</u> <u>Niedersachsen</u></p> <p>A system of hunting wardens ("Wattenjagdaufseher") is established. They are responsible for all seal matters along the coast. They take in dead seals, decide what to do with found ill seals and motherless pups. The coordination is done by the Bezirksregierung Weser-Ems and the seal station in Norddeich. Nature conservation tasks in the area are carried out by a system of wardens ("Nationalparkwacht" and "Landschaftswarte").</p> <p><u>Schleswig-Holstein</u></p> <p>A system of 25 so called "seal hunters" is established. They are responsible for all seal matters along the coast. They take in dead seals, decide what to do with found ill seals and motherless pups. The coordination is done by NPA. Furthermore a NP Service with about 24 rangers was founded with various nature conservation tasks.</p> <p><u>DENMARK</u></p> <p>A wardening system is established under the responsibility of two local state forest districts. All together about 10 people are employed as rangers and wardens in the protected area.</p>
	<ul style="list-style-type: none"> - to ensure that the seal reserves are, as parts of the nature reserves and the national parks, adequately wardened; 	<p>Fixing special guidelines for an effective wardening including proper wardening of seal pups resting on shores of inhabited or frequented areas.</p>	<p><u>THE NETHERLANDS</u></p> <p>A Code of conduct for governmental wardens exists, however, guidelines for rescue centers regarding taking of seals on shores of inhabited or frequented areas are not existing.</p> <p><u>GERMANY:</u> <u>Niedersachsen</u></p> <p>A guideline ("Richtlinie zur Behandlung von erkrankt, geschwächt oder verlassen aufgefundenen Seehunden – Heulerrichtlinie") was enacted in 1997.</p> <p><u>Schleswig-Holstein</u></p> <p>A very precise guideline was enacted in 1997 ("Richtlinie zur Behandlung von erkrankt, geschwächt oder verlassen aufgefundenen Robben")</p> <p><u>DENMARK</u></p> <p>Adopted approach: seals are not taken from the Wadden Sea; sick and evidently abandoned seals are put down.</p>

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 - 2000	Implementation in 1996 - 2000, state of the art
<p>The Parties shall coordinate their research programs and projects and their monitoring of the seal population to increase their knowledge of the biology and the habitat including harmful effects of human activities on the seal population to provide a basis for measures to improve its conservation status.</p>	<ul style="list-style-type: none"> - to designate administrative agencies responsible for seal wardening; - to ensure a coordination of the state and voluntary wardens. - to ensure that the seal reserves are clearly marked and indicated on sea charts. 	<p>NATIONAL LEVEL Designate state administrative agencies responsible for the coordination of the implementation of the seal wardening, including voluntary wardens.</p>	<p>THE NETHERLANDS <u>Designated agency:</u> Department North of the Ministry of Agriculture, Nature Management and Fisheries. This department co-ordinates all nature and fisheries subjects of "Wadden Sea-policy", including the "seal policy".</p> <p>GERMANY: <u>Niedersachsen</u> <u>Designated agency:</u> Bezirksregierung Weser-Ems (regional government). The department of forestry and hunting (Dezernat 510) and the National Park administration (Dezernat 04) are part of this agency.</p> <p>Schleswig-Holstein <u>Designated agency:</u> NPA in Tönning.</p> <p>DENMARK <u>Designated agency:</u> The National Forest and Nature Agency, Nature and Wildlife Section.</p>
<p>3. RESEARCH AND MONITORING</p> <p>Research and Monitoring</p> <p>It will be necessary</p>	<p><u>Research</u></p> <ul style="list-style-type: none"> - to establish an overview of recent and ongoing research projects on seals to ensure information exchange; compiled by the CWSS. 	<p>TRILATERALLY An inventory of recent, ongoing and planned research projects on seals in the entire Wadden Sea area and relevant adjacent areas should be</p> <p>The results of the research projects on seals in the Wadden Sea area should be subject to evaluation by the Trilateral Seal Expert Group (tasks of this group see last page).</p>	<p>Information on ongoing projects partly available.</p> <p>Not done.</p>
<ul style="list-style-type: none"> - to consider a trilateral project on feeding ecology of seals. 	<p>TRILATERALLY Invite institutions to draft a joint feeding ecology project (see also 3.2 institutions). Such a common project should be prepared and considered in close connection with the responsible administrative agencies in the area.</p>	<p>Such a joint project proposal was considered as a priority in TSEG in 1998. A proposal (including choice of prey, quantity of prey and foraging areas) will be submitted in 2001.</p>	

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 – 2000	Implementation in 1996 – 2000, state of the art
<p>2. They shall, in particular, monitor and coordinate their research on,</p> <p>a. population trends e.g. through periodic aerial surveys and counts;</p>	<p>It will be necessary to designate institutions responsible for the monitoring.</p> <ul style="list-style-type: none"> - in order to guarantee continuity in reliability and comparability of data obtained by the monitoring scheme, the monitoring should be carried out by institutions on a long-term basis. - in order to obtain more comparable results, to be used for the assessment of population sizes and other demographic parameters, to promote the harmonization of the surveys in the different countries. 	<p><u>Designated monitoring institutions:</u></p> <p>DENMARK: Fiskeri-og Søfartsmuseet, Esbjerg</p> <p>SCHLESWIG-HOLSTEIN: Nationalparkamt Tönning / FTZ Büsum der Univ. Kiel</p> <p>NIEDERSACHSEN: Bezirksreg. Weser-Ems, Dez. 04: NP Verw., Dez. 607: Verw. Forst und Jagdhoheit / Univ. Oldenburg / Staatl. Veterinäruntersuchungsamt f. Fische u. Fischwaren, Cuxhaven</p> <p>THE NETHERLANDS: Alterra, Texel</p> <p>TRILATERALLY AND NATIONAL LEVEL Make sufficient funding available for the monitoring in accordance to the given monitoring scheme in the different parts of the Wadden Sea for the current and following years:</p> <ul style="list-style-type: none"> - in 1996, 1998 and 1999 at minimum five coordinated surveys; - in 1997 and 2000 eight coordinated surveys; - to consider a study by the monitoring institutions for the elaboration / or improvement of the correction factors for aerial surveys to assess size of the seal stocks in each sub-region. 	<p><u>Designated monitoring institutions, if changes:</u></p> <p>DENMARK: National Environmental Research Institute, Kalø, Fiskeri-og Søfartsmuseet, Esbjerg</p>
<p>a. population trends e.g. through periodic aerial surveys and counts;</p>	<ul style="list-style-type: none"> - to closely follow the population development according to a coordinated scheme specified basically in the report on the Joint Trilateral Project on Conservation and Management of common seals in the Wadden Sea (see the following). - in order to assess trends in population size, to carry out at minimum 5 aerial surveys each year, 3 during the pupping and 2 during the moulting period. - in order to assess pup production, total numbers born and juvenile mortality, to carry out 8 surveys (6 in the pupping and 2 in the moulting period), with intervals of 3 to 5 years; preferably starting with a 3-year interval and shift according to the developments in the population. 	<p>Aerial surveys were carried out in the agreed coordinated monitoring scheme in the area.</p> <p>THE NETHERLANDS All flights have been carried out by Alterra (Texel) according to the agreed monitoring scheme. A correction factor has been established (Ries & Reijnders 1999).</p> <p>GERMANY: Niedersachsen All flights have been carried out according to the agreed monitoring scheme. A study for improvement of correction factors has not been carried out.</p> <p>Schleswig-Holstein All flights have been / are conducted according to the common scheme. Exemptions happened only due to long lasting bad weather conditions. A correction factor was developed based on telemetric studies (Schwarz 1997). It is expected that a correction factor based on population analysis can be given in the near future (K.Abt). Furthermore new telemetric studies began using satellite telemetry and data recorders.</p> <p>DENMARK All flights have been / are conducted according to the common scheme. Exemptions happened only due to long lasting bad weather conditions. A correction factor was developed based on telemetric studies as part of a trilateral project in 1989-94.</p>	

