Annex L

Report of the Sub-Committee on Small Cetaceans

Members: Fortuna (Convenor), Scheidat (co-Convenor), An, Baker, Baulch, Bell, Bjørge, Brockington, Brownell, Cavalcanti, Chilvers, Cipriano, Collins, Costa, Crespo, Currey, Diallo, Donovan, Funahashi, Gallego, Galletti, Genov, Gonçalves, Hall, Hoelzel, Holcer, Holm, Ilyashenko, Iñiguez, Kerem, Kim, Kock, Lauriano, Leslie, Liebschner, Lundquist, Marcondes, Mate, Notarbartolo di Sciara, Öztürk, Panigada, Parsons, Porter, Prewitt, Rendell, Reyes, Ridoux, Ritter, Rodriguez Fonseca, Rojas Bracho, Rose, Rosenbaum, Rowles, Santos, Shpak, Simmonds, Slooten, Stachowitsch, Stimmelmayr, Suydam, Tiedemann, Thomas, Urbán, Vély, Wade, Williams, Wilson, Ylitalo, Zerbini.

1. CONVENER'S OPENING REMARKS

Fortuna welcomed the participants to the meeting.

2. ELECTION OF CHAIR

Fortuna was elected Chair and Scheidat co-Chair.

3. APPOINTMENT OF RAPPORTEURS

Collins, Porter, Genov and Thomas undertook the duties of rapporteurs.

4. ADOPTION OF AGENDA

The adopted agenda is given as Appendix 1.

5. REVIEW OF AVAILABLE DOCUMENTS

The following available documents contained information relevant to the work of the sub-committee: SC/65b/SM01-SM27, SC/65b/SD04, SC/65b/SH05, SC/65a/SCP01, National Progress Reports, Bolaños-Jiménez *et al.* (2014); Cunha *et al.* (2014); Frantzis (2009); Genov *et al.* (2008); Mackenzie and Clement (2014); Mendez *et al.* (2013); Ministry for Primary Industries (2013); Slooten *et al.* (2013); Perrin *et al.* (2007); Van Bressem *et al.* (2014).

Any abundance estimates presented or referenced in this report were not formally evaluated by the sub-committee.

6. REVIEW OF STATUS OF SMALL CETACEANS IN THE EASTERN MEDITERRANEAN AND RED SEAS

At SC/65a the sub-committee had decided that, given the location of the meeting, review of the status of small cetaceans in the eastern Mediterranean and Red Seas would be the priority topic at this year's meeting.

6.1 Review of status of small cetaceans in the eastern Mediterranean Sea

The sub-committee noted that relatively little information was received on the eastern Mediterranean Sea and that several areas in the region remain poorly known with respect to the status of small cetaceans. The sub-committee considered information on cetaceans primarily in the Adriatic and Aegean Seas, Libyan waters and the Levantine Basin.

6.1.1 Adriatic Sea

SC/65b/SM20 provided a general review of cetacean species in the Adriatic Sea. The common bottlenose dolphin (*Tursiops truncatus*) is the only species that occurs throughout the basin and it appears to have a continuous distribution, mostly over the continental shelf area. In 2010 (as part of the Italian cetacean bycatch monitoring scheme, with support from State Institute for Nature Protection, Croatia) and 2013 (EU IPA Adriatic NETCET project) aerial surveys were carried out by the Italian National Institute for Environmental Protection and Research (ISPRA) and Blue World Institute (Croatia), to provide snapshots of the summer distribution and abundance of common bottlenose dolphins and other cetaceans in the entire Adriatic Sea. These surveys confirmed that the common bottlenose dolphin is the only cetacean species regularly present in the entire Adriatic Sea (Bearzi *et al.*, 2009; Bearzi and Notarbartolo di Sciara, 1995; Notarbartolo di Sciara *et al.*, 1993) and generated a minimum abundance estimate of 5,772 animals (CV=0.25, 95% CIs=3,467-9,444, uncorrected for availability and perception bias). Genetic analyses indicate fine-scale structuring within the Adriatic Sea with putative local sub-populations, suggestive of several management units (Gaspari *et al.*, 2013).

