

Agenda Item 14.1.4

Implementation of the ASCOBANS Triennial
Work Plan (2007-2009)

ASCOBANS Baltic Recovery Plan (Jastarnia
Plan)

Revision of the Jastarnia Plan

Document 13

**ASCOBANS Recovery Plan for Baltic
Harbour Porpoises**

Action Requested

- take note of the draft document
- comment
- decide on the process and timeline for finalising the revision
- adopt the plan (if it will be possible to finalise outstanding issues at the meeting)

Submitted by

Jastarnia Group



NOTE:
**IN THE INTERESTS OF ECONOMY, DELEGATES ARE KINDLY REMINDED TO BRING THEIR OWN
COPIES OF DOCUMENTS TO THE MEETING**

Secretariat's Note

At the 14th Meeting of the Advisory Committee (San Sebastián, Spain, April 2007), suggestions for revision of the Jastarnia Plan, made by the 3rd Meeting of the Jastarnia Group (Copenhagen, Denmark, February 2007) were welcomed.

Based on the final first version of the Jastarnia Plan, agreed at the 9th Meeting of the ASCOBANS Advisory Committee in June 2002 in Hindås, Sweden, the Secretariat started working on the revision in order to provide a basis for further discussion among the experts. A first draft for a revised and updated version was forwarded to the Jastarnia Group in October 2007, which started working on it in the run-up to their 4th Meeting.

This document is the result of discussions at the 4th Meeting of the ASCOBANS Jastarnia Group, held in Kolmården, Sweden from 25-27 February 2008 and subsequent further revision through email correspondence.

Participants of the Advisory Committee Meeting are encouraged to read it critically while keeping in mind that highlighted sections are still being updated.

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**Recovery Plan for
Baltic Harbour Porpoises
Jastarnia Plan**

DRAFT

28 March 2008

ASCOBANS

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ASCOBANS RECOVERY PLAN FOR HARBOUR PORPOISES IN THE BALTIC SEA (JASTARNIA PLAN)

1. Introduction

The harbour porpoise (*Phocoena phocoena*) is widely distributed in shelf waters of the temperate North Atlantic and North Pacific Oceans and in some semi-enclosed seas (e.g. the Black and Baltic Seas). Although still numerically abundant as a species, at least in comparison to many other cetaceans (whales, dolphins and porpoises), the harbour porpoise has experienced major declines in portions of its range, including and perhaps most notably the Baltic Sea. The causes of population decline in the Baltic may include the commercial catching of porpoises historically (Kinze 1995), the periodic catastrophic mortality resulting from severe winter ice conditions (Johansen 1929 and Bondesen 1977, both as cited in Teilmann and Lowry 1996; Hanstrom 1960, as cited in Berggren 1994; Lindroth 1962) and habitat degradation of various kinds (e.g. pollution, noise, decrease in prey abundance or quality; cf. Teilmann and Lowry 1996). Whatever other factors may be involved, however, it is very likely that incidental mortality in fishing gear has played a major role in reducing porpoises to a small fraction of their historical abundance in the region, and is now helping to prevent their recovery. Catches of harbour porpoises in salmon drift nets and bottom-set gillnets (for cod and other demersal species) are known to have occurred in many parts of the Baltic (e.g. Lindroth 1962, Skóra et al. 1988, Christensen 1991, Skóra 1991, Berggren 1994, Kock and Benke 1996), and therefore these types of fishing gear are a focus of concern when considering how to facilitate recovery of harbour porpoises.

Berggren et al. (2002) incorporated the interim objective to restore the population to 80% of the carrying capacity into a Potential Biological Removal (PBR) model to estimate an annual "mortality limit" of only one or two harbour porpoises in the surveyed portion of the Baltic Sea (see chapter 4.1). In other words, their analysis indicated that recovery towards the interim goal of 80% of carrying capacity could only be achieved if the bycatch in this part of the Baltic were reduced to two or fewer porpoises per year (compared with the estimated current minimum bycatch of seven, Berggren et al. 2002).

2. Objectives

ASCOBANS has the goal of restoring the population of harbour porpoises in the Baltic Sea to at least 80% of the carrying-capacity. To fulfil the objectives of this recovery plan, Baltic Range States should as a matter of urgency:

- (1) implement management measures of a precautionary nature to reduce the number of bycaught porpoises in the Baltic towards zero,
- (2) improve knowledge in key subject areas as quickly as possible, and
- (3) develop more refined (quantitative) recovery targets as new information becomes available on population status, bycatch and other threats.

In the short- to medium term, further issues should also be addressed as a matter of priority, namely the creation and proper management of marine protected areas for harbour porpoises, public awareness raising and cooperation with other relevant organisations.

3. The background of the Jastarnia Plan

The need for a Baltic harbour porpoise recovery plan has been recognised for a considerable time not only by ASCOBANS, but also by other international bodies, such as the Scientific Committee of the International Whaling Commission (IWC), the World Conservation Union (IUCN), which in 1996 listed harbour porpoises in the Baltic as a geographical population that is “vulnerable” (IUCN 1996) and the Baltic Marine Environment Protection Commission (Helsinki Commission, or HELCOM).

This recovery plan is the result of a collaborative effort organised under the auspices of ASCOBANS. It is the culmination of a series of scientific initiatives and meetings over several years, starting in 1997. The ASCOBANS Parties adopted a series of Resolutions on this issue. Based on the preparatory work of the ASCOBANS Baltic Discussion Group (ABDG), a small group of scientists, a workshop was held in Jastarnia, Poland, 9-11 January 2002, which was attended by 40 individuals from ten countries, representing fishermen, environmental groups, government ministries, international conventions, and public and private institutions in six of the Baltic Range States. The final Recovery Plan, now known as the Jastarnia Plan, was endorsed by the ASCOBANS Parties at their 4th Meeting in 2003.

