Agenda Item 4	Annual National Reports 2008
Document 41 rev.1	**Reports received from The Netherlands** **a) Stranding Questionnaire** **b) Annual National Report**
Action Requested	• Briefly present highlights from reports (max. 5 minutes) • Take note of the information submitted • Comment
Submitted by	The Netherlands

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

Questionnaire
on post mortem research schemes within the ASCOBANS Agreement area

Name and address of reporting institution	Wageningen Imares
Name of respondent	Mardik F. Leopold
What data are recorded routinely?	Stranding-date, location, age, sex, length, state of decomposition, weight, external lesions, condition, pathological abnormalities, stomach contents
Description of methods and units of measure-ment used	Lengths (cm), weight (kg), corpse decomposition code (very fresh, fresh, putrefied, very putrefied, remains), nutritive condition code (NCC1, NCC2,… NCC6), all according to Kuiken/Jauniaux protocols
List of tissue samples usually taken	Rib, teeth, stomach, liver, muscle, bronchial node, mesenteric node, gonads, blubber, shkin, lung, spleen, kidney, blood, adrenal, thymus, thyroid
How are the samples preserved?	Frozen, formalin or alcohol
How are carcasses disposed of?	Destruction
Are data recorded in a computer database? Please describe	Yes, custom made, in Paradox
How many data sets (by species) do you have?	One, covering harbour porpoise necropsies 2006-present
Which computer software is used?	Paradox
Do you foresee any problems (e.g. regarding intellectual property rights etc.) related to a central database?	No, government-funded data.
What advantages would you expect from a central database?	All the usual. More is better, if (and only if) database is well-designed and well kept and if methodology across partners is similar
Additional Information (e.g. website addresses)	http://home.planet.nl/~camphuys/home.html www.walvisstrandingen.nl

ASCOBANS Annual National Report

A. General information

Name of party: The Netherlands	**1 January - 31 December 2008** Period covered
Name of report compiler: Meike Scheidat, Wageningen IMARES, meike.scheidat@wur.nl	Date of report: 30.03.2009
Any changes in coordinating authority, appointed member of advisory committee: F. R. van Dijken f.van.dijken@minlnv.nl, Directorate Nature, Ministry of Agriculture, Nature & Food Quality	

B. NEW measures/action towards meeting the resolutions of the Meeting of Parties

1. Direct interaction of small cetaceans with fisheries

A number of studies have taken place on captive harbour porpoises to investigate how they use acoustics, what they hear as well as how they react to sounds in water. This information is needed to better understand how porpoises use their sonar and to develop adequate devices (so called pingers) that will reduce bycatch of porpoises in nets.

Kastelein et al. (2008a) conducted a study in which they describe the echolocation effort number and duration of echolocation click trains produced by a harbor porpoise in relation to target presence, strength and distance, and performance of the detection task. The porpoise was presented with two target sizes at five distances 12–20 m, or no target, and had to indicate whether it could detect the target. Small, distant targets required long and multiple click trains. Multiple click trains mostly occurred when the small target was far away and not detected, and during target-absent trials in which the animal correctly responded. In target-absent trials, an incorrect response was linked to short click trains. Click train duration probably increased until the animal's certainty about the target's presence or absence exceeded a certain level, after which the porpoise responded.

Another study by Kastelein et al. (2008b) investigated the hearing of harbour porpoises. The 50% detection hearing thresholds of a harbor porpoise for a 4.0 kHz narrow-band FM signal, presented at the background noise level in a pool and with two masking noise levels, were measured using a go/no-go response paradigm and an up-down staircase psychometric method. The masker consisted of a 1/6-octave noise band with a center frequency of 4.25 kHz. Its amplitude declined at 24 dB/octave on both sides of the spectral plateau. The absolute hearing threshold of the porpoise, found previously, was confirmed. The animal's auditory system responded in a linear fashion to the increase in masking noise. Since the narrow-band noise was off-center of the test frequency, the critical ratio of a harbor porpoise for 4.0 kHz tonal signals in white noise can at present only be estimated to be between 18 and 21 dB re: 1 µPa.

Kastelein, R.A., Verlaan, M., Jennings, N. 2008a. Number and duration of echolocation click trains produced by a harbor porpoise (*Phocoena phocoena*) in relation to target and performance (L). J. Acoust. Soc. Am. 124, 40-43.

Kastelein, R. A., and Wensveen, P. J. 2008d. Effect of Two Levels of Masking Noise on the Hearing Threshold of a Harbor Porpoise (*Phocoena phocoena*) for a 4.0 kHz Signal. Aquatic Mammals 34(4), 420-425.

Investigations of methods to reduce by-catch

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Implementation of methods to reduce by-catch

No by-catches have been recorded in the ongoing monitoring programme on the incidental bycatch of cetaceans in Dutch pelagic fisheries under EU Council Regulation 812/2004 in 2008.

A monitoring programme financed by the LNV (Ministry of Agriculture, Nature and Food Quality) for part of the set net fishery targeting cod and turbot, took place in 2008. One animal was by-caught. Extrapolation to the fleet gives 2-30 specimens during the period covered (week 7-22).

Just over 300 porpoises stranded on Dutch beaches in 2008. Eighty-one of these were secured for detailed necropsies and stored frozen. The University of Utrecht hosted an international necropsy session to work through these animals, from 7-12 December 2008. An international team of some 25 necropsy experts, lead by prof. Dr. Andrea Gröne of the Veterinary Department of Utrecht University, Dr Thierry Jauniaux (Vet. Dept., Univ. Luik) and Mardik Leopold (Wageningen Imares) performed the necropsies. As in the two previous years, bycatches in -presumed- fishing gear and various diseases were the main obvious causes of death. Fine-tuning of necropsy results will follow later, after all samples taken for lab-analyses (histology) will have been processes.

The incidence of bycatch in 2008 seems slightly lower than in previous years, partly due to the fact that very few porpoises stranded in Spring 2008. Springtime was the peak of both strandings and bycatch percentages among strandings in previous years; the pattern of strandings was very different in 2008 as compared to 2006 and 2007. Shortly after the necropsy session, from end December 2008 and through March 2009, a relatively large number of by-caught animals stranded on Texel and the northern part of Noord-Holland, again a pattern in strandings previously unknown. First analyses indicates that a large proportion of these animals were by-caught.

Estimates of by-catch in set net and pelagic trawl fisheries

Species	Estimated number of by-caught animals	Area (ICES area or more detailed)	Notes (type of fishery, effort, seasonal variations, etc.)
Harbour porpoise	unknown	Dutch North Sea coast	Presumably bottom set gillnets

2. Reduction of disturbance to small cetaceans

Several studies continued in 2008 investigating the possible impact of an offshore wind park in the North Sea on porpoise habitat use. Both boat surveys and the deployment of hydrophones (T-PODs) have been used. The study is ongoing and will finish in 2009 and results will be published.

Two further studies by Kastelein et al. (2008c and 2008d) were addressing the effect of acoustics on harbour porpoise behaviour:

First of all the use of ultrasonic sounds in alarms for gillnets may be advantageous, but the deterring effects of ultrasound on porpoises are not well understood. Therefore a harbor porpoise in a large floating pen was subjected to a continuous 50 kHz pure tone with a source level of 122 3 dB re 1 Pa, rms . When the test signal was switched on during test periods, the animal moved away from the sound source. Its respiration rate was similar to that during baseline periods, when the sound was switched off. The behavior of the porpoise was related to the sound pressure level distribution in the pen. The sound level at the animal's average swimming location during the test periods was approximately 107 3 dB re 1 Pa, rms. The avoidance threshold sound pressure level for a continuous 50 kHz pure tone for this porpoise, in the context of this study, is estimated to be 108 3 dB re 1 Pa, rms. This study demonstrates that porpoises may be deterred from an area by high frequency sounds that are not typically audible to fish and pinnipeds and would be less likely masked by ambient noise.

Additionally, two harbor porpoises in a floating pen were subjected to five pure tone underwater signals of 70 or 120 kHz with different signal durations, amplitudes and duty cycles (% of time sound is produced). Some signals were continuous, others were intermittent (duty cycles varied between 8% and 100%). The effect of each signal was judged by comparing the animals' surfacing locations and number of surfacings (i.e. number of respirations) during test periods with those during baseline periods. In all cases, both porpoises moved away from the sound source, but the effect of the signals on respiration rates was negligible. Pulsed 70 kHz signals with a source level (SL) of 137 dB had a similar effect as a continuous 70 kHz signal with an SL of 148 dB (re 1 lPa, rms). Also, a pulsed 70 kHz signal with an SL of 147 dB had a much stronger deterring effect than a continuous 70 kHz signal with a similar SL. For pulsed 70 kHz signals (2 s pulse duration, 4 s pulse interval, SL 147 dB re 1 lPa, rms), the avoidance threshold sound pressure level (SPL),

in the context of the present study, was estimated to be around 130 dB (re 1 lPa, rms) for porpoise 064 and around 124 dB (re 1 lPa, rms) for porpoise 047. This study shows that ultrasonic pingers (P70 kHz) can deter harbor porpoises. Such ultrasonic pingers have the advantage that they do not have a ‘‘dinner bell” effect on pinnipeds, and probably have no, or less, effect on other marine fauna, which are often sensitive to low frequency sounds.

Kastelein, R. A., Verboom, W. C., Jennings, N., de Haan, D., van der Heul, S. 2008c. The influence of 70 and 120 kHz tonal signals on the behavior of harbor porpoises (*Phocoena phocoena*) in a floating pen. Marine Environmental Research 66, 319-326.

Kastelein, R.A., Verboom, W.C., Jennings, N., and de Haan, D. 2008d. Behavioral avoidance threshold level of a harbor porpoise (*Phocoena phocoena*) for a continuous 50 kHz pure tone (L). J. Acoust. Soc. Am. 123, 1858-1861.

Information on levels of disturbance
(e.g. seismic surveys, new high-speed ferry routes, studies about acoustic impacts on cetaceans, etc.)