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 – 2000	Implementation in 1996 – 2000, state of the art
<p>b. seal migration;</p> <p>c. seal population parameters, e.g. diseases, survival, age structure, sex ratio.</p> <p>Seal Agreement, Art. V</p>	<p>See designation of monitoring institutions in each country</p> <p><u>TRILATERALLY</u> The Triilateral Seal Expert Group should discuss and elaborate a proposal to the Triilateral Monitoring and Assessment Group (TMAG) for further relevant seal population parameters.</p>	<p>Discussion within TSEG in 1996. Further relevant seal parameters were not included in the common package of TMAP.</p>	
<p>Monitoring of Pollution</p> <p>b. coordinate their research projects regarding seal diseases and the effects on the seal population of such substances, e.g. organo-chlorine compounds, heavy metals and oil, and agree on methods which permit a comparison of research results;</p> <p>c. monitor in the Agreement Area, in particular in seal tissue and organisms which are preyed upon by seals, the levels of those substances which in the light of the results of research appear to play a major role in the Conservation status of the seal population.</p> <p>Seals Agreement, Art. VIII, b-c</p>	<p><u>TRILATERALLY</u> A triilateral expert group should discuss and elaborate a proposal to the TMAG for the relevant seal TMAG parameters and / or concomittant ecological research concerning pathology, immunology and toxicology and establish harmonized guidelines.</p> <p>A triilateral expert group should make a proposal to the TMAG concerning the establishment of a common tissue bank.</p> <p>NATIONAL LEVEL Collection and sampling of dead animals for monitoring purposes have to beensured.</p> <p>THE NETHERLANDS The monitoring regarding dead animals on a voluntary basis is carried out by the seal rescue centres. There are incomplete individual reports per seal. Actual information of the number of dead seals have recently become available.</p>	<p>Discussion within TSEG in 1996. Further relevant seal parameters were not included in the common package of TMAP.</p>	

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 – 2000	Implementation in 1996 – 2000, state of the art
			<p><u>GERMANY:</u> Niedersachsen The monitoring regarding dead animals is carried out by the Staatliches Veterinäruntersuchungsamt für Fische und Fischwaren, Cuxhaven.</p> <p><u>Schleswig-Holstein</u> The monitoring regarding dead animals is ensured, actually on a lower level than before. Until 1998 all dead found animals were examined (in 1998: 428(!), in 1999: 109. In 2000 the contract with the FZ Büsum was reduced to a representative selection of 50 seals.</p> <p><u>DENMARK</u> Included in the Danish marine mammal contingency plan.</p>
4. TAKING AND EXEMPTIONS FOR TAKING			
Taking			
1. The Parties shall prohibit the taking of seals from the Wadden Sea	The taking of seals from the Wadden Sea shall be prohibited by the parties.	<p><u>NATIONAL LEVEL</u> Implement provisions in appropriate form in national legislation.</p> <p><u>SCHLESWIG-HOLSTEIN</u> Install closed hunting season.</p>	<p><u>THE NETHERLANDS</u> Hunting is not allowed since 1967.</p> <p><u>GERMANY:</u> <u>Niedersachsen</u> There is no open season for hunting seals since 1972 in Lower Saxony.</p> <p><u>Schleswig-Holstein</u> Hunting of seals ended in 1974. Up to now, there is still a hunting season from 15.09. – 31.10. (Landesverordnung über die Änderung von Jagdzeiten, 1978), but shooting licenses were set to zero since 1974. Since the end of 1999, according to the New NP Law, hunting is prohibited in the whole Wadden Sea NP.</p> <p><u>DENMARK</u> Seals have been protected in the Danish Wadden Sea since 1976. No permits are issued in order to collect seals for rehabilitation etc.</p>
Seal Agreement, Art. VI, 1			

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 – 2000	Implementation in 1996 – 2000, state of the art
<p>Exemptions for Taking</p> <p>2. The competent authorities may grant exemptions from the prohibition referred to in the first paragraph authorizing persons to take seals:</p> <ul style="list-style-type: none"> - for institutions to be designated performing scientific research into the conservation of the seal population in the Wadden Sea or the conservation of the Wadden Sea ecosystem, insofar as the information required for such research cannot be obtained in any other way; or 	<p>It will be necessary to ensure §§ 56-61 of the Leeuwarden Declaration (LD), which are based on the "Statement on Seal Rehabilitation and Release, based on scientific experience and knowledge" elaborated by seal experts in 1994:</p> <p>§ 60</p> <p>to reduce the current number of seals taken from and released to the Wadden Sea to the lowest level possibly applying guidelines for handling diseased or weakened seals or evidently abandoned pups, and to release seals based on the precautionary approach, referred to the "Statement on Seal Rehabilitation and Release, based on scientific experience and knowledge" as elaborated by seal experts.</p>	<p>NATIONAL LEVEL</p> <p>Each country should elaborate and implement guidelines in line with §§ 56–60 (LD)</p> <p>Designated national authorities responsible for granting of exemptions from taking and releasing:</p> <p>DENMARK Skov- og Naturstyrelsen, Reservatsektionen</p> <p>NIEDERSACHSEN Bezirksreg. Weser-Ems, Dez. 04: NP-V, Dez. 607: Verw. Forst u. Jagdhoheit</p> <p>SCHLESWIG-HOLSTEIN Nationalparkamt, Tönning</p> <p>THE NETHERLANDS LNV Dir. N, Den Haag</p> <p>Designated scientific institutions (1) and nursery stations (2):</p> <p>DENMARK Fiskeri-og Søfartsmuseet, Esbjerg (1,2)</p> <p>NIEDERSACHSEN Staatliches Veterinäruntersuchungsamt Cuxhaven (1); Aufzuchtstation Norden / Norddeich (2)</p> <p>SCHLESWIG-HOLSTEIN FTZ Büsum, Univ. Kiel (1); Seehund- aufzuchtstation Friedrichskoog (2)</p> <p>THE NETHERLANDS IBN-DLO Institute, Texel (1); Zeehonden- crèche, Pieterburen; Ecomare, Texel (2)</p>	<p>THE NETHERLANDS</p> <p>A Code of Conduct from the state agency was drawn up and issued to all government vessels on the Wadden Sea. A Code of Conduct from the state agency has not been issued to seal rescue centers. The current permits, granted to the seal rescue centers under the terms of Natuurbeschermingswet (Nature Protection Act), only include the conditions governing the keeping and transportation of seals, and returning them to the wild.</p> <p>No guidelines have been compiled to reduce the numbers of seals taken by rescue centers.</p> <p>The Dutch view with respect to the taking of seals is based on two principles: an eco-ethical and an animal-ethical principle.</p> <ul style="list-style-type: none"> - The eco-ethical principle will emphasize that the population as a whole has to be considered and self regulation should not be hampered by taking of seals, whereas - the animal-ethical principle, is mainly based on preventing suffering for the individual animal. <p>The Dutch view is that taking of seals is not necessary to maintain the population. However, there is support in the society for a restricted (to avoid unnecessary risks for the wild population) taking and releasing of seals.</p> <p>GERMANY: Niedersachsen</p> <p>A guideline (see above) is in force.</p> <p>Schleswig-Holstein</p> <p>A guideline is in force (see above). Since many years the number of raised pups is relatively constant (ca. 20 animals). Since the population grew rapidly, the percentage of raised pups decreased to 1.3 % of the counted newborn seals in 1999.</p> <p>DENMARK</p> <p>Seals are not taken from the Wadden Sea. Sick and evidently abandoned seals are put down due to considerations and decisions taken by the local State Forest Districts.</p>

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 - 2000	Implementation in 1996 - 2000, state of the art
	<p>The guidelines shall be based upon the following principles:</p> <p>§ 60.1 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;</p> <p>§ 60.2 seals rehabilitated shall only be released into the wild on a permit granted by the national authority responsible for nature conservation and management if the following criteria are met:</p>	<p><u>NATIONAL LEVEL</u> This should include the development of guidelines on priorities in taking.</p>	<p><u>THE NETHERLANDS</u> A Code of Conduct was drawn up and issued to all government vessels on the Wadden Sea. Special investigators from the Ministry of Agriculture, Nature Management and Fisheries (LNV) take action when necessary. For taking and releasing no criteria have been established, these are currently under discussion.</p> <p><u>GERMANY:</u> <u>Niedersachsen</u> The "Heulerrichtlinie" ensures that only certain persons are allowed to handle seals. Rehabilitated seals can only be released if they are fit, free of diseases and a permit is given.</p> <p><u>Schleswig-Holstein</u> The above mentioned guideline ensures that only certain persons may handle seals, and that rehabilitated seals can be only released, if a permit of the NPA is given. This permit is only handed out when the veterinarian has certified that each single animal is fit and free of diseases.</p> <p><u>DENMARK</u> Implemented.</p>
	<p>(i) the seal has not been treated with specific groups of medicine to be further specified.</p>	<p><u>TRILATERALLY AND NATIONAL LEVEL</u> A trilateral expert group should specify this item on a technical and political level:</p> <ul style="list-style-type: none"> - on the basis of the decisions § 58 - 60 LD, - on the basis of the different point of views on this item in each country (papers should be elaborated by each party), - taking into account that effort should be more concentrated on the "Heulervermeidungsstrategie", - taking into account that additional discussion is needed, on which principle should be applied with regard to medical treatment. 	<p>The discussion and initiating activities of TSEG were placed back due to missing information.</p> <p><u>DENMARK</u> Medicine is not applied in Danish wildlife management.</p>

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 - 2000	Implementation in 1996 - 2000, state of the art
	<p>(ii) the seal does not carry pathogens <u>alien</u> to the wild population;</p> <p>(iii) the seal is released as soon as possible but not later than half a year after it has been brought in for rehabilitation;</p> <p>(iv) the seal has not been kept in a center where species of animals <u>alien</u> to the Wadden Sea, or marine mammals not resident in the Wadden Sea, are held;</p> <p>§ 60.3 seals should only be released in the areas where they were found;</p> <p>§ 60.4 seals shall not be transported between subregions of the Wadden Sea;</p> <p>§ 60.5 seals held in captivity shall, in principle, not be released into the wild;</p> <p>§ 60.6 seals born in captivity shall not be released into the wild; exemptions can only be allowed after the approval of the competent authorities.</p>	<p><u>Definition:</u> Pathogens which are normally not found in the Wadden Sea are <u>alien</u>.</p>	
		<p><u>Definition:</u> Every area which does not belong to the Wadden Sea should be considered <u>alien</u> in this context.</p>	<p>TRILATERALLY These objectives have not been achieved because: - seals from outside the Wadden Sea have been taken in to a Wadden Sea seal rescue center; - seals have been transported between sub-regions of the Wadden Sea.</p>
			<p>THE NETHERLANDS Contrary to the definition of alien in the SMP 1996-2000 the discussion in The Netherlands are held, the seals from the Wadden Sea and other areas such as the Delta Area, Belgium, France, the Wash (UK) and Scotland are belonging to one population and therefore these animals from the other mentioned areas may not be considered as alien to the Wadden Sea. It has been decided that species other than grey and common seals should not be kept in Wadden Sea seas rescue centers.</p>

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 - 2000	Implementation in 1996 - 2000, state of the art
<p>- for institutions to be designated nursing seals in order to release them after recovery, insofar as these are diseased or weakened seals or evidently abandoned suckling seals.</p> <p>Seals which are clearly suffering and cannot survive may be killed by the persons referred to in this paragraph.</p>	<p>It will be necessary to ensure at each seal station:</p> <ul style="list-style-type: none"> - specialized veterinarian monitoring of the animals; - writing of a station diary on each individual animal; - full time specialized supervision of the station; - standards for the supervision have to be developed. 	<p><u>TRILATERALLY AND NATIONAL LEVEL</u></p> <p>The required effort should be implemented on a standardized trilateral level by each country.</p>	<p><u>THE NETHERLANDS</u></p> <p>The seal stations fulfill the standards. Per station there is a special veterinary committee, maintaining a station diary on each individual animal. Special investigators check whether the rules are obeyed and enforce obedience when necessary.</p> <p>Such information from station diaries is provided on a voluntary basis. To date not all Dutch rescue centers have done so.</p> <p>This information and its interpretation will be discussed in the Wetenschappelijk Platform Zeehonden Waddenzee (Dutch Wadden Sea Scientific Seal Platform).</p> <p>Currently, the Dutch Government considers to make the provision of information concerning the use of veterinary medicines compulsory under the new permits for the seal stations.</p> <p><u>GERMANY:</u> Niedersachsen</p> <p>The authorized seal station in Norddeich fulfils all the required standards. A guideline "Pflege- und Aufzuchtbedingungen für wieder auszuwildernde Seehunde" as part of the "Heulerrichtlinie" is in force.</p> <p><u>Schleswig-Holstein</u></p> <p>The authorized seal station in Friedrichskoog meanwhile fulfils all the required standards (specialized veterinarian, station diary, fulltime specialized supervision, high supervision standard).</p> <p><u>DENMARK</u></p> <p>Not relevant.</p>
<p>3. Any Party having granted exemptions as mentioned above shall notify the other Parties as soon as possible and provide them an opportunity for review and comment.</p> <p>Seal Agreement Art. VI, 2-3</p>	<p>It will be necessary</p> <ul style="list-style-type: none"> - to report annually exemptions and the number of taken and released seals to the coordinating institution (CWSS); 	<p><u>TRILATERALLY</u></p> <p>Trilateral standardized formats should be elaborated for the annual reporting concerning taking and releasing of seals and the implementation of § 60 of the Leeuwarden Declaration. The Annual Report will be compiled by the coordinating institution (CWSS) including the listing of permits and exemptions.</p>	<p>Information on standardized formats is available for 1996 - 1999, however, the formats have to be revised.</p>

Seal Agreement	Required effort and objectives (SMP 1996-2000)	Planned Actions in 1996 - 2000	Implementation in 1996 - 2000, state of the art
<p>5. PUBLIC INFORMATION</p>	<p>The Parties shall take such measures as may be required to make the general public aware of the conservation status of the seal population, of the content and aims of this Agreement, and of the measures they have taken pursuant to this Agreement, including the Conservation and Management Plan, to improve this conservation status.</p>	<p>It will be necessary</p> <ul style="list-style-type: none"> - to inform the public on a common basis to contribute to the continuous implementation of the conservation and management plan; - to recognize the fact that the seals of the Wadden Sea belong to one population and are an integrated part of the Wadden Sea ecosystem; - to ensure that in each seal station a qualified full time public awareness officer takes care of the public information; - to ensure, that information, that could enhance the taking of seals, will be avoided; - to ensure, that the public knows, when they disturb seals and how they can avoid it; - to ensure, that the public knows, what to do in case they find a live or dead seal on the beach. 	<p>TRILATERALLY Publish a common brochure, poster or leaflet in the three languages to be used in information centers, exhibitions, on ferries and in tourist institutions including "Kurverwaltungen".</p> <p>Not done.</p>
<p>6. FINANCIAL IMPLICATIONS</p>	<p>a. national: The implementation of the common Conservation and Management Plan in national measures including monitoring to be financed by the contracting parties.</p>		<p>Not yet done.</p>
<p>b. common: Joint brochure, poster and / or leaflet.</p>			<p>Not yet done.</p>

Additional Measures for the Protection of the Grey Seal

Required effort and objectives

Implementation in 1996 – 2000, state of the art

Taking and exemptions for Taking

§ 60 of the Leeuwarden Declaration and the concerned chapter of the Seal Management Plan 1996 – 2000 for the common seal is also valid for the grey seal in the Wadden Sea.

LD § 60
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.

TRILATERALLY

Information on annually exemptions and the number of taken and released grey seals on standardized formats is available for 1996–1999.

THE NETHERLANDS

Attempts to reduce the number of taken grey seals have not been initiated.

Habitats

It will be necessary:

- to ensure that the grey seal colonies are protected as reserves which are maintained, extended and created in such a way that disturbance is limited to a minimum;
- to install seal sanctuaries on beaches including a wardening system, where possible and acceptable and to install a flexible protection scheme of "contemporary undisturbed areas" in regions where grey seal pups rest regularly;
- to restrict disturbances near pupping grounds (such as fishery);

Research and Monitoring

It will be necessary:

- to consider a research project on habitat use and demands, behavior and health status of grey seals in the Wadden Sea and to invite institutions in Schleswig-Holstein and The Netherlands to draft such a project;
- to improve the monitoring of breeding colonies during breeding season by regular ship and / or aerial surveys;

TRILATERALLY

The project proposal compiled by the TSEG in 1999 was not financially supported by the trilateral cooperation.

THE NETHERLANDS

Extra funding especially for the grey seal is being considered.

Schleswig-Holstein

A photo-identification project was conducted by the TFZ Büsum to find out, if the grey seal colony consists of permanently staying individuals, or if there is a predominant exchange with other sub-populations. Yearly monitoring reports about the observations in winter time are written by two NGOs (Öömrang Ferian and Schutzstation Wattenmeer). Actually two persons from the seal station Friedrichskoog in cooperation with a so called "seal hunter" go out by boat in winter and observe and count the grey seal colony. In summer grey seals are counted by airplane in connection with the common seal counts.

Implementation in 1996 – 2000, state of the art

Required effort and objectives

Wardening

It will be necessary:

- to promote a warden system for installing "flexible protection zones", that is active during breeding season in regions, where grey seal pups regularly are;

THE NETHERLANDS
 The establishment of so-called "flexible protection zone on the beaches" has been discussed with the local islands-politicians. The discussion are continuing.