Since 2005, annual meetings of the so-called Jastarnia Group are held. This expert working group, composed of representatives from the environment and fisheries sectors of the countries surrounding the Baltic Sea, discusses progress made and further implementation priorities for the Jastarnia Plan and makes recommendations to the ASCOBANS Advisory Committee.

4. Status of the Population(s)

4.1. Abundance

As is true of other small populations that inhabit large areas and occur in low densities, scientific assessment of harbour porpoises in the Baltic is extremely challenging. Estimates of abundance and bycatch tend to be imprecise because their precision is dictated primarily by the number of sightings or bycatch observed, in combination with the amount of effort in relation to the size of the area or the fishing fleet. Similarly, the number of tissue samples available dictates the power of genetic analyses of population structure. Uncertainty in the data is an inherent feature of work with small populations and necessitates decision-making in management to be precautionary (Taylor and Gerrodette 1993).

It is clear from morphologic, genetic and other analyses that the aggregate North Atlantic harbour porpoise population occurs as a series of relatively discrete

subpopulations or stocks (e.g. Andersen et al. 2001) at least one of which occurs in the Baltic (e.g. Tiedemann et al. 1996; Wang and Berggren 1997, Börjesson and Berggren 1997). However, relatively few porpoise specimens from the Baltic proper (i.e. east of the Darss and Limhamn underwater ridges; see IWC 2000b) have been collected and studied, and although the animals found there are different from those found in the Skagerrak-Kattegat Seas (Tiedemann et al., 1996; Börjesson and Berggren 1997; Wang and Berggren 1997; Berggren et al., 1999; Huggenberger, 1999), the stock relations of porpoises in the Danish straits, Kiel and Mecklenburg Bights, and the Baltic proper remain uncertain.

Sightings surveys which have been limited to aerial surveys of portions of the southern and western Baltic were conducted in 1995 (Heide-Jørgensen et al., 1992, 1993; Hiby and Lovell 1996), as well as a vessel survey (visual and acoustic) of Polish coastal waters in 2001 (P. Berggren, pers. comm.). Although a large decline in abundance from historic levels is generally acknowledged (e.g. Donovan and Bjørge 1995; IWC 1996, 2000), there is no reliable quantitative estimate of historic abundance (probably at least several thousands). Estimates of current abundance in the Baltic-proper are taken from the 1995 aerial surveys by Hiby and Lovell (1996), as follows: 599, CV=0.57, 95%CI 200-3,300, for a 43,000km² area corresponding to ICES Sub-divisions 24 and 25 but excluding a 22 km wide corridor off the Polish coast; and 817, CV=0.48, 95%CI 300-2,400, for Kiel and Mecklenburg Bights in the western Baltic.

In 2001 and 2002 boat-based acoustic and visual transect surveys for harbour porpoises were conducted mostly in German and Polish waters but also including some Swedish and Danish waters during the summer season in order to investigate their distribution and relative abundance (Gillespie *et al.*, 2005). The pattern of acoustic detections in this study indicates a gradient in the density of porpoises falling from the west to the east. The low porpoise detection rate of the entire Baltic Sea block agrees in broad sense with the low density found in the 1995 aerial survey, with a general detection rate two orders of magnitude lower in the Baltic Sea than in other waters surveyed (Gillespie *et al.*, 2005).

A Static Acoustic Monitoring (SAM) survey took place from August 2002 to December 2005, when the German part of the Baltic Sea (Belt Sea and Pommeranian Bight) was surveyed by means of Porpoise detectors (T-PODs) by Verfuß *et al.* (2007). The analysis of the data of this survey also shows a significant decrease from west to east in the percentage of days with porpoise detections. At most of the measuring positions in the German Baltic Sea, harbour porpoises were detected year-round, with the data displaying a seasonal variation with fewer days of porpoise detections in winter than in summer. However, only infrequent detections have been recorded north and east of the island of Rügen, thus confirming a very low density of the harbour porpoise sub-population in the Baltic proper (Verfuß *et al.*, 2007).

In another SAM study, deploying Porpoise Click Loggers (PCL:s) in coastal waters in Southern Sweden between June 2006 and September 2007, only 21 "porpoise positive days" were obtained in 2345 PCL days (Amundin et al. 2008) All but one of these detections occurred in the late summer-fall, and all in the western half of the study area (from Falsterbo Reef to South of Öland). Although the methodology was somewhat different from the German T-POD study, the overall detection frequencies were similar to

that in the German waters along the same longitude.

During 1997-2007, 63 harbour porpoises were tagged with satellite transmitters in Danish and adjacent waters and followed for up to a year. The only major area that was not covered by the tagged animals was the Southern North Sea. In the Baltic east of Rügen only one porpoise which was tagged in the Danish Belts moved east of Bornholm to the southern tip of Öland and back on a two week trip during spring. Sixteen high density areas were identified in Danish waters based on satellite tracking and surveys (Teilmann et al. 2008). Three (Flensburg Fjord , Fehmarn Belt and Kadet Trench) of these were found in the western Baltic.

- 1) Eleven porpoises visited the Flensburg Fjord where the inner part of Flensburg Fjord had particularly high density from June to November while the porpoises move to the outer part during the rest of the year. Flensburg Fjord was also important for adult females.
- 2) Fehmarn Belt tagged animals were present here in all months except August and October. Peak densities were in April, June and December. In total 13 tagged porpoises visited this area but only 5 of them stayed in the area for more than two days and these only stayed for 7 days on average. This suggests that the area is mainly used as an important corridor to the eastern part of the area. The area was also important for adult females.
- 3) The Kadet Trench is a deep basin in a relatively shallow area east of the Darss/Gedser underwater ridge. The Kadet Trench is therefore potentially important in regard to the vulnerable Baltic Sea population and the only high density area determined in the Baltic proper (defined as ICES area III d). The 7 porpoises visiting the area were mostly present from September to December and in March.

The situation that appears to have arisen in the Baltic is one that can easily lead to circular reasoning. With an extremely low density of porpoises, the animals are rarely seen or caught by fishermen. In the light of their own experience, then, fishermen view themselves as undeserving scapegoats, and they are reluctant to accept the claims by scientists and conservationists that bycatch is a serious threat to the porpoise population. However, if bycatch has been, as many assume, a major contributory factor in the decline of porpoises, there is little prospect of recovery unless the probability of bycatch for individual porpoises is substantially reduced. Therefore, without bycatch mitigation, porpoises will remain scarce (making it difficult to obtain better abundance estimates), the bycatch will remain small (making it difficult to quantify removals), and fishermen will remain incredulous towards the idea that fishery bycatch is a problem for porpoise conservation.

Despite the generally poor quality of available data, there is sufficient evidence to conclude that porpoises are now much less common in the Baltic than they were in the past, and that much of the decline occurred from the middle to late 20th century (e.g. Skóra et al. 1988; Berggren and Arrhenius 1995). There is also sufficient evidence to conclude that bycatch in fishing gear has played an important role not only in reducing the abundance of porpoises, but also in preventing their recovery in the Baltic (e.g. Skóra et al. 1988, Berggren 1994, Kock and Benke 1996, Teilmann and Lowry 1996, Berggren et al. 2002). The ASCOBANS Baltic Discussion Group concluded, and the Jastarnia workshop concurred, that: (1) the available evidence (abundance estimates,

bycatch levels, stock identity) clearly points to a population that is in serious danger; and (2) as a matter of urgency, every effort should be made to reduce the porpoise bycatch towards zero as quickly as possible. Of the factors potentially contributing to the decline in porpoise abundance in the Baltic, which could include climatic variability, contaminants, and changed ecological conditions, bycatch is probably the only one for which the effect of remedial action would be immediate and unambiguous.

4.2. Legal status of the Baltic harbour porpoise

In addition to the various provisions within the ASCOBANS Agreement text and its Conservation and Management Plan, the Baltic harbour porpoise is subject to protection and management measures advanced by a number of other competent organisations within the Baltic Sea area.

Under European Community law, specific attention is paid to the conservation needs of the Baltic harbour porpoise under Council Directive No 92/43/EEC (the “Habitats Directive”). In particular, Member States are required to establish a system of strict protection under national law for “all species” of cetaceans. Furthermore, the harbour porpoise is listed in Annex II of the Directive and is therefore one of the species for which Member States are to establish Special Areas of Conservation to ultimately contribute towards the creation of a coherent ecological network of protected areas throughout the Community (Natura 2000). These obligations are echoed and further advanced to non-EU Member States that are nonetheless contracting parties of the Berne Convention on the Conservation of European Wildlife and Natural Habitats 1979, adopted by the Council of Europe, through the establishment of the EMERALD network of protected areas, inaugurated in 1998.

Moreover, the Baltic Marine Environmental Protection Commission (HELCOM), has also established a series of protection measures and conservation targets vis-a-vis the Baltic harbour porpoise. In November 2007, the Baltic Sea Action Plan was formally adopted by HELCOM, establishing a co-ordinated programme to restore the good ecological status of the Baltic Sea region by 2021. The Action Plan includes further developing cooperation with ASCOBANS, including the elaboration of a coordinated reporting system and database on Baltic harbour porpoise sightings, by-catches and strandings. In addition to this, the Baltic Sea Protected Areas (BSAP) programme encourages the contracting parties to establish a system of coastal and marine protected areas, which could include measures to protect the Baltic harbour porpoise. A specific Recommendation, HELCOM Recommendation 17/2 on the protection of the harbour porpoise in the Baltic Sea area was adopted in 1996, recommending that Contracting Parties give “highest priority” to avoiding by-catches of these animals, as well as analysing the status of stocks, considering the establishment of protected areas under the BSAP programme and reporting on a triennial basis on progress made in these respects.

5. Recovery Recommendations

The following recommendations constitute the ASCOBANS Recovery Plan for Harbour Porpoises in the Baltic Sea:

5.1. Bycatch Reduction

Both the ASCOBANS Baltic Discussion Group and the Jastarnia workshop concluded that bycatch reduction was the highest priority for Baltic harbour porpoise recovery, and that measures to achieve such reduction should begin immediately. Experience elsewhere has been that bycatch reduction strategies should not rely on a single approach to mitigation, but rather incorporate multiple approaches as a way of dealing with the uncertainty of outcome associated with any individual measure (Read 2000). A key point about all of the following recommendations related to bycatch reduction is that **stakeholders need to be closely involved in the process**. As a priority, fishermen and their representatives should be included routinely in discussions and decision-making that have implications for their livelihoods. Another important proviso is that the entire Baltic Sea is not a homogeneous system, and therefore the same bycatch reduction measures are unlikely to be appropriate on the same time schedule in all areas. Ignorance about porpoise distribution, movements, relative abundance and habitat use throughout the Baltic, however, is a major obstacle to devising an area- or time-specific approach to bycatch reduction.

It is important to emphasise that although there is no unanimity on the issue of how bycatch should be reduced, there is consensus that porpoises are likely to disappear from the Baltic unless a major effort of some kind is made quickly to achieve bycatch reduction. At one extreme are those who believe that the only effective and environmentally benign way to reduce porpoise bycatch to the PBR level or below is through major reductions in “high-risk” fishing effort, while others believe that, despite their side-effects and associated uncertainties, acoustic deterrents should be used on a short-term basis as part of a bycatch reduction strategy. These viewpoints are both reflected in the recovery plan to the extent possible.

5.1.1. Reduce fishing effort in certain fisheries

The most effective way to reduce bycatch is to reduce or eliminate fishing effort that involves gear known to cause high porpoise bycatch rates (Read 2000). Therefore, it is recommended that **measures should be taken by the Baltic Range States to reduce the fishing effort of fishing gear known to be harmful to porpoises such as set nets in the Baltic**. Driftnets, defined by the relevant EC legislation as any gillnet held on the sea surface or at a certain distance below it by floating devices, drifting with the current, either independently or with the boat to which it may be attached¹, are from 1 of January 2008 not allowed in the Baltic. It is stressed that fishing effort includes both the amount of net deployed and the amount of time that the nets are in the water (soak time). It is also important to emphasise that reductions in catch quotas and/or fishing

¹ Regulation No. 809/2007

capacity are not the same as reductions in fishing effort, and therefore it cannot be assumed that reduced fish catch quotas or reduced fleet sizes will necessarily reduce porpoise bycatch. Reductions in fishing effort prompted by concerns about fish stock depletion or other ecosystem considerations should be encouraged, especially if such reductions are applied to fisheries known to kill porpoises (e.g. set nets) and occur in areas known, or thought to be, inhabited by porpoises. It is certainly preferable that effort reductions be targeted at high-risk gear types in areas frequented by porpoises. Although some uncertainty remains in regard both to high-risk gear and porpoise distribution, documented bycatch localities and dates provide a useful starting point for specifying high-risk areas (see chapter 5.2).

5.1.2. Involve stakeholders in the work of reducing bycatch of harbour porpoises.

Stakeholders such as fishermen, governments and environmental organisations need to work together when trying to reduce bycatch. Fishermen should be involved not only in the implementation but throughout the whole process. A working group including fishermen, governments and environmental organisations should be established to develop guidelines and methods to reduce and monitor bycatch in relevant fisheries. A way to create a positive collaboration with fishermen is to support the environmental certification of fisheries by helping the fishermen to reduce their bycatch, through pingers or alternative fishing gear, or monitor the bycatch in their fisheries.

5.1.3. Replace fishing methods known to be associated with high porpoise bycatch (i.e. set nets) and introduce alternative gear that is considered less harmful

A change to gear that is less harmful to porpoises is one way of maintaining a viable fishery while achieving bycatch reduction. It is therefore recommended that **trials using fish traps, fish pots, and longlines be initiated immediately, with the long-term goal of replacing gillnets in the cod fishery, particularly in areas where porpoises are known or expected to occur frequently.** The development and introduction of alternative gear in the Baltic cod fishery should be undertaken as a high priority. Work to develop such gear should be coordinated among the range states and implementation should begin immediately when cost-effectiveness as well as an ecological sustainable fishing has been demonstrated. An important consideration in defining cost-effectiveness is that catch levels may be reduced compared to common fishing methods, but counterbalanced by improved quality (and thus market value), particularly when fish are taken in traps or pots rather than set nets.

5.1.4. Implement a pinger programme on a short-term basis

Pingers (acoustic alarms or deterrents) have been shown to be effective in reducing porpoise bycatch in set net fisheries outside the Baltic and, as noted by Read (2000)¹², no further trials are necessary before they are used in at least bottom-set gillnet fisheries within the ASCOBANS area.

Recognising that there may be a lag of several years before the necessary reductions in fishing effort and changeover to lower-risk gear (above) are fully implemented, it is recommended that **pinger use should be made mandatory in probable high-risk areas and fisheries associated with bycatch of harbour porpoises on a short-term basis (no more than 3 years) irrespective of vessel size.** In areas where pinger use leads to increased seal-fisheries conflict or seal bycatch, interactive pingers should be used. It should be noted, however, that interactive pingers are not yet available on the market and therefore immediate research is necessary to develop functional interactive pingers.

In reaching this recommendation, a number of positive and negative issues had to be considered, summarised below:

- 1) One of the drawbacks of relying upon pingers is that their use does not ensure a zero bycatch. However, since it is clear that the Baltic Range States will not accept immediate closure of the set net fisheries, or be able to achieve an immediate changeover to alternative gear, any reduction in bycatch that can be accomplished during the next few years through the rapid implementation of pingers will be better than no reduction.
- 2) A second problem is that the cost of an independent on-board observer scheme of sufficient scale (given the large number of small boats in the Baltic that are unable to carry observers) to monitor the programme's effectiveness (generally considered a required component of pinger programmes; IWC 2000, Read 2000) may be exorbitant, particularly given that it would likely be competing for funds with programmes to develop alternative gear, etc. (see point 5 below). The absence of such an observer scheme would mean that effectiveness could not be formally evaluated. Although it may be possible for enforcement vessels (e.g., Coast Guard) to use click detectors to monitor compliance with pinger-use regulations, or checking pingers in the harbours, the problem of evaluating effectiveness can only be addressed through a costly, large-scale on-board observer programme.
- 3) A third concern is that widespread pinger use may displace porpoises from important habitat (IWC 2000)¹⁵. This issue cannot be rigorously addressed on present evidence and therefore must be viewed in much the same way as the non-zero bycatch (Point a, above). In other words, the unknown risk of displacement must be weighed against the known risk of entanglement in nets without pingers. Experimental studies outside the Baltic have shown that porpoises quickly return to an area from which they have been displaced after pingers are removed or rendered inactive (Lockyer et al. 2001; Teilmann et al 2007).
- 4) The use of pingers can increase the seal and fisheries conflict, which includes an increase in damaged catch and fishing gear but also an increase of entangled and thereby by-caught seals. In many countries along the Baltic Sea coast, seals are causing great economic losses in the small scale coastal fisheries and the conflict is at present spreading from north to south with the increasing seal population. This bycatch is equally unacceptable. This problem may be solved by using interactive pingers, since their infrequent pinging will not make them useful as "dinner bells" for the seals.

- 5) Finally, full implementation of a mandatory pinger programme would represent a major investment of resources, possibly precluding investments in long-term solutions to the bycatch problem (above), important research (below), and public awareness initiatives (below). Moreover, pinger manufacturers are likely to use the large number of new orders as a stimulus for expanding their production capacity, thereby acquiring a strong incentive to promote pinger use beyond the “short term” of two or three years. In other words, the inertia of “short-term” pinger programmes could be difficult to overcome with alternative approaches once the procedures and capital investments of the pinger programmes are in place. It is therefore essential that management authorities and the fishing industry be encouraged to engage in multiple approaches to the bycatch-reduction problem simultaneously and to move ahead with the longer-term strategies outlined elsewhere in this recovery plan.

Taking into account the above considerations, the following process is recommended:

- It is essential that any pinger implementation be accompanied by measures to verify that pingers are being used properly at sea.
- The importance of independent on-board observation at an appropriate sampling level to obtain reliable data on cetacean by-catch is well documented. Despite the associated difficulties with high fishing effort and low by-catch rates, by-catch monitoring needs to be made an integral part of any pinger implementation programme.
- The concern that pingers might exclude porpoises from large areas of critical habitat should be addressed before pinger use becomes widespread in the Baltic. As an initial approach, an analysis similar to that conducted previously for the North Sea (Larsen and Hansen, 2000) should be conducted to estimate the potential extent of habitat exclusion for the Baltic.
- Implementation of pingers should be short-term and therefore should be reconsidered for a maximum duration of 3 years, with the expectation that pinger use will be replaced by longer-term mitigation measures at that time.
- The rapid development of medium- and long-term approaches to mitigation (e.g. reduced fishing effort in high-risk areas, conversion to fishing gear and practices that are much less likely to result in porpoise by-catch) is crucial and should not be compromised. This work should be initiated immediately and in parallel with the identification of high-risk areas and targeted pinger implementation efforts.

5.2. Research and Monitoring

As discussed earlier in this document, the problem of harbour porpoise conservation in the Baltic Sea is marked by scientific uncertainty, and this situation is likely to prevail far into the future. While recognising the need for more research and monitoring, the ASCOBANS Baltic Discussion Group and the Jastarnia workshop strongly emphasised that there was no need to wait for further research before implementing a bycatch reduction strategy – therefore, none of the recommendations in this section of the recovery plan should be viewed as a higher priority than the bycatch reduction initiatives

outlined above.

There is considerable uncertainty to what degree contaminants (e.g. organochlorines, organotins, and heavy metals), ecological perturbations (e.g. ice winters, trophic shifts affecting porpoise prey consumption; see MacKenzie et al. 2002), and other factors have contributed to the decline of Harbour porpoise in the Baltic, and its failure to recover. However, it is of imminent importance to elucidate the impact of these factors in order to determine whether harbour porpoises are able to repopulate the region previously occupied by them in the Baltic. Further research is needed not only to provide information on by-catch mitigation and on monitoring of possibly recovery, but also to guide decisions concerning such things as waste management, pesticide use, marine construction, industrial (e.g. extractive) use of the seabed, and the impact of fisheries in a broader sense in order to convince fishermen, decision-makers, and the general public of the need for a recovery strategy (see chapter 5.4).

High priorities for research and monitoring identified under the auspices of the Jastarnia Group include, in addition to by-catch and its mitigation:

- 1.) Analyse stock affinities of harbour porpoises in the “transition zone” of the south-western Baltic.** Two populations have been identified to live in the Baltic: the Baltic proper and the Western Baltic stock. However the genetic evidence that there are two distinct populations is under discussion and a more thorough investigation of the pattern of genetic sub-structuring of the harbour porpoises of this region is urgently needed (Palme et al. 2008). Various types of evidence already available need to be considered in an integrated analysis, taking account of new acoustic, tracking, and genetic data. There should also be a strong initiative to obtain and analyse additional tissue samples from the Baltic proper (e.g. historical samples in museums and new samples from stranded or by-caught animals).
- 2.) Develop and apply new techniques (e.g. acoustic monitoring) for assessing trends in abundance.** Given the apparently low-density occurrence of porpoises in the central Baltic, standard line transect sampling methods are unlikely to provide adequate statistical power to detect trends. New approaches have to be developed, such as passive/static acoustic monitoring methods, which may provide better estimates of harbour porpoise abundance and also detect possible trends in abundance.
- 3.) Develop interactive pingers or pingers using frequencies not audible to seals.** Interactive pingers or pingers not audible to seals could be used to decrease the level of acoustic pollution caused by pingers or for use in areas where there is a seal-fisheries conflict. In addition to causing increased levels of acoustic pollution, acoustic alarms might thus be detrimental to harbour porpoise conservation via habitat exclusion and habituation. Addressing the problem mentioned above, interactive pingers, deterrent devices that only emit sound when triggered by the sonar clicks of an oncoming porpoise, should be considered (Amundin *et al.*, 2002; Poulsen, 2004). However, their efficiency and any habituation or habitat exclusion effects must be investigated further.

- 4.) **Investigate possible detrimental effects of various types of sound and disturbance (including pinger signals, noise from vessels, wind parks or constructions and seabed exploration for oil and gas) on harbour porpoises.** Such investigations may be better conducted in areas other than in the Baltic, where harbour porpoise is more abundant and it might be easier to develop a proper experimental design can be applied.
- 5.) **Monitor by-catch in fisheries known to be harmful to harbour porpoises to be able to estimate bycatch levels.** Estimations of bycatch levels in certain areas and fisheries are urgently needed and monitoring bycatch through observer schemes or pilot projects should be conducted in probable high-risk areas and in fisheries associated with bycatch, including recreational and small scale fisheries.
- 6.) **Compile Data on Fishing Effort.** While any reduction in fishing effort of set nets within the areas utilised by porpoises would be expected to provide some benefit in terms of reduced bycatch, it is preferable that effort reductions (and other forms of bycatch mitigation) be implemented in probable “high-risk” areas. **Identification of such areas depends at least partly on the amount of effort placed in a given area** and the bycatch of harbour porpoise in this area. An initial assessment should be made immediately to determine sources of relevant data and identify individuals or the national focal points in the range states whose cooperation is needed and who can deliver the relevant data. When relevant fishing effort data has been collected a working group should be established to evaluate the available data and thereafter compile data on fishing effort.
- 7.) **Examine habitat preference of harbour porpoises.** Little is currently known of the habitat preferences of harbour porpoises. Presumably, it is linked to distribution of prey, however the spatial links between porpoises and their prey have not been analysed due to lack of data. It is proposed to make a spatial model on preferred habitats in waters adjacent to the Baltic Sea. By linking physical and biological variables to the presence of satellite tracked porpoises and/or survey data in e.g. the Belt Sea and the western Baltic and consequently extending this model into the Baltic Sea it will be possible to predict where the suitable habitats for porpoises in the Baltic proper would be. The presence of porpoises in these areas could be verified by static acoustic monitoring throughout the year. Furthermore the areas could be compared with fishing effort in the Baltic and thereby identify high risk areas.
- 8.) **Investigate the prevalence of derelict (“ghost”) gear and the feasibility of its removal.** “Ghost nets” form a component of effective fishing effort in the Baltic. Therefore clearance of “ghost nets” would represent a reduction in fishing effort (and hence potential harbour porpoise bycatch) without affecting fishing yield, and should be seriously considered.

5.3. Marine Protected Areas

Available data on porpoise distribution and habitat use within the Baltic are currently inadequate for identifying specific areas that should be designated for special protection. Furthermore, results of satellite tagging of harbour porpoise (see Read and Westgate 1997; Larsen et al. 2000; Teilmann et al. 2008) suggest that animals (in particular juveniles and males) are highly mobile, with important implications for protected area scale and design. Existing and proposed protected areas in the Baltic, established under the Flora-Fauna-Habitat Directive of the European Union or as part of the HELCOM Baltic Sea Protected Area network, are generally considered either too small or inappropriately designed to provide significant benefits to harbour porpoises.

Despite these shortcomings, authorities should be encouraged to expand the network and improve its connectivity, while ensuring the development and implementation of appropriate management plans within protected areas to improve the status of harbour porpoises and/or their critical resources (e.g. prey stocks). However, such limited measures should not be allowed to serve as substitutes for the other broader-scale conservation initiatives recommended elsewhere in this recovery plan. Especially in low-density areas, MPAs do not have the potential for significant conservation benefits.

Besides the management of marine resources in protected areas, they can also be effective tools for awareness raising among the public. Management plans for MPAs should therefore include information and education work to engage the wider public in protection of harbour porpoises (see chapter 5.4.).

5.4. Public Awareness

Public awareness is an essential part in supporting a recovery plan. People need to be aware that harbour porpoise is an integral part of the fauna of their local waters and are worth saving. Whereas other elements of the plan depend largely on the decision-making processes of national or supranational governmental agencies and international regulatory bodies, public awareness is an area in which ASCOBANS has an autonomous role to play. Parties to ASCOBANS have ongoing responsibilities and commitments to disseminate reliable information about Baltic harbour porpoises, to support the well-being of the species and to actively promote its protection and recovery.

Baltic fishermen are among those people most likely to interact most directly and most frequently with harbour porpoises. Baltic fishermen need to be viewed as a key audience. At the same time, it is also important to approach members of the general public. They are consumers of fishery products and the ultimate arbiters of public policy. Public awareness has to be objective, attendant to and respectful towards cultural and linguistic differences, and candid about scientific uncertainty.

The elements of a comprehensive public awareness campaign are outlined below:²

- 1) While acknowledging national programmes in raising public awareness, ASCOBANS should **develop and promote a regional approach to Baltic harbour porpoise conservation**.
- 2) Explicit efforts should be made to **enlist the help of the general public and people related to the sea in obtaining reports of porpoise observations** throughout the Baltic. This can be expected to improve understanding of porpoise distribution and relative abundance, while at the same time enhancing public support for recovery efforts. However, it is important that opportunistic reports by untrained observers be interpreted cautiously, and that the need for documentary evidence (e.g. photographs, tissue samples in the case of strandings) be stressed when soliciting such reports.
- 3) The ASCOBANS Secretariat should **establish direct communications links with Baltic fishermen and seek their assistance** in determining how to reach fishing communities more effectively, e.g. via newsletters, tabloids, displays at fishing exhibitions, etc.
- 4) The Baltic Range States should **establish national focal points**, with responsibility for coordinating public awareness efforts. These focal points would be responsible for establishing and maintaining working relationships with fishing communities and other target groups.
- 5) Parties are requested to provide assistance to maintain an **interactive Baltic harbour porpoise website** for the storage of GIS-based porpoise observation data. This web page should incorporate other existing possibilities to report sightings of harbour porpoises. The page should be designed for use throughout the Baltic region.³ This website may provide further opportunities for collaboration with relevant bodies such as HELCOM.

5.5. ASCOBANS Cooperation with Other Bodies

Although ASCOBANS is the only international body with an explicit mandate to improve the conservation status of harbour porpoises in the Baltic Sea, several other regional and international bodies also have important roles to play, particularly with regard to improving the quality of the Baltic marine environment and regulating Baltic fisheries. **There is a need for close consultation and cooperation between ASCOBANS and these other bodies.**

The most relevant other body is HELCOM, which deals with environmental protection of the marine area of the Baltic Sea. HELCOM has a strong interest in porpoise recovery. In 1996 HELCOM adopted the Recommendation on protection of harbour porpoise in the Baltic Sea (Recommendation 17/2). The recommendation specifically promotes by-catch reduction, relevant research and consideration of porpoise habitat requirements in the design and management of marine protected areas. HELCOM Baltic Sea Action

² Compare also Appendix 3 of AC 9 Doc 7 (S)

³ Existing examples are www.balticseaporpoise.org; www.gsm-ev.de; www.habitatmare.de

Plan adopted by a Ministerial Meeting in Krakow, Poland in November 2007 aims to ensure viable populations of species e.g. by developing cooperation with ASCOBANS on a coordinated reporting system and database on Baltic harbour porpoise sightings, by-catches and strandings and developing and implementing effective monitoring and reporting systems for by-caught mammals. The Action Plan urges competent fisheries authorities in co-operation with the Baltic RAC and HELCOM to urgently adopt measures to minimise by-catch of non-target species by 2012 and to evaluate the effectiveness of existing technical measures by 2008 to minimise by-catch of harbour porpoises and to introduce adequate new technologies and measures. Within HELCOM the HELCOM SEAL expert group and the HABITAT group are the relevant bodies dealing with harbour porpoises.

The European Union adopts its fishery legislation within the framework of the Common Fisheries Policy. The Baltic Sea Regional Advisory Committee (RAC) provides advice on the management of Baltic Sea fisheries⁴. It is expected that a review of the Common Fisheries Policy will deal with issues related to interactions between fisheries and ecosystems. The European Commission has, in recent years, indicated to member states its intention to deal with the problem of cetacean bycatch. Individual states in the region may also adopt national regulatory measures that only apply to their national fishing fleets.

The EU Council Directive 92/43/EEC (Habitats & Species Directive) lists harbour porpoise in Annexes II and IV, the former identifying species whose conservation requires the designation of special conservation areas (subject to certain conditions being met), and the latter identifying species in need of strict protection - Article 12.4 of this directive requires EU Member States to “establish a system to monitor the incidental capture and killing of ... species listed in Annex IV...” and in light of the information obtained, to “take further research and conservation measures as required to ensure that incidental capture and killing does not have a significant negative effect on the species concerned.”

The International Council for the Exploration of the Sea (ICES) provides scientific advice relevant to the management of fish stocks and other species, including marine mammals.

The Scientific Committee of the International Whaling Commission (IWC) has provided an important forum for assessing the status of small cetaceans, including harbour porpoises.

⁴ The creation of Regional Advisory Councils (RACs) was one of the pillars of the reform of the Common Fisheries Policy (2002), as a response to calls from stakeholders in the fisheries sector who wanted to be more involved in the way fisheries are managed in the EU. The Baltic Sea RAC was set up in March 2006.

6. Re-evaluation of this Recovery Plan

It is important that this recovery plan and actions outlined within it be implemented without delay, and that ASCOBANS undertake a formal re-evaluation and revision of the plan than every five years. **The first review should occur three years after the first implementation of pingers.** It is also suggested that Baltic Range States (ASCOBANS members and non-members alike) be asked to supply ASCOBANS with updated information, on an annual basis, concerning progress in implementation.

7. Implementation

For the continued implementation of this plan, concrete steps are outlined in **Appendix 3.**

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Appendix 1: Outline Example for Fishing Effort Data collected by each ASCOBANS party

Description of fishing gear	Gillnet meshsize	ICES Fishing Area 24, ICES rectangle 3959						ICES Fishing Area 24, ICES rectangle 3959						ICES Fishing Area 24, ICES rectangle 3960						→ etc.
		Net km.hour/ number of fishing vessels						Net km.hour						Net km.hour						
		Jan	Feb	Mar	Apr	May	→ etc.	Jan	Feb	Mar	Apr	May	→ etc.	Jan	Feb	Mar	Apr	May	→ etc.	
(Salmon) driftnets > 10m boats																				
(Salmon) driftnets < 10m boats																				
Cod) Bottom-set Gillnets > 10m boats/ 8m boats																				
(Cod) Bottom-set Gillnets < 10m boats/ 8m boats																				
(Flatfish) Bottom-set Gillnets																				
Etc. →																				

Appendix 1: Outline Example for Fishing Effort Data

Year (provide separately for most recent 3 available)	ICES Fishing Area 24						ICES Fishing Area 25						ICES Fishing Area 26						→etc.
	Net km.hour						Net km.hour						Net km.hour						
	Jan	Feb	Mar	Apr	May	→ etc.	Jan	Feb	Mar	Apr	May	→ etc.	Jan	Feb	Mar	Apr	May	→ etc.	
(Salmon) driftnets > 10m boats																			
Denmark																			
Estonia																			
Finland																			
Germany																			

Latvia																		
Lithuania																		
Poland																		
Russian Federation																		
Sweden																		
(Salmon) driftnets < 10m boats																		
Denmark																		
Estonia																		
Finland																		
Germany																		
Latvia																		
Lithuania																		
Poland																		
Russian Federation																		
Sweden																		
(Cod) Bottom-set Gillnets > 10m boats																		
Denmark																		
Estonia																		
Finland																		
Germany																		
Latvia																		
Lithuania																		
Poland																		
Russian Federation																		
Sweden																		
etc.																		

Appendix 2: Map of the Baltic Region

Appendix 3: Important Steps for the Implementation of the Jastarnia Plan

TO BE REVISED WHEN THE MAIN TEXT IS FINALISED

The following steps for the implementation of the Jastarnia Plan were identified, in order of importance⁵:

*****1. Establish an Advisory Group to oversee the process of identifying high-risk areas for bycatch mitigation.** This group will have responsibility for further development of the Terms of Reference for needed studies, choosing consultants (or other individuals) to carry out the studies, and generally to carry forward the relevant recommendations in the Recovery Plan.

1a. Collation of data on the distribution and timing of porpoise bycatches in the Baltic, and on the distribution and timing of porpoise observations (including strandings) in the Baltic, over approximately the past 50 years. It was agreed that this work should be conducted by a cetacean expert who is familiar with the Baltic literature. Preferably, this should be a scientist who is sponsored by an agency in one of the ASCOBANS Parties. Estimated time required : 1 month.

1b. Collation of data on fishing effort, following the terms of reference and example data sheet in the Recovery Plan. It was agreed that this work should be conducted by someone with an intimate knowledge of Baltic fisheries and with a high degree of competence in dealing with fishery statistics. As part of this project, a steering group should be identified consisting of one contact person in each Baltic Range State who can help direct the contractor to relevant sources of data. Estimated time required: 4-6 months. Cost: up to 70,000 Euros.

*****2. Model pinger function in Baltic conditions.** The simple modelling exercise called for in the Recovery Plan should be conducted to determine whether hydrographic conditions in the Baltic are sufficiently different to dramatically compromise pinger efficacy. It was agreed that Håkan Westerberg and Peter Evans would take responsibility for ensuring that this exercise is carried out independently in Sweden and the UK, with Peter first obtaining necessary hydrographic data from Håkan. Cost: none foreseen.

*****3. Send the Recovery Plan (and this "implementation plan") to IBSFC, HELCOM, and other relevant bodies,** with an appropriate cover letter outlining what is expected from them. It is particularly urgent that the transmittal to IBSFC take place without delay, and that every effort be made to ensure that the Recovery Plan is on the agenda of IBSFC's September meeting this year and that a representative of the ASCOBANS Advisory Committee is present at the meeting to present the Plan in person. The responsibility for ensuring that this item is carried out should jointly fall upon the Secretariat and the Chairman-Vice-Chairman.

*****4. Initiate a review of all experiments to date with alternative gear and fishing practices that might be used to replace the current use of driftnets and bottom-set**

⁵ *** Top priority/immediate implementation

** high priority/implement without delay

* to be implemented as soon as feasible

gillnets in the Baltic. The objective of this review will be to identify promising gear for further development and testing. It was agreed that this work would take about 2-3 months to complete, at a cost of about 30,000 Euros. Håkan Westerberg and Finn Larsen will be responsible for ensuring that an appropriate person is identified and engaged to do this work. Funding and implementation could be provided through partnership with one or more NGOs, but with the Terms of Reference developed by Håkan Westerberg and Finn Larsen on behalf of the Advisory Committee.

****5. Initiate communication with competent fishery authorities to ensure that there is consistency** between what is envisaged in the Baltic Recovery Plan with regard to changes in fishing gear and practices, and any measures that are being considered or taken by those authorities. This work is the joint responsibility of the Secretariat and the Chairman/Vice-Chairman. It should be completed at no cost.

****6. Develop and implement a strategy for getting fishermen to support bycatch mitigation measures.** A key element of any pinger implementation will be educating fishermen on how to use them properly.

***7. Improve effort and protocols for data collection from stranded or incidentally caught harbour porpoises in the Baltic.** Concerted efforts should be made to locate such animals and to perform comprehensive necropsies on them. Data and samples are particularly needed to expand work on stock identification, contaminant levels, diet, and reproduction.

***8. Once sufficient data are available from items 1 and 2, an analysis should be initiated** for the Baltic similar to that reported for the North Sea in 2000 by Hansen and Larsen. The aim will be to evaluate the potential for habitat exclusion caused by pinger use in the Baltic. It was agreed that the eight points detailed above should be attached to the Baltic Recovery Plan.

Appendix 4: Resolution No. 5 (2006) “Incidental Take of Small Cetaceans”

Appendix 5: Resolution No. 9 (2006) “Implementation of the Jastarnia Plan”