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Implementation of guidelines, new legislation, etc. to reduce disturbance

3. Protected areas for small cetaceans

A study started in 2006 to identify candidate Special Areas of Conservation (SACs) under the Habitats Directive and OSPAR in the Dutch sector of the North Sea. In the Dutch Continental Shelf and Coastal Waters 4 sites have been identified as marine areas: Doggersbank, Klaverbank and two parts of the coastal zone, Noordzeekustzone in the north and Vlakte van de Raan in the south. These areas will be proposed to the EU commission as Special Areas of Conservation (SACs) under the European Habitats Directives and will also be reported to the OSPAR Secretariat as MPA's according to the OSPAR Convention. Although these future SACs will not be designated for small cetaceans especially, they will contribute to their protection.

Measures taken to identify, implement and manage protected areas

4. Further research on small cetaceans

Porpoises were collected for necropsies in 2008 and in the following years, to follow the development of by-catch percentages and for other studies into porpoise biology, such as gathering dietary information. Since 2006 LNV (Ministry of Agriculture, Nature and Food Quality) is conducting research on stranded cetaceans with the help of veterinary pathologists from the University of Utrecht. One of the main results so far is that for about half of the animals the cause of death is drowning in fishing nets. Increasingly carcasses that strand show signs of cuts or are partly cut up. The reasons for this are unclear. A second result is that in the winter months in general the overall health status is good (few lethal diseases, full stomachs, large blubber layer). However, in the summer months more animals died because of disease and showed empty stomachs as well as small blubber layers. Finally, the results show a clear spring peak in the percentage of by-catch in the years 2006 and 2007 of the analysed animals. In 2008 this peak was not visible, but in December 2008 to March 2009 a new peak of strandings of by-caught animals occurred.
A PhD project started in 2007, investigating whether food availability is a governing factor for the abundance of porpoises in Dutch coastal waters, unraveling possible links between shifts in the feeding ecology and changes in their distribution and relative abundance in the Southern North Sea. In this project, 3 methods of diet analysis are used: [1] stomach contents analysis (identification of recently ingested and undisgested prey remains, [2] fatty acid analysis (QFASA, discerning the diet of the last 3-4 month) and [3] stable isotope analysis (C13:C12 and N15:N14 ratios). This combination of techniques will provide information on prey species, relative prey composition and trophic level, both in space (e.g. estuarine verus open sea) and time (e.g. short, mid and long term.

A study by Osinga et al. (2008) analysed stranding data and recorded post-mortem findings for 153 harbour porpoises (*Phocoena phocoena*), which were collected by the Seal Rehabilitation and Research Centre

(SRRC; Pieterburen, The Netherlands) in the period 1984–2006. Special consideration was given to 'by-catch' listed as a major cause of death. A distinct increase in the numbers of strandings of porpoises along the Dutch coastline has occurred in the recent years of the studied period. This corresponds to the number of porpoises observed in Dutch waters in the same period. Although strandings occurred throughout the entire year, they were most frequent during the January to July period. By-catch and drowning were noted most frequent in the winter and spring seasons (December–April). By-catch and drowned porpoises were found along the entire Dutch coastline. The numbers of animals per area varied depending on the collection efforts. At post-mortem investigation, three probable causes of death were identified most frequently: pneumonia, emaciation and by-catch/drowning. The by-catch and drowning rate was calculated to vary between 7% and 19%.

Osinga, N., 't Hart, P. and Morick, D. 2008. By-catch and drowning in harbour porpoises (*Phocoena phocoena*) stranded on the northern Dutch coast. Eur. J. Wild. Res 54:667-674

Implementation of schemes to use and gain information from stranded cetaceans.
An overview of strandings between 1998 and 2007 in the Netherlands has been published by Camphuysen et. al. (2008). In total 2063 cetaceans were found stranded, representing at least 14 species of which two species are additions to the Dutch list. All individual cases other than harbouw porpoises are listed in this paper, reporting species, date, locality, reporter, sex, total length (TL), collected remains, and remarks. For porpoises (n= 1968), overall stranding patterns by means of frequencies, seasons, sex ratios and age classes are discussed. The role of by-catch as a cause of death is discussed and a dialogue with fisheries organisations is proposed to explore the issue further and to try and mitigate the problem.

Aerial surveys were conducted within a research project funded by LNV (Ministry of Agriculture, Nature and Food Quality) and RWS (Ministry of Transport, Public Works and Water Management) to cover part of the southern coastal Dutch waters to estimate abundance of harbour porpoises during different times of the year. The first aerial surveys using distance sampling methodology and were conducted in May 2008 and November 2008. Analyses of habitat use and abundance estimates are ongoing and will be expected to be published in 2009 and 2010.

A towed hydrophone array has been used during a number of studies in the North Sea. The data is still being analysed but the method is promising to collect data on harbour porpoise occurrence, especially in weather conditions when visual surveys can not be conducted. Data continues to be collected on an ad hoc basis whenever adequate vessels are available.

Research on abundance, population structure etc.

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Research on the effects of pollutants on cetacean health

5. Public awareness and education

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Measures taken in the fields of public awareness and education to implement or promote the Agreement:
An article on Underwater noise will be published in the Magazine "Kust & Zee Gids 2009.