Schleswig-Holstein
 A wardening system is installed since 1996. Wardening is done by the Öömrang Ferian in cooperation with the Schutzstation Wattenmeer and the Verein Jordsand.

Public information

It will be necessary:

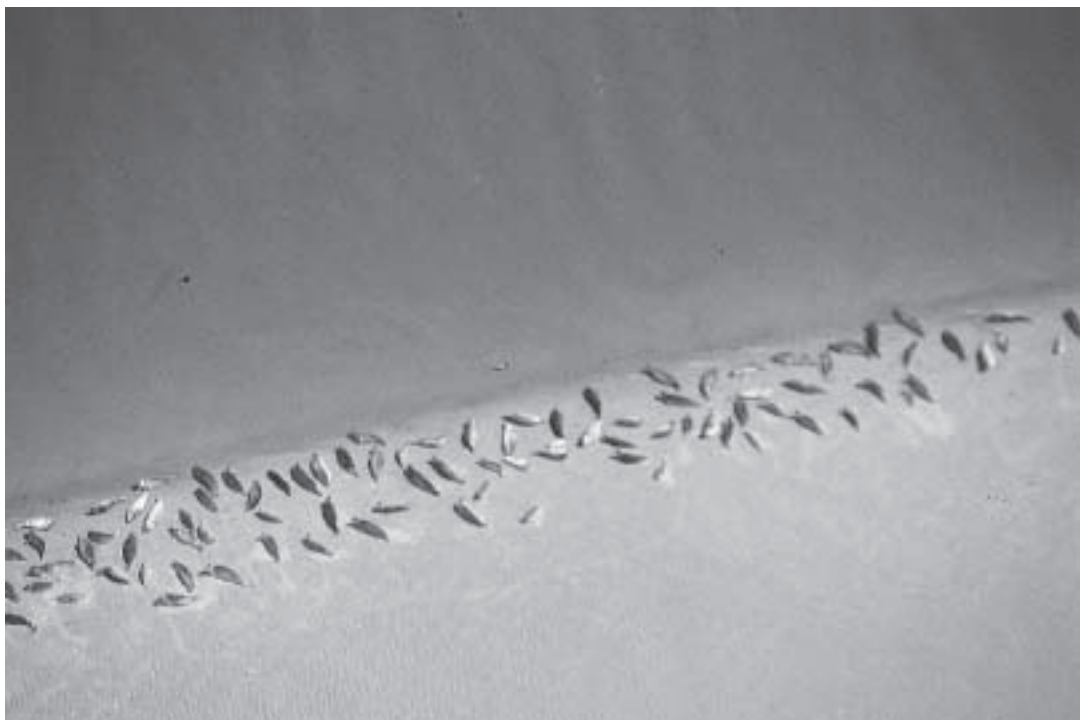
- to inform the public on a common basis on grey seals as a indigenous resident species of the Wadden Sea which is resettling the area;
- to inform the public, how to deal with stranded (dead / live) grey seals.

THE NETHERLANDS
 A communication-strategy is being considered.

Schleswig-Holstein
 WWF and the Schutzstation Wattenmeer have produced brochures, leaflets and posters about marine mammals including the grey seal. The Öömrang Ferian has published a poster, which specially deals with the contemporary undisturbed area on the Kniepsand of Amrum. The NPA and the NP Service have developed a visitor information systems which gives information on grey seals on those islands where they are neighboring, i.e. on Amrum and Sylt. Some general information is given in the "Umweltatlas Wattenmeer", actual information about the pupping season is published in the "Nationalpark-Nachrichten".



S. Tougaard



S. Tougaard

Proposed Monitoring Schedule for the Seal Management Plan in the Wadden Sea from 2001 onwards

From the experiences with the census of Common seals in the previous years, it appears necessary to proceed with a program of five coordinated surveys per year and area. Once every five years, a larger series of eight surveys needs to be carried out to assess initial juvenile mortality and total number of pups born. The surveys should be timed in such a way that the two most important points in the annual cycle of the seals are included, i.e. three surveys are to be made during the late pupping season in late June/very early July and two during the adult moulting season in August. It is important to note that counts from these two periods represent different indices of population size, and may theoretically not be mixed (although concrete figures may be quite similar in some instances).

The reasons may be specified as follows:

1. The rate of increase is an important parameter of the seal population, which integrates the vital characteristics of fertility and mortality. However, measurement of this parameter seems to be not as straightforward as commonly believed. The Common seal stock is a highly structured animal population, with sex and age groups differing markedly in seasonal haul-out behavior. These differences are related to age and sex specific timing of the biological cycle, major events of which are breeding (in adult seals) and moult. As a consequence, seals hauled-out do at no time during the (summer) counting season constitute a representative sample of the population. Furthermore, the proportion of counted seals in relation to the total population will to some extent vary with the age distribution of the seals, i.e. counts will only represent a constant fraction of the population over time when the population structure is stable. However, certain biological events, such as mass mortalities or significant changes in population increase, do cause demographic changes, such that single counts may fail to indicate real changes in population size. Counts at different points of the annual cycle (i.e. in the breeding and moulting season), which are dominated by different sex and age groups respectively, help to detect such bias and facilitate a

realistic evaluation of population development.

2. As indicated by the 1989-1999 census data, counts in the pupping season have yet mostly produced the highest total numbers of the year. When subtracted by the number of pups, they presently provide the most powerful index of population development. However, this could be a characteristic of the currently increasing population, and may change with the seal stock stagnating or decreasing. This implies that with the mean age of seals increasing, counts during the moult may gain importance. Furthermore, this could also be due to the fact that relative to the moulting period, more surveys have been carried out in the pupping season. These are additional reasons for counting Common seals in both the pupping and moulting season.

3. In other European areas, where Common seals live in different habitats (e.g. in Scotland, Iceland, Norway, Sweden), as well as in similar habitats (Moray Firth (Scotland) and the Wash (England) as the Wadden Sea, counts are made in the moulting season. It is of some interest, to have a population index, which is entirely comparable to data from these areas. This may be viewed as another argument for counting seals in the moulting season.

4. A variety of factors, which are not entirely or not at all predictable, can invalidate the result of single counts: i) adverse weather in at least part of the census area, ii) heavy disturbance at important haul-outs, iii) irregular water level situations (including extremely low ones), and iv) technical problems. These factors make repeated counts, or at least the option to repeat a necessary feature of an effective monitoring scheme. As unsuitable weather conditions may in fact persist for entire tidal cycles, as experienced in 1998 and 2000, situations may occur where no valid data can be produced for either the pupping or moulting season. Again, it is safe to schedule counts in both periods in order to minimize the risk of ending up with no or meaningless results.

5. Counts during the late pupping season are regarded as important, since through discrimination

of newborn seals, they enable monitoring changes in pup production by the seal stock. Counts during this season are, however, most difficult to perform because seals are highly, and partly non-predictably, dispersed over the Wadden Sea area. Furthermore, an unknown number of non-reproducing mature females, sub-adults, juveniles and males participating in breeding are present. Fluctuations in these numbers will influence the figure for reproductive rate. The adequate time where counts should be made is a period of 10-14 days duration in late June/very early July, as corresponding to the late whelping season. There is evidence, however, that the timing of pupping has undergone a seasonal shift. Apart from minor year-to-year changes related to the air/water temperature in spring, it was found in the Netherlands and Lower Saxony area (Ries et al., 1997) and in

Schleswig-Holstein (FTZ Westküste, unpubl. data) that, for unknown reasons, pupping of Common seals occurred approximately two weeks earlier in the post-epizootic period than in the mid 1980s. Counts in the moulting season do include predominantly adults.

6. In order to deal with the above mentioned difficulties and uncertainties, and realizing that not all of the planned surveys can be successfully carried out, there should be three coordinated surveys during the late pupping season and two the moulting season. If less surveys will be carried out, the statements of population increase/decrease and pup production will become unreliable. Another consequence is that actual changes in the population parameters will only be detected after a longer time period, which will hamper adequate management responses.

Background Information – Discussions within the TSEG-plus Meetings

Monitoring Strategy – Aerial Surveys

The basis for the discussion was the document "Proposed monitoring schedule for the Seal Management Plan 2001ff in the Wadden Sea", which was compiled within the TSEG as a scientific statement (see Annex 5). In order to deal with the difficulties and uncertainties mentioned in the document, and realizing that not all of the planned surveys could successfully be carried out in one year, three coordinated surveys during the late pupping season and two in the moulting season should be carried out in line with the scientific statement. If less surveys would be carried out, the statements of population increase/decrease and pup production would become unreliable. Another consequence is that actual changes in the population parameters would only be detected after a longer time period, which would hamper adequate management responses.

Therefore, the TSEG-recommendation regarding the monitoring strategy is:

- annually three surveys in the pupping seasons and two in the moulting season;
- every 5 – 8 years - in case of emergency - a few more surveys should be carried out in the pupping season.

Statements by the management members of TSEG-plus

Palle Uhd Jepsen, Denmark, agreed on the scientific recommendation as a minimum program, and proposed to use the document as an Annex to the SMP. Denmark gave a clear plea to go for the scientific proposal regarding the concerned tri-lateral monitoring program for seals instead of cutting the program and go back to fewer surveys.

Th. Borchart, Schleswig-Holstein, stated that according to the regular occurrence of two stock peaks per season in Schleswig-Holstein 2 x 2 surveys have to be carried out to obtain the maximum number in Schleswig-Holstein. To get four successful flights 5 surveys yearly have to be

aimed for. Nevertheless, he stated that there was the tendency of the responsible ministry to reduce the costs for the surveys.

M. Dippel, Lower Saxony stated that from the administrative point of view of Lower Saxony no more than 3 flights annually were being considered to be necessary to reach the regional aim "maximum number in Lower Saxony". Therefore, the Ministry of Agriculture in Lower Saxony would not provide the financial means for more than 3 flights in the future.

G. van Brakel, the Netherlands, agreed to the given scientific recommendation as a minimum program. However, he stated that for the implementation of more frequent flights every 5 – 8 years, more scientific arguments should be given.

During the discussion, the meeting stated that the financing of the surveys was still not ensured in most cases in the different countries in the future. It was or would be a question of prioritization of financing at a later stage, and in Lower Saxony, e.g. financing should be discussed not only within the Ministry of Agriculture but also with other responsible bodies and organizations.

Taking as Mitigation Measure

The starting point of the discussion was the Danish viewpoint as Annex 5 of the Senior Officials meeting in November 1999:

"Danish authorities may issue permits to take individual seals evidently damaging fishing gear and catches".

A basis discussion document on this item was chapter 3.1 "Assessment of potential conflicts between fisheries and seals". Here, the national statements regarding conflicts between seals and fisheries are being summarized for the different countries.

Palle Uhd Jepsen, DK pointed out that only commercial fishermen under special requirements were concerned for the requested management tool, and in each single case a license from the minis-

try would be a prerequisite for shooting the seal, followed by a reporting to the TWG. The Danish request was not based on a conservation problem but a request for better management of seals related to fishery conflicts. In Denmark, it was not possible by law to pay compensation for the damage of wildlife to the concerned fishermen.

The meeting discussed the main conflict area in Denmark (river/estuary: Kammerslusen) which is in the Cooperation Area and outside the Conservation Area and the possibilities to solve the problem on a trilateral level.

At the first TSEG-plus meeting, the representatives of Schleswig-Holstein and the Netherlands had severe problems to accept such an approach as Denmark requested because of animal ethical welfare aspects and the psychological negative effects on the seal protection effort. Nevertheless, the following options to solve the problem were generated in case there would be no possibility to solve the problem within Denmark itself:

A. Amendment of the Seal Agreement

Possible changes of § VI "Taking" of the Seal Agreement (additional granted exemptions because of managing conflicts between seals and fisheries) were rejected by the meeting, to avoid further requests for changing the Seal Agreement. Denmark does not see this option as an adequate solution any longer and withdraws the request to amend the Seal Agreement.

B. Changing the definition of the Agreement Area

According to the SMP the concerned Agreement Area is the Trilateral Cooperation Area.

According to the Seal Agreement § II

b. "the Agreement Area means the area of water known as the Wadden Sea including all sandbanks therein as well as all shore areas of the North Sea coasts of Denmark, the Federal Republic of Germany and the Netherlands between Blaavandshuk to the north and Den Helder to the west. The main ranges and the main migration routs are located in the Wadden Sea."

c. "seal population means all seals which, at any time, are present in the Agreement Area."

d. "habitat means any part of the Agreement Area which is essential to the maintenance of the vital biological functions of seals, including but not limited to breeding, whelping, nursing, feeding or resting."

The meeting realized that the definition of the Agreement Area in the SMP (Agreement Area = Trilateral Cooperation Area) was in line with the definition in the Seal Agreement and therefore changes in the definition within the SMP would not be possible.

C. Revision of the SMP to include exemptions for taking as mitigation measure

According to the SMP the concerned Agreement Area is the Trilateral Cooperation Area.

To include the possibility to use a management tool in single cases of conflicts between individual seals and fishermen in the Agreement Area outside the Trilateral Conservation Area, an exemption for mitigation measures should be included in the SMP in the future. Prerequisites for each single case are the special condition, a license and the reporting to the TWG.

Denmark stated to aim for solution C. This was supported by the TSEG-plus meeting.

**Conservation and Management Plan
for the Wadden Sea Seal Population
2002 - 2006**

**Annex 1 of the
Esbjerg Declaration 2001**

Conservation and Management Plan for the Wadden Sea Seal Population 2002 – 2006

According to Art. IV of the Agreement on the Conservation of Seals in the Wadden Sea, which entered into force on October 1, 1991.

Explanatory note:

The measures of the conservation and management plan are outlined according to the following scheme:

Seal Agreement: The objectives and obligations of the Agreement itself.

Required effort and objectives: The objectives and the individual activities and measures that need to be undertaken to achieve the objectives.

Action in 2002 – 2006: The activities and measures which trilaterally and/or each country/state shall implement in addition to the (seal) protection measures which already exist in the given state, in order to fulfill the prescriptions.

Seal Agreement	Required effort and objectives	Action in 2002 – 2006
<p>1. PURPOSE AND OBJECTIVE</p> <p>Seal Agreement, Art. III</p> <p>The Parties shall cooperate closely with the view to achieving and maintaining a favorable conservation status for the seal population.</p>		
<p>Seal Agreement, Art. II, b and d</p> <p>b. The "Agreement Area" means the area of water known as the Wadden Sea, including all sandbanks therein as well as all shore areas of the North Sea coasts of Denmark, the Federal Republic of Germany and the Netherlands between Blaavandshuk to the north and Den Helder to the west. The main ranges and the main migration routes are located in the Wadden Sea.</p>	<p>To achieve these general objectives it will be necessary</p> <ul style="list-style-type: none"> - to achieve and maintain a comprehensive conservation and management of the seal population of the Wadden Sea through common, coordinated measures of the responsible authorities; and - to achieve and maintain a public understanding and awareness of the Wadden Sea seal population as an entity and as an integrated part of the ecosystem. 	<p>The Agreement Area is the Wadden Sea Area (Trilateral Cooperation Area).</p>
<p>d. "habitat" means any part of the Agreement Area which is essential to the maintenance of the vital biological functions of seals, including but not limited to breeding, whelping, nursing, feeding or resting;</p>		

Seal Agreement	Required effort and objectives	Action in 2002 - 2006
2. CONSERVATION AND MANAGEMENT MEASURES		
Habitats		
Seal Agreement, Art. VII, 1	1. The Parties shall take appropriate measures for the protection of habitats. They shall pay due regard to the necessity of creating and maintaining a network of protected areas also in the migration areas of the seals in the Agreement Area and of ensuring the preservation of areas which are essential to the maintenance of the vital biological functions of seals.	<p>THE NETHERLANDS AND GERMANY Evaluate the necessity to establish and manage seal reserves in the Eems-Dollard region, similar to seal reserves established and managed in other areas of the Wadden Sea.</p>
	It will be necessary to identify, maintain, extend and create seal interest zones / reserves of an appropriate size in the trilateral Wadden Sea Cooperation Area and in adjacent areas and to take appropriate measures, i.e.:	<p>TRILATERALLY Evaluate the existing network of seal reserves in the countries as to whether they comply with the EU Habitat Directive. In case the assessment indicates that more seal reserves are needed, the installation of further seal reserves should be considered in cooperation with relevant stakeholders.</p>
	- to ensure that the existing seal reserves cover the main birth, nursery and resting areas of seals and ensure that there is an adequate number of seal reserves;	<p>TRILATERALLY Referred to RESEARCH AND MONITORING: "Investigations of habitat requirements of seals in relation to recreational demands"</p>
	- to ensure that at present and in the future, in view of expected increases in populations, assignments of seal reserves are based on well defined criteria of critical habitats.	<p>TRILATERALLY The TSEG should assess whether the implemented measures meet the habitat requirements of seals in the offshore area connected with the Wadden Sea and report the results to the TWG and inform the TMAG.</p>
	- to identify and if necessary maintain, extend and create a seal protection zone of an appropriate size outside the Trilateral Wadden Sea Conservation Area related to appropriate measures and ensure that this zone covers the foraging area offshore particularly during winter.	<p>TRILATERALLY Develop a trilateral framework for guidelines to regulate excursions by boats to seal haul-outs. These guidelines should be based on a precautionary principle. National guidelines should be based on the trilateral framework and could – if needed – consider a specification for certain haul-outs, e.g. colonies where seal pups are born should preferably not be visited during the whelping and lactation period. The guidelines should, e.g., include distances to seal colonies, speed of boats and provide for possibilities to assess and evaluate the impact of seal excursions on vigilance and other behavior of the seals.</p>
Seal Agreement, Art. VII, 2	2. The Parties shall preserve habitats and seals present from undue disturbances or changes resulting, directly or indirectly, from human activities.	

Seal Agreement	Required effort and objectives	Action in 2002 - 2006
	<ul style="list-style-type: none"> - to reduce the disturbance by air traffic; - to prohibit disturbing activities in seal reserves at least in the time from 15.05. to 01.09.; - to reduce the number of seals caught as by-catch and ensure that seals do not drown in fyke nets; 	<p>Referred to: Necessary measures outlined in the Wadden Sea Plan</p> <p>Referred to: Necessary measures outlined in the Wadden Sea Plan</p>
		<p>THE NETHERLANDS AND LOWER SAXONY Investigate experimentally, preferably in consultation with the fishermen, which mesh size used in seal guards is necessary to prevent drowning of, particularly, young seals in this type of fishery and make such seal guards obligatory for fishing with fyke nets in all sub-regions in the Wadden Sea where this type of fishery is carried out.</p>
<p>Seal Agreement, Art. VII, 3</p> <p>3. The Parties shall have regard to the protection of habitats from adverse effects resulting from activities carried out outside the Agreement Area.</p>	<ul style="list-style-type: none"> - to avoid and determine the number of seal-by-catches in fishery activities. 	<p>TRILATERALLY Improve the central collection of information on drowning/entanglement of seals in fisheries in the Wadden Sea and adjacent waters, either via existing stranding networks or through establishing such a system.</p>
<p>Seal Agreement, Art. VII, 4</p> <p>4. The Parties shall explore the possibility of restoring degraded habitats and of creating new ones.</p>		
<p>Pollution</p> <p>Seal Agreement, Art. VIII, a</p> <p>The Wadden Sea States are determined to do their utmost to further reduce pollution of the North Sea from whatever source with the aim of conserving and protecting the Agreement Area.</p> <p>To this end they shall:</p>	<p>It will be necessary</p> <ul style="list-style-type: none"> a. to reduce the pollution from whatever source, i.e. <ul style="list-style-type: none"> - to continue to commonly implement the decisions of the North Sea Conferences; - to continue to coordinate efforts in the framework of the North Sea Conferences to further reduce the pollution of the Wadden Sea and North Sea. 	<p>TRILATERALLY Referred to: The necessary measures are and / or will be outlined in the Wadden Sea Plan, the decisions of the North Sea Conferences and other relevant international fora.</p>

Seal Agreement	Required effort and objectives	Action in 2002 - 2006
<p>a. endeavor to identify the sources of such pollution;</p> <p>see also Seal Agreement, Art. VIII, b and c, under 3. RESEARCH AND MONITORING: Monitoring of Pollution</p>	<p>b. if possible to use seals as an indicator of the condition of the environment.</p>	
<p>Wardening</p> <p>Seal Agreement, Art. VI, 4</p> <p>4. The Parties shall take appropriate action to suppress illegal hunting and taking of seals.</p>	<p>c. to ensure that dumping of dredged material, or taking of mud and sand in or near the Wadden Sea will have no negative effects on seals resp. seal banks.</p>	<p>TRILATERALLY</p> <p>Exchange information on precautionary measures for seals in the practice of dumping of dredged material or taking of mud or sand in or near the Wadden Sea.</p>
<p>3. RESEARCH AND MONITORING</p> <p>Research and Monitoring</p> <p>Seal Agreement, Art. V, 1</p> <p>1. The Parties shall coordinate their research programs and projects and their monitoring of the seal population to increase their knowledge of the biology and the habitat including harmful effects of human activities on the seal population to provide a basis for measures to improve its conservation status.</p>	<p>It will be necessary to ensure the enforcement of the provisions of the agreement by an adequate management and wardening system, which should – concerning all seal matters – be coordinated at state administrative agencies:</p> <ul style="list-style-type: none"> - to ensure that the seal reserves are, as parts of the nature reserves and the national parks, adequately warded; - to designate administrative agencies responsible for seal wardening. - to ensure a coordination of the state and voluntary wardens. - to ensure that the seal reserves are clearly marked and indicated on sea charts. 	<p>TRILATERALLY</p> <p>Evaluate the existing wardening systems, as whether they meet the common standards according to Annex I of the Esbjerg Declaration (1991), and improve the wardening system, if needed.</p>
	<p>Research</p> <p>It will be necessary</p> <ul style="list-style-type: none"> - to establish an overview of recent and ongoing research projects on seals to ensure information exchange; 	<p>TRILATERALLY</p> <p>Report all research projects on seals or related to seals in the Wadden Sea to the coordinating institution, and to the TSEG. After completion of a project, a report on the results should be made available to the coordinating institution for further evaluation by the TSEG.</p>

Seal Agreement	Required effort and objectives	Action in 2002 - 2006
	<ul style="list-style-type: none"> - to consider a trilateral project on feeding ecology of seals; 	<p>TRILATERALLY</p> <p>Complete the ongoing drafting of the joint trilateral project on "Feeding Ecology of Common seals", including prey preference, food quality and foraging areas. The information will not only be used to understand and follow whether changes in feeding patterns and food availability may occur in the future, but most importantly does provide the necessary information to identify, in an early stage, whether seals – fishery inter-actions become evident, and facilitate the assessment of the extent of such a conflict, and recommend appropriate management solutions. The partners in the Seal Agreement in close connection with the responsible administrative agencies in the area are invited to facilitate funding for this project. The research project "feeding ecology of common seals" has the first priority relative to "investigations of habitat requirements of seals in relation to recreational demands."</p> <p>TRILATERALLY</p> <p>Redraft the joint proposal regarding "habitat use with regard to human activities in the Wadden Sea and adjacent areas" and submit it – in consultations with responsible state administrative agencies for nature conservation – to organizations (e.g. EC or others) for funding. The partners in the Seal Agreement, in close connection with the responsible administrative agencies in the area, are invited to facilitate funding for this project.</p> <p>The research project "investigations of habitat requirements of seals in relation to recreational demands" has second priority in relation to "feeding ecology of common seals."</p>
	<ul style="list-style-type: none"> - to consider a trilateral project on habitat requirements of seals in relation to recreational demands. 	<p>TRILATERALLY</p> <p>Redraft the joint proposal regarding "habitat use with regard to human activities in the Wadden Sea and adjacent areas" and submit it – in consultations with responsible state administrative agencies for nature conservation – to organizations (e.g. EC or others) for funding. The partners in the Seal Agreement, in close connection with the responsible administrative agencies in the area, are invited to facilitate funding for this project.</p> <p>The research project "investigations of habitat requirements of seals in relation to recreational demands" has second priority in relation to "feeding ecology of common seals."</p>

Seal Agreement	Required effort and objectives	Action in 2002 – 2006
Seal Agreement, Art. V, 2 2. They shall, in particular, monitor and coordinate their research on,	<p>Monitoring It will be necessary</p> <ul style="list-style-type: none"> - to designate institutions responsible for the monitoring; - in order to guarantee continuity in reliability and comparability of data obtained by the monitoring scheme, the monitoring should be carried out by institutions on a long-term basis; - in order to obtain more comparable results, to be used for the assessment of population sizes and other demographic parameters, to promote the harmonization of the surveys in the different countries; 	<p>Designated monitoring institutions:</p> <p>DENMARK: Fiskeri-og Søfartsmuseet, Esbjerg</p> <p>SCHLESWIG-HOLSTEIN: Nationalparkamt Tönning / FTZ Büsum der Univ. Kiel</p> <p>NIEDERSACHSEN: Bezirksreg. Weser-Ems, Dez. 04: NP Verw., Dez. 510: Verw. Forst und Jagdhoheit / Univ. Oldenburg / Staatl. Veterinäruntersuchungsamt f. Fische u. Fischwaren, Cuxhaven</p> <p>THE NETHERLANDS: Alterra, Texel</p>
Seal Agreement, Art. V, 2 a and b a. population trends, e.g. through periodic aerial surveys and counts; b. seal migration	<ul style="list-style-type: none"> - to closely follow the population development according to a coordinated scheme specified basically in the report by the Trilateral Seal Expert Group-plus (TSEG-plus 2000): - in order to assess trends in population size, to carry out at a minimum 5 aerial surveys each year, 3 during the pupping and 2 during the moulting period; 	<p>TRILATERALLY Carry out five flights per year in a trilaterally coordinated way (three during the pupping and two during the moulting period) as a minimum program according to the given arguments in the TSEG-document.</p> <p>More flights in one year (a few more flights in the pupping season) should only be carried out in a trilaterally coordinated way in case of emergency or because of special local/regional reasons on the basis of agreed scientific requirements.</p>
Seal Agreement, Art. V, 2 c c. seal population parameters, e.g. diseases, survival, age structure, sex ratio.		
<p>Monitoring of Pollution</p>		
Seal Agreement, Art. VIII, b b. coordinate their research projects regarding seal diseases and the effects on the seal population of such substances, e.g. organochlorine compounds, heavy metals and oil, and agree on methods which permit a comparison of research results; sea also Seal Agreement, Art. III, a under 2. CONSERVATION AND MANAGEMENT MEASURES: Pollution		

Seal Agreement	Required effort and objectives	Action in 2002 – 2006
<p>Seals Agreement, Art. VIII, c</p> <p>c. monitor in the Agreement Area, in particular in seal tissue and organisms which are preyed upon by seals, the levels of those substances which, in light of the results of research, appear to play a major role in the conservation status of the seal population.</p> <p>see also Seal Agreement, Art. III, a under 2. CONSERVATION AND MANAGEMENT MEASURES: Pollution</p>	<p>- to monitor seal tissue concerning selected contaminants with coordinated and standardized methods within the framework of the TMAP.</p> <p>- to consider the establishment of a tissue bank according to common guidelines.</p>	<p>TRILATERALLY</p> <p>The status of the common seal population and changes thereof, can be described in quantitative terms (population demographics) as well as in qualitative terms (reproductive capacity, survival and health status). Such a multiple index should be used to describe the status of a population. To be able to do so, it is necessary to establish a trilaterally agreed monitoring program that includes as first priorities the research disciplines population dynamic and pathobiology.</p> <p>The basic program may be completed by a less intensive program of selected parameters of immunological, endocrinological, toxicological, parasitological, bacteriological, and virological investigations. The TSEG should draft such a first-priority and second-priority monitoring program including ways to obtain the necessary data and/or required samples and report the results to the TMAG.</p>
<p>4. TAKING AND EXEMPTIONS FOR TAKING</p>		
<p>Taking</p>		
<p>Seal Agreement, Art. VI, 1</p> <p>1. The Parties shall prohibit the taking of seals from the Wadden Sea</p>	<p>The taking of seals from the Wadden Sea shall be prohibited by the parties.</p>	<p>NATIONAL LEVEL</p> <p>Implement provisions in appropriate form in national legislation.</p>
<p>Exemptions for Taking</p>		
<p>Seal Agreement, Art VI, 2 first part</p> <p>2. The competent authorities may grant exemptions from the prohibition referred to in the first paragraph authorizing persons to take seals:</p> <ul style="list-style-type: none"> - for institutions to be designated performing scientific research into the conservation of the seal population in the Wadden Sea or the conservation of the Wadden Sea ecosystem, insofar as the information required for such research cannot be obtained in any other way; or 	<p>It will be necessary to ensure §§ 56 - 61 of the Leeuwarden Declaration (LD), which are based on the "Statement on Seal Rehabilitation and Release, based on scientific experience and knowledge" elaborated by seal experts in 1994:</p> <p>§ 60 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, referred to in the "Statement on Seal Rehabilitation and Release, based on scientific experience and knowledge" as elaborated by seal experts.</p>	<p>NATIONAL LEVEL</p> <p>Given the prosperous development of the seal population in the Wadden Sea, both in terms of growth as well as in fitness, §56 – §61 of the Leeuwarden Declaration (LD) are strongly reconfirmed, especially §60, taking into account that ethical considerations, legislation, as well as management practices differ in the three countries.</p>

Seal Agreement	Required effort and objectives	Action in 2002 - 2006
<p>The guidelines shall be based upon the following principles:</p>	<p>§ 60.1 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;</p> <p>§ 60.2 seals rehabilitated shall only be released into the wild on a permit granted by the national authority responsible for nature conservation and management if the following criteria are met:</p>	<p><u>Designated national authorities responsible for granting of exemptions from taking and releasing:</u></p> <p>DENMARK: Skov- og Naturstyrelsen, Reservatsektionen</p> <p>NIEDERSACHSEN: Bezirksreg. Weser-Ems, Dez. 04: NP Verw., Dez. 510: Verw. Forst und Jagdhoheit</p> <p>SCHLESWIG-HOLSTEIN: Nationalparkamt, Tönning</p> <p>THE NETHERLANDS: Ministry of Agriculture, Nature Management and Fisheries, Directie Noord, Groningen</p> <p><u>Designated scientific institutions (1) and nursery stations (2):</u></p> <p>DENMARK: Fiskeri-og Søfartsmuseet, Esbjerg (1,2)</p> <p>NIEDERSACHSEN: Staatliches Veterinäruntersuchungsamt Cuxhaven (1); Aufzuchtstation Norden / Norddeich (2)</p> <p>SCHLESWIG-HOLSTEIN: FTZ Büsum, Univ. Kiel (1); Seehundaufzuchtstation Friedrichskoog (2)</p> <p>THE NETHERLANDS: Alterra, Texel (1); Zeehondencrèche, Pieterburen; Ecomare, Texel (2)</p>
<p>(i) the seal has not been treated with specific groups medicine to be further specified.</p>	<p>TRILATERALLY</p> <p>A detailed expert discussion on medical treatment of taken seals should take place resulting in an advice on the use of specific groups of medicines in seal centers, where seals are rehabilitated and released, taking into account that ethical considerations, legislation, as well as management practices differ in the three countries.</p>	

Seal Agreement	Required effort and objectives	Action in 2002 – 2006
<p>(ii) the seal does not carry pathogens alien to the wild population; (Definition alien: Pathogens which are normally not found in the Wadden Sea are alien.)</p> <p>(iii) the seal is released as soon as possible but not later than half a year after it has been brought in for rehabilitation;</p>	<p>(iv) the seal has not been kept in a center where species of animals alien to the Wadden Sea, or marine mammals not resident in the Wadden Sea, are held; (Definition: Every area which does not belong to the Wadden Sea should be considered alien in this context.)</p>	<p>NATIONAL LEVEL Prohibit the keeping of seal species, other than common and grey seals, in Wadden Sea seal centers. Avoid the taking of common and grey seals from areas outside the Wadden Sea and keeping them in Wadden Sea seal centers. Prohibit the release of seals, having been kept in other than the Wadden Sea seal centers, into the Wadden Sea, taking into account that ethical considerations, legislation, as well as management practices differ in the three countries.</p>
<p>Seal Agreement, Art. VI, 2, second part</p> <p>- for institutions to be designated nursing seals in order to release them after recovery, insofar as these are diseased or weakened seals or evidently abandoned suckling seals.</p> <p>Seals which are clearly suffering and cannot survive may be killed by the persons referred to in this paragraph.</p>	<p>§ 60.3 seals should only be released in the areas where they were found;</p> <p>§ 60.4 seals shall not be transported between subregions of the Wadden Sea;</p> <p>§ 60.5 seals held in captivity shall, in principle, not be released into the wild;</p> <p>§ 60.6 seals born in captivity shall not be released into the wild; exemptions can only be allowed after the approval of the competent authorities.</p>	<p>TRILATERALLY AND NATIONAL LEVEL Enable an independent check of the station records at a national/trilateral level by responsible state agencies.</p>

Seal Agreement	Required effort and objectives	Action in 2002 - 2006
Seal Agreement, Art. VI, 3	3. Any Party having granted exemptions as mentioned above shall notify the other Parties as soon as possible and provide them an opportunity for review and comment.	<p>TRILATERALLY</p> <p>From all animals taken, either euthanized, otherwise killed, or rehabilitated and released, at least the following information has to be collected: Number of seals, age (length), sex, time and location found at, and time and location of release of rehabilitated seals.</p> <p>In the beginning of the year, each country provides the coordinating institution with a complete list of the abovementioned data collected in the past year. The data will be provided to the TSEG in order to evaluate the data for their significance in relation to monitoring possible changes in the population. The results should be reported to the TWG and TMAG.</p> <p>The TSEG should advise on a revision of the presently used, standardized annual reporting formats, as well as on possible other relevant data to be collected from seals taken.</p>
5. PUBLIC INFORMATION	<p>Seal Agreement, Art. X</p> <p>The Parties shall take such measures as may be required to make the general public aware of the conservation status of the seal population, of the content and aims of this Agreement, and of the measures they have taken pursuant to this Agreement, including the Conservation and Management Plan, to improve this conservation status.</p>	<p>TRILATERALLY/ NATIONAL LEVEL</p> <p>Publish a brochure including, e.g., information on the status of the seal population, the aims of the Seal Agreement and the Seal Management Plan, the views on rehabilitation, the need to guarantee the primary objective to achieve managing the Wadden Sea as a nature area with the least human interference possible.</p> <p>The state agencies responsible for seal management should bring this message to the public.</p>
6. FINANCIAL IMPLICATIONS	<p>a. National: The implementation of the common Conservation and Management Plan in national measures including monitoring to be financed by the contracting parties.</p> <p>b. Common: Possibly joint brochure.</p>	

7. ADDITIONAL MEASURES FOR THE PROTECTION OF THE GREY SEAL IN THE WADDEN SEA

According to the Conservation and Management Plan for the Wadden Sea Seal Population 1991 - 1995 (Seal Management Plan), which was elaborated in accordance with art. 4 of the Agreement on the Conservation of Seals in the Wadden Sea, the only concerned species has been the common seal (*Phoca vitulina*). Since the Seal Management 1996-2000 additional measures for the protection of the grey seal (*Halichoerus grypus*) in the Wadden Sea are also included, according to §61 of the Leeuwarden Declaration 1994 (LD). Due to §61 LD, the principles and guidelines concerning taking of seals, rehabilitation and releasing of seals, which are given under §60 LD, should also apply to the grey seal in the Wadden Sea.

Taking and Exemptions for Taking:

§ 60 of the Leeuwarden Declaration and the concerned chapter of the Seal Management Plan 2002 - 2006 for the common seal is also valid for the grey seal in the Wadden Sea.

LD § 60 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.

Further activities regarding additional measures to be taken for the protection of the grey seal in the Wadden Sea are being addressed here.

It will be necessary:

Habitats:

- to ensure that the grey seal colonies are protected as reserves which are maintained, extended and created in such a way that disturbance is limited to a minimum;
- to install seal sanctuaries on beaches including a wardening system, where possible and acceptable and to install a flexible protection scheme of "contemporary undisturbed areas" in regions where grey seal pups rest regularly;
- to restrict disturbances near pupping grounds (such as fishery);

ACTION IN 2002 - 2006

The Dutch responsible agencies should seek advice from the TSEG on the necessary measures to provide grey seals in the Dutch Wadden Sea with a similar level of protection as provided to the common seal.

Research and Monitoring:

- to consider a research project on habitat use and demands, behavior and health status of grey seals in the Wadden Sea and to invite institutions in Schleswig-Holstein and The Netherlands to draft such a project;
- to improve the monitoring of breeding colonies during breeding season by regular ship and / or aerial surveys;

ACTION IN 2002 - 2006

Raise funding for the trilateral project "Habitat use and demands, behavior and health status of grey seals in the Wadden Sea" in order to provide the basic data to monitor the status of the different colonies of grey seals and formulate an adequate conservation policy and management for this species.

Wardening:

- to promote a warden system for installing "flexible protection zones", that is active during breeding season in regions, where grey seal pups regularly are;

Public information:

- to inform the public on a common basis on grey seals as a indigenous resident species of the Wadden Sea which is resettling the area;
- to inform the public, how to deal with stranded (dead / live) grey seals.

8. RESPONSIBLE BODIES

(according to Art. IX of the Agreement on the Conservation of Seals in the Wadden Sea)

Responsible national authorities:**DENMARK**Responsible for the Seal Agreement:

Ministry of the Environment
The National Forest and Nature Agency
Haraldsgade 53
DK - 2100 Copenhagen Ø
phone: + 45 39 47 29 00
fax: + 45 39 27 98 99

Responsible for the management of seals and wildlife:

Ministry of the Environment
The National Forest and Nature Agency
Nature and Wildlife Section
Ålholtvej 1
DK 6840 Oksbøl
phone: +45 76 54 10 40
fax: +45 76 54 10 46
e-mail: puj@sns.dk

FEDERAL REPUBLIC OF GERMANY

Federal Ministry for the Environment, Nature
Conservation and Nuclear Safety
Arbeitsgruppe - NI2-
Postfach 12 06 29
D - 53048 Bonn
phone: +49 (0)228 - 305 2621
fax: +49 (0)228 - 305 2697
in cooperation with the Federal States

THE NETHERLANDS

Ministry of Agriculture, Nature Management
and Fisheries
Directie Noord
Postbus 30032
NL - 9700 RM Groningen
phone: + 31 (0)50 - 50 599 2320
fax: + 31 (0) 50 - 50 599 2399

COORDINATING INSTITUTION

Common Wadden Sea Secretariat
Virchowstr. 1
D - 26382 Wilhelmshaven
phone: + 49 (0)44 21 - 91 08 11
fax: + 49 (0)44 21 - 91 08 30
E-mail: reineking@waddensea-secretariat.org

The coordinating institution shall be informed on all developments and activities which concern the Conservation and Management of the Wadden Sea Seal Population and an annual report shall be made on the implementation of the Conservation and Management Plan, to be sent also to the Bonn Convention Secretariat.

Trilateral Seal Expert Group (TSEG):

DK: Svend Tougaard, Fiskeri-og Søfartsmuseet, Esbjerg
SH: Ursula Siebert, Kai F. Abt, FTZ Büsum der Univ. Kiel
Nds:Ekkehard Vareschi, Universität Oldenburg
NL: Peter H. Reijnders, Alterra, Texel

The Trilateral Seal Expert Group has the task to coordinate and supervise the implementation of monitoring activities and the assessment of the results, assess relevant research results and, as appropriate, give advice regarding management on request of the trilateral cooperation. The TSEG should continuous to be a group which can act independently.

Tasks of the TSEG:

- analyze (chronic and sudden) developments in the common and grey seal populations (e.g. oil pollution, higher mortality) and accordingly provide through the CWSS management advise to the responsible authorities;
- coordinate, supervise and execute monitoring activities as identified in the SMP and assess the results;
- formulate, in cooperation with the CWSS, concrete plans to achieve the objectives of the SMP (work plan), in particular the identified required efforts and objectives;
- coordinate and supervise, in consultation with the CWSS, the implementation of the SMP;
- evaluate progress in the implementation of the SMP and advise on interim management measures to enhance execution of the planned actions;
- elaborate and submit proposals to the responsible authorities to initiate and implement research activities as identified in the SMP and assess relevant research results;
- evaluate the current SMP and formulate, in cooperation with the CWSS and further experts, an outline for the new SMP;
- report to TWG and TMAG.

Issues of the Publication Series „Wadden Sea Ecosystem“

- No. 1: Breeding Birds in the Wadden Sea 1991. 1994.
- No. 2: Migratory Waterbirds in the Wadden Sea 1992/93. 1994.
- No. 3: Guidelines for Monitoring of Breeding Birds in the Wadden Sea (in Dutch, German, Danish). 1995.
- No. 4: Breeding Birds on Census Areas 1990 until 1994. Status of Shorelark, Twite and Snow Bunting in the Wadden Sea. 1997.
- No. 5: Migratory Waterbirds in the Wadden Sea 1993/94. 1996.
- No. 6: Trilateral Monitoring and Assessment Program. TMAP Expert Workshops 1995/96. 1996.
- No. 7: Assessment of the Wadden Sea Ecosystem. 1997.
- No. 8: Monitoring Breeding Success of Coastal Birds. Monitoring Pollutants in Coastal Bird Eggs in the Wadden Sea. 1998.
- No. 9: Wadden Sea Quality Status Report 1999. 1999.
- No. 10: Breeding Birds in the Wadden Sea in 1996. 2000.
- No. 11: Contaminants in Bird Eggs in the Wadden Sea. Spatial and Temporal Trends 1999 - 2000. 2001.
- No. 12: Lancewad. Landscape and Cultural Heritage in the Wadden Sea Region. 2001.
- No. 13: Final Report of the Trilateral Working Group on Coastal Protection and Sea Level Rise. 2001.
- No. 14: Wadden Sea Specific Eutrophication Criteria. 2001.
- No. 15: Common and Grey Seals in the Wadden Sea. TSEG-plus Report March/June 2001. 2002.