Results from the 2010 aerial survey yielded an uncorrected population estimate for striped dolphins (*Stenella coeruleoalba*) of over 15,000 individuals in the southern Adriatic (Fortuna *et al.*, 2011). Initial genetic results suggest connectivity to the wider Mediterranean population. Sightings of mother-calf pairs of Cuvier's beaked whales (*Ziphius cavirostris*) suggest that the southern Adriatic Sea is a nursing area. However this species as well as the Risso's dolphin (*Grampus griseus*) are present in smaller numbers and only in the southern Adriatic Sea. The common dolphin (*Delphinus delphis*), a once abundant species, is considered extremely rare in the Adriatic, with encounters limited to solitary animals (Bearzi and Notarbartolo di Sciara, 1995; Genov *et al.*, 2012; Rako *et al.*, 2009).

The Swiss NGO OceanCare provided an inventory of the seismic offshore explorations for oil and gas conducted in the Mediterranean Sea since 2006. They noted 'an alarming geographical overlap with areas proposed as being of importance for cetaceans'. The inventory, as presented, is a work in progress, and may not be exhaustive. OceanCare also reported that the information about these surveys is not readily accessible. The sub-committee thanked OceanCare for providing this information and noted in discussion the need to gain an improved understanding of where and when seismic surveys are taking place.

The discussion on beaked whales and anthropogenic noise was carried out in the joint session with the sub-committee on Environmental Concerns (see Annex K, item 9.4).

Genov provided information on a local population of common bottlenose dolphins that occurs year round along the coasts of Slovenia and the Gulf of Trieste (northern Adriatic Sea) that has been monitored since 2002, primarily through boat-based surveys using photo-identification techniques

(Genov *et al.*, 2008). Closed population mark-recapture estimates show considerable variability in abundance between years possibly driven by yearly changes in habitat use, rather than variability in population size. The estimate for 2008 (considered by Genov to be the most reliable and representative) is 74 animals - 95 % CI=57-90 (Genov, 2011) and between 40 and 100 animals use the study area on an annual basis and, based on photo-identification data (Genov *et al.*, 2009) may represent a distinct management unit. Interactions with trawlers are common and were recorded in 32% of all dolphin encounters. Incidental mortality and cases of live-entangled dolphins have been documented. Preliminary analysis of biopsy samples suggests that PCB levels are relatively high, particularly in males. Survey data also suggest that dolphin occurrence is negatively correlated with recreational boat traffic in coastal areas during summer months (Genov *et al.*, 2008).

The sub-committee thanked Holcer and colleagues for compiling this overview and Genov for supplementing the information in the review. The sub-committee **recommends** the following for the Adriatic Sea*:*

- monitoring programmes should be coordinated among the neighbouring countries to enable regular basin-wide surveys of populations and monitoring of threats (e.g. links with ACCOBAMS ongoing effort on Mediterranean bottlenose dolphin conservation plan and European Marine Strategy Framework Directive); and
- continue and strengthen ongoing studies in the region, particularly in offshore areas.

6.1.2 Aegean Sea

Frantzis (2009) summarised the present status of knowledge on small cetaceans in Greek waters, and more recent publications (Bearzi *et al.*, 2011; Bonizzoni *et al.*, 2014) complementing that information. Five species of small cetaceans are present year-round in Greek waters: striped dolphin, common bottlenose dolphin, short-beaked common dolphin, Risso's dolphin and Cuvier's beaked whale. Additionally, the harbour porpoise (*Phocoena phocoena*) has been recorded in the northern Aegean Sea. The false killer whale (*Pseudorca crassidens*) has been recorded rarely, while the rough-toothed dolphin (*Steno bredanensis*) has been recorded in offshore waters in the central Ionian Sea. The common bottlenose dolphin and striped dolphin are the most common species, followed by the short-beaked common dolphin and the less abundant Risso's dolphin. Cuvier's beaked whale is present along the Hellenic Trench from Corfu to Rodos Island, and over steep depressions of the Aegean plateau. The abundance of small cetaceans has only been estimated in four locations and for three species: about 150 *T. truncatus* in the Amvrakikos Gulf (Bearzi *et al.*, 2008a), 15 *D. delphis* in the Inner Ionian Sea Archipelago (Bearzi *et al.*, 2008b), about 800 *S. coeruleoalba*, and about 30 *D. delphis* in the Gulf of Corinth (Bearzi *et al.*, 2011) and about 100 *T. truncatus* in the Evoikos Gulf (Bonizzoni *et al.*, 2014). No other abundance estimates are available for the Greek seas. While trends for Cuvier's beaked whale are unknown, a decrease in sightings and strandings (with no reduction in search effort) during the last decade raises the concern of population decline. The most important identified threats for small cetaceans in Greek waters are reduced availability of prey caused by overfishing, incidental mortality in fishing gear, chemical pollution, anthropogenic noise (particularly military sonars and high-energy sounds from other sources) and plastic debris. Intentional killing is still a cause of mortality in Greece, although it seems to be occurring less often. Another emerging potential threat is the noise produced by Acoustic Harassment Devices or Acoustic Deterrent Devices, sold to coastal artisanal fishermen and mariculture owners, which may have the effect of excluding cetaceans from their normal habitat. Finally, climate change and associated thermal stress is a potential threat to Aegean harbour porpoises.

The sub-committee **recommends** that authorities in Greece encourage local governments to more strictly regulate fisheries and stop the illegal use of explosives.

SC/65b/SM15rev provided a review of current knowledge on small cetaceans in the Mediterranean waters of Turkey, including the Aegean Sea. Information on cetaceans, particularly abundance and population structure, is limited because of the size of the area and lack of funding and capacity for research. Nine species of small cetaceans have been recorded from the area. The short-beaked common dolphin, common bottlenose dolphin, striped dolphin, Risso's dolphin and Cuvier's beaked whale are considered common based on sighting and stranding data whereas the long-finned pilot whale, the false killer whale and beaked whales (*Mesoplodon* sp.) are considered rare. Harbour porpoises are observed mainly in the northern Aegean Sea. Genetic studies indicate that these are not genetically isolated from those in the Black Sea (*Phocoena phocoena relicta*) (Rosel *et al.*, 2003; Tonay *et al.*, 2012; Viaud-Martínez *et al.*, 2007). All cetacean species are protected by national legislation. The commercial dolphin fishery in Turkey ended in 1983. Current threats include bycatch in driftnets, prey depletion and habitat degradation. The sub-committee thanked Öztürk and colleagues for preparing a useful overview.

SC/65b/SM04 summarised relevant sections of the report of the 2013 *Song of the Whale* survey of the Aegean and Levantine Seas, conducted between July and September 2013 (Ryan *et al.*, 2014). The project had several aims: (i) providing data for 'gaps' in previous systematic survey coverage for sperm whales (*Physeter macrocephalus*) in the Mediterranean; (ii) investigating the northern Aegean Sea for harbour porpoises; and (iii) helping identify risks posed to cetaceans from shipping (e.g. noise pollution, ship-strikes). Over 7,000 km of trackline was surveyed using acoustic and visual methods. Harbour porpoises were encountered for the first time in over 20 years through both acoustic detections (n=16) north of Thasos Island and west of Alexandropoulos (Greece) and visual sightings (n=9) in Saros Bay (Turkey). Common bottlenose dolphins were the most frequently sighted cetaceans in the Aegean Sea. Striped dolphins were observed most often in the Levantine Sea. Common dolphin sightings were limited to the northern Aegean Sea, primarily the Thracian Sea. Rough-toothed dolphins were observed twice in the Levantine Sea, south of Cyprus, while Risso's dolphins were documented four times. Seven acoustic detections (no sightings) of beaked whales were recorded, one in the Ikaria Basin, an area thought to be important for deep-diving species, and the rest along the Anaximander Seamount, south of Turkey.

During discussion, it was noted that although no study has been conducted, there have been opportunistic sightings of harbour porpoises in the straits between the Aegean and Black Seas.

The sub-committee **recommends** that Turkey develops a Conservation Action Plan for small cetacean species in its waters which incorporate public awareness as well as research elements.

6.1.3 Libyan waters

SC/65b/SM16 provided a brief summary of the status of small cetaceans in Libyan waters, which occupy 40% of the

southern Mediterranean coast. The cetacean fauna of Libya is little known, with seven species expected to occur. A long-term photo-identification study in Cyrenaica suggests the presence of a resident bottlenose dolphin population distributed between two areas. There is growing concern over both habitat degradation and unregulated fisheries, including the use of explosives. There are some reports of bycatch, consisting mostly of striped dolphins and common bottlenose dolphins in seasonal trammel net fisheries in the west of the country.

The sub-committee **recommends** that Libyan authorities should be encouraged to more strictly regulate fisheries and stop the illegal use of explosives.

6.1.4 Levantine Basin

SC/65b/SM09 presented a review of what little is known about small cetaceans in Israeli waters of the Levantine Basin. Very few surveys have been conducted, but densities of all species appear to be relatively low. The following species are present in the region: *T. truncatus*, *S. coeruleoalba*, *D. delphis*, *G. griseus*, *S. bredanensis* and *Z. cavirostris*.

A small number of photographic recaptures suggest that common bottlenose dolphins are part of a larger Levantine population, and further comparison of regional catalogues is required (SC/65b/SM09). Ongoing genetic work (Viaud-Martinez, pers. comm.) and morphometric data (Sharir, 2008; Sharir *et al.*, 2011); De Francesco, pers. comm.) suggest that bottlenose dolphins in the Levantine basin are part of a distinct eastern Mediterranean population. Data collected in Israel between 2000 and 2010 indicate that 26 of 105 dead bottlenose dolphins were trapped in the safety line of bottom trawls. Entanglement in gill nets is apparently rarer, with six cases reported in the same period.

Sightings records of striped dolphins are insufficient to determine their status in the Levant. The number of stranded striped dolphins recorded is second only to bottlenose dolphins. Evidence from microsatellites suggests male-mediated gene flow between Levantine and more western regions (S. Gaspari, pers. comm.). The presence of large groups of short-beaked common dolphins (up to 100 individuals) off southern Israel is noteworthy. A limited sample of stomach contents collected from stranded animals suggests that the Israeli trawl-fishery does not compete with common dolphins in Israel although the dolphins may feed on discards. Information on beaked whales, Risso's dolphins and rough-toothed dolphins is limited. The majority of sightings and strandings of rough-toothed dolphins have occurred between February and July and the authors of SC/65b/SM09 encouraged further analyses of acoustic recordings in an as yet unanalysed dataset from surveys carried out by IFAW in 2013.

SC/65b/SM09 described a range of anthropogenic threats, some of which are a particular concern given the oligotrophic nature of the eastern Levantine basin. The Suez Canal has facilitated a rapid invasion by Red Sea species although direct effects of invasive species on cetaceans have not been observed. Other potential threats include the expansion of gas exploration activities and planned naval exercises involving Israel, Turkey and Greece.

Discussion focused on the status of rough-toothed dolphins in the eastern Levantine basin, an area of apparent importance for the species. Available records indicate the species is absent from the western Mediterranean and the Red Sea. Preliminary mtDNA analyses of samples collected from Israeli strandings, together with those available on *GenBank*, suggest the Levantine animals are a relict population of Atlantic origin with little if any recent exchange with other populations. Differences in behaviour have been noted and limited samples suggest that the diet of rough-toothed dolphins in the Levant differs from those of the nearest populations in the Atlantic.

The sub-committee thanked Kerem and his colleagues for preparing a valuable report for a poorly known region. The sub-committee **encouraged** the authors to publish their report in a peer-reviewed journal as soon as practicable. In addition, the sub-committee **recommended** that Israel develop Conservation Action Plans for small cetacean species in its waters which incorporate public awareness as well as research elements and fund a preliminary analysis to define the amount of effort needed to obtain meaningful abundance and distribution data.

6.1.5 General recommendations for the eastern Mediterranean

Noting the various threats identified for small cetaceans in the eastern Mediterranean region, the sub-committee **recommends** that further research be conducted to investigate their effects on the long-term viability of populations. Specifically the sub-committee **recommends** the following.

- The large-scale survey known as the 'ACCOBAMS Survey Initiative' be carried out as soon as possible in order to obtain information on cetacean distribution and abundance for the whole Mediterranean, including the eastern sub-region.
- Systematic sub-regional surveys be implemented.
- Research be undertaken to define management units, at least for the most common species (e.g. the common bottlenose dolphin and the striped dolphin), through multidisciplinary approaches (including genetics, isotopes, biomarkers and photo-identification) to evaluate the effects of anthropogenic mortality (e.g. bycatch) at population level.
- The nature and extent of cetacean-fisheries interactions (including bycatch, depredation and competition/overfishing) be investigated more intensively and extensively. This could include enlarging the scope of existing fishery monitoring programmes (e.g. by collecting data on cetaceans bycatch and other interactions on a regular basis), including those for IUU fisheries.
- Research be conducted on the extent and effects of oil- and gas-related activities.
- Cooperative research with oil and gas industries be developed for sharing information on cetacean distribution and to develop models to identify areas of high density or high importance to small cetaceans.
- Conduct research on the effects of boat traffic on local populations of small cetacean local populations, especially in harbours and other areas of high activity and potential overlap.
- A research project be developed in the eastern Mediterranean Sea to gather data on rough-toothed dolphins in order to assess their degree of isolation and their conservation status under IUCN criteria. This assessment should make use of existing acoustic and genetic data.
- Regional cooperation for science and management for conserving/managing shared populations/species (e.g. common research/monitoring programmes, common mitigation actions) should be implemented (e.g. in the Adriatic Sea under the Marine Strategy Framework Directive).
- Capacity building actions should be implemented (university, local authorities) throughout the region.

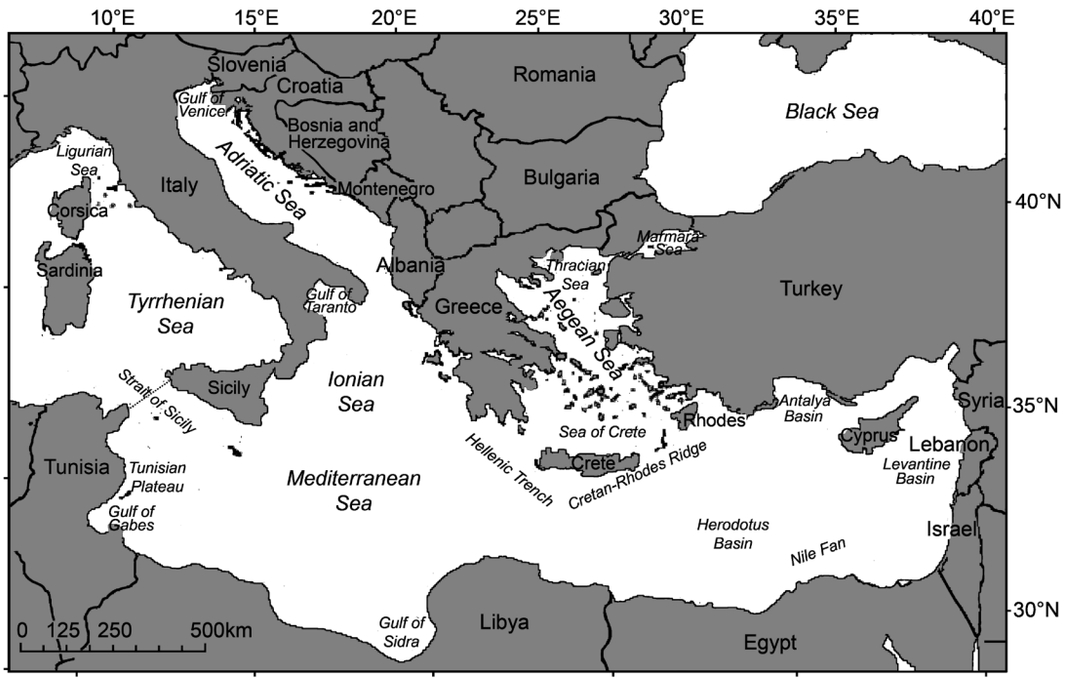

Fig. 1. Map of the eastern Mediterranean.

6.2 Review of status of small cetaceans in the Red Sea

SC/65b/SM13 summarised existing knowledge on cetaceans in the Red Sea based on a literature review and the authors' first-hand observations. Eleven species of small cetaceans are thought to occur in the Red Sea: *Delphinus capensis tropicalis*, *Globicephala macrorhynchus*, *Grampus griseus*, *Orcinus orca*, *Pseudorca crassidens*, *Sousa plumbea*, *Stenella attenuata*, *S. coeruleoalba*, *S. longirostris*, *Tursiops aduncus* and *T. truncatus*. Of these species, only eight (*D. c. tropicalis*, *G. griseus*, *P. crassidens*, *S. plumbea*, *S. attenuata*, *S. longirostris*, *T. aduncus* and *T. truncatus*) are thought to occur in the region regularly. Although rough-toothed are mentioned in the literature as having occurred in the Red Sea, the authors found no clear evidence of its presence in the region and recommend that in the absence of further information its occurrence should be considered doubtful.

SC/65b/SM23 summarised the results of a dedicated survey to estimate abundance of delphinids in the southern Egyptian Red Sea (10,651km^2). Estimates for the five species regularly encountered were: *S. attenuata* 8,146 (CV=0.26), *S. longirostris* 6,609 (CV=0.24), *T. truncatus* 407 (CV=0.36), *T. aduncus* 497 (CV=0.49) and *G. griseus* 303 (CV=0.34). *Stenella* species were encountered throughout the study area. Bottlenose dolphins were present at low densities, with an apparent concentration of *T. truncatus* in offshore areas and *T. aduncus* in southern coastal areas. Within the study area *G. griseus* occurred mainly south of 23°N. The survey provided evidence that the offshore reefs in the southern part of the study area are used as resting areas by at least three species; this is also an area where fishing and tourist activities are concentrated. The authors stressed the need to gather more information about these zones, since similar resting areas are known to be heavily affected by tourist and fishing activities in the northern part of the study area. Furthermore, the authors urged that there be more research effort in the southern coastal areas frequented by two coastal species (*T. aduncus* and *S. plumbea*), where unregulated fishing is conducted regularly from the main village in the zone (Shalatin) and where there are two large active Egyptian naval bases.

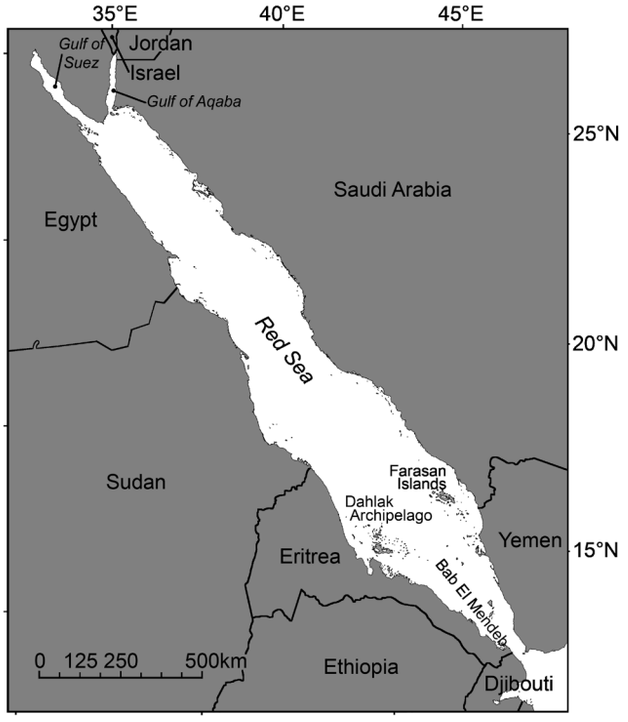

Fig. 2. Map of the Red Sea.

During discussion, clarification was sought on how the two bottlenose dolphin species were distinguished during the surveys. Diagnostic features, including body size, colouration and other morphological features were used. It was further noted that the holotype of *Tursiops aduncus* had been collected from the Dahlak archipelago in 1825 (Perrin *et al.*, 2007). The absence of records of deep-diving cetaceans (notably *Ziphiidae*, *Physeteridae* and *Kogiidae*) was noted and further investigation was encouraged, including through the use of acoustic methods. The absence of such species from the regional stranding record is noteworthy. The shallow bathymetry of the southern channel of Bab El Mendeb may

act as a barrier that discourages deep-diving species from entering the Red Sea via the Gulf of Aden. Although Red Sea cetaceans may be considered among the world's least affected because of the low densities of human habitation along the region's desert coasts, observed increases in tourism and coastal development, fishing, shipping, and hydrocarbon exploration and extraction (particularly in the northern portion of the region) suggest the need for increased cetacean research efforts. Dedicated research projects and surveys should include investigations of ecology, potential threats and conservation status. Such actions could be facilitated by PERSGA, the Regional Organization for the Conservation of the Red Sea and Gulf of Aden.

The sub-committee **agreed** on the urgency of gathering additional detailed information on the distribution and abundance of cetaceans, particularly in the least known portions of the region (e.g. the Gulf of Suez, waters of Saudi Arabia, Sudan, Eritrea and Yemen), and promoting regulation of dolphin-watching in Egypt. The sub-committee **encouraged** the authors to publish their review in a peer-reviewed journal as soon as practicable.

7. REPORT ON THE VOLUNTARY FUND FOR SMALL CETACEAN CONSERVATION RESEARCH

Fortuna presented a summary of projects funded by the Voluntary Fund for Small Cetaceans. Approximately £350,000 has been disbursed since 2010 and 16 projects have been funded (Appendix 2, Table 1). Projects were awarded through two calls for proposals (2011 and 2013). Proposals are selected through a rigorous review process by the Small Cetacean Conservation Research Fund Review Group which currently includes seven members of the Scientific Committee (*http://www.iwc.int/sm_fund*). Projects were either fully or partially funded.

In the discussion it was clarified that details of funded projects were available through the Secretariat and final results would be made available on the IWC website at a later date.

Additional discussion focused on the allocation of funds in emergency situations, a proposal further discussed under Item 11.

Finally, the sub-committee welcomed the most recent voluntary contributions received after the last Commission meeting in Panama (June, 2012) by Italy (£12,300), the Netherlands (£19,324), the UK (£30,000), the USA (£6,320), Italian National Institute for Environmental Protection and Research (£12,132), OceanCare (£998), World Society for Protection of Animals (£3,000) and World Wildlife Fund (£1,295).

7.1 Update on 2011 awarded projects

SC/65b/SM21 reports progress on the IWC SCCF grant on coastal dolphins of west Madagascar, a project co-funded by the US Marine Mammal Commission ('Ecology, Status, Fisheries Interactions and Conservation of Coastal Indo-Pacific Humpback and Bottlenose Dolphins on the West Coast of Madagascar' - Principal Investigator: Cerchio). Boat surveys in the northwest of Madagascar have indicated a high encounter rate for *Sousa plumbea* relative to other studied regions (southwest), particularly around Nosy Be and Nosy Iranja (an established Marine Protected Area). Encounter rates for *Tursiops aduncus* were also high, but lower than those for *S. plumbea*. These areas are considered important habitat for coastal dolphins and mark-recapture, population genetics tools and habitat modelling will be used to assess population size, genetic structure, and distribution towards a prioritisation of habitat protection. Interview surveys with fishers in the northwest indicated that directed hunting on coastal dolphins is not as prevalent as in the southwest, but bycatch, particularly of *T. aduncus*, does occur and there is some evidence for 'directed bycatch' that may indicate a progression towards hunting. Surveys also revealed that hunting of dugongs is a widespread if recent phenomenon in the Nosy Iranja region, highlighting the existence of a rare extant population under hunting pressure. In the southwest where hunting has been documented, a model of community-based conservation has been successfully implemented; local associations for the protection of marine mammals have been established, education and outreach commenced, local traditional laws (Dina) are being developed and ratified, and alternative livelihood options (ecotourism) are being tested.

In discussion it was noted that in the southwest the overt presence of meat in markets had decreased since the project's inception (1999) and that fishers were benefiting from alternate sources of cash generated through seasonal whale watching ecotourism activities (developed in 2004). The number of local operators and clients was increasing in the Anakao area and the spatial extent of conservation work was expanding in the wider southwest region (Anakao to Andavadoaka). Continued effort was planned but requires additional funding.

The sub-committee emphasised that this project represented another good example of the importance of the Small Cetaceans Conservation Research Fund co-funding.

7.2 Update on 2013 awarded projects

SC/65b/SM26 provides a progress review of the project entitled 'Defining the units of conservation and historic population dynamics for two small cetacean species affected by directed and incidental catches in the North Pacific'(Principal Investigator: Chen). A final report will be provided in June 2014. Ten animals confiscated in Ping Dong, Taiwan from an illegal take (from locations unknown) were investigated to confirm species identity. They had been identified as Fraser's dolphins (*Lagenodