Annex L

Report of the Sub-Committee on Small Cetaceans

Members: Read (Chair), Aguilar, An, Baker, Berggren, Bjørge, Black-Layne, Bordino, Borsani, Bortolotto, Brownell, Cañadas, Canese, Cipriano, Clark, E., Cozzi, Crespo, Deimer, Di Natale, Dinter, Donahue, Donovan, Fortuna, Fossi, Ilyashenko, Iñíguez, Kim, Kock, Larsen, Lauriano, Lawrence, Lázaro, Lima, Lovell, Marsili, Martin, Mikhalev, Natoli, Northridge, O'Hara, Olafsdottir, Palazzo, Palka, Pamplin, Panigada, Park, Parsons, Pelusi, Perrin, Perry, Pomilla, Rambally, Reeves, Reijnders, Reilly, Ridoux, Ritter, Rogan, Rose, Rosenbaum, Rowles, Sadler, Secchi, Senn, Sequeira, Simmonds, Sohn, Stachowitsch, Suydam, Taylor, Tiedemann, Urbán, Urquiola, Van Waerebeek, Walters, Wang, Wells, Williams, Wilson, Zerbini.

1. ELECTION OF CHAIR

Read was elected Chair.

2. ADOPTION OF AGENDA

The adopted Agenda is given in Appendix 1.

3. APPOINTMENT OF RAPPORTEURS

Rogan and Wilson acted as rapporteurs.

4. REVIEW OF AVAILABLE DOCUMENTS

Documents relevant to the work of the sub-committee were: SC/56/SM1-30 and SC/56/SOS1.

5. REVIEW OF THE STATUS OF FRANCISCANA

5.1 Distribution

The distribution of the franciscana (*Pontoporia blainvillei*) is restricted to the nearshore waters of the Atlantic coasts of Brazil, Uruguay and Argentina. The northern limit of its range is Itaúnas, Espírito Santo State, Brazil (18°25'S; Siciliano, 1994) and the southern limit is the north coast of Golfo San Matias, Chubut Province, Argentina (42°35'S; Crespo *et al*., 1998). The species' range is more or less continuous along the coast, with the exception of two gaps in the Brazilian states of Rio de Janeiro and Espírito Santo. The offshore limit of its distribution is not well understood. It is generally believed that most animals occur within the 30m isobath, but sightings in waters up to and beyond the 50m isobath have been recorded (SC/56/SM9).

5.2 Population structure

A number of studies have examined population structure in franciscana by examining spatial variation in morphological, biological and genetic parameters. Pinedo (1991) initially suggested the existence of two populations, distinguished by morphology, with a smaller form north of the Brazilian state of Santa Catarina and a larger form south of that region. This subdivision was supported by genetic (mtDNA) analysis (Secchi *et al*., 1998), although separation between the two forms appears to be recent (Lazaro *et al*., 2004). Lázaro *et al*. (2004) compared mtDNA markers from four separate geographic regions – two areas in Brazil (Rio de Janeiro and Rio Grande, similar to those analysed by Secchi *et al*., 1998), the Rio de la Plata (including the Uruguayan coast) and Claromecó, Argentina. These authors also found significant differences between franciscanas from Rio de Janeiro (RJ) and those from elsewhere. Analyses of molecular variance showed significant differences between Rio de Janeiro and all southern samples ($\Phi st = 0.461$, $p<0.001$). Among the latter, Claromecó was separated using the classical, frequency-based Fst, but not when molecular distances were used (see Table 1). Estimated gene flow was higher between neighbouring populations and decreased as more distant localities were compared, suggesting that the observed differences might reflect separation by distance, rather than strict isolation. However, the gene flow between individuals from RJ and all the southern populations was estimated to be less than one individual per generation. These authors suggested that a model of strict isolation between Rio de Janeiro and southern populations, coupled with mild isolation by distance in the southern portion of the range, was possible.

Preliminary analysis of mtDNA genetic work on franciscana in Argentina was presented in SC/56/SM14. Based on a small sample size, the authors suggested that an additional population may exist in this region. The number of samples examined was small, however, and the sub-committee concluded that more work was needed before firm conclusions could be drawn.

The sub-committee was informed of recent work by Ott (2002), who used both mtDNA and microsatellite loci to examine the population structure of franciscana over a wide area. From examination of a relatively large number of samples, Ott (2002) suggested the existence of at least three genetically distinct Franciscana populations: (1) Rio de Janeiro; (2) São Paulo and Paraná; and (3) south of Santa Catarina, Rio Grande do Sul, Uruguay and Argentina. Some genetic differentiation was found within the third unit, separating Argentina from the other areas, suggesting the possibility of a fourth population. Information on population structure based on genetic analysis is summarised in Table 1.

The existence of at least three distinct populations of franciscana is supported by a variety of other studies, although the sub-committee did not have time to review this material in detail. Much of this material was summarised in Secchi *et al*. (2003a), who used a combination of biological,

Table 1

Summary of the genetic analyses for population structuring of Franciscana. Only the most significant differences are shown. Sampling locations are presented in Fig. 1.

Paper	FMA	Location	Sample #	Marker	Test	Significance
Secchi *et al.* (1998)	I	Atafona (RJ)	10*	mtDNA (D-loop)	AMOVA (Φ_St = 0.403)	p<0.0001
	III	Rio Grande (RG)	10**			
	IV					
	I	Atafona (RJ)	10*	mtDNA (D-loop)	AMOVA (Φ_St=0.461)	p<0.001
Lázaro *et al.* (2004)	III	Rio Grande (RG)	14 (9**)		PAIRWISE F_st	
					CL(A. IV) vs RP (A. III)	
		Uruguay (RP)	37***		(F_st= 0.107)	p<0.0001
					CL(A. IV) vs RG(A. III)	
	IV	Mar de Ajó (RP)	1+		(F_st= 0.114)	p<0.0001
		Claromecó (CL)	31++			
SC/56/SM14	I	Atafona (RJ)	1*	mtDNA (D-loop)		
	III	Rio Grande (RG)	1**		No populational comparison	
	IV	San Bernardo (SAN)	12			
				mtDNA (D-loop) -microsat.		
Ott (2002)	I	Atafona (RJ)	29 (10*)	(12 loci)	I vs II vs III vs IV	
					AMOVA (Φ_St=0.197) (mtDNA)	p<0.001
	II	São Paulo (SP)	34		(Rst=0.170) (microsat)	p<0.001
		Paraná (PR)	11		I vs II vs III + IV + SC	
		Santa Catarina (SC)	7		AMOVA (Φ_St=0.302) (mtDNA)	p<0.001
		N. Rio Grande				
	III	(RGN)	34		(Rst=0.249) (microsat)	p<0.001
		S. Rio Grande				
		(RGS)	31 (10**)			
		Uruguay (RP)	37***		PAIRWISE Φ_st	
					RJ (A. I) vs SP(A. II) (Φ_st =	
	IV	Mar de Ajó (RP)	1+		0.395) (mtDNA)	p<0.001
		San Bernardo (SAN)	28		(Φ_St=0.123) (Microsat)	p<0.001
					RJ(A. I) vs PR(A. II) (Φ_st =	
		Claromecó (CL)	31++		0.400) (mtDNA)	p<0.001
Valsecchi &						
Zanelatto (2003)	I	Atafona (RJ)	10*	mt DNA (D-loop)	PAIRWISE Φ_st	
					RJ (A. I) vs PR(A. II) (Φ_st =	
					0.530) (mtDNA)	p<0.001
	II	Paraná (PR)	13			
					RG (A. III) vs PR (A. II) (Φ_st =	
					0.310) (mtDNA)	p<0.001
	III	Rio Grande (RG)	11 (9**)			
	IV					

Sample size for microsatellite is smaller (n=207) than for mtDNA (n=243) in Ott (2002); * , ** , *** , + , ++ overlapping samples.

ecological, morphological and genetic information to suggest that the franciscana should be divided into four stocks for the purposes of assessment: two inhabiting coastal waters of Brazil; one in Rio Grande do Sul state (southern Brazil) and Uruguay; and the fourth in the coastal waters of Argentina. These stock designations, referred to as franciscana management areas (FMAs), are illustrated in Fig. 1.

After considering the new genetic information, the sub-committee concluded that there are at least three genetically distinguishable populations of franciscanas (approximating Areas I, II and III-IV). The sub-committee also recognised the possibility of a fourth population in the southern part of the range (separating Areas III and IV). Therefore, the sub-committee considered the delineations of the four FMAs identified by Secchi *et al*. (2003a) to be useful in its consideration of status. However, the sub-committee recognised that some of these stock boundaries are approximate and should be re-considered as new information becomes available. In particular, the sub-committee **recommended** that the exact location of the current stock boundary separating areas II and III should be reviewed as more samples become available. The sub-committee also **recommended** an evaluation of the hiatus in distribution in Area I, to determine whether or not a barrier exists to gene flow in this region.

The sub-committee suggested that all available genetic information be pooled to provide an opportunity for further stratification of the data (e.g. bycatch versus stranded animals) and to consider temporal variation. The sub-committee also **recommended** that further work be done to examine population structure within Areas III and IV and that Bayesian, boundary rank, or other alternatives to pairwise comparison analyses, be conducted in this area. There was some discussion in the sub-committee about the existence of franciscana sub-species, particularly based on the high Φ st values, and it was **recommended** that a phylogenetic tree be used to examine this possibility.

5.3 Abundance

The sub-committee reviewed the results of three line-transect surveys of franciscana, each conducted in an area of high bycatches. Estimates of total abundance derived from these surveys are presented in Table 2.

The first surveys were carried out by Secchi *et al*. (2001) along the Rio Grande do Sul State coast of southern Brazil in 1996. These flights were restricted to areas within 9.3 km of the coast and water depths shallower than 15 m. Thirty-four franciscanas in 29 groups were observed; mean group size was 1.16. Application of a correction factor for the availability component of $g(0)$ resulted in a mean density of 0.657 individuals/km^2.

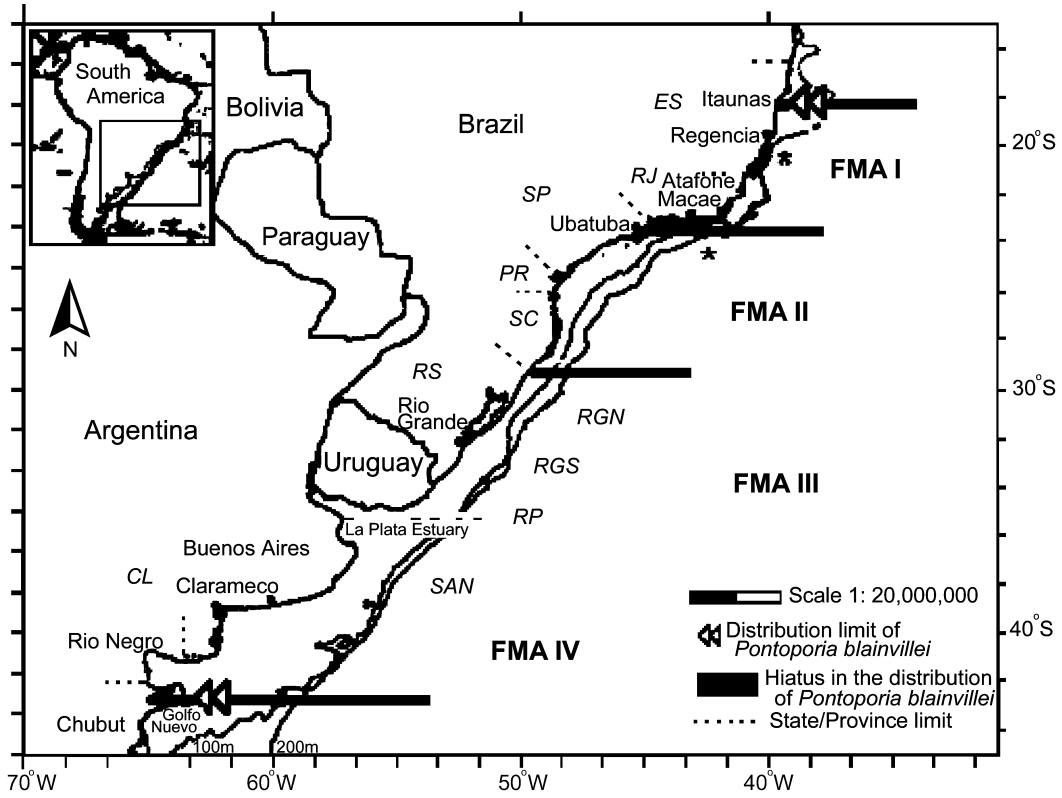

Fig. 1. The known range of the franciscana. Double arrows denote known species boundaries and asterisks mark gaps in distribution. Horizontal lines represent the border of each putative stock. Black lines imply strong confidence regarding the stock boundaries; grey lines indicate moderate confidence; and the dashed line shows weak confidence. FMA I-IV represents the four Franciscana Management Areas described in the current literature.

The second surveys (SC/56/SM9) were carried out in the Argentinean provinces of Buenos Aires and Rio Negro during the summer and autumn of 2003 and the summer of 2004. These flights covered areas within 28 km from the coast and extended to water depths beyond 50 m. One hundred and one franciscanas in 71 groups were observed; mean group size was 1.43. Density was estimated separately for the northern and southern parts of the surveyed area; survey coverage was relatively poor in the southern component. All density estimates were corrected for the availability component of $g(0)$. The corrected density estimate for the northern area during autumn was 0.296 individuals/km^2; the corresponding estimate for the southern area was 0.155 individuals/km^2.

The third series of surveys (SC/56/SM13) was conducted in both winter and spring during 1996-1998 and 2000-2003, also in Buenos Aires province, Argentina. These boat-based surveys extended offshore to a distance of 9.3 km. Eighty-seven sightings were recorded; mean group size was 2.3 animals. A mean density estimate of 0.38 individuals/km^2 was calculated, assuming that $g(0)$ was 1.0.

The sub-committee discussed these estimates at length and identified several concerns regarding the calculation of density and its subsequent scaling to obtain population size. These concerns included: the potential for perception bias in $g(0)$ during both aerial and boat-based surveys; the potential for bias in estimation of group size during aerial surveys; the possibility that dolphins under the plane would be missed by observers; and the potential for dolphin behavioural responses towards or away from the observing platforms. Most importantly, the sub-committee discussed problems associated with extrapolating observed density estimates to unsurveyed areas. The sub-committee noted that it was difficult to determine total abundance, particularly because of uncertainties regarding the offshore limit of the species and the uncertain effect of depth and distance from shore on density.

The sub-committee concluded that the estimates of abundance presented in these three papers could be either positively or negatively biased. Potential sources of positive bias include the extrapolation of density from high-use areas close to shore to other areas of potentially lower density. Potential sources of negative bias include: under-estimation of mean group size during aerial surveys: poor sightability under the aircraft; and perception bias of $g(0)$ in both aerial and boat-based surveys. The sub-committee noted that most of these potential biases would lead to an under-estimate of density in surveyed areas, but that the extrapolation of observed density to unsurveyed areas could lead to a positive bias in abundance. The sub-committee concluded, therefore, that it was *not* appropriate to consider the results of these surveys as minimum estimates of abundance.

The sub-committee made several **recommendations** for improvements in future attempts to estimate the abundance of franciscana. First, the distribution of Franciscana should be examined with respect to depth and distance from shore, to determine the offshore limit of the species and to assist in the application of existing and future estimates of density in estimation of abundance. Second, potential biases in the estimation of group size during aerial surveys should be evaluated, together with an examination of seasonal and spatial variation in this parameter. Third, future surveys should attempt to correct for perception bias in $g(0)$, by using dual observation teams, or other methods. Finally, the sub-committee **recommended** that line transect

abundance surveys be conducted in areas for which estimates of density do not yet exist, particularly in Areas I and II (Fig. 1).

5.4 Life history

Information on the life history of franciscana has been derived from examination of stranded and bycaught animals. The level of sampling has varied, with most information coming from Rio Grande do Sol state (Area 3 in Secchi *et al*., 2003a) and little information from the other areas. In addition to variable sampling effort, the interpretation of Growth Layer Groups in the dentine for age estimation is difficult for this species (Kasuya and Brownell, 1979; Pinedo and Hohn, 2000). Life history parameters vary among areas, particularly reproductive parameters and longevity. In most cases, these parameters have been estimated from small samples.

ASM for females was estimated in Rio Grande do Sul state (Area III) as 3.2-3.7 years (Danilewicz *et al*., 2000), Punta del Diablo, Uruguay (Area III) as 2.2-2.8 years (Kasuya and Brownell, 1979) and Buenos Aries province, Argentina (Area IV) as 4.3-4.5 years (Danilewicz *et al*., 2000). For males, ASM has been estimated as between 3 and 3.6 years in Rio Grande do Sul (Danilewicz *et al*., 2000). The maximum estimated age was 21 years (Pinedo, 1994) from Area III.

Sexual dimorphism occurs in this species, with females achieving greater asymptotic lengths than males. Spatial differences in growth and asymptotic lengths have also been reported, with animals from Rio Grande do Sul markedly larger than those from Paraná, São Paulo and Rio de Janeiro. Asymptotic lengths ranged from 129.8-136.4cm for males and 146.4-161.9cm for females, in Rio Grande do Sul, compared to 113.3-117.1cm and 128.9-144.7cm, for males and females, respectively, from the other areas (Danilewicz *et al*., 2002).

Reproductive seasonality in franciscana also appears to differ among regions. In most areas (e.g. Rio Grande do Sul, southern Brazil) reproduction is seasonal from October – February, with the peak in births between October and December (Danilewicz 2003). In contrast, however, births take place all year round in Rio de Janeiro (Area I) (Di Beneditto and Ramos 2001, cited in Danilewicz 2003). Length and weight at birth in the Rio Grande de Sul area was estimated at 73.4cm and 6.1kg; gestation was estimated to last for 11.2 months. An annual pregnancy rate was calculated in this area to be 0.66.

SC/56/SM16 compared two techniques for estimating survival rates of franciscana. The first approach used data on age at death of stranded animals, adjusted for bias bycaught individuals, and fitted to the Siler model. These results were compared to those derived using model life tables derived from other mammalian species of similar body size and with similar life histories. The two methods resulted in similar estimates of mean survival rates for both immature (non-calf) and adult franciscanas. Read noted that both of these approaches required the input of estimates of r, for which no empirical information existed. The sub-committee **recommended** that alternative approaches be explored to modelling survival rates and potential rates of increase of franciscana using observations of age-at-death (e.g. Udevitz and Ballachey, 1998).

The sub-committee noted the lack of basic information on the life history of this species in some areas and **recommended** that data be collected to allow for estimation of life history parameters (age and size at sexual maturity, annual pregnancy rate), particularly in Areas II and IV. The sub-committee further **recommended** that methods be standardised for estimating life history parameters among areas to allow for more rigorous comparisons.

SC/56/SM20 presented a population viability analysis for the franciscana. Stage-specific deterministic dynamic models, parameterised with values of life history parameters noted above, suggest that the species has a relatively low intrinsic population growth rate and is, therefore, vulnerable to incidental mortality in fisheries. The study examined the four stocks of franciscana separately and, in light of potential differences in their life histories, modelled each separately. A notable difference among stocks was the reproductive seasonality observed among the four units: franciscanas in the three southern stocks are pulse breeders, but the northern stock is composed of year-round breeders. No abundance estimates were available from Areas I and II, so information on franciscana bycatch-per-unit-effort (CPUE) was used to extrapolate from observed density in Area III. This approach assumes that bycatch CPUE is a valid index of density.

The results of this modelling exercise suggested that the potential for population growth in this species is likely insufficient to compensate for current levels of bycatch mortality in some areas, particularly when environmental stochasticity is considered. The sub-committee discussed several methodological issues associated with these findings, particularly the extrapolation of abundance from Area III to other areas using bycatch CPUE as a correction factor. The sub-committee **agreed** that the approach of SC/56/SM20 was based on sufficient data in Area III, but that more empirical data were required from other regions. Wade noted that it would be helpful to include density dependence in the life history terms used in the modelling exercise. The sub-committee recognised that bycatch was the only source of non-natural mortality considered in this study and that other less well documented threats or risk factors could worsen the status of franciscana populations.

5.5 Ecology

A considerable body of information on the ecology of franciscana exists, but this year only one paper covering this topic was presented to the sub-committee. SC/56/SM24 summarised information on group size, group dispersion, group composition, behaviour and presence of predators in northern Patagonia, Argentina (Area IV), where franciscanas were present year-round. The authors of this paper suggested that killer whales are a potential predator of the franciscana in the Rio Negro mouth. These observations indicate that the mouth of the Rio Negro is an important habitat for the franciscana in this region. The sub-committee expressed concern about the development of a new fishery using set gillnets in this area and **recommended** that this fishery should be monitored for interactions with franciscana.

5.6 Habitat

The franciscana is found primarily in coastal habitats, with most sightings occurring near shore in shallow water, although some sightings have been recorded in waters beyond the 50m isobath (SC/56/SM9). Occasional sightings are made as far as 55km offshore, but density in such areas is believed to be considerably lower than in near-shore areas. As noted above, the offshore limit of their distribution remains unknown.

To date, there is no evidence of large-scale migratory movements in this species. However, seasonal movements have been recorded in Bahia Anegada (40°30'S, Argentina)

with more frequent sightings in nearshore waters during the spring and summer than during winter (Bordino *et al*., 1999). Observations from incidental captures suggest that the distribution patterns of different age and sex classes may differ, with females and juveniles more frequently captured in inshore waters off northern Buenos Aires than adult males (SC/56/SM11). In view of the demographic impact of incidental captures of adult female franciscanas, the sub-committee encouraged further work to investigate such patterns of habitat use.

The sub-committee received no new information on threats to the franciscana, other than incidental takes in fisheries. It recognised, however, that a variety of anthropogenic activities could impact this coastal species and encouraged researchers to evaluate their effects. Furthermore, it would be useful to examine patterns of habitat use and selection by franciscanas, to allow for more precise extrapolation of observed densities to unsurveyed areas when estimating abundance.

5.7 Incidental takes

The bycatch of franciscana in fishing operations has been recorded for almost 60 years in some areas (Ott *et al*., 2002). Information on bycatch has been compiled using a number of different methods and techniques, including the examination of stranded animals, interviews with fishers and, in a small number of cases, fisheries observer programmes. To date, most concern regarding the effects of bycatch relates to coastal fisheries using set gillnets, although some records of incidental capture in long lines and trawls has been reported. A summary of fishing types and fishing effort in the area is given in Ott *et al*. (2002) and Secchi *et al*. (2003b). The sub-committee reviewed a number of papers on recent bycatch studies.

SC/56/SM11 reported on incidental mortality of franciscana in coastal gillnet fisheries in northern Buenos Aires, Argentina. Observers monitored approximately 20% of the fishing fleet, mainly from September to April, during a four-year period from 2000-2004. During this period 312 dolphins were observed taken in fishing gear. Seventy-one percent of these bycaught franciscanas were female and most (56%) were immature. Fishing effort fluctuated greatly on a seasonal and inter-annual basis, making extrapolation to the fleet difficult. Fishing effort has increased since 2000. The authors of SC/56/SM11 used CPUE data to estimate that approximately 651 dolphins were removed each year in the entire gillnet fishery. This estimate of total bycatch may be negatively biased, as takes in other fishing gears, such as the trawl fishery, were not included. A large variety of gillnets are used, of varying lengths, material, mesh sizes and twine types and it was suggested that analysis could be undertaken to see if there was any difference in catch rates between gear types.

SC/56/SM12 presented the results of an acoustic trial to reduce incidental mortality in coastal gillnets. A double blind experiment was carried out to examine the efficacy of decreasing franciscana bycatch using 70kHz pingers manufactured by Airmar. In a previous trial, Dukane pingers operating at 10kHz reduced the bycatch of franciscana, but increased the depredation rate of catches and damage to nets caused by sea lions. Forty-three dolphins were caught in the control nets and only two dolphins in the active nets, demonstrating a highly significant reduction in bycatch and the efficacy of the pingers. No differences in the catch of target species were reported from the active and control nets. Furthermore sea lion depredation was not increased by the use of the 70kHz pingers. It was noted however, that trawlers also use areas where coastal gill nets are set, despite current fisheries regulations prohibiting this practice, and that this mobile gear could destroy gill nets equipped with pingers. Thus, effective implementation of pingers is unfeasible until more rigorous enforcement of fishing regulations occurs.

SC/56/SM17 presented results of a small-scale survey of fishers operating from the post of Rio Grande. Logbook data were obtained from 9-10% of the fleet, allowing the authors to estimate the total number of dolphins taken as bycatch by the entire fleet using CPUE data. The total annual bycatch was estimated to be 946 dolphins (CI 467-1525) in 1999 and 719 (CI 248-1413) in 2000. This was further extrapolated to all of Area III, giving a total estimated bycatch of 1,106 (CI 578-1,915) in 1999 and 992 (CI 475-1,832) in 2000. As this method of monitoring bycatch typically results in estimates that are negatively biased, the sub-committee noted that this was probably an underestimate of total bycatch for this region and encouraged the development of an observer programme to monitor this fishery.

Zerbini presented new information on bycatch in an artisanal fishery in south-eastern Brazil (in part of Area II). Previous studies had shown that a small number of individuals were caught annually in this region, but there was very little information on overall fishing effort (Bertozzi and Zerbini, 2002). This study, established in January 2004, was intended to quantify fishing effort (number of boats) and gear type, target species and the seasonality of fisheries by visiting fishing villages in the area. Results to date suggest that there are a minimum of 99 fishing villages/landing sites across the area, with 1,186 boats using gillnets. The fleet is mostly comprised of small boats, using relatively small nets (60-1,800m in length). Using bycatch rates from observer programmes in the same area (but from different years), Zerbini and his colleagues estimated that the bycatch of franciscana in Sao Paulo was approximately 350 animals. The sub-committee welcomed this information and suggested that future analysis should attempt to stratify the data by net type.

The sub-committee **recommended** that estimates of franciscana bycatch be estimated for areas in which they do not currently exist, using observer programmes wherever possible. The sub-committee also **recommended** that potential bias in bycatch estimates derived from interview or logbook data should be evaluated using on-board observer programmes. Given the varying age/sex ratios of the bycatch in some of the fisheries, the sub-committee also **recommended** that wherever possible, the age and sex composition of the bycatch should be evaluated through analysis of samples and observations generated by observer programmes. The sub-committee also **recommended** continued and expanded monitoring of gill net fishing effort throughout the range of the franciscana.

5.8 Other

The sub-committee did not review any other material on the franciscana.

5.9 Consideration of status

As noted above, the sub-committee concluded there are at least three genetically distinct populations of franciscana, with a strong likelihood of there being *at least* one more. Bycatch occurs in gillnet fisheries in all areas where franciscana are present. The sub-committee noted the difficulties in estimating abundance and bycatch levels for franciscana populations and of assessing the effects of these removals. Nevertheless, estimates of both abundance and

bycatch are available for Areas III and IV and, in both areas, bycatch levels exceed the 1% removal level determined by the Scientific Committee to warrant concern. Aproximate annual removal rates were estimated as 3.3% for Area III and 1.6% for Area IV (Table 2). The sub-committee expressed concern regarding the status of franciscana in both of these areas.

It was noted that the Area III population has been listed as 'Vulnerable' by the IUCN. The sub-committee recommended that further effort should be made by IUCN to formally assess the franciscana as a species (currently designated as 'Data Deficient') and also to consider listings of additional sub-populations.

Bycatches also occur in Areas I and II, where there are no estimates of total abundance. Given the fragmentation of franciscanas in Area I, which are genetically isolated from other populations, the sub-committee expressed concern about franciscana in this region and also in Area II, where bycatch levels appear to be high.

6. PROGRESS ON PREVIOUS RECOMMENDATIONS

The sub-committee noted IWC Resolution 2001-13 (IWC, 2002a), which directs it to continue to review progress on recommendations and resolutions relating to critically endangered stocks of small cetaceans on a regular basis. This year the sub-committee reviewed progress on several of these stocks.

6.1 Baiji

The baiji (*Lipotes vexillifer*) is the most endangered cetacean. Its range is restricted to the Yangtze River and its population size is probably only a few tens of animals. Given its critically endangered status, the Commission has requested that the Government of China report progress on the conservation of this species to the Scientific Committee on an annual basis. No new information was received from the Government of China. However, Wells brought to the attention of the sub-committee a press release describing a newly designated reserve for the baiji. The sub-committee welcomed any further information on this development. Reeves also informed the sub-committee of planning for a possible meeting to be held in China later this year (2004) to discuss baiji conservation. The sub-committee welcomed this initiative and looked forward to reviewing any progress on baiji conservation measures at its next meeting.

6.2 Vaquita

The sub-committee has followed with great interest progress on conservation efforts on behalf of the highly endangered vaquita (*Phocoena sinus*); several members of the sub-committee are members of the International Committee for the Recovery of the Vaquita (CIRVA). This year the sub-committee received SC/56/SM5, the report of the third meeting of CIRVA. The sub-committee **reiterated** its endorsement of the fundamental conclusions drawn by CIRVA – that the current grave conservation status of this species is due to fisheries bycatch and, furthermore, that such bycatches threaten the future existence of this species. The sub-committee noted six records of bycatch in the past year and, in general, was disheartened by the lack of any substantial progress in reducing bycatches since last year's meeting. The sub-committee **urged** the Government of Mexico to implement the previous recommendations of CIRVA and to take immediate action to eliminate the bycatch of this species in the northern Gulf of California.

6.3 Harbour porpoise

The harbour porpoise has experienced major declines in parts of its range, primarily as a result of fisheries bycatch. To help assess the status of this species, a major survey was conducted in 1994 to determine the abundance of harbour porpoises, as well as the abundance of minke whales (*Balaenoptera acutorostrata*) and white-beaked dolphins (*Lagenorhynchus albirostris*) (Hammond *et al*., 2002). The results of this project, known as Small Cetacean Abundance in the North Sea and adjacent waters (SCANS), have been widely used to assess the impacts of bycatch on the harbour porpoise in European waters.

SC/56/SM4 described progress on planning for the project Small Cetaceans of the European Atlantic and North Sea, also known as SCANS-II, which has three primary objectives. The first objective is to update estimates of abundance from the original SCANS area and to obtain estimates for previously unsurveyed areas in all shelf waters of the European Atlantic margin. The second is to develop a management framework or procedure for assessing the impact of bycatch and setting safe bycatch limits, work that has been recommended by the Scientific Committee (IWC, 2002b, p.59). The third objective is to develop and recommend methods for monitoring small cetacean populations in periods between major decadal SCANS-type surveys.

Table 2

Current knowledge on abundance and bycatch for FMA. Bycatch estimates for most areas are likely to be negatively biased and should be considered only preliminary in Area II. Abundance estimates for Areas III and IV need further refinement. Some of the data presented below are unpublished and will probably be modified in the future.

Stocks	Variables	Estimate	Minimum	Maximum	Reference
FMA I	Abundance (N)	NA	NA	NA	
	Total annual bycatch	110	44	176	Di Beneditto (2003)
FMA II	Abundance (N)	NA	NA	NA	
	Total annual bycatch	375	-	-	Bertozzi *et al*. (2002); Rosas *et al.* (2002)
FMA III	Abundance (N)	42,078	33047	53542	Secchi *et al*. (2001, 2002)
	Total annual bycatch	1,374	694	2215	SC/56/SM17
FMA IV	Abundance (N)	31,350*	15262	47850	FSC/56/SM13
		40,230**	23840	73834	SC/56/SM9
		34,131***	16360	74397	SC/56/SM9
	Total annual bycatch	651	398	1097	SC/56/SM11

*For Buenos Aires Province. **Autumn estimate (for the entire Area IV). ***Summer and autumn combined estimate (for the entire Area IV).

In the field component of SCANS-II, abundance will be estimated from data collected on shipboard and aerial surveys to be conducted in July 2005. Techniques will be similar to those used on SCANS, but updated to include recent developments in methods for data collection and analysis. A pilot survey will take place in April 2005 to test equipment and methods and to train cruise leaders. Monitoring methods to be investigated will include towed or hull-mounted acoustic arrays for harbour porpoises and the use of observers on platforms of opportunity. Promising methods will then be tested during the main surveys in parallel with methods to estimate absolute abundance. The management framework will be developed along the lines outlined in IWC (2002b, p.59).

Support for SCANS-II is expected from the European Commission LIFE Nature programme and twelve European governments. The latter two objectives are particularly important for the European Commission in the context of implementing the EU Habitats Directive, under which Member States are required to maintain cetacean populations at favourable conservation status. One aim of the project is for the scientific results to support development of a policy basis for the management of bycatch in European Atlantic waters.

At last year's meeting, the sub-committee was informed that SCANS-II would include surveys of offshore waters to the limit of the European Atlantic fishing zone (IWC, 2004, p.323). This offshore component is no longer part of SCANS-II but will form the basis of a future proposal, aimed particularly at estimating the abundance of the short-beaked common dolphin (*Delphinus delphis*), which is taken as bycatch in pelagic trawl fisheries in these waters.

Members of the sub-committee asked how much effort would be carried out in the Baltic Sea, an area where porpoises have experienced major declines. Hammond informed the sub-committee that SCANS-II would not attempt to estimate the absolute abundance in this area, because so few porpoises were found there. However the project would, instead, be developing and testing alternative methods to monitor the population of harbour porpoises in this area.

Hammond noted that the SCANS-II team recognised the expertise held by the sub-committee in various areas to be covered by this project and acknowledged its previous assistance, both with the first survey and also in formulation of management advice, upon the request of ASCOBANS. Hammond requested that the sub-committee continue to provide assistance in these matters. The sub-committee **endorsed** the SCANS-II initiative, offered its continued assistance and encouraged the development of a further proposal to gather funding of the offshore survey component.

SC/56/SM7 presented an abundance estimate of harbour porpoises in the Baltic Sea derived from aerial surveys conducted in summer 2002. The survey area covered approximately 2.25% of the 68,000 km^2 survey area, and represents most of the known distribution of the species in the Baltic Sea. Two sightings of single animals were made, giving an abundance estimate of 93 groups, with 95% confidence limits from 10-460 groups. This contrasts with a previous estimate of 599 groups (CI 200-3,300) from a similar area derived from an aerial survey in 1995. The results of the 2002 survey underscore the poor conservation status of harbour porpoises in the Baltic Sea.

Kock informed the committee of two aerial surveys undertaken in German Baltic waters in 2002 and 2003. A survey is also scheduled for 2004. There were large inter-annual variation in the number of animals observed, with between 60 and 80 porpoises been seen in 2002, but none seen in 2003. The relatively large numbers in 2002 may have been due to an aggregation in this area during 2003, or an influx of animals into this area from the adjacent waters, such as the Kattegat Sea. The sub-committee welcomed this new information on harbour porpoises in the Baltic Sea and looked forward to receiving the results of these surveys next year.

6.4 Bycatch mitigation

The sub-committee has previously voiced its concern about the potential scale of small cetacean bycatch in gillnet and pelagic trawl fisheries to the south of the United Kingdom (IWC, 2004, p.322). The primary evidence for this problem has come from stranded cetaceans, predominantly common dolphin, in the winter months along the English and French coasts. However, the distribution of cetaceans in this area and at this time of year is poorly known. SC/56/SM10 described a survey conducted in January-March of 2004 from the *MV Esperanza* in the Western Approaches of the English Channel and the Celtic Sea. The main aim of the survey was to monitor fisheries in this area that could be responsible for bycatches of small cetaceans and to investigate the distribution and abundance of cetacean populations.

Poor weather meant that systematic survey work was only collected on 19 of the 48 days available. In total 469 sightings of 3,707 animals of 7 different species were recorded. The common dolphin was the most common species observed, followed by harbour porpoises, bottlenose dolphins (*Tursiops truncatus*), minke whales, Risso's dolphins (*Grampus griseus*), striped dolphins (*Stenella coeruleoalba*) and fin whales (*Balaenoptera physalus*). The results of this survey support previous suggestions that common dolphins move along the continental shelf, north into the English Channel and Celtic Sea in winter. Several dead common dolphins were observed, and examination of these carcasses revealed the following injuries: wounds on the rostrum, including deep linear lacerations and impressions; distorted jaws and missing teeth; fluid/foam exuding from the blowhole; and deep cuts in dorsal fins, flippers and flukes. Live common dolphins showing marks and wounds that may have arisen from encounters with nets were also recorded. Members of the sub-committee noted that some of the lacerations observed on the floating carcases could have arisen from the gill-net fisheries that occur in the area.

The sub-committee briefly reviewed SC/56/SM1, which described marine mammal bycatches in the California gillnet fishery. The sub-committee thanked the Southwest Fisheries Science Center for this long-standing submission and noted the value of the data it contained. Read drew the sub-committee's attention to the annual variation in common dolphin bycatch in the pelagic drift net fishery, in which the use of acoustic alarms (pingers) was implemented in 1996. Common dolphin bycatch rates in the years immediately following the introduction of pingers were comparatively low, but in recent years bycatch rates have shown considerable variability and, in some years, occurred at rates comparable to the fishery prior to the implementation of pingers. The sub-committee requested that the authors of SC/56/SM1 explore the sources of this variation in bycatch rate and, in particular, whether the effectiveness of pingers varied over time. Di Natale suggested that more precise measures of bycatch rate that incorporated variation in net length and soak time might

reduce some of the observed variation in bycatch rates. The sub-committee looked forward to reviewing the results of such analyses at future meetings.

6.5 Other

Several geographically isolated populations of the Irrawaddy dolphin *Orcaella brevirostris* in Malampaya Sound, Songkhla Lake and the Ayeyarwady, Mekong and Mahakam rivers are presently, or soon will be, classified as 'critically endangered' in the IUCN Red List (SC/56/SM26). The primary threat to their viability is entanglement in gillnets, but other risk factors include electric fishing, gold mining operations, live captures to stock dolphinaria, and possibly mercury toxicity. A proposal to transfer Irrawaddy dolphins from CITES Appendix II to Appendix I is being sponsored by Thailand for consideration at the 13th Conference of Parties in Bangkok later this year. The proposal is intended as a means of addressing the expected increase in demand for live specimens of this species in international trade. During its review of freshwater cetaceans in 2000 the sub-committee recommended that, given the precarious conservation status of this species throughout its range, all live captures should cease 'until affected populations have been assessed using accepted scientific practices' (IWC, 2001, p.266). Also as part of that review, the sub-committee made a series of recommendations regarding investigation and mitigation of other threats to Irrawaddy dolphins. The proposed revision of the status of *Orcaella brevirostris* in CITES is consistent with the previous assessment of this species made by this sub-committee in 2000. In view of its previous recommendations and the findings of SC/56/SM26, the sub-committee re-iterates its concern about the status of this species and **recommends** that all live captures should cease until affected populations have been assessed using accepted scientific practices.

As last year, the sub-committee did not have sufficient time to consider new information on narwhals (*Monodon monoceros*) and white whales (*Delphinapterus leucas*). However, the sub-committee noted several important developments with these two species. The status of the West Greenland stock of white whales has been assessed using Bayesian methods, with the conclusions that present abundance is approximately 20% of that in 1954 and that continuation of recent catch levels will pose a 90% risk of extinction in 20 years (Alvarez-Flores and Heide-Jørgensen, 2004). This finding reinforces last year's recommendation and the sub-committee again **recommended** that this stock of white whales should be considered to be 'of highest conservation concern' and that efforts should be made to improve its status.

With regard to narwhals, new data were presented in February 2004 at a joint meeting of the Scientific Working Group of the Canada-Greenland Joint Commission on the Conservation and Management of Narwhal and Beluga (JCNB) and the NAMMCO Scientific Committee Working Group on the Population Status of Narwhal and Beluga in the North Atlantic. New stock divisions were proposed for narwhals in the Davis Strait/Baffin Bay region and the results of recent aerial surveys were presented and discussed. As noted in IWC/56/11 appendix K, the estimated total abundance of narwhals in the Inglefield Bredning summering area in Northwest Greenland in 2002 was about 15% of the estimated abundance in 1986. The Joint Scientific Working Group concluded that West Greenland narwhals (including those occupying Inglefield Bredning and other areas) are likely depleted to approximately one fourth of their 'pre-harvested' abundance and that continued hunting at recent levels 'may result in the extinction of West Greenland narwhals in the near future'. The JCNB, which provides management advice for stocks of narwhal shared between Canada and Greenland, has accepted this scientific advice and recommended substantial reductions in removal levels from West and NW Greenland narwhal stocks as well as a moratorium on narwhal hunting in Melville Bay. Having recommended last year that better information should be provided on narwhal stocks in Greenland and Canada, the sub-committee acknowledged the efforts of scientists involved in the research and assessment of those stocks, and expressed its concern for narwhals in this region. The sub-committee **recommended** that narwhal stocks that are either depleted, small in size or currently declining in numbers or range, should be considered of highest conservation concern. Efforts to improve their current status should be undertaken and supported. Particular emphasis should be placed on status where all three of these characteristics apply.

Reeves informed the sub-committee about a proposed plan by the Indian government to construct 31 link canals and dams to transfer water from Himalayan to Peninsular rivers. These proposed constructions are within the Ganges dolphin's known or suspected historical range. In its review of river dolphins in 2000, the sub-committee noted that Ganges dolphins currently exist as a meta-population, with numerous subpopulations isolated to varying degrees by similar structures. It noted that potential threats from further construction and channelisation on the scale proposed include: (a) further fragmentation of the dolphin meta-population, (b) reduction or elimination of habitat in terms of dry-season flow, (c) 'escapement' of dolphins into canals where they are unlikely to return into rivers and are therefore doomed, (d) cascading effects from interrupted migrations of prey organisms, degradation of prey spawning habitat etc., (e) contaminant flux leading to significant changes in chronic and/or acute toxicant exposure for both the dolphins and their prey organisms, (f) loss of complexity (e.g. channelisation downstream and sediment entrapment upstream of dams), making the rivers less habitable for dolphins and (g) changes in the ecology of the delta (e.g. saline encroachment, loss of sediment). Furthermore, the sub-committee considered that structures built in the Brahmaputra basin of India will severely reduce freshwater flow during the dry season downstream in Bangladesh and increase the problem of saline encroachment in the Sundarbans Delta. These changes would also affect Irrawaddy dolphins that inhabit the mangrove channels and inner waters of the delta, and possibly also humpback dolphins and finless porpoises that inhabit outer waters. The sub-committee expressed concern over the effects of the proposed India Rivers Interlink Water Transfer Project and **recommended** a full assessment of the effects of this project on the Ganges dolphins and other small cetaceans.

The sub-committee also noted that between June and September 2003, at least 94 bottlenose dolphins (*Tursiops* spp.) and one pan-tropical spotted dolphin (*Stenella attenuata*) were captured alive in waters of the Solomon Islands. Live capture of dolphins for public display are on-going or have occurred in various regions, but the Solomon Islands capture was notable for the large number of animals captured in a single operation. Most of these removals were from small coastal populations for which abundance and status is unknown. The sub-committee re-iterated its **recommendation** that live captures (or other directed takes) of *any* small cetacean species be proceeded by a full

assessment. The sub-committee was also informed about a recent survey in the waters around the Solomon Islands, which included a marine mammal component, and looks forward to receiving information on the results of this survey.

The genus *Sousa* was the subject of an extensive review at the sub-committee's 2002 meeting in Shimonoseki. SC/56/SM8 addressed two of the recommendations made during this review: that further studies be conducted on cetaceans in East Africa and that abundance estimates of Indo-Pacific humpback dolphins (*Sousa chinensis*) should be generated in areas where this information is lacking. SC/56/SM8 presented abundance estimates for Indo-Pacific bottlenose (*Tursiops aduncus*) and humpback dolphins off the south coast of Zanzibar, based on mark-recapture analysis of photographically identified individuals. These data were collected during boat based surveys conducted between 1999 and 2002. SC/56/SM23 presented new work on Atlantic humpback dolphins (*Sousa teuszii*) in coastal waters of Gabon. This paper addressed two specific recommendations made by the sub-committee in 2002 relating to this genus. New records for the species were presented, which included several sightings from dedicated survey effort. The work in Gabon includes dedicated surveys, genetic sampling and the initiation of long-term photo-identification studies. The sub-committee welcomed this work and looks forward to receiving updates at future meetings. The sub-committee **endorsed** the continuation of these two research projects in Tanzania and Gabon.

7. OTHER PRESENTED INFORMATION ON SMALL CETACEANS

The sub-committee did not have time to review each of the large number of contributed papers that focused on other topics, due to its focus on priority topics at this year's meeting. Nevertheless, the sub-committee managed to briefly review a small number of these papers that were directly relevant to its work. SC/56/SOS1 reviewed the occurrence of odontocete species within the Southern Ocean Sanctuary (SOS), using both published and unpublished sources. Species were grouped into two categories: autochthonous (regular, probably year-round, presence) and vagrants (with three or less confirmed records). Results indicate the presence of 21 autochthonous species and six vagrant species. A single species, *Mesoplodon ginkgodens*, was found contiguous to the Sanctuary boundaries.

Prior to the declaration of the SOS, research programmes focused on estimating abundance of commercially exploited large whales. Since 1994, however, the establishment of broader research programmes has resulted in improved knowledge of the distribution of several small odontocete species in the Southern Ocean. Nonetheless, many species remain poorly known. Until recently, most research cruises pooled mesoplodont beaked whales as 'ziphiid whales', mainly because of the difficulty in identifying beaked whales at sea. The few stranding records south of 45ºS may reflect the paucity of land surfaces, as data from sightings surveys suggests that *M. layardii, M. grayi* and other, unidentified mesoplodonts are widely distributed throughout this region. The available data are too scarce at present to establish the southern distribution range for several beaked whale species, including two smaller species *M. hectori* and *M. peruvianus*, and four larger species *M. bowdoini, M. traversii, M. mirus* and *M. ginkgodens*, but any of these could occur in the region. The presence of Cuvier's beaked whale (*Ziphius cavirostris*) is now confirmed south of the Antarctic Polar Front. Generally, more odontocete species were found, or penetrated further south, in the SOS than expected. Many earlier surveys did not identify the presence of *Mesoplodon* spp., but this is most readily explained by a bias in research effort focused on large whales. The increasing number of highly experienced observers working in this region and the use of high-magnification binoculars will likely add more sightings of these cryptic species. In general, however, the abundance and status of all odontocete populations in the SOS are poorly known. Branch and Butterworth (2001) calculated estimates for sperm whale, killer whale, and southern bottlenose whale from the IDCR/SOWER surveys, but noted important caveats surrounding all of these estimates. The sub-committee thanked the authors for this report, noting that it contained a substantial amount of information on the southern Ocean.

SC/56/SM2 and SC/56/SM3 presented the first results of an IWC co-sponsored (Small Cetacean Voluntary Fund) multi-disciplinary research project (SC/52/SM34), investigating the biology of common dolphins off the Pacific coast of South America. SC/56/SM2 presented a comparative analysis of the diet of long-beaked common dolphin with three other small cetacean species of coastal Peru, based on stomach contents of 281 animals. All these species prey on both pelagic and mesopelagic fishes and appear to demonstrate little selectivity towards individual prey species. The low diversity in diet and high degree of overlap in trophic niche may related to the high productivity of the Peruvian upwelling system. The sub-committee welcomed these initial reports and looked forward to receiving further updates in the future.

8. TAKES OF SMALL CETACEANS

The sub-committee reviewed its table of recent catches (Appendix 2) of small cetaceans. It noted, once again, that this table is incomplete and urged Contracting Governments to provide this information to the IWC. Simmonds noted that, despite concern about bycatches of small cetaceans in driftnets in the Mediterranean, there are few reliable estimates on the magnitude or composition of these takes.

SC/56/BC5 reported on the species identity of 334 products from odontocetes purchased in commercial markets of Japan and the Republic of Korea between March 1993 and October 2003. At least 18 species from five families were detected among the 288 odontocete products from the Japanese market, and at least 10 species from three families were represented among the 46 odontocete products from the Korean market. Baker noted that the surveys were not intended for quantitative estimates of small cetacean takes, but that a qualitative assessment was possible, particularly in cases where a species was found in the market, but not reported in official records of directed or incidental takes (Appendix 1). An example is the sale of products from a Cuvier's beaked whale in the Korean market and the absence of this species in the national progress reports of this country in recent years. It was noted that such discrepancies could be due to mistaken species identification of bycatch, particularly for immature species of some ziphiids, and that such species identification could be improved by genetic analysis of tissue samples collected from bycaught specimens.

Results from a study being undertaken on resident and transient killer whales (*Orcinus orca*) in southeast Kamchatka, Russia, were presented in SC/56/SM15. The authors reported a live-capture operation conducted on 26

September 2003, involving more than 30 resident killer whales. Perrin noted that the relatively high number of re-sightings documented in SC/56/SM15 suggested that the population of resident killer whales in this area was likely to be relatively small. The sub-committee re-iterated it's previous recommendation and again **recommended** that all directed removals, including live captures, should be preceded by a full assessment using accepted scientific practices.

9. WORK PLAN

SC/56/SM22 proposed a series of regional workshops, sponsored by the IWC, to advance assessment and mitigation of cetacean bycatches. The main thrust of the workshops would be to conduct the necessary assessment, monitoring and mitigation functions that will lead, where necessary, to the reduction of bycatch and alleviation of the conservation threat to the population or species under consideration. Many advances have been made in both the assessment and mitigation of cetacean bycatch since pioneering IWC workshop held in 1990, but another workshop of the scope and scale of the 1990 La Jolla meeting may not be appropriate. Instead, given the case-specific nature of the problem, a series of broad-based regional workshops would be more effective, focusing on regions where bycatch problems:

(1) have been given priority by the Scientific Committee as part of its normal review process at annual meetings; and
(2) are not already being addressed.

The precise nature of the workshops would depend on the level of information already available. For example, in some cases an assessment of the problem may already have been undertaken, so the primary focus may be to determine appropriate mitigation and monitoring measures; in other cases, an initial assessment may need to be undertaken. The workshops should be held in regions where bycatch problems are centred. Participants should include appropriate Scientific Committee members, together with invited experts on the biology of the most affected species, local scientists, fishery managers, representatives of the fishing industry and non-governmental organisations and government decision makers.

The sub-committee **strongly endorsed** this proposal and **recommended** collaboration with other organisations with an interest in this matter (e.g. the Convention on Migratory Species, the Committee on Fisheries of the UN Food and Agriculture Organisation, IUCN, relevant international and regional fishery organisations) in the organisation and execution of these workshops.

Read noted that, with respect to those workshops that may concentrate on small cetaceans, it may be most appropriate for any financial IWC contribution to be obtained via the Small Cetaceans Voluntary Fund.

As described above, the special topic of the small cetaceans sub-committee at this year's meeting was a status review of the franciscana. The primary threat to this species is bycatch in gill net fisheries. Read noted that much of the progress made in the assessment of franciscana populations was due to the existence of strong collaboration amongst researchers from Brazil, Uruguay and Argentina and, furthermore, that such a framework of co-operation would support new efforts directed at bycatch mitigation. For example, four workshops have already been held to address scientific questions regarding the status of franciscana and to identify research and conservation priorities. Considering this existing collaborative framework, and the results of the status review conducted at this year's meeting, therefore, the sub-committee **endorsed** a proposal to hold the first regional workshop in Argentina in 2005 to focus on mitigation of bycatches of franciscanas. It was agreed that the 2005 workshop should bring together local, regional and national representatives, including representatives of fisheries and non-governmental organisations, to address this issue. The workshop should evaluate potential mitigation measures, together with their implementation and monitoring, and begin a dialogue among all stakeholders regarding the identification of regional conservation goals for this species.

The sub-committee **recommended** that an inter-sessional working group be formed to develop a detailed plan for the workshop. The working group should: (1) develop an agenda and format for the workshop; (2) identify potential partner organisations that could provide financial and other support; (3) prepare a list of invited experts and stakeholders. In addition, this group should produce a discussion document detailing future proposals for workshops for consideration, based on previous sub-committee discussions and recommendations.

The sub-committee then reviewed its schedule of priority topics. Those currently held by the sub-committee are as follows:

(1) Systematics and population structure of *Tursiops*.
(2) Status of Ziphiids in the Southern Ocean.
(3) Status of cetaceans in the Caribbean Sea.
(4) Population structure and systematics of killer whales.

After consulting with researchers currently working on *Tursiops* systematics, the Chair informed the sub-committee that significant new information would become available in several years time. It was, therefore, agreed to delay a review of this topic until this work has been completed. The sub-committee **agreed** that it would also be useful to delay the review of killer whale population structure and systematics until current work in this area had been completed.

Two new priority topics for 2005 and 2006 were identified. The first topic is the status of common dolphins (*Delphinus* spp.). The sub-committee **agreed** that, given the anticipated location of the meeting in 2006 (France), and the likely availability of local expertise at that venue, it would be most appropriate to review the status of common dolphins at that meeting. The sub-committee noted that a considerable amount of new information on the abundance (from SCANS-II), population structure, life history and bycatch of short-beaked common dolphins from the North Atlantic would likely be available at the 2006 meeting.

The Chair noted that the success of this year's review was due, in large part, to the attendance of expert Invited Participants from South America. Most of the funding required to support the attendance of these individuals came from outside of the IWC, because the Small Cetaceans Fund was almost entirely exhausted. With this proviso in mind, the sub-committee agreed that support for IPs should be carefully optimised at future meetings, and the choice of a priority topic that would involve local expertise would be prudent. Given the generally poor conservation status of the finless porpoise *Neophocaena phocaenoides* throughout its range, a review of this genus at next years meeting in South Korea was suggested. The sub-committee **agreed** that this was an appropriate and urgent topic that would benefit from a thorough review.

10. ADOPTION OF REPORT

The report was adopted at 21:00 hours on 7 July 2004. On behalf of the sub-committee, Read thanked the rapporteurs for their excellent work and expressed his gratitude to the invited experts for their important contributions to the review of the franciscana.

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Appendix 1

AGENDA

1. Convenor's opening remarks
2. Election of Chair
3. Appointment of rapporteurs
4. Adoption of agenda
5. Review of documents
6. Status of franciscana
   - 6.1 Distribution
   - 6.2 Population structure
   - 6.3 Abundance
   - 6.4 Life history
   - 6.5 Ecology
   - 6.6 Habitat
   - 6.7 Incidental takes
   - 6.8 Other
   - 6.9 Consideration of status
7. Progress on previous recommendations
   - 7.1 Baiji
   - 7.2 Vaquita
   - 7.3 Harbour porpoise
   - 7.4 Bycatch mitigation
   - 7.5 Other
8. Other
9. Takes of small cetaceans
10. Work plan
11. Adoption of report

Appendix 2

SMALL CETACEAN CATCHES 2000-2003

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). Catches are tabled according to the calendar year in which they were taken. All direct and incidental removals (including live captures) are recorded but not stranded animals.

	2000					2001					2002					2003				
	Direct		Indirect		Live	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.	Rep.	Est. total	Rep.	Est. total	Rep.
Argentina																				
Franciscana	-	-	49[a]	272-570[ba]	-	-	-	28[e]	160-306	1	-	-	52[g]	215[g]	1[g]	-	-	102[a]	893[a]	2[a]
Peale's dolphin	-	-	1[b]	5[b]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Commerson's dolphin	-	-	103[c]	100-212[cf]	-	-	-	37[d]	-	-	-	-	1[i]	-	-	-	-	-	-	-
Burmeister's porpoise	-	-	1[j]	1[j]	-	-	-	-	-	-	-	-	1[h]	-	-	-	-	9[a]	-	-
Australia																				
Pygmy sperm whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2[s]		
Dwarf minke whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1[t]	-	-
False killer whale	-	-	-	-	-	-	-	1[h]	-	-	-	-	-	-	-	-	-	-	-	-
Bottlenose dolphin	-	-	5[a]	5[a]	-	-	-	9[d]	9[d]	-	-	-	8[i]	8[i]	-	-	-	-	-	-
Bottlenose dolphin sp.	-	-	-	-	-	-	-	3	3[g]	-	-	-	-	-	-	-	-	-	4[q]	-
Indo-Pacific bottlenose dolphin	-	-	-	-	-	-	-	-	-	-	-	-	1[j]	1[j]	-	-	-	-	5[r]	-
Common dolphin (?sp.)	-	-	-	-	-	-	-	7[e]	7[e]	-	-	-	15[k]	15[k]	-	-	-	-	11[o]	-
Irrawaddy dolphin	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indo-pacific humpback dolphin	-	-	1	1	-	-	-	2	2[f]	-	-	-	6[l]	6[l]	-	-	-	6[r]	-	-
Spinner dolphin	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4[nm]	-
Short beaked common dolphin	-	-	9[b]	9[b]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pantropical spotted dolphin	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified dolphin	-	-	6[c]	6[c]	-	-	-	2	2	-	-	-	-	-	-	-	-	-	1[np]	-
Brazil																				
Bottlenose dolphin	-	-	1[a]	-	-	-	-	-	-	-	-	-	-	-	-	0	0	2[mn]	-	-
Franciscana	-	-	103[b]	>1,496[b]	-	-	-	19[f]	-	-	-	-	60[i]	60[i]	-	-	-	101[mr]	10[mq]	-
Tucuxi	3	-	8[c]	-	-	-	-	4[g]	-	-	-	-	18[j]	18[j]	-	0	0	47[p]	50[m]	-
Atlantic spotted dolphin	-	-	2[d]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pantropical spotted dolphin	-	-	-	-	-	-	-	-	-	-	-	-	1[k]	1[k]	-	-	-	-	-	-
Rough-toothed dolphin	-	-	-	-	-	-	-	-	-	-	-	-	1[l]	1[l]	-	0	0	1[mo]	-	0
Striped dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	1[mo]	-	0
Inia geoffrensis	-	-	-	-	78[e]	-	-	-	-	-	>50[h]	>50[h]	-	-	-	Ca. 150[em]	Ca. 150[em]	3[em]	-	0
Clymene dolphin	-	-	-	-	-	-	-	-	-	-	-	-	1[k]	1[k]	-	0	0	6[km]	-	0
Unidentified dolphins	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified species	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Cont.

	2000					2001					2002					2003				
	Direct		Indirect		Live	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.	Rep.	Est. total	Rep.	Est. total	Rep.
Canada																				
Narwhal	-[a]	-	-	-	-	559[b]	-	-	-	-	-[a]	-	-	-	-	-[a]	-	-	-	-
White whale	-[a]	-	-	-	-	375[c]	-	-	-	-	-[a]	-	-	-	-	-[a]	-	-	-	-
Denmark																				
Harbour porpoise	-	-	-	4,149[a]	-	-	-	-	3,887[a]	-	-	-	-	-	-	-	-	-	-	-[b]
Unidentified species	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ETP																				
Bottlenose dolphin	-	-	-	4	-	-	-	-	1	-	-	-	-	10	-	-	-	-	4	-
Pantropical spotted dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Northeastern[a]	-	-	-	295	-	-	-	-	591	-	-	-	-	439	-	-	-	-	289	-
Western-southern[a]	-	-	-	435	-	-	-	-	309	-	-	-	-	206	-	-	-	-	340	-
Coastal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spinner dolphin (? stock)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eastern[b]	-	-	-	275	-	-	-	-	469	-	-	-	-	405	-	-	-	-	287	-
Whitebelly[b]	-	-	-	262	-	-	-	-	372	-	-	-	-	186	-	-	-	-	169	-
Central	-	-	-	2	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
Striped dolphin	-	-	-	11	-	-	-	-	3	-	-	-	-	2	-	-	-	-	11	-
Common dolphin (?sp.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Northern	-	-	-	54	-	-	-	-	94	-	-	-	-	69	-	-	-	-	133	-
Central	-	-	-	223	-	-	-	-	203	-	-	-	-	155	-	-	-	-	140	-
Southern	-	-	-	10	-	-	-	-	46	-	-	-	-	4	-	-	-	-	99	-
Rough-toothed dolphin	-	-	-	27	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-
Risso's dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Short fined pilot whales	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-
Pygmy sperm whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unspecified dolphins	-	-	-	37	-	-	-	-	40	-	-	-	-	28	-	-	-	-	27	-
Faroes																				
Long-finned pilot whale	588[a]	-	-	-	-	918[a]	-	-	-	-	-[b]	-	-	-	-	-[b]	-	-	-	-
Atlantic white-sided dolphin	255[a]	-	-	-	-	546[a]	-	-	-	-	-[b]	-	-	-	-	-[b]	-	-	-	-
Bottlenose dolphin	-	-	-	-	-	6[a]	-	-	-	-	-[b]	-	-	-	-	-[b]	-	-	-	-
Northern bottlenose whale	-	-	-	-	-	2[a]	-	-	-	-	-[b]	-	-	-	-	-[b]	-	-	-	-
France																				
Long-finned pilot whale	-	-	1	-	-	-	-	2[e]	-	-	-	-	2	-	-	-	-	1[j]	-	-
Bottlenose dolphin	-	-	6	-	-	-	-	10[d]	-	-	-	-	13[g]	-	-	-	-	14[jk]	-	-
Striped dolphin	-	-	15[b]	-	-	-	-	15[e]	-	-	-	-	23[h]	-	-	-	-	4[j]	-	-
Short-beaked common dolphin	-	-	218	-	-	-	-	118	-	-	-	-	207	-	-	-	-	41[j]	-	-
Harbour porpoise	-	-	17	-	-	-	-	12	-	-	-	-	9	-	-	-	-	10[j]	-	-
Spotted dolphin	-	-	-	-	-	-	-	1[f]	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified dolphin	-	-	14	-	-	-	-	15	-	-	-	-	18	-	-	-	-	2[j]	-	-

Cont.

	2000					2001					2002					2003				
	Direct		Indirect		Live	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.	Rep.	Est. total	Rep.	Est. total	Rep.
Germany																				
Harbour porpoise	-	-	5[a]	5[a]	-	-	-	8[b]	8[b]	-	-	-	8[c]	8[c]	-	-	-	10[d]	10[d]	-
Greenland																				
Narwhal	600[b]	-	-	-	-	609[b]	-	-	-	-	-[a]	-	-	-	-	-[a]	-	-	-	-
White whale	610[b]	-	-	-	-	398[b]	-	-	-	-	-[a]	-	-	-	-	-[a]	-	-	-	-
Harbour porpoise	1,607[b]	-	-	-	-	1,946[b]	-	-	-	-	-[a]	-	-	-	-	-[a]	-	-	-	-
Long-finned pilot whale	5[b]	-	-	-	-	45[b]	-	-	-	-	-[a]	-	-	-	-	-[a]	-	-	-	-
Ireland																				
Common dolphin	-	-	3	-	-	-	-	1[a]	-	-	-	-	16[c]	-	-	-	-	7[b]	-	-
Harbour porpoise	-	-	-	-	-	-	-	1[a]	-	-	-	-	5[a]	-	-	-	-	-	-	-
Risso's dolphin	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1[c]	-	-
Bottlenose dolphin	-	-	-	-	-	-	-	-	-	-	-	-	1[a]	-	-	-	-	-	-	-
Italy																				
Striped dolphins	-	-	14[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6[b]	-	-
Bottlenose dolphins	-	-	6[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Undetermined delphinids	-	-	4[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Japan																				
Baird's beaked whale	62	-	-	-	-	62	-	-	-	-	62	-	1	-	-	-	-	-	-	-
Killer whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
False killer whale	8	-	-	-	-	26	-	-	-	11	7	-	-	-	-	-	-	-	-	-
Short-finned pilot whale[a]	304	-	-	-	-	342	-	-	-	2	176	-	5	-	-	-	-	-	-	-
Pacific white-sided dolphin	1	-	-	-	-	-	-	-	-	6	-	-	2	-	7	-	-	-	-	-
Bottlenose dolphin	1,426	-	-	-	-	247	-	-	-	12	729	-	-	-	72	-	-	-	-	-
Pantropical spotted dolphin	39	-	-	-	-	10	-	-	-	-	418	-	1	-	-	-	-	-	-	-
Striped dolphin	300	-	-	-	-	484	-	-	-	-	642	-	-	-	-	-	-	-	-	-
Short-beaked common dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Risso's dolphin	506	-	-	-	-	474	-	1	-	3	386	-	1	-	1	-	-	-	-	-
Dall's porpoise	16,171	-	-	-	-	16,650	-	-	-	-	15,949	-	-	-	-	-	-	-	-	-
Finless porpoise	-	-	20	-	-	-	-	8	-	1	-	-	8	-	-	-	-	-	-	-
Stejneger's beaked whale	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harbour porpoise	-	-	-	-	-	-	-	1	-	-	-	-	2	-	3	-	-	-	-	-
Dwarf sperm whale	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified dolphin	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-
Korea																				
Baird's beaked whale	-	-	-	-	-	-	-	1[b]	-	-	-	-	1[bp]	-	-	-	-	1[bc]	-	-
Pacific white-sided d.	-	-	4[bc]	-	-	-	-	41[bi]	-	-	-	-	53[bq]	-	-	-	-	18[by]	-	-
Common dolphin	-	-	29[d]	-	-	-	-	62[bj]	-	-	3[b]	-	76[br]	-	-	-	-	113[bz]	-	-
Risso's dolphin	-	-	20[e]	-	-	-	-	25[bk]	-	-	-	-	2[bs]	-	-	-	-	2[A]	-	-
Harbour porpoise	-	-	-	-	-	-	-	87[bl]	-	-	-	-	34[bt]	-	-	-	-	104[bB]	-	-
Finless porpoise	-	-	-	-	-	-	-	7[bm]	-	-	-	-	14[u]	-	-	-	-	82[C]		

Cont.

	2000					2001					2002					2003				
	Direct		Indirect		Live	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.	Rep.	Est. total	Rep.	Est. total	Rep.
Korea cont.																				
Stejneger's beaked whale	-	-	1[f]	-	-	-	-	-	-	-	-	-	2[bv]	-	-	-	-	2[bD]	-	-
Killer whale	-	-	1[bc]	-	-	-	-	-	-	-	-	-	3[bc]	-	-	-	-	-	-	-
False killer whale	-	-	1[bc]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bottlenose dolphin	-	-	12[g]	-	-	-	-	3[bn]	-	-	-	-	4[bw]	-	-	-	-	1[E]	-	-
Dall's porpoise	-	-	-	-	-	-	-	2[bo]	-	-	-	-	1[ab]	-	-	-	-	-	-	-
Unidentified dolphin	-	-	27[h]	-	-	-	-	-	-	-	-	-	4[bx]	-	-	-	-	7[bF]	-	-
Mexico[a]																				
Vaquita																				
Gulf of California	-	-	5[bd]	-	-	-	-	2[d]	-	-	1	-	-	-	-	-	-	-	-	-
Bottlenose dolphin																				
Baja California Pacific	-	-	-	-	8[e]	-	-	-	-	-	1[f]	-	1	-	-	-	-	-	-	-
Gulf of California	-	-	-	-	15[c]	-	-	1	-	15	-	-	-	-	0	-	-	-	-	-
Gulf of Mexico	-	-	-	-	7[e]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Risso's dolphin	-	-	1[e]	-	-	-	-	--	-	-	-	-	-	-	-	-	-	-	-	-
Netherlands																				
Harbour porpoise	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Zealand																				
Long-finned pilot whale	-	-	-	-	-	-	-	-	-	-	-	-	1[e]	-	-	-	-	-	-	-
Bottlenose dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Common dolphin (?sp.)	-	-	1	-	-	-	-	3[b]	-	-	-	-	2[d]	-	-	-	-	33[d]	-	-
Hector's dolphin	-	-	10[a]	-	-	-	-	13[c]	-	-	-	-	6[f]	-	-	-	-	+[i]	-	-
Maui's dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+[j]	-	-
Dusky dolphin	-	-	2	-	1	-	-	3[d]	-	-	-	-	-	-	-	-	-	-	-	-
Killer whale	-	-	-	-	-	-	-	-	-	-	-	-	1[g]	-	-	-	-	-	-	-
Maui's dolphin	-	-	-	-	-	-	-	-	-	-	-	-	2[h]	-	-	-	-	-	-	-
Oman																				
Indo-Pacific hump-backed dol.	-	-	-	-	-	-	-	6	-	-	-	-	1	-	-	-	-	1	-	-
Bottlenose dolphin	-	-	6	-	-	-	-	8	-	-	-	-	1	-	-	-	-	-	-	-
Common dolphin	-	-	6	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Spinner dolphin	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Dwarf sperm whale	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
False killer whale	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified dolphin	-	-	1	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-
Peru																				
Dusky dolphin	-	-	12[a]	-	-	-	-	2[a]	-	-	-	-	-	-	-	-	-	-	-	-
Long-beaked common dolphin	-	-	20[a]	-	-	-	-	7[a]	-	-	-	-	161[c]	-	-	-	-	-	-	-
Common dolphin	-	-	-	-	-	-	-	-	-	-	-	-	1[c]	-	-	-	-	-	-	-

Cont.

	2000					2001					2002					2003				
	Direct		Indirect		Live	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.	Rep.	Est. total	Rep.	Est. total	Rep.
Peru cont.																				
Bottlenose dolphin	-	-	6[a]	-	-	-	-	1[a]	-	-	-	-	-	-	-	-	-	-	-	-
Burmeister's porpoise	-	-	39[a]	-	-	-	-	14[a]	-	-	-	-	125[c]	-	-	-	-	-	-	-
Unidentified dolphins	-	-	-	-	-	-	-	-	-	-	-	-	17[d]	-	-	-	-	-	-	-
Unspecified species	-	-	79[ab]	-	-	-	-	12[ab]	-	-	-	-	70[c]	-	-	-	-	-	-	-
Russian Federation																				
White whale	22[a]	-	-	-	-	7[a]	-	-	-	-	20[ab]	-	-	-	-	-	-	-	-	-
South Africa																				
Indian Ocean bottlenose dolphin	-	-	-	-	-	-	-	22	-	-	-	-	35	35	-	-	-	36[ab]	36[ab]	-
Long-beaked common dolphin	-	-	-	-	-	-	-	13	-	-	-	-	32	32	-	-	-	31[ab]	31[ab]	-
Indo-Pacific humpbacked dol.	-	-	-	-	-	-	-	2	-	-	-	-	9	9	-	-	-	3[ab]	3[ab]	-
Unidentified dolphins	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-
Spain																				
Common dolphin (?sp.)	-	-	3	-	-	-	-	4	-	-	-	-	8[m]	-	-	-	-	77[q]	77[q]	-
Cuvier's beaked whale	-	-	1	-	-	-	-	-	-	-	-	-	10[hn]	-	-	-	-	-	-	-
Blainville's beaked whale	-	-	-	-	-	-	-	-	-	-	-	-	1[gh]	-	-	-	-	-	-	-
Gervais' beaked whale	-	-	-	-	-	-	-	-	-	-	-	-	1[gh]							
Beaked whale	-	-	-	-	-	-	-	-	-	-	-	-	1[ci]	-	-					
Harbour porpoise	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	6[jr]	-	-
Bottlenose dolphin	-	-	-	-	-	-	-	2	-	-	-	-	7[o]	-	-	-	-	3[bs]	8[bs]	-
Long-finned pilot whale	-	-	-	-	-	-	-	-	-	-	-	-	4[bi]	-	-	-	-	-	-	-
Short-finned pilot whale	-	-	-	-	-	-	-	-	-	-	-	-	1[ch]	-	-	-	-	-	-	-
Pilot whale(?)	-	-	2[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peale's dolphin	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Atlantic spotted dolphin	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Striped dolphin	-	-	1	-	-	-	-	1	-	-	-	-	12[bi]	-	-	-	-	20[t]	53[t]	-
Pygmy sperm whale	-	-	-	-	-	-	-	1	-	-	-	-	1[ch]	-	-	-	-	-	-	-
White sided dolphin	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1[ek]	-	-
Risso's dolphin	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dwarf sperm whale	-	-	-	-	-	-	-	-	-	-	-	-	1[bh]	-	-	-	-	-	-	-
Killer whale	-	-	-	-	-	-	-	-	-	-	-	-	1[p]	-	-	-	-	-	-	-
False killer whale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1[fl]	-	-
Unidentified dolphin	-	-	12	-	-	-	-	1	-	-	-	-	1[bi]	-	-	-	-	3[h]	52[h]	-
Sweden																				
Harbour porpoise	-	-	5[a]	-	-	-	-	3[b]	-	-	-	-	3[c]	-	-	-	-	5[d]	-	-
Tanzania, Zanzibar																				
Atlantic bottlenose dolphin	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-
Indo-Pacific bottlenose dolphin	-	-	-	-	-	-	-	12	-	-	-	-	11	-	-	-	-	15	-	-
Risso's dolphin	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-	-	-	1	-	-
Indo-Pacific humpback dolphin	-	-	-	-	-	-	-	5	-	-	-	-	1	-	-	-	-	4	-	-
Spotted dolphin	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	2	-	-
Spinner dolphin	-	-	-	-	-	-	-	18	-	-	-	-	-	-	-	-	-	10	-	-

Cont.

	2000					2001					2002					2003				
	Direct		Indirect		Live	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.	Rep.	Est. total	Rep.	Est. total	Rep.
Turkey																				
Harbour porpoise	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	-	-	-	-	-
Unidentified dolphins	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-	-	-	-	-	-
UK																				
Common dolphin (?sp.)	-	-	12[a]	-	-	-	-	72[c]	-	-	-	-	-	-	-	-	-	-	-	-
Shortbeaked common dolphin	-	-	-	-	-	-	-	-	-	-	-	-	37[d]			-	-	120[f]	-	-
Harbour porpoise	-	-	34[b]	-	-	-	-	11	-	-	-	-	29[e]	-	-	-	-	22[g]	-	-
Bottlenose dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Striped dolphin	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified delphinid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
USA																				
White whale	240[e]	-	-	-	-	463[d]	-	-	-	-	394[n]	-	-	-	-	-	-	-	-	-
Killer whale	-	-	-	-	-	-	-	2[o]	2[o]	-	-	-	-	-	-	-	-	-	-	-
Atlantic pilot whale (*Globicephala* sp.)	-	-	3[f]	58[f]	-	-	-	16[p]	94[p]	-	-	-	-	-	-	-	-	-	-	-
Pacific pilot whale (*Globicephala macrorhynchus)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1[y]	5[y]	-
Atlantic white-sided dolphin	-	-	1[g]	26[g]	-	-	-	3[q]	28[q]	-	-	-	-	-	-	-	-	-	-	-
Pacific white-sided dolphin	-	-	2[b]	5[b]	-	-	-	2[r]	6[r]	-	-	-	1[m]	5[m]	-	-	-	-	-	-
Atlantic bottlenose dolphin	-	-	5[h]	338[h]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pacific bottlenose dolphin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pacific short-beaked common dolphin	-	-	23[b]	75[b]	-	-	-	7[r]	22[r]	-	-	-	9[m]	49[m]	-	-	-	17[y]	84[y]	-
Pacific long-beaked common dolphin	-	-	2[b]	9[b]	-	-	-	-	-	-	-	-	4[m]	15[m]	-	-	-	-	-	-
Atlantic common dolphin (sp.)	-	-	6[i]	273[i]	-	-	-	2[s]	126[s]	-	-	-	-	-	-	-	-	-	-	-
Pacific common dolphin (sp.)	-	-	-	3[c]	-	-	-	0[t]	3[t]	-	-	-	-	3[l]	-	-	-	-	-	-
Northern right whale dolphin	-	-	11[b]	47[b]	-	-	-	5[r]	9[r]	-	-	-	3[m]	15[m]	-	-	-	1[y]	5[y]	-
Atlantic Risso's dolphin	-	-	2[j]	56[j]	-	-	-	4[x]	26[x]	-	-	-	-	-	-	-	-	-	-	-
Pacific Risso's dolphin	-	-	2[b]	7[b]	-	-	-	-	-	-	-	-	-	-	-	-	-	4[y]	20[y]	-
Atlantic harbour porpoise	-	-	16[k]	528[k]	-	-	-	5[u]	79[u]	-	-	-	-	-	-	-	-	-	-	-
Pacific harbour porpoise	-	-	7[a]	26[a]	-	-	-	1[v]	5[v]	-	-	-	-	16[l]	-	-	-	-	-	-
Dall's porpoise	-	-	-	-	-	-	-	2[w]	3[w]	-	-	-	-	-	-	-	-	-	-	-

Argentina: In the following notes the estimated catch is given, followed by observed catch in brackets: (a) Buenos Aires coast - gillnet; (b) Tierra del Fuego - gillnet; (c) figure composed as follows: <100 (34) Tierra del Fuego - gillnet + 141-112 (69) Ria Gallegos - gillnet; (d) figure composed as follows: 31 Tierra del Fuego - gillnet + 6 Santa Cruz; (e) Buenos Aires coast - gillnet; (f) Ria Gallegos and La Angelina (Santa Cruz) - gillnet; (g) Buenos Aires coast - gillnet-driftnet; (h) Buenos Aires coast; (i) Santa Cruz coast - gillnet; (j) Tierra del Fuego - gillnet.

Australia: In the following notes the estimated catch is given, followed by observed catch in brackets: (a) figure composed as follows: 3 (0) Gold Coast, Queensland + 0 (1) Shark net, SE Australia, New South Wales + 1 (1) gillnet, SE Australia, New South Wales; (b) figure composed as follows: 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; (d) figure composed as follows: 1 (0) Sunshine Coast, Queensland + 2 (0) Gold Coast, Queensland + 1 (0) gillnet fishery, Gulf of Carpentaria, Queensland + 1 (0) Mackay, Queensland + 0 (2) Probable entanglement SA coastline + 0 (1) euthanased, SA coastline + 1 (0) salmon farm net, Southern Australia; (e) figure composed as follows: 3 (0) Sunshine Coast, Queensland + 2 (0) Gold Coast, Queensland + 0 (2) SE Australia; (f) figure composed as follows: 0 (1) Sunshine Coast, Queensland + 0 (1) Cairns, Queensland; (g) Gulf of Carpentaria, Queensland; (h) SE Australia (NSW) - net entanglement; (i) figure composed as follows: 2 (2) QDPI SCP net, Gold Coast, Queensland + 5 (5) QDPI SCP net, Sunshine Coast, Queensland + 1 (?) entangled in salmonid farm net, SE TAS; (j) probable entanglement, SA coastline; (k) figure composed as follows: 1 (1) Shark control net, Sydney, NSW + 6 (6) QDPI SCP net, Gold Coast, QLD + 4 (4) QDPI SCP net, Sunshine Coast, QLD + 2 (2) probable entanglement SA coastline + 2 (?) SE TAS; (l) figure composed as follows: 1 (1) NT PWC + 1 (1) QDPI SCP net, Mackay, QLD + 4 (4) QDPI SCP net, Sunshine Coast, QLD; (m) figure composed as follows: 1 Gold Coast, Queensland (Burleigh Heads) - June + 2 Gold Coast, Queensland (Surfers Paradise and Burleigh Heads) - October + 2 Gold Coast, Queensland (Currumbin) - December; (n) shark control program; (o) figure composed as follows: salmonid farm net: 2 Tasmania + shark control program: 3 Gold Coast, Queensland (Currunbin, Main

beach and Burleight Heads) - November + 2 Sunshine Coast, Queensland (Wurtulla) - March + 1 Sunshine Coast, Queensland (Marcoola) - September + shark control net: 1 Sunshine Coast + 2 Sydney; (p) Sunshine Coast, Queensland (Rainbow Beach) - September; (q) figure composed as follows: salmonid farm: 1 Tasmania + shark control program: 2 Sunshine Coast, Queensland - January + 1 Gold Coast, Queensland - April; (r) figure composed as follows: 3 SA coastline - propeller strike + 3 SA coastline; (s) SA - OU (probably boat strike); (t) East coast - ship strike.

Brazil: Note: The catches in 1999 and 2000 are pers. comm. S. Siciliano. In the following notes the estimated catch is given, followed by the observed catch in brackets: (a) caught in central São Paulo - gillnet; (b) figures composed as follows: >850 (55) 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 Secchi *et al.*, 1997) + 646 (48) from Rio Grande, southern Rio Grande do Sul (Secchi *et al.*, 2003); (c) 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; (d) caught from central São Paulo; (e) caught from Central Amazon; (f) figure composed as follows: 1 Northern Rio Grande do Sul, gillnets + 18 northern, gillnets; (g) northern; (h) central and high Amazon reports of more than 50 dolphins being caught during October/\November to be used as bait to catch one species of catfish, to export to Colombia and Peru; (i) figure composed as follows: 39 from Rio Grande do Sul - gillnet + 12 from São Paulo - gillnet + 9 from Santa Catarina - gillnet; (j) figure composed as follows: 13 from Bahia + 5 from Ceará - trawl net (2); gillnet (3); (k) Bahia; (l) from Rio Grande do Norte - gillnet; (m) gillnet; (n) figure composed as follows: 1 from Bahia + 1 from São Paulo; (o) São Paulo; (p) figure composed as follows: 4 from Ceará unknown source + 1 from Ceará bottom gillnet + 1 sergipe gillnet + 5 from Espírito Santo gillnet + 4 from Espírito Santo and Bahia - gillnet + 16 from Bahia - gillnet + 10 from Rio de Janeiro - gillnet + 6 from São Paulo - gillnet; (q) Rio de Janeiro; (r) figures composed as follows: 2 Rio de Janeiro + 22 São Paulo + 77 Rio Grande do Sul.

Canada: (a) No information; (b) figure composed as follows: 451 High Arctic + 108 Hudson; (c) figure from Nunavut. figures from Northwest Territories - Beaufort Sea were not available at the time of the report.

Denmark: (a) Vinther and Larsen, 2002 - bycatch is overestimated, as the effect of the use of pingers has not been taken into account; (b) no information.

ETP: (a) includes prorated unidentified spotted and coastal spotted; (b) includes prorated unidentified spinner.

Faroes: (a) NAMMCO; (b) no information.

France: (a) 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; (b) figure composed as follows: 11 Atlantic/Channel + 4 Mediterranean; (c) figure composed as follows: 1 Atlantic/Channel + 1 Mediterranean; (d) figure composed as follows: 9 Atlantic/Channel + 1 Mediterranean; (e) figure composed as follows: 9 Atlantic/Channel + 6 Mediterranean; (f) Caribbean; (g) figure composed as follows: 10 Atlantic/Channel + 3 Mediterranean; (h) figure composed as follows: 16 Atlantic/Channel + 7 Mediterranean; (i) the compilation of data is uncompleted at this date; (j) Atlantic - CRMM; (k) figure composed as follows: 3 Atlantic + 11 Mediterranean (GECEM).

Germany: (a) figure composed as follows: 3 from Schleswig-Holstein, Baltic Sea - gillnet + 2 from Mecklenburg-Prepommerania, Baltic Sea - gillnet; (b) figure composed as follows: 5 from Schleswig-Holstein, Baltic Sea - gillnet + 3 from Mecklenburg-Prepommerania, Baltic Sea - gillnet; (c) figure composed as follows: 1 from North Sea + 4 from Schleswig-Holstein, Baltic Sea + 3 from Mecklenburg-Prepommerania, Baltic Sea - gillnet; (d) figure composed as follows: 7 from North Sea - observer + 1 from Schleswig-Holstein, Baltic Sea + 2 from Mecklenburg-Prepommerania, Baltic Sea - gillnet.

Greenland: (a) no information; (b) NAMMCO.

Ireland: (a) bycatch determined from post-mortems; (b) figure composed as follows: 1 (BIM) + 1 drift nets + 5 diagnosed as bycatch during post-mortem examinations (UCC); (c) bycaught in a pelagic trawler.

Italy: (a) Centro Studi Cetacei. 2002. Cetacei spiaggiati lungo le coste italiana. XV. Rendiconto 2000 (Mammalia). Atti Soc. It. Nat. Museo civ. Stor. Nat. Milano, 142/2001(II):251-264; (b) caught in the Tyrrhenian Sea - gillnet.

Japan: (a) Northern and Southern forms; (b) figures obtained from the Japanese website *www.jfa.maff.go.jp/whale/document/2000progressreport.pdf* - table 9; (c) figures obtained from the Japanese website *www.jfa.maff.go.jp/whale/document/2001progressreport.pdf* - table 9; (d) figures obtained from the Japanese website *www.jfa.maff.go.jp/whale/JapanProgrep.SM2003.pdf - .pdf* - table 9; (e) no information.

Korea: (a) drift gillnet; (b) East Sea; (c) gillnet; (d) figure composed as follows: East Sea - 2 trap net + 8 purse seine + 7 gillnet + 12 set net; (e) figure composed as follows: East Sea - 2 gillnet + 17 set net + 1 trap net; (f) East Sea - set net; (g) figure composed as follows: East Sea - 1 gillnet + 1 set net + South Sea - 10 purse seine; (h) figure composed as follows: East Sea -1 purse seine + 18 gillnet + 3 set net + 4 trap net + South Sea - 1 set net; (i) figure composed as follows: 21 gillnet + 14 set net + 3 trap net + 3 unidentified; (j) figure composed as follows: 18 purse seine + 1 long line + 8 gillnet + 32 set net + 3 trap net; (k) figure composed as follows: 4 purse seine + 5 gillnet + 4 set net + 1 long line + 2 trap net + 9 unidentified; (l) figure composed as follows: 1 long line + 57 gillnet + 29 set net; (m) figures composed as follows: 5 gillnet + 2 set net; (n) figures compose as follows: 1 gillnet + 1 set net + 1 trawl; (o) figures composed as follows: 1 gillnet + 1 set net; (p) drifted; (q) figure composed as follows: 2 long line + 6 driftnet + 11 gillnet + 31 set net + 1 trap net + 2 drifted; (r) figure composed as follows: 4 long line + 3 drift gillnet + 11 gillnet + 47 set net + 2 squid zigging + 2 drifted + 4 unidentified + 3; (s) figure composed as follows: 1 gillnet + 1 unidentified; (t) figure composed as follows: 8 drift gillnet + 8 gillnet + 14 set net + 4 drifted; (u) figure composed as follows: 1 South Sea - unidentified + 3 East Sea - gillnet + 1 East Sea - set net + 2 East Sea - drifted + 7 Yellow Sea - unidentified; (v) figure composed as follows: 1 gillnet + 1 drifted; (w) figure composed as follows: 2 trawl + 2 drifted; (x) figure composed as follows: 2 drift gillnet + 1 gillnet + 1 drifted; (y) figure composed as follows: 3 set net + 11 gillnet + 3 trap net + 1 drifted; (z) figure composed as follows: 59 set net + 29 gillnet + 14 trap net + 1 zigging + 3 drifted + 7 unidentified; (A) figure composed as follows: 1 East Sea unidentified + 1 South Sea gillnet; (B) figure composed as follows: 48 set net + 54 gillnet + 1 long line + 1 drifted; (C) figure composed as follows: 2 South Sea unidentified + 2 East Sea gillnet + 1 East Sea unidentified + 77 Yellow Sea unidentified; (D) figure composed as follows: 1 set net + 1 gillnet; (E) South Sea - unidentified; (F) figure composed as follows: 1 set net + 1 trap net + 1 drifted + 4 unidentified.

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; (f) illegal takes for shark bait.

Netherlands: (a) No information.

New Zealand: (a) South Island - beachcast; (b) gillnet/trawl; (c) figure composed as follows: gillnet - 3 North Island, west coast + 6 South Island, west coast + 4 South Island, east coast; (d) trawl: (e) bottom long line; (f) figure composed as follows: gillnet - 3 South Island, west coast + 3 South Island, east coast; (g) long line - Bay of Plenty; (h) gillnet - North Island, west coast; (i) South Island - no reports received but bycatch is known to have occurred; (j) North Island, west coast - no reports received but bycatch is known to have occurred.

Oman: There is no standardized observer or survey programme and number of records are directly related to beach survey effort, which was lower in 1999 and 2002 than in 2000 and 2001. Records are taken from the Oman Cetacean Database, maintained by the Oman Whale and Dolphin Research Group. Records all result from examination of carcasses encountered during beach or small boat survey showing clear evidence of fisheries interaction (rope or net on body, clear rope or net burns/scars, flensed carcasses).

Peru: Figures are a mixture of direct and incidental catches: (a) figures are taken from Van Waerebeek *et al.* (2002). All catches taken from Table 1 have been tabled as incidental because it is not clear which were direct and which were incidental; (b) mostly meat samples; (c) taken from Salverrry port - pers. comm. K. Van Waerebeek (Source: Peruvian Centre for Cetacean Research (CEPEC) and Asociacion ProDelphinus); (d) taken from San Jose between 14 January 2002 and 27 March 2002. pers. comm. K. Van Waerebeek (Source: Peruvian Centre for Cetacean Research (CEPEC) and Asociacion ProDelphinus).

Russian Federation: (a) figures taken from FAO tables; (b) figure composed as follows: 15 Pacific, northwest + 5 Atlantic, northeast.

South Africa: (a) KwaZulu-Natal; (b) shark nets.

Spain: In the following notes the estimated catch is given, followed by the observed catch in brackets. The numbers for 2000 have been updated according with the information given in Lens (2003). The numbers for 2002 have been updated according with the information given in SC/56/Prog.Rep.Spain. (a) probable pilot whale - ship strike; (b) fishing interaction; (c) collision with ship; (d) gillnet; (e) trawl; (f) long line; (g) military manouvres; (h) Canary Islands; (i) south Spain; (j) Galicia (north Spain); (k) NE Atlantic; (l) Indian Ocean; (m) figure composed as follows: (36) Galicia (north Spain) - gillnet/trawl + 77 (6) Andalucia (south Spain) - fishing interaction + (1) Indian Ocean - long line; (n) figure composed as follows: (9) military manouvres + (1) collision with ship; (o) figure composed as follows: fishing interaction: (3) Canarias + (1) south Spain + (3) Baleares (east Spain); (p) north Spain - shot; (q) figure composed as follows: (36) Galicia (north Spain) - gillnet/trawl + (34) Galicia (north Spain) - diagnosed as captures by gears + 77 (6) Andalucia (south Spain) - fishing interaction + (1) Indian Ocean - long line; (r) figure composed as follows: 3 gillnet + 3 diagnosed as captures by gears; (s) figure composed as follows: (1) Asturies + 8 (1) south Spain + (1) Valencia Region (east Spain); (t) figure composed as follows: fishing interaction: (1) Asturies + 53 (6) Malaga (south Spain) + (5) Catalonia (NE Spain) + (4) south Spain + (4) diagnosed as captures by gears - south Spain.
Sweden: (a) figure composed as follows: 1 Baltic Sea - gillnet + 4 Swedish Skagerrak Sea - Öresund - gillnet; (b) figure composed as follows: 1 Baltic Sea - gillnet + 2 Swedish Skagerrak Sea (1 gillnet + 1 trawl); (c) figure composed as follows: 1 Baltic Sea - gillnet + 2 Skagerrak and Kattegat Seaa, and Öresund - fishing gear; (d) figure composed as follows: 1 Baltic Sea - vessel strike + 4 Skagerrak and Kattegat Seaa, and Öresund - gillnet.
Tanzania, Zanzibar: Data supplied by P. Berggren, Sweden. (a) Zanzibar - driftnet.
Turkey: Radu *et al.* (2003) - incidental catches by Turkish trawlers in the Romanian Exclusive Economic Zone.
UK: (a) figure composed as follows: 10 England and Wales - stranded/diagnosed at necropsy + 2 Celtic Sea - observed bycatch in set net fisheries; (b) figure composed as follows: 8 England and Wales - stranded/diagnosed at necropsy + 12 North Sea - observed bycatch in set net fisheries + 14 Celtic Sea - observed bycatch in set net fisheries; (c) pelagic trawling; (d) 29 UK - stranded /necropsy + 8 Channel - pair trawl fishery; (e) figure composed as follows: 24 UK - stranded/necropsy + 5 skate tangle net fishery, North Sea; (f) figure composed as follows: 25 stranded/necropsy + 95 observed bycatch; (g) figure composed as follows: 11 stranded/necropsy + 11 observed bycatch.
USA: The reported catch columns include catches reported by observer programs, 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) halibut/angel shark set gillnet fishery - Monterey Bay (Quintal, 2003); (b) swordfish/thresher shark drift gillnet fishery (Quintal, 2003); (c) set gillnet fishery - non-Monterey strata: Southern California, Ventura, Channel Is., and Morro Bay) (Carretta, 2001): (d) figure includes 51 struck and lost - does not include figures for Cook Inlet: (e) figure includes 28 struck and lost - does not include figures for Cook Inlet; (f) NW Atlantic and Mid Atlantic - figure composed as follows: 34(2) south New England *Illex* squid trawl + 24(1) pelagic long line: (g) NW Atlantic, Northeast sink gillnet: (h) figure composed as follows: Coastal stock - 202(3) Mid-Atlantic, coastal gillnet + 4(1) Florida coast, south Atlantic shark gillnet fishery + offshore stock - 132(1) NW Atlantic, northeast sink gillnet; (i) NW and Mid-Atlantic, south New England *Loligo* squid trawl; (j) NW and Mid-Atlantic - figure composed as follows: 41(1) pelagic long line + 15(1) northeast sink gillnet; (k) Gulf of Maine/Bay of Fundy and Mid-Atlantic - figure composed as follows: 507(15) northeast sink gillnet + 21(1) Mid-Atlantic coastal gillnet; (l) Carretta and Chivers, 2003 - California set gillnet fishery; (m) SC/55/SM3 - California drift gillnet fishery; (n) figure includes 30 struck and lost - does not include figures for Cook Inlet; (o) Bering Sea, animals hit trawl vessel propellers; (p) figure composed as follows: 11(11) NW and Mid-Atlantic herring trawl and 29(1) NW and Mid-Atlantic pelagic long line + 54 (4) Atlantic pelagic long line; (q) figure composed as follows: 26(1) Northeast sink gillnet and 2(2) herring trawl; (r) California swordfish/thresher shark drift gillnet fishery; (s) south New England *Loligo* squid trawl; (t) California halibut/angel shark set gillnet; (u) figure composed as follows: 53(4) NE sink gillnet, 26(1) Mid-Atlantic coastal gillnet; (v) figure composed as follows: 2(1) Bering Sea trawl, 3(0) California halibut/angel shark set; (w) Bering Sea trawl; (x) figure composed as follows: 26 (4) Atlantic pelagic long line; (y) SC/56/SM1- preliminary estimates of marine mortality in California gillnet fisheries.

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