Annex K

Report of the Standing Sub-Committee on Small Cetaceans

Members: Read (Chair), Baker, Berggren, Bjørge, Borchers, Borodin, Branch, Brown, Brownell, Childerhouse, Cipriano, Clark, E., Dalebout, Deimer, de Boer, DeMaster, Escorza-Treviño, Fortuna, Fulford-Gardener, Gillespie, Hammond, Haug, Hedley, Kasuya, Kell, Kim, Kock, Krahn, Lento, Lyrholm, O'Hara, Palazzo, Parsons, Peddemors, Perrin, Pinto de Lima, Macleod, Manzanilla, Martin, Mate, Northridge, Oosthuizen, Perry, Reeves, Reijnders, Robineau, Rojas-Bracho, Rogan, Rose, Rosenbaum, Rowles, Senn, Simmonds, M., Suydam, Taylor, Thiele, Tiedemann, Tregenza, Wade, Williams, Wilson, Von Post, Zerbini.

1. ELECTION OF CHAIR

Read was elected as Chairman.

2. ADOPTION OF AGENDA

The adopted agenda is given as Appendix 1.

3. APPOINTMENT OF RAPPORTEURS

Rogan acted as rapporteur.

4. REVIEW OF AVAILABLE DOCUMENTS

Documents relevant to the work of the sub-committee were SC/53/SM1-17, SC/53/E17, SC/53/SD1, SC/53/O7 and 15, Escorza-Treviño and Dizon (2000), Escorza-Treviño *et al.* (2001) and Pout *et al.* (2001).

5. STATUS OF DALL'S PORPOISE TAKEN BY THE JAPANESE HAND-HARPOON FISHERY

The Scientific Committee has, on several occasions, expressed concern regarding the status of Dall's porpoise stocks impacted by the Japanese hand-harpoon fishery. This concern grew as the number of animals taken increased rapidly during the mid-1980s (see Table 1).

In 1990, the sub-committee on small cetaceans conducted a review of the status of these stocks and concluded that 'current takes in the harpoon fishery are not sustainable and … it is urgent that the catch be reduced at least to pre-1986 levels (which themselves may have been too high)'. At that time (IWC, 1991b, pp.177-179), the sub-committee also recommended that:

(1) new stock assessments should be undertaken immediately;
(2) struck-and-lost rates be estimated;
(3) total removals, including incidental takes in other fisheries, be considered;
(4) new sighting surveys be carried out; and
(5) a plan for monitoring trends be developed.

In response to these concerns, the Commission passed a resolution (IWC, 1991a, p.40) in which it '…requests the Japanese government consider the advice from the Scientific Committee as a matter of urgency, and as soon as possible to reduce the takes to at least the levels before 1986, and that even further reductions be considered when planned new stock assessments are completed'.

In 1991, the sub-committee on small cetaceans revisited the status of these stocks and conducted a review of sightings surveys that were conducted in 1990 (IWC, 1992, pp.179-180). The sub-committee noted that catch levels had decreased substantially (Table 1), although not to pre-1986 levels, and acknowledged the response of the Japanese government to its recommendations. The sub-committee then reiterated its recommendation that catches be further reduced (IWC, 1992, p.180) and advised that:

(1) surveys be continued as a basis for monitoring trends in population sizes;
(2) catch statistics be improved;
(3) additional information be collected on struck-and-lost rates; and
(4) further steps be taken to improve the precision of estimates of take.

In 1999, the Commission passed Resolution 1999-9 (IWC, 2000), in which it noted that the Scientific Committee had offered advice to the Government of Japan on Dall's porpoises in the past, and that such advice had led to very positive responses from the Government, and directed the Scientific Committee to review the status of the impacted stocks at its 2001 Annual Meeting. Resolution 1999-9 further encouraged the Government of Japan to make available data for this review and invited the Government to reconsider the level of its domestic quota in the light of concerns expressed by the Scientific Committee.

Until this year, the Government of Japan has submitted catch statistics to the Scientific Committee on an annual basis, together with some information on bycatches in domestic fisheries and harvest quotas. This year, for the first time, such data have not been made available, and their absence hampered the work of the sub-committee. Nevertheless, a considerable body of information was available from previous reviews and published sources, allowing the sub-committee to review the status of these stocks and make recommendations for future work.

Table 1

Directed and incidental takes of Dall's porpoises (1963-1999). Data from IWC (1991), IWC (1992) Japanese ProgReps and SM14. Bycatches in the Japanese salmon driftnet fishery in the Russian EEZ are taken from SC/53/SM15.

Year	Japanese hand-harpoon fishery			Domestic bycatch	Total removals	Quota *dalli*-type	Quota *truei*-type	Bycatch in Russian EEZ
	dalli-type	*truei*-type	Total					
1963	-	-	9,040	-	-	-	-	-
1964	-	-	9,440	-	-	-	-	-
1965	-	-	9,180	-	-	-	-	-
1966	-	-	7,980	-	-	-	-	-
1967	-	-	5,150	-	-	-	-	-
1968	-	-	6,020	-	-	-	-	-
1969	-	-	7,020	-	-	-	-	-
1970	-	-	8,060	-	-	-	-	-
1971	-	-	5,210	-	-	-	-	-
1972	-	-	5,190	-	-	-	-	-
1973	-	-	7,230	-	-	-	-	-
1974	-	-	6,470	-	-	-	-	-
1975	-	-	7,350	-	-	-	-	-
1976	-	-	9,899	-	-	-	-	-
1977	-	-	9,358	-	-	-	-	-
1978	-	-	8,426	-	-	-	-	-
1979	-	-	6,843	-	-	-	-	-
1980	-	-	6,920	-	-	-	-	-
1981	-	-	9,767	-	-	-	-	-
1982	-	-	12,833	-	-	-	-	-
1983	-	-	12,776	-	-	-	-	-
1984	-	-	9,764	-	-	-	-	-
1985	-	-	10,378	-	-	-	-	-
1986	-	-	16,515	-	-	-	-	-
1987	-	-	25,600	-	-	-	-	-
1988	-	-	40,367	-	-	-	-	-
1989	-	-	29,048	-	-	-	-	-
1990	-	-	21,802	-	-	-	-	-
1991	4,671	6,457	11,128	3,207[1]	14,335	-	-	-
1992	3,394	8,009	11,403	6	11,409	-	-	-
1993	5,731	8,587	14,318	5	14,323	9,000	8,700	2,595
1994	8,093	7,854	15,947	4	15,951	9,000	8,700	1,584
1995	7,002	5,394	12,396	0	12,396	9,000	8,700	1,500
1996	8,038	8,062	16,100	2	16,102	9,000	8,700	643
1997	8,533	10,007	18,540	1	18,541	9,000	8,700	1,548
1998	5,303	6,082	11,385	2	11,387	9,000	8,700	1,272
1999	6,379	8,428	14,807	169	14,976	9,000	8,700	3,149

[1] Bycatch estimates in 1991 are for the Japanese high seas driftnet fishery for salmon.

At the opening meeting of the Scientific Committee, Morishita noted that the Government of Japan opposed Resolution 1999-9 and that it would not collaborate with the IWC on this matter. Members of the Japanese delegation did not participate in the work of the standing sub-committee on small cetaceans this year. The position of the Government of Japan regarding this matter is given in Annex V.

5.1 Review of available information

5.1.1 Distribution and stock structure

Dall's porpoises (*Phocoenoides dalli*) are endemic to the North Pacific, where they inhabit both coastal waters and the open sea. They have been sub-divided into two sub-species: *P.d. truei* and *P.d. dalli*, primarily on the basis of colour patterns (Rice, 1998). In 1991 and 1992 the Scientific Committee identified seven *dalli*-type stocks and one *truei*-type stock, based on the location of calving grounds, pigmentation, parasite loads and body size (IWC, 1991b, pp.177-179; IWC, 1992, pp.179-180).

SC/53/SM14 reviewed information on the distribution and stock structure of Dall's porpoise stocks in the Sea of Japan and Okhotsk Sea. There are at least three stocks of Dall's porpoises in these areas: a *dalli*-type stock that winters in the Sea of Japan and breeds in the southern Okhotsk Sea, a *truei*-type stock that winters off the Pacific coast of Japan and breeds in the central Okhotsk Sea and a *dalli*-type stock that breeds in the northern Okhotsk Sea. In the Okhotsk Sea, the summer breeding grounds of the two *dalli*-type stocks are separated by that of the morphologically dissimilar *truei*-type stock (Miyashita, 1991).

Escorza-Treviño and Dizon (2000) used genetic markers to examine stock structure of the *dalli*-type throughout the range of the species. Analysis of mitochondrial DNA (mtDNA) and microsatellite markers revealed the presence of at least nine distinct *dalli*-type populations. With the exception of the northern Okhotsk and southern Okhotsk stocks, these analyses supported the existence of stocks currently defined by the IWC (1991b, pp.177-179; 1992, pp.179-180). In addition, samples obtained from the western Aleutians were found to be significantly different from other areas, Dall's porpoises in the Bering Sea stock were differentiated into western and eastern populations, and animals from the northern coast of North America were separated from those along the rest of this coastline. However, samples were not available from the Gulf of Alaska or from the central Bering Sea.

Escorza-Treviño *et al.* (2001) used mtDNA and microsatellites to examine genetic differences between the *dalli*- and *truei*-types. The results of this analysis confirm that these two morphotypes are forms of the same species. Furthermore, significant differences were found between the

truei-type and sympatric and adjacent *dalli*-type stocks. These differences, together with the maintenance of strong phenotypic differences between the two forms, suggest that there is a low level of genetic exchange between the *truei* and *dalli* morphotypes. No significant differences were found between *truei* and *dalli* types in the Okhotsk Sea, although the power of this analysis was limited by the small number of samples available. Escorza-Treviño *et al.* (2001) noted that this finding did not necessarily constitute a lack of structure, and the sub-committee reiterated its previous conclusion that at least three stocks (one *truei* and two *dalli*) exist in the Sea of Okhotsk during the summer. The sub-committee **recommended** that further genetic analysis address the issue of stock structure within the Okhotsk Sea. Additional samples may be available from the bycatch of Dall's porpoises in the Japanese salmon drift-net fishery that operates within the Russian Exclusive Economic Zone (EEZ) (see below).

Therefore, the sub-committee recognised the existence of the following breeding stocks of this species (Fig. 1). It is possible that another stock exists in the central Bering Sea, as suggested by IWC (1991b, pp.177-179; 1992, pp.179-180) on the basis of calving grounds. All are *dalli* type, unless otherwise indicated.

(1) Northern Okhotsk Sea.
(2) Central Okhotsk Sea (*truei* type).
(3) Southern Okhotsk Sea.
(4) Northwest North Pacific, referred to as South of Kamchatka in IWC (1991b, pp.177-179).
(5) Western Bering Sea.
(6) Eastern Bering Sea.
(7) Western Aleutians.
(8) Central North Pacific, referred to as South of the Aleutian Islands in IWC (1991b, pp.177-179).
(9) Gulf of Alaska.
(10) Northern North American coastal.
(11) Central and Southern North American coastal.

Stocks two and three above, and at least one additional stock of unknown identity, are taken in the Japanese hand harpoon fishery.

5.1.2 Abundance

The most recent abundance estimate for Dall's porpoises in the Okhotsk Sea was made by Miyashita (1991) using line transect survey data collected during July to September, 1989 and 1990. These surveys were reviewed by the sub-committee in 1991; this information is summarised in SC/53/SM14 and IWC (1992, pp.179-180). Miyashita estimated the abundance of the three stocks in the Okhotsk Sea to be: 111,000 (CV = 0.29) for the *dalli*-type stock in the northern Okhotsk Sea; 226,000 (CV = 0.15) for the *dalli*-type stock in the southern Okhotsk Sea; and 217,000 (CV = 0.23) for the *truei*-type stock in the central Okhotsk Sea (IWC, 1992, pp.179-180).

No more recent abundance estimates are available, so the sub-committee used these estimates in its deliberations. The sub-committee **recommended** that new abundance estimates be generated for Dall's porpoise stocks in the region, particularly in view of the continued and sustained high level of directed and incidental takes. Biases in abundance estimates for this species may occur because of vessel avoidance by females with dependent calves or attraction to survey vessels by other animals (Miyashita, 1991; IWC, 1992, pp.179-180); future work on abundance estimation with this species should address these potential sources of bias.

5.1.3 Seasonal movements

Off the coast of Japan, Dall's porpoise stocks undergo seasonal movements, as described in SC/53/SM14. For example, the *dalli*-type stock that breeds in the southern Okhotsk Sea winters in the Sea of Japan and the *truei*-type stock that breeds in the Okhotsk Sea winters off the Pacific coast of Japan. The wintering grounds of the *dalli*-type stock that breeds in the northern Okhotsk Sea remains unknown. Such seasonal movements result in seasonal variation in the identity of stocks exploited by the hand-harpoon fishery. The *dalli*-type breeding stock from the southern Okhotsk Sea is taken primarily in spring and summer in the northern Sea of Japan, southern Okhotsk Sea and Pacific coast of Hokkaido, but small numbers are also taken in winter on the Pacific coast of northern Honshu, together with larger numbers of *truei*-type animals. The *truei*-type stock is taken throughout its wintering area off the Pacific coast of Honshu. A small number of *dalli*-type animals of unknown origin are taken during winter off the Sanriku coast.

5.1.4 Life history

Comparison of analyses conducted with mitochondrial and nuclear markers led Escorza-Treviño and Dizon (2000) to conclude that there is a significant gender bias in the

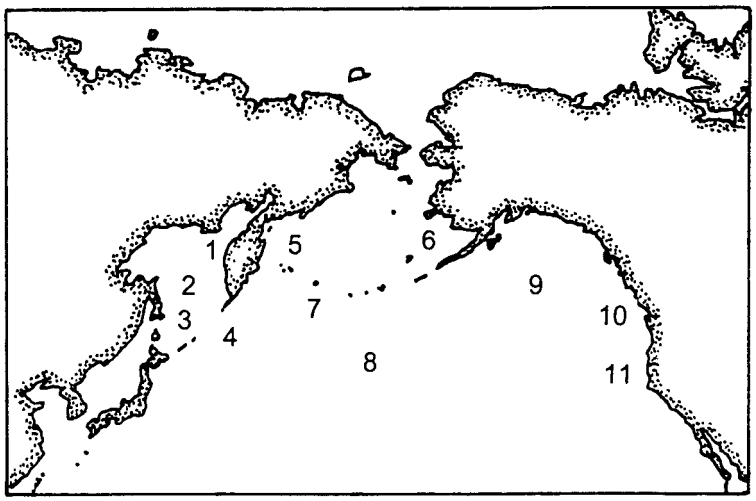

Fig. 1. Approximate distribution of breeding stocks of the Dall's porpoise stocks recognised by the sub-committee. Numbers refer to stocks identified in the text.

dispersal pattern of Dall's porpoises. Females exhibit considerable philopatry, while males disperse widely. Such female site fidelity may promote the existence of population structure. Significant age and sex segregation has also been recorded for this species (SC/53/SM14).

Published evidence, summarised in SC/53/SM14, suggests that Dall's porpoises mate and calve in summer, with some geographical variation in the timing of parturition. For example, parturition in *dalli*-type porpoises in the southern Okhotsk Sea and Sea of Japan occurs in May or June while in *truei*-types from the central Okhotsk Sea/Pacific coast, parturition occurs in late August.

SC/53/SM14 also reviewed reports of a recent increase in the proportion of lactating *dalli*-type females in the porpoises landed at Otsuchi on the Pacific coast of Sanriku. Recent data from the harpoon fishery has shown an increase in the proportion of lactating females (Amano *et al.*, 1998; Perry, 1999), which may reflect a change in fishing tactics, as lactating females have not comprised a significant portion of the catch in previous years because they tend to avoid vessels. One possible explanation for this shift is that, due to a decline in the availability of males and non-lactating females, fishermen have begun to target lactating females accompanied by dependent calves (SC/53/SM14). Without access to data on temporal trends in catch-per-unit-effort in this fishery, the sub-committee was unable to evaluate this possibility.

5.1.5 Ecology

No new information was presented to the sub-committee on the ecology of Dall's porpoise stocks impacted by the Japanese hand-harpoon fishery.

5.1.6 Habitat

No new information was presented to the sub-committee on the habitat of Dall's porpoise stocks impacted by the Japanese hand-harpoon fishery.

5.1.7 Directed takes

No new information was available on directed takes in the Japanese hand-harpoon fishery. However, SC/53/SM14 outlined the history of this fishery and provided catch statistics from previous Japanese Progress Reports to the Scientific Committee. These catch statistics, reproduced in Table 1, are available from 1963. Catches of the two morphotypes have been reported separately since 1991. The most recent estimate of the total catch (for 1999) was 14,807, well above that in any year prior to 1986.

As noted in previous reports of this sub-committee and in SC/53/SM14, there are several limitations and problems with the reported catch statistics that hinder a full assessment of the status of Dall's porpoise stocks: (1) catch statistics of the *dalli*-type prior to 1980 may be incomplete; (2) the catch statistics may not be reported accurately on a stock-by-stock basis, partially because some animals are processed at sea and catch numbers are estimated from landings of meat; (3) individuals taken as 'struck and lost' are not accounted for in the catch data; (4) no data are reported on the composition (age, sex and reproductive condition) of the catch. This is particularly important if lactating females are being harvested, because their capture likely also results in the mortality of dependent calves; and (5) there are some discrepancies between the reported catch statistics and estimates made by scientists working in fish markets, where small cetaceans and their products are landed. For example, the number of Dall's porpoises observed landed at a single market (Otsuchi) in 1991 and 1992 exceeded the total catch reported by the government of Japan for all locations (SC/53/SM14). The sub-committee **recommended** that more accurate estimates of the total catch be reported on a stock-by-stock basis, with information on the catch composition and numbers 'struck and lost'. The sub-committee also expressed concern that the fishery had recently targeted lactating females and that there was a possibility, given the evidence of female philopatry, of localised depletion.

5.1.8 Incidental takes

SC/53/SM15 reported information on the bycatch of Dall's porpoises in the Japanese salmon drift-net fishery that operates in the Russian EEZ, abstracting data from Burkanov and Nikulin (In press). The sub-committee welcomed data on these bycatches, which are an important component of the overall anthropogenic mortality experienced by these stocks. An observer programme, operating since 1993, has allowed estimation of total marine mammal bycatch and the proportion of Dall's porpoises taken on an annual basis from 1993-1999. Extrapolating from Table 1 and fig. 3 in SC/53/SM15, between 643 and 3,149 Dall's porpoises were taken annually in this fishery, with a total of 11,973 individuals taken over the entire period (Table 1). This bycatch takes porpoises from stocks impacted by the Japanese harpoon fishery, and the sub-committee **recommends** that these bycatches be considered in any future assessment of these stocks. At present, there is insufficient information, particularly on the morphotype or stock identity of individuals taken, to understand the impact of these bycatches on affected stocks. The sub-committee noted that observer coverage has been dwindling in this fishery and **recommends** that the programme continue at a statistically meaningful level. The sub-committee further **recommended** that the Government of Russia report bycatches of Dall's porpoises (and other small cetaceans) from the Japanese salmon drift net fishery operating in the Russian EEZ in its annual Progress Reports to the Scientific Committee, together with estimates of the magnitude of bycatches in other fisheries.

Large numbers of Dall's porpoises have been taken in the past in other fisheries in this and adjacent regions (see review in Northridge, 1991) and small numbers of Dall's porpoises are reported annually as bycatch in domestic Japanese fisheries (Table 1). The sub-committee recognised that many fisheries likely to take Dall's porpoises currently operate both outside and inside the Japanese EEZ and noted that data on fishing activity and effort would be useful in trying to evaluate the extent of the bycatch. The sub-committee also **recommended** that other governments with fisheries in the range of these stocks, such as Korea, report bycatches of this species on an annual basis to the Scientific Committee. The sub-committee reiterated its previous recommendation that age, sex and reproductive condition of all bycaught animals be reported whenever possible.

5.1.9 Other

SC/53/SM7 included information on the frequency of occurrence of Dall's porpoise products in Japanese and Korean markets between 1993 and 1999, identified using phylogenetic analyses of mtDNA data. Dalebout noted that these surveys are biased towards collection of products from large cetaceans, but that a small number of Dall's porpoise products were found in Japanese market surveys; none were found in the Korean markets sampled.

5.2 Consideration of status

In the absence of other information, the sub-committee assessed the status of these stocks by comparing the magnitude of direct and incidental takes with the most recent estimates of abundance and potential rates of increase, as it has for other species of small cetaceans. Assuming that all catches of *dalli*-type porpoises were from the relatively large stock that breeds in the southern Okhotsk Sea, directed takes of both forms have exceeded 2% of the most recent abundance estimates for each year (with the exception of the *dalli*-type in 1992) since catch statistics were first reported for both morphotypes in 1991 (Table 1). In some years, these directed takes have exceeded 4% of estimated abundance. The sub-committee noted that current quotas appear to have been set at 4% of the abundance estimates for the southern Okhotsk Sea stock (*dalli*-type) and central Okhotsk Sea stock (*truei*-type). There is no published information on the potential rate of increase for this species, so the sub-committee considered information on the harbour porpoise, a closely related species with a similar life history, as a proxy. In the case of the harbour porpoise, the sub-committee has previously concluded that anthropogenic mortality (primarily incidental catches in this species) of more than 2% of abundance are unlikely to be sustainable. As noted above, reported levels of directed takes have exceeded 2% of estimated abundance for both exploited stocks breeding in the Okhotsk Sea in almost every year since 1991. The sub-committee further noted that these conclusions do not consider the effects of porpoises struck and lost, bycatches in the Japanese salmon drift-net fisheries (or other fisheries), or possible effects of the age and sex structure of directed and incidental takes.

Based on this review, the sub-committee was not in a position to change its previous advice on the status of stocks of Dall's porpoises taken by the Japanese hand-harpoon fishery. The sub-committee reiterated its extreme concern for these stocks and repeated its previous **recommendation** that catches be reduced as soon as possible to sustainable levels. It is not clear whether the catch levels reported prior to 1986 would be sustainable at present. To determine what levels of catch might be sustainable, the sub-committee **recommended** that a full assessment of the status of each stock be conducted as soon as possible, including consideration of the factors described above.

5.3 Future work

The sub-committee was unable to complete a full assessment of the status of Dall's porpoise stocks impacted by the Japanese hand harpoon fishery, as directed by Commission Resolution 1999-9 (IWC, 2000), because data required for this assessment was not forthcoming from the Government of Japan. The sub-committee will not be able to perform this task unless and until the Government of Japan provides the necessary information, as identified below:

(1) a recent estimate of abundance for each stock;
(2) improved catch statistics for each stock, including information on age, sex and reproductive status; and numbers struck and lost;
(3) estimates of total bycatches for each stock.

6. PROGRESS ON PREVIOUS RECOMMENDATIONS

6.1 Status of the baiji

The range of the baiji (*Lipotes vexillifer*) is restricted to the Yangtze river and its population size is probably only a few tens of animals (IWC, 2001a, p.275). Given the critically endangered status of the baiji, last year the Scientific Committee asked that the Secretary of the IWC request the Government of China to report progress on the conservation of this species to the Scientific Committee on an annual basis. Unfortunately, no new information was received and the sub-committee re-iterated its request for updated information on this critically endangered species.

6.2 International Programme for the Recovery of the Vaquita

Rojas-Bracho presented three papers on the highly endangered vaquita (*Phocoena sinus*). SC/53/SM16 provided information on visual and acoustic surveys for the vaquita in the Upper Gulf of California. Initial surveys followed line-transect methodology and porpoise vocalisations were recorded using an automated porpoise click detector. More recent surveys have made recordings at dedicated listening stations. Results of these surveys confirm that the distribution of the vaquita is localised mainly on the western side of the Gulf. SC/53/SM17 outlined preliminary analyses of oceanographic data collected during a sightings cruise for vaquita. A large number of physico-chemical parameters, nutrients, chlorophyll and sediments have been analysed to better understand the habitat of this species.

SC/53/SM13 outlined an integrated framework being developed to implement the recovery plan for the vaquita, as recommended by the International Committee for the Recovery of the Vaquita (CIRVA). The strategy includes four main elements: (1) conservation; (2) socio-economic aspects; (3) communication; and (4) a legal framework. These strategies combine a number of different approaches, aimed at consensus building, and are intended to involve representatives of all stakeholders. The strategies include: introduction of fishing gear that will not result in bycatch of vaquita; providing viable economic alternatives to fishers; exchanging information and publicising the programme; and developing a legal framework for ecosystem protection.

The sub-committee welcomed this update and reiterated its endorsement of the primary conclusion of CIRVA – that to ensure the future survival of the vaquita it will be necessary to eliminate all bycatches as rapidly as possible. The future survival of this species, therefore, will require the gradual substitution of gillnet fisheries with other economic activities in the Upper Gulf of California, as recommended in the Recovery Plan drafted by CIRVA.

The sub-committee also noted that the Government of Mexico has recognised the potentially adverse effects of degradation of estuarine habitat in the Upper Gulf of California on a wide range of marine biota. The sub-committee agreed that further research on the effects of this degradation is required.

6.3 Harbour porpoise

6.3.1 IWC/ASCOBANS harbour porpoise working group

At its meeting in 1998, the sub-committee agreed that a joint IWC/ASCOBANS Working Group should provide scientific advice to the Advisory Committee of ASCOBANS on matters pertaining to the assessment of status of harbour porpoises in the North Sea and adjacent waters (IWC, 1999, p.215). The Working Group met in St Andrews in March 1999 and outlined a simulation modelling approach that might allow ASCOBANS to develop algorithms to meet their conservation objectives, the results of which were presented at this meeting (Pout *et al.*, 2001). The sub-committee considered this report in some detail and thanked the authors for their work. The sub-committee concluded that the model developed some useful approaches

and served to highlight the paucity of data in some areas, particularly in regard to stock structure, bycatch estimates and dispersal rates. Nevertheless, the sub-committee did not believe that the approach described in the report would provide direct advice that would allow ASCOBANS to meet its management objectives.

The sub-committee then considered an alternative approach, suggested by Wade and Bravington, that would develop a relatively simple, but spatially explicit, dynamic model or models. One of the major conservation objectives of ASCOBANS is that populations of small cetaceans should recover to or be maintained at above 80% of carrying capacity. Therefore, it was agreed that such models should deliver two main outputs:

(1) an indication of what reduction in bycatch level is likely to achieve the conservation objective, for purposes of evaluating current status; and
(2) the capacity to develop a longer-term management procedure for ensuring that conservation objectives are met.

The model should assume a regular schedule for surveys and generation of bycatch estimates, and feedback rules that calculate limits of removals. This approach could be developed along the following framework:

(1) establish conservation goals in quantitative terms (in this case, ASCOBANS has already agreed that harbour porpoise populations should be maintained at or above 80% of K);
(2) propose a rule for setting bycatch limits, that can be calculated using available data (for example, some proportion of the abundance estimate);
(3) establish simulations designed to cover a range of plausible scenarios (for example, single stock, two stocks with and without seasonal mixing, etc);
(4) apply the proposed method within the context of the simulation and collect performance statistics on how often the simulated population achieves the conservation goal.

The sub-committee strongly **endorsed** this new approach. Reijnders also welcomed this approach, on behalf of the Advisory Committee of ASCOBANS. Development of such a relatively simple, spatially structured model could greatly assist ASCOBANS in determining whether or not current and future levels of bycatches are consistent with its conservation objectives. In addition, the model would be very useful in the development and assessment of future conservation tools.

The sub-committee did not consider the status of harbour porpoises at this meeting, but wished to reiterate its previous advice regarding the status of this species in the North Sea and adjacent waters. Throughout this region, in areas where bycatches have been estimated and estimates of abundance are available, the incidental catches are above 2% of abundance and may, therefore not be sustainable (IWC, 1997, p.170).

6.3.2 Norwegian fjord feasibility study

Bjørge described the initial results of a feasibility study to derive estimates of harbour porpoise abundance in the complex inshore waters of Norway. Pilot surveys were conducted in two different habitats: deep fjords and relatively shallow coastal archipelagos. Boat based surveys, with a double platform design, used a combination of zigzag line and longshore transect approaches. Variation in fine-scale patterns of habitat use, sightability and boat avoidance behaviour were documented, all of which might be expected to affect survey results. There was discussion within the sub-committee about these initial results and several members offered suggestions to Bjørge regarding survey design. The sub-committee thanked Bjørge for this presentation and looked forward to receiving an update on this work at its next meeting.

6.4 Survey methodology for freshwater cetaceans

At its meeting in 2000, the sub-committee recommended that scientists with appropriate analytical skills be directly involved in the design and implementation of surveys for freshwater cetaceans, so that these surveys might result in statistically robust estimates of abundance. It was also suggested that scientists familiar with techniques of abundance estimation should obtain relevant experience at a range of field sites and make recommendations for appropriate survey and analytical methods (IWC, 2001a, p.177).

Hedley informed the sub-committee about line/strip transect pilot surveys of boto (*Inia geoffrensis*) and tucuxi (*Sotalia fluviatilis*) in the Colombian Amazon and noted that proposals are being developed to involve analysts with studies of freshwater cetaceans at a number of survey sites. The sub-committee welcomed this approach and the development of such proposals. In addition, following the sub-committee's previous recommendation that a workshop or workshops be held to develop capacity in such analytical skills, Read agreed to facilitate the development of an e-mail group to attain this goal. Members of the sub-committee also encouraged the consideration of photo-identification and genetic approaches to estimate abundance of freshwater cetaceans during these workshops.

6.5 Bycatch mitigation

SC/53/E17 reviewed cetacean bycatches in South Africa from 1978-2000. The low bycatch in most fisheries has led to the development of few mitigation measures, with the exception of the shark-net fishery in KwaZulu-Natal. Peddemors noted the effect of the annual sardine migration on bycatches and described how the Natal Sharks Board has tried to deal with the problem of bycatches in various ways. These approaches include a reduction in fishing effort through permanent removal of nets and trials of fishing techniques using baited hooks. Trials using passive reflectors (sonar floats) designed to reflect the echolocation of small cetaceans have proven successful in one experiment, but not in a second trial. This discrepancy has been attributed to behavioural variation in the use of echolocation between the two areas and has led to the inclusion of acoustic alarms on nets to assist in alerting dolphins. Since acoustic alarms were deployed together with passive reflectors, there have been no further catches. Pingers have also been tested to reduce the bycatches of Indo-Pacific hump-backed dolphins (*Sousa chinensis*) and have resulted in no catches over the past 19 months. This reduction in catch is not statistically significant, but it was deemed prudent to deploy pingers at an additional four sites along the coast. Trials of these bycatch mitigation measures are continuing and it is envisaged that a more in-depth report will be available next year.

SC/53/SM9 presented preliminary estimates of cetacean mortality in California halibut/angel shark set gillnet and swordfish/thresher shark drift gillnet fisheries for 2000. The cetacean species caught in these fisheries included harbour porpoise, common dolphins (*Delphinus delphis* and *capensis*), Risso's dolphins (*Grampus griseus*), northern

right whale dolphins (*Lissodelphis borealis*) and Pacific white-sided dolphins (*Lagenorhynchus obliquidens*). The bycatch in the drift net fishery during 2000 (0.052/day) was comparable to rates observed in years before pingers became mandatory in the drift-net fishery. The sub-committee expressed particular interest in the relative efficacy of acoustic alarms in this fishery and requested that the authors of this paper provide further information on this subject at next year's meeting.

6.6 Other

No other information on progress on previous recommendations was received.

7. DEVELOPMENT OF A PHOTO-ID CATALOGUE FOR ANTARCTIC KILLER WHALES

Williams outlined a proposal for a collaborative project to develop a centralised catalogue for killer whales in the Antarctic. The sub-committee considered such a catalogue to be a useful research tool and endorsed the development of a centralised catalogue of Antarctic killer whales. Kock suggested that the observer programme on the Antarctic longline fishery run by CCAMLR might be an additional source of photographs.

8. OTHER PRESENTED INFORMATION ON SMALL CETACEANS

SC/53/SM6 summarised results from the 4th franciscana (*Pontoporia blainvillei*) workshop, held in Porto Alegre, Brazil in November 2000. It was attended by scientists, fishers, community representatives and decision-makers from Brazil, Uruguay and Argentina. Working groups were established to review current knowledge on the biology and conservation of this species and to provide recommendations for future research and conservation actions. The species' range was divided into geographical sections, which assisted in the identification of areas where basic information is lacking. One outcome of the Workshop was the creation of four franciscana management areas (FMAs). Modelling exercises suggested that dolphins in at least area FMA III, southern Brazil and Uruguay, are declining. The workshop concluded that it is unlikely that the dolphins in three other areas are in a better situation and recommended that the species be listed as 'Vulnerable' in the IUCN Red List of Threatened Species. Despite this progress, the workshop noted that basic studies are still needed in many regions of the species' range. Finally, the workshop encouraged the development of multinational conservation and management actions involving Brazil, Uruguay and Argentina within the scope of the Convention for Migratory Species, the IUCN and UNESCO. Other information on the franciscana was presented in SC/53/SM1, SM4 and SM5 but the sub-committee did not discuss these papers.

SC/53/SM7 addressed the species identity of small cetacean products from Japanese and Korean markets. The technique of using phylogenetic analysis of mtDNA sequences to identify small cetacean species available in markets has been difficult until recently, due to a lack of DNA reference databases and some taxonomic uncertainties. From March 1993 to October 1999, 15 species from five families were identified among 84 products from Japanese markets. Eight species from three families were identified among 24 samples from Korean markets. The authors considered that these numbers to underestimate the true diversity of species available in the markets, because they prioritised products from baleen whales for collection.

SC/53/SM3 provided the report of a workshop on interactions between dolphins and fisheries in the Mediterranean. The focus of the workshop was to review knowledge of interactions in which bottlenose dolphins deliberately utilise fishing gear (or aquaculture facilities) as part of their foraging strategy and to evaluate potential mitigation alternatives. These interactions cause real and perceived damage to fishing gear and catch and have led fishermen to take retaliatory measures against dolphins. The workshop concluded that more information is required on the distribution of this problem in the Mediterranean, the true extent of the problem, a description of the fisheries involved, types and quantification of the damage, and the importance of this foraging strategy to the dolphins. Preliminary trials have been conducted with acoustic alarms to deter dolphins from nets in several areas, but more rigorous experiments are needed to examine the efficacy of alarms and other mitigation approaches in this regard. The workshop recommended that acoustic harassment devices (which have a much higher source level) were *not* appropriate for use in alleviating these conflicts between dolphins and fisheries in the Mediterranean, but that non-acoustic approaches held considerable promise in this regard and deserved detailed evaluation. In addition, the workshop outlined information requirements and methodological approaches that would improve understanding of the scale, nature, distribution and true costs of such interactions.

SC/53/SM8 presented information on the distribution of beaked whales from surveys in the Southern Ocean. A total of 44 sightings of beaked whales of approximately 67 individuals were made during three voyages during January-March 1999 and November 1999-February 2000. At least five different beaked whale species, including southern bottlenose whale (*Hyperoodon planifrons*), Cuvier's beaked whale (*Ziphius cavirostris*), Gray's beaked whale (*Mesoplodon grayi*), Arnoux's beaked whale (*Berardius arnuxii*) and strap-toothed whale (*M. layardii*), were positively identified. Animals, believed by the authors to have been Shepherd's beaked whales (*Tasmacetus shepherdi*), were observed on two occasions. Dalebout noted that biopsy samples provided a useful means of confirming species identity of beaked whales and that the collection of such samples should be encouraged.

Several other papers contained information on the distribution and abundance of small cetaceans. SC/53/O7 contained information from a line-transect survey for cetaceans from June 2000 in the south-eastern Bering Sea. Sightings of small cetaceans included Baird's beaked whale (*Berardius bairdii*), killer whales, Pacific white-sided dolphins, Dall's porpoises and harbour porpoises. Abundance estimates were calculated for both species of porpoise. SC/53/O15 described a cetacean sightings survey during August 2000 in western Irish waters and the Rockall Trough area. At least three species of beaked whale were recorded, including Cuvier's and Sowerby's (*Mesoplodon bidens*) beaked whales. Other small cetaceans recorded included long-finned pilot whales (*Globicephala melas*), harbour porpoises, striped dolphin (*Stenella coeruleoalba*), common dolphins (*Delphinus delphis*) and Atlantic white-sided dolphins (*Lagenorhynchus acutus*). Abundance estimates were derived for Atlantic white-sided and common dolphins in this paper.

A number of papers described life-history information on small cetaceans. SC/53/SM10 presented information on the species composition and reproductive status of the cetaceans incidentally killed in the Californian drift and set gillnet fisheries during the 2000 season. Identification of some species was confirmed using molecular genetic techniques and, for some individuals, gender was determined by amplyifing the SRY gene. Information derived from strandings and sightings of bottlenose dolphins in North Carolina, USA suggest that there is a strong peak of parturition in the spring and a smaller but distinct peak in the autumn (SC/53/SM12). SC/53/SD1 described geographical variation in testis size and degree of sexual dimorphism in spinner dolphins (*Stenella longirostris*) in the eastern tropical Pacific, suggesting correlated variation in mating system with greater polygny to the east and greater polgynandry to the west. This may indicate tighter school structure in the eastern spinner and greater vulnerability to school disruption by tuna-seining operations.

9. TAKES OF SMALL CETACEANS IN 2000

As in previous years, the sub-committee noted that the table of recent catches of small cetaceans (Appendix 2) is incomplete. The sub-committee repeated its **recommendation** that member nations should submit full and complete information on direct and incidental takes in their progress reports. The sub-committee further noted that such information should be submitted on a stock-by-stock basis. At its meeting next year, the sub-committee agreed to review current knowledge of the existence of directed and incidental takes by member countries to ensure that such information was available to assist in its deliberations (see below).

10. WORK PLAN

The sub-committee reviewed its schedule of priority topics and identified several new topics that involve the assessment of conservation status of particular taxa. Topics currently listed for future priority topics (IWC, 2001a, p.279) are:

(1) Systematics and population structure of *Tursiops*;
(2) Status of ziphiids in the Southern Ocean;
(3) Status of small cetaceans in the Caribbean Sea.

Last year, the sub-committee invited the government of Japan to provide information that would allow it to determine whether sufficient new data exist on Baird's beaked whales to review the status of this species in the year 2002 or beyond. The sub-committee did not receive any information from the Government of Japan on Baird's beaked whales at this meeting. In light of the position of the Government of Japan on this matter (IWC, 2001b), the sub-committee has not taken further action on this topic.

The sub-committee agreed to add the following items to its schedule of future priority topics:

(1) Status of small cetaceans (*Phocoena*, *Delphinus* and *Tursiops*) in the Black Sea;
(2) Review of the status of *Sousa*;
(3) Review of the status of *Pontoporia*.

The rationale for the first additional topic is continuing concern regarding the status of these three species in the Black Sea, given the existence of high levels of directed catches in the past, continuing bycatches, and environmental degradation throughout the ocean basin. In addition, the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Seas and contiguous Atlantic area (ACCOBAMS) has recently entered into force and this sub-committee may be able to provide scientific advice to that body in the same way that it does with ASCOBANS. The rationale for the second topic is continuing concern regarding the relatively small, localised populations of *Sousa* throughout its range. Several current research efforts are directed at this species and new information should be forthcoming on its status. The rationale for the franciscana is continued concern regarding the effects of long-standing bycatches of this species in coastal fisheries. In addition, a large amount of new information is available (e.g. SC/53/SM1 and SM4-6).

Given the location of the meeting in 2002, the sub-committee agreed that it should review the status of humpbacked dolphins (genus *Sousa*) as its priority topic at the 54th Annual Meeting. In addition, the sub-committee proposes to conduct a review of the existence of directed and incidental takes of small cetaceans in member countries, with a view to requesting data on the magnitude of such takes from member governments in the future. This process is intended to ensure that the table of recent catches of small cetaceans is as complete and useful as possible. The sub-committee will also review briefly progress on recommendations made at this year's meeting.

11. OTHER BUSINESS

Manzanilla introduced the following statement from the Government of Mexico regarding the vaquita. The Ministry of the Environment in Mexico will support the efforts to reduce bycatch of the critically endangered vaquita in the Upper Gulf of California. At the ecosystem level, the government is also concerned about habitat degradation of the original estuarine ecosystem in the same area. There is scientific unpublished evidence suggesting that the temporal and partial restoration of estuarine conditions during El Niño year 1998 increased feeding habitat availability for several species of whales and dolphins. The Ministry recognises the importance of both issues in the survival and long-term recovery, if any, of the vaquita.

12. ADOPTION OF REPORT

The report was adopted as amended on 11 July 2001.

REFERENCES

Amano, M., Amano, A., Oizumi, H. and Marui, M. 1998. Landing of porpoises and dolphins at Otsuchi fish market, April 1992 through April 1996. pp. 1-32. *In:* N. Miyazaki (ed.) *Report of Contract on Population of Dolphins and Porpoises*. Ocean Research Institute, University of Tokyo, Tokyo. 242pp. [In Japanese with tables and figures in English].

Burkanov, V.N. and Nikulin, V.S. In press. Estimation of accidental bycatch of marine mammals in salmon drift net fishery in Russian Exclusive Economic Zone, 1993-1999. Kamchatrybvod, Petropavloak.

Escorza-Treviño, S. and Dizon, A.E. 2000. Phylogeography, intraspecific structure and sex-biased dispersal of Dall's porpoise, *Phocoenoides dalli*, revealed by mitochondrial and microsatellite DNA analyses. *Mol. Ecol.* 9:1049-60.

Escorza-Treviño, S., Pastene, L. and Dizon, A.E. 2001. Phylogenetic analysis of the *truei* and *dalli* morphotypes of Dall's porpoise (*Phocoenoides dalli*). *Evolution* :In press.

International Whaling Commission. 1991a. Chairman's Report of the Forty-Second Meeting. *Rep. int. Whal. Commn* 41:11-50.

International Whaling Commission. 1991b. Report of the Scientific Committee, Annex G. Report of the sub-committee on small cetaceans. *Rep. int. Whal. Commn* 41:172-90.

International Whaling Commission. 1992. Report of the Scientific Committee, Annex G. Report of the sub-committee on small cetaceans. *Rep. int. Whal. Commn* 42:178-234.
International Whaling Commission. 1997. Report of the Scientific Committee, Annex H. Report of the sub-committee on small cetaceans. *Rep. int. Whal. Commn* 47:169-91.
International Whaling Commission. 1999. Report of the Scientific Committee. Annex I. Report of the Standing Sub-Committee on Small Cetaceans. *J. Cetacean Res. Manage. (Suppl.)* 1:211-25.
International Whaling Commission. 2000. Chairman's Report of the Fifty-First Annual Meeting. Appendix 10. IWC Resolution 1999-9. Resolution on Dall's porpoise. *Ann. Rep. Int. Whaling Comm.* 1999:55-6.
International Whaling Commission. 2001a. Report of the Scientific Committee, Annex K. Report of the Standing Sub-Committee on Small Cetaceans. *J. Cetacean Res. Manage. (Suppl.)* 3:263-91.
International Whaling Commission. 2001b. Report of the Scientific Committee. Annex X. Statement on the Agenda. Statement by the Japanese Delegation Concerning Small Cetaceans. *J. Cetacean Res. Manage. (Suppl.)* 3:370.
Miyashita, T. 1991. Stocks and abundance of Dall's porpoises in the Okhotsk Sea and adjacent waters. Paper SC/43/SM7 presented to the IWC Scientific Committee, Reykjavik, Iceland, May, 1991 (unpublished), 23pp. [Paper available from the Office of this Journal].
Northridge, S.P. 1991. Driftnet fisheries and their impacts on non-target species: a worldwide review. FAO Fisheries Technical Paper 320. FAO Rome. 115pp.
Perry, C. 1999. Status of the Dall's porpoise (*Phocoenoides dalli*) in Japan. Paper SC/51/SM46 presented to the IWC Scientific Committee, May 1999, Grenada, WI (unpublished). 9pp. [Paper available from the Office of this Journal].
Pout, A.C., Borchers, D.L., Northridge, S.P. and Hammond, P.S. 2001. Modelling fishery impacts on the North Sea harbour porpoise populations. Draft Final Report to Department of Environment, Food and Rural Areas, London, UK (unpublished). [Available from: *dlb@mcs.st-and.ac.uk*]
Rice, D.W. 1998. *Marine Mammals of the World. Systematics and Distribution.* Special Publication No. 4. The Society for Marine Mammology, Lawrence, Kansas. 231pp.

Appendix 1

AGENDA

1. Election of Chair
2. Adoption of agenda
3. Appointment of rapporteurs
4. Review of available documents
5. Status of Dall's porpoise taken by the Japanese hand-harpoon fishery
   - 5.1 Review of available information
     - 5.1.1 Distribution and stock structure
     - 5.1.2 Abundance
     - 5.1.3 Seasonal movements
     - 5.1.4 Life history
     - 5.1.5 Ecology
     - 5.1.6 Habitat
     - 5.1.7 Directed takes
     - 5.1.8 Incidental takes
     - 5.1.9 Other
   - 5.2 Consideration of status
   - 5.3 Future work
6. Progress on previous recommendations
   - 6.1 Status of baiji
   - 6.2 International Programme for the Recovery of the Vaquita
   - 6.3 Harbour porpoise
     - 6.3.1 IWC/ASCOBANS harbour porpoise working group
     - 6.3.1 Norwegian fjord feasibility study
   - 6.4 Survey methodology for freshwater cetaceans
   - 6.5 Bycatch mitigation
   - 6.6 Other
7. Development of a photo-id catalogue for Antarctic killer whales
8. Other presented information on small cetaceans
9. Takes of small cetaceans in 2000
10. Work plan
11. Other business
12. Adoption of report

Appendix 2

SMALL CETACEAN CATCHES 1998-2000

All information was taken from National Progress reports unless otherwise stated. Catches are presented by nation, rather than ocean area, except in the case of the data submitted by the IATTC for the eastern tropical Pacific (ETP). In this case, the submitted estimated catches are not broken down by country and a summed total incidental catch for the participating countries is given. The reported catch columns include catches reported by observer programmes, from interviews with fishermen and incidental reports (e.g. stranded whales determined to have died in nets).

	1998					1999					2000				
	Direct		Indirect		Live	Direct		Indirect		Live	Direct		Indirect		Live
Species	Rep.	Est. total	Rep.	Est. total	rep.	Rep.	Est. total	Rep.	Est. total	rep.	Rep.	Est. total	Rep.	Est. total	rep.
Argentina															
Dusky dolphin	-	-	15[a]	-	-	-	-	-	-	-	-	-	-	-	-
Franciscana	-	-	-	-	-	-	-	-	-	-	-	-	49[b]	272-570[b]	-
Peale's dolphin	-	-	-	-	-	-	-	-	-	-	-	-	1[c]	5[c]	-
Commerson's dolphin	-	-	-	-	-	-	-	-	-	-	-	-	37[d]	<168[d]	-
Australia															
Bottlenose dolphin	-	-	9	-	-	-	-	9	-	-	-	-	2[a]	4[a]	-
Common dolphin (?sp.)	-	-	7	-	-	-	-	8	-	-	-	-	-	-	-
Irrawaddy dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
Indo-pacific humpback	-	-	2	-	-	-	-	2	-	-	-	-	-	1	-
Spinner dolphin	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-
Short beaked common d.	-	-	5	-	-	-	-	8	-	-	-	-	6[b]	3[b]	-
Pantropical spotted dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Unidentified dolphin	-	-	27	-	-	-	-	12	2	-	-	-	1[c]	3[c]	-
Unidentified cetacean	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Brazil															
False killer whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spinner dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bottlenose dolphin	-	-	-	-	-	-	-	-	-	-	-	-	1[j]	-	-
Common dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Franciscana	-	-	101[b]	25[c]	3[f]	-	-	17[g]	202[g]	-	-	-	55[k]	>850[k]	-
Tucuxi	-	-	7[e]	3[d]	-	-	-	17[h]	141[h]	-	3	-	8[l]	-	-
Spotted dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Atlantic spotted dolphin	-	-	5[i]	-	-	-	-	-	-	-	-	-	2[m]	-	-
Pantropical spotted dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Risso's dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rough-toothed dolphins	-	-	-	-	-	-	-	7	150	-	-	-	-	-	-
Striped dolphin	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
Inia geoffrensis	-	-	1	-	-	-	-	-	-	-	-	-	-	-	78[n]
Unidentified dolphins	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified species	-	-	9[a]	-	-	-	-	-	-	-	-	-	-	-	-
Chile															
Burmeister's porpoise	-	-	1[a]	-	-	-	-	1[c]	-	-	-	-	-	-	-
Long-finned pilot whale	-	-	-	-	-	1[b]	-	-	-	-	-	-	-	-	-
Pygmy Sperm whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Denmark															
Harbour porpoise	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified species	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ETP															
Bottlenose dolphin	-	-	29	29	-	-	-	9	9	-	-	-	4	4	-
Pantropical spotted dolphin															
Northeastern	-	-	298	298	-	-	-	358	358	-	-	-	303	303	-
Western-southern	-	-	341	341	-	-	-	253	253	-	-	-	428	428	-
Coastal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spinner dolphin (? stock)															
Eastern	-	-	422	422	-	-	-	363	363	-	-	-	272	272	-
Whitebelly	-	-	249	249	-	-	-	192	192	-	-	-	262	262	-
Central	-	-	12	12	-	-	-	13	13	-	-	-	2	2	-
Striped dolphin	-	-	24	24	-	-	-	5	5	-	-	-	11	11	-
Common dolphin (?sp.)															
Northern	-	-	261	261	-	-	-	85	85	-	-	-	56	56	-
Central	-	-	172	172	-	-	-	34	34	-	-	-	222	222	-
Southern	-	-	33	33	-	-	-	1	1	-	-	-	9	9	-
Rough-toothed dolphin	-	-	-	-	-	-	-	-	-	-	-	-	27	27	-
Risso's dolphin	-	-	-	-	-	-	-	3	3	-	-	-	-	-	-
Short fined pilot whales	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-
Pygmy sperm whale	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-
Unspecified dolphins	-	-	35	35	-	-	-	32	32	-	-	-	39	39	-
Faroes															
Long-finned pilot whale	815[a]	-	-	-	-	608	-	-	-	-	b	-	-	-	-
Atlantic white-sided dolphin	438[a]	-	-	-	-	-	-	-	-	-	b	-	-	-	-
Bottlenose dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harbour porpoise	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

cont...

Small cetacean catches continued.

Species	1998					1999					2000				
	Direct		Indirect		Live	Direct		Indirect		Live	Direct		Indirect		Live
	Rep.	Est. total	Rep.	Est. total	rep.	Rep.	Est. total	Rep.	Est. total	rep.	Rep.	Est. total	Rep.	Est. total	rep.
France															
Long-finned pilot whale	-	-	1[a]	-	-	-	-	5[a]	-	-	-	-	1[a]	-	-
Bottlenose dolphin	-	-	7[a]	-	-	-	-	7[a]	-	-	-	-	3[a]	-	-
Striped dolphin	-	-	17[a]	-	-	-	-	14[a]	-	-	-	-	7[a]	-	-
Common dolphin (?sp.)	-	-	19[a]	-	-	-	-	140[a]	-	-	-	-	193[a]	-	-
Atlantic white-sided dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Risso's dolphin	-	-	2[a]	-	-	-	-	-	-	-	-	-	-	-	-
Common porpoise	-	-	1[a]	-	-	-	-	8[a]	-	-	-	-	11[a]	-	-
Unidentified dolphin	-	-	2[a]	-	-	-	-	18[a]	-	-	-	-	9[a]	-	-
Unid./other cetacean	-	-	-	-	-	-	-	1[a]	-	-	-	-	-	-	-
Germany															
Harbour porpoise	-	-	5	-	-	-	-	3	-	-	-	-	5[a]	5[a]	-
Long-finned pilot whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
White-beaked dolphin	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Greenland															
Narwhal	822	-	-	-	-	a	-	-	-	-	a	-	-	-	-
White whale	746	-	-	-	-	a	-	-	-	-	a	-	-	-	-
Harbour porpoise	2,131	-	-	-	-	a	-	-	-	-	a	-	-	-	-
Long-finned pilot whale	365	-	-	-	-	a	-	-	-	-	a	-	-	-	-
Ireland															
Common dolphin	-	-	14[b]	-	-	-	-	8[c]	-	-	-	-	3	-	-
Harbour porpoise	-	-	2[a]	-	-	-	-	4	-	-	-	-	-	-	-
White-sided dolphin	-	-	1[a]	-	-	-	-	-	-	-	-	-	-	-	-
Striped dolphin	-	-	14	-	-	-	-	1	-	-	-	-	-	-	-
Bottlenose dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pilot whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Risso's dolphin	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Unidentified dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Italy															
Striped dolphins	a	-	a	-	-	a	-	-	-	-	-	-	-	-	-
Bottlenose dolphins	a	-	a	-	-	a	-	-	-	-	-	-	-	-	-
Common dolphins	a	-	a	-	-	a	-	-	-	-	-	-	-	-	-
Japan															
Baird's beaked whale	54	-	-	-	-	62	-	-	-	-	-	-	-	-	-
Killer whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
False killer whale	5	-	-	-	3	5	-	-	-	-	-	-	-	-	-
Short-finned pilot whale[a]	229	-	-	-	-	394	-	-	-	2	-	-	-	-	-
Pacific white-sided dolphin	-	-	1	-	-	-	-	-	-	11	-	-	-	-	-
Bottlenose dolphin	245	-	-	-	21	658	-	-	-	91	-	-	-	-	-
Pantropical spotted dolphin	460	-	-	-	-	38	-	-	-	-	-	-	-	-	-
Striped dolphin	449	-	2	-	-	596	-	1	-	-	-	-	-	-	-
Short-beaked common d.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Risso's dolphin	442	-	-	-	3	489	-	-	-	-	-	-	-	-	-
Dall's porpoise	11,385	-	2	-	-	14,807	-	169	-	-	-	-	-	-	-
Finless porpoise	-	-	6	-	1	-	-	1	-	-	-	-	-	-	-
Unidentified dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified species	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Korea															
Baird's beaked whale	-	-	-	-	-	-	-	1[ab]	-	-	-	-	-	-	-
Short-finned pilot whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pacific white-sided dolphin	-	-	7[bc]	-	-	-	-	3[bg]	-	-	-	-	4[bg]	-	-
Common dolphin	-	-	17[bd]	-	-	-	-	25[bh]	-	-	-	-	29[k]	-	-
Risso's dolphin	-	-	7[ef]	-	-	-	-	2[be]	-	-	-	-	20[l]	-	-
Harbour porpoise	-	-	-	-	-	-	-	1[bg]	-	-	-	-	-	-	-
Finless porpoise	-	-	2[be]	-	-	-	-	14[i]	-	-	-	-	-	-	-
Stejneger beaked whale	-	-	-	-	-	-	-	2[j]	-	-	-	-	1[m]	-	-
Killer whale	-	-	-	-	-	-	-	-	-	-	-	-	1[bg]	-	-
False killer whale	-	-	-	-	-	-	-	-	-	-	-	-	1[bg]	-	-
Bottlenose dolphin	-	-	-	-	-	-	-	-	-	-	-	-	12[n]	-	-
Unidentified dolphin	-	-	-	-	-	-	-	-	-	-	-	-	27[o]	-	-
Mexico															
Vaquita	-	-	-	-	-	-	-	-	-	-	-	-	5[bd]	-	-
Bottlenose dolphin															
Baja California Pacific	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7[c]
Gulf of California	-	-	-	-	4[c]	-	-	-	-	4[c]	-	-	-	-	8[c]
Gulf of Mexico	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15[c]
Risso's dolphin	-	-	-	-	-	-	-	-	-	-	-	-	1[e]	-	-

cont...

Small cetacean catches continued.

Species	1998					1999					2000				
	Direct		Indirect		Live	Direct		Indirect		Live	Direct		Indirect		Live
	Rep.	Est. total	Rep.	Est. total	rep.	Rep.	Est. total	Rep.	Est. total	rep.	Rep.	Est. total	Rep.	Est. total	rep.
Netherlands															
Long-finned pilot whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Atlantic white-sided d.	-	-	29	-	-	-	-	-	-	-	-	-	-	-	-
Common dolphin (?sp.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harbour porpoise	-	-	4	-	-	-	-	-	-	-	-	-	2	-	-
Unidentified dolphins	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Zealand															
Long-finned pilot whale	-	-	1[a]	-	-	-	-	3	-	-	-	-	-	-	-
Bottlenose dolphin	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Common dolphin (?sp.)	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Hector's dolphin - S. Island	-	-	14[b]	-	-	-	-	5[c]	-	-	-	-	10[c]	-	-
Dusky dolphin	-	-	1	-	-	-	-	-	-	-	-	-	2	-	1
Unidentified dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peru															
Dusky dolphin	-	-	7[a]	-	-	-	-	-	-	-	-	-	-	-	-
Long-beaked common d.	-	-	23[b]	-	-	-	-	-	-	-	-	-	-	-	-
Common dolphin (?sp.)	-	-	1[c]	-	-	-	-	-	-	-	-	-	-	-	-
Bottlenose dolphin	-	-	1[d]	-	-	-	-	-	-	-	-	-	-	-	-
Burmeister's porpoise	-	-	16[e]	-	-	-	-	-	-	-	-	-	-	-	-
Unspecified species	-	-	7[f]	-	-	-	-	-	-	-	-	-	-	-	-
South Africa															
Bottlenose dolphin	-	-	28	-	-	-	-	41[a]	-	-	-	-	-	-	-
Common dolphin (?sp.)	-	-	7	-	-	-	-	11[a]	-	-	-	-	-	-	-
Indo-Pacific humpbacked d.	-	-	8	-	-	-	-	8[a]	-	-	-	-	-	-	-
Heaviside's dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Risso's dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spinner dolphin	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified dolphins	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Spain															
Common dolphin (?sp.)	-	-	-	-	-	-	-	2	-	-	-	-	2	-	-
Cuvier's beaked whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
False killer whale	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Harbour porpoise	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Bottlenose dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clymene dolphin	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-
Spinner dolphin	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Long-finned pilot whale	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Short-finned pilot whale	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
Peale's dolphin	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Atlantic spotted dolphin	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Unidentified dolphin	-	-	5	-	-	-	-	4	-	-	-	-	11	-	-
St Lucia															
Short-finned pilot whale	-	-	-	-	-	8[a]	35[a]	-	-	-	-	-	-	-	-
Pygmy killer whale	-	-	-	-	-	2[a]	18[a]	-	-	-	-	-	-	-	-
False killer whale	-	-	-	-	-	3[a]	12[a]	-	-	-	-	-	-	-	-
Melon head whale	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Bottlenose dolphin	-	-	-	-	-	2[b]	20[b]	-	-	-	-	-	-	-	-
Atlantic spotted dolphin	-	-	-	-	-	12[b]	60[b]	-	-	-	-	-	-	-	-
Short-snouted Spinner d.	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Fraser's dolphin	-	-	-	-	-	1[b]	6[b]	-	-	-	-	-	-	-	-
Common dolphin	-	-	-	-	-	1[b]	10[b]	-	-	-	-	-	-	-	-
Striped dolphin	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Sweden															
Harbour porpoise	-	-	14	-	-	-	-	2	-	-	-	-	-	-	-
UK															
White-beaked dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Striped dolphin	-	-	1[a]	-	-	-	-	-	-	-	-	-	-	-	-
Common dolphin(?sp.)	-	-	5[a]	-	-	-	-	4[e]	-	-	-	-	12[g]	-	-
Risso's dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harbour porpoise	-	-	33[b]	-	-	-	-	19[d]	-	-	-	-	34[h]	-	-
White-sided dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bottlenose dolphin	-	-	-	-	-	-	-	1[e]	-	-	-	-	-	-	-
Unidentified Delphinid	-	-	-	-	-	-	-	1[f]	-	-	-	-	-	-	-

cont...

Small cetacean catches continued.

Species	1998					1999					2000				
	Direct		Indirect		Live	Direct		Indirect		Live	Direct		Indirect		Live
	Rep.	Est. total	Rep.	Est. total	rep.	Rep.	Est. total	Rep.	Est. total	rep.	Rep.	Est. total	Rep.	Est. total	rep.
USA															
White whale	-	366[d]	-	-	-	238[o]	-	2	2[n]	-	-	-	-	-	-
Killer whale	-	-	0	0	-	-	-	-	-	-	-	-	-	-	-
Atl. pilot whale	-	-	14[a]	104[a]	-	-	-	3	93	-	-	-	-	-	-
Pac. pilot whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Atlantic white-sided dolphin	-	-	1[b]	34[b]	-	-	-	4	69	-	-	-	-	-	-
Pacific white-sided dolphin	-	-	1[c]	1[c]	-	-	-	0	0	-	-	-	2[q]	5[q]	-
Atl. Bottlenose dolphin			6[d]	66[d]				56	n/a						
Pac. Bottlenose dolphin	-	-	-	-	-	-	-	0	0	-	-	-	-	-	-
Striped dolphin	-	-	4[e]	4[e]	-	-	-	-	-	-	-	-	-	-	-
Pac. Short-beaked common d.	-	-	11[f]	53[f]	-	-	-	-	-	-	-	-	23[q]	75[q]	-
Pac. Long-beaked common d.	-	-	2[g]	2[g]	-	-	-	-	-	-	-	-	2[q]	9[q]	-
Atl. Common dolphin (sp.)	-	-	272[h]	272[h]	-	-	-	3	195	-	-	-	-	-	-
Pacific Common dolphin (sp.)	-	-	-	-	-	-	-	-	-	-	-	-	3[r]	-	-
Spotted dolphin (*Stenella* sp.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Northern right whale dolphin	-	-	-	-	-	-	-	-	-	-	-	-	11[q]	47[q]	-
Atlantic Risso's dolphin	-	-	10[i]	44[i]	-	-	-	-	-	-	-	-	-	-	-
Pacific Risso's dolphin	-	-	-	-	-	-	-	0	0	-	-	-	2[q]	7[q]	-
Atlantic harbour porpoise	-	-	65[j]	778[j]	-	-	-	36	342	-	-	-	-	-	-
Pacific harbour porpoise	-	-	1[k]	>64[k]	-	-	-	28	133	-	-	-	7[p]	26[p]	-
Dall's porpoise	-	-	7[l]	14[l]	-	-	-	4	4[n]	-	-	-	-	-	-
Beaked whales	-	-	11[m]	11[m]	-	-	-	0	0	-	-	-	-	-	-
Unidentified species	-	-	-	-	-	-	-	0	0	-	-	-	-	-	-

Argentina: In the following notes the estimated catch is given, followed by observed catch in brackets: (a) 5 caught by FV *Humpback* and 10 caught by FV *Harengus* between 2/4/98 to 13/4/98. (SC/51/SM45); (b) Buenos Aires coast – gillnet; (c) Tierra del Fuego - gillnet; (d) Figure composed as follows:<100 (34) Tierra del Fuego - gillnet + 68 (3) Ria Gallegos - gillnet.

Australia: In the following notes the estimated catch is given, followed by observed catch in brackets; (a) 3 (0) Gold Coast, Queensland + 0 (1) Shark net, SE Australia, New South Wales+ 1 (1) gillnet, SE Australia, New South Wales; (b) 3 (0) Gold Coast, Queensland + ? (6) SE Australia, New South Wales; (c) Figure composed as follows: 2 (0) Gold Coast, Queensland + 1 (1) SE Australia, New South Wales.

Brazil: Note: All the information for the 1997 and 1998 catches was taken from the revised Prog.Rep. Brazil except for the 12 franciscana and 4 tucuxi caught on Northern RJ State (pers. comm. A.P. Di Beneditto and R. Ramos) 1998. The catches in 1999 and 2000 are pers. comm. Salvatore Siciliano.
In the following notes the estimated catch is given, followed by the observed catch in brackets.
(a) Caught in Rio de Janeiro (pers. comm. A.P. Di Beneditto and R. Ramos - UENF); (b) 17 from Southern (north RS) + 61 from Southern (south RS) + 6 from SW Atlantic + 4 from Praia Grande – S.P. State + 12 from North of RJ State. (pers. comm. A.P. Di Beneditto and R. Ramos) + 1 from northern Rio de Janeiro (pers. comm. S. Siciliano); (c) 4 from Praia Grande - S.P. State + 6 from SW Atlantic + 15 from Northern Rio Grande do Sul; (d) 3 from SW Atlantic; (e) 3 from SW Atlantic + 4 from Northern RJ State (pers. comm . A.P. Di Beneditto and R. Ramos); (f) From Praia Grande - S.P. State; (g) 178 [1986-1999] (1) from Northern Rio de Janeiro + 24 [Aug. 1998 - May 2000] (10) from Central São Paulo + (3) from Northern Rio Grande do Sul + (3) from Northern Rio de Janeiro (pers. comm. A.P. Di Beneditto and R. Ramos); (h) 141 (4) from Northern Rio de Janeiro + (4) from Northern Espírito Santo + (2) from Paraíba + (7) from Northern Rio de Janeiro State (pers. comm. A.P. Di Beneditto and R. Ramos); (i) Caught in Rio de Janeiro (pers. comm. Salvatore Siciliano); (j) Caught in Central Sao Paulo - gillnet; (k) Caught in Southern Brazil - Gillnet. It is only a rough estimate based on extrapolation. For the whole fleet. Data from only nine boats from a fleet of about 140-150 (see Sechi *et al*., 1997); (l) Figure composed as follows: 3 Direct and 3 Indirect from Cananeia Estuary, SP - gillnet + 2 from Northern Rio de Janeiro - gillnet (pers. comm. A.P. Di Beneditto and R. Ramos) + 3 from NE Brazil - gillnet; (m) Caught from Central Sao Paulo; (n) Caught from Central Amazon.

Chile: Figures are taken from SC/51/SM17 and are a mixture of direct and incidental catches.
(a) Port Punta de Choros IV R - Carcass (II) with net marks butchered openly on wharf; meat reportedly used for human consumption; (b) Stranded (III), harpoon wounds; + witness evidence directed take; parts muscle and blubber removed; (c) Stranded with multiple cut marks and flukes severed.

Faroes: (a) NAMMCO Annual Report 1999: Faroe Islands Progress Report 1998; (b) No information.

France: Includes those found stranded with marks indicating that they had been most probably caught in fishing gear. Data are provided by the CRMM-La Rochelle, France.

Germany: (a) 3 from Schleswig-Holstein, Baltic Sea - gillnet + 2 from Mecklenburg-Prepommerania, Baltic Sea - gillnet.

Greenland: (a) No information.

Ireland: (a) Bycatch determined from post-mortems; (b) Bycatch of 1 determined from post-mortem + 13 incidentally caught in surface gillnet; (c) Bycatch of 1 determined from post-mortem + 7 incidentally caught in surface gillnet

Italy: (a) Centro Studi Cetacei della Societa Italiana di Scienze Naturali 1998 and 1999 report in preparation.

Japan: (a) Northern and Southern forms.

Korea: (a) Drift gillnet; (b) East sea; (c) 4 set net, 2 gillnet, 1 drift gillnet; (d) 9 set net, 7 gillnet, 1 drift gillnet; (e) Set net; (f) South sea; (g) Gillnet; (h) 20 set net, 5 gillnet; (i) 1 East sea - gillnet, 13 Yellow sea stow net; (j) 1 gillnet + 1 drift gillnet; (k) East Sea – 2 trap net + 8 purse seine + 7 gillnet + 12 set net; (l) East Sea - 2 gillnet + 17 set net + 1 trap net; (m) East Sea - set net; (n) East Sea - 1 gillnet + 1 set net + South Sea - 10 purse seine; (o) East Sea -1 purse seine + 18 gillnet + 3 set net + 4 trap net + South Sea - 1 set net.

Mexico: (a) See the ETP table for catches taken in the Eastern Tropical Pacific. They are not included here; (b)Captured in the Gulf of California; (c) Permits issued by SEMARNAP. The animals are being kept in captivity at recreational facilities; (d) Gillnet. (e) Pacific - long line.

New Zealand: (a) Pers. comm. R.G. Johnston; (b) From Government observer programme (covering about 10% of range of Hector's dolphin); (c) Number beachcast.

Peru: Figures are taken from SC/51/SM17 and are a mixture of direct and incidental catches. All catches taken from tables 1-4 have been tabled as incidental because it is not clear which were direct and which were incidental.
(a) Salaverry - 4 heads, and skulls/calvaria + Chimbote - 1 head + San Andres - 2 butchered; (b) Salaverry - 19 heads, and skulls/calvaria + Chimbote - 2 heads + Pucusana - 1 head, backbone and viscera on beach; young animal + 1 head found on beach; young animal; (c) Chimbote - relatively fresh head found on beach close to fishmarket; (d) Pucusana - entire but cut specimen found on Naplo beach; (e) Salaverry - 9 heads, and skulls/calvaria + Chimbote - 4 relatively fresh heads found on beach close to fishmarket + 3 heads; (f) Chimbote - 2 + Pucusana - 1 freshly cut stomach of an unidentified small cetacean washed ashore on Naplo beach + 1 Blubber of an unidentified cetacean + 1 Blubber of an unidentified cetacean seen on Naplo beach + San Andres - 2.

South Africa: (a) Pers. comm. P. Best.
St Lucia: All caught in the Caribbean Sea. (a) Harpoon gun; (b) Harpoon gun/hand harpoon.
UK: (a) Bycatch diagnosed at necropsy (England and Wales); (b) 20 from gillnets, 12 unknown but diagnosed at necropsy, 1 reported to SWF in Shetland (2 from Scotland, 30 from England and Wales + 1 from Shetland); (c) Bycatch diagnosed at necropsy (England); (d) 9 diagnosed at necropsy (England and Wales), 4 gillnet fisheries (England), 1 gillnet (E. Scotland), 3 trawl (W. Scotland), 2 diagnosed at necropsy (W. Scotland); (e) Illegal salmon net (Moray Firth); (f) Gillnet fishery (England); (g) 10 England and Wales - stranded/diagnosed at necropsy + 2 Celtic Sea - observed bycatch in set net fisheries; (h) 8 England and Wales - dtranded/diagnosed at necropsy + 12 North Sea - observed bycatch in set net fisheries + 14 Celtic Sea - observed bycatch in set net fisheries.
USA: The reported catch columns include catches reported by observer programmes, from interviews with fishermen and incidental reports (e.g. stranded animals determined to have died in nets). There are no live captures to report. All information is taken from published USA National Marine Fisheries Service Annual Marine Mammal Stock Assessment Reports (SAR) unless otherwise indicated. Stranded animals are not included.
In the following notes the estimated catch is given, followed by observed catch in brackets. (a) 12(12) Pelagic drift gillnet + squid, mackerel, butterfi sh fishery 85(1) + Mid-Atlantic coastal sink gillnet 7(1); (b) 34(1) NE multispecies sink gillnet (US Atlantic and Gulf of Mexico SAR - 2000); (c) For 1998 1(1) WA/CA/OR groundfish trawl (US Pacific SAR - 2000); (d) 63(3) Mid-Atlantic coastal sink gillnet(coastal bottlenose) + 3(3) pelagic drift gillnet (offshore bottlenose); (e) 4(4) Pelagic drift gillnet; (f) 51(9) CA/OR drift gillnet + $\geq$2(2) CA large mesh set gillnet (US Pacific SAR - 2000); (g) $\geq$2(2) CA large mesh set gillnet (US Pacific SAR - 2000); (h) 255(255) Pelagic drift gillnet + 17(17) mackerel joint venture (US Atlantic and Gulf of Mexico SAR - 2000); (i) 9(9) Pelagic drift gillnet + 35(1) Pelagic longline (US Atlantic and Gulf of Mexico SAR - 2000); (j) 332(12) NE multispecies sink gillnet + 446(53) Mid-Atlantic coastal gillnet + 0(0) Pelagic drift gillnet (US Atlantic and Gulf of Mexico SAR – 2000); (k) $\geq$1(1) Klamath River tribal salmon fishery + 63 (n/a) CA large mesh sink gillnet (as described for 1997) (US Pacific SAR - 2000); (l) 3(2) WA/OR/CA groundfish trawl + 4(3) BSAI groundfish trawl + 3(1) Gulf of Alaska trawl + 4(1) BSAI groundfish longline ((US Pacific SAR - 2000 and Alaska SAR - 2000); (m) Pelagic drift gillnet fishery (US Atlantic and Gulf of Mexico SAR - 2000); (n) Estimate is a minimum because some reported takes for an entire fishery only occurred in unsampled sets; (o) pers. comm. D.P. DeMaster – does not include figures for Cook Inlet; (p) Halibut/angel shark set gillnet fishery – Monterey Bay (SC/53/SM9); (q) Swordfish/thresher shark drift gillnet fishery (SC/53/SM9); (r) Set gillnet fishery – non-Monterey strata: Southern California, Ventura, Channel Is., and Morro Bay) (SC/53/SM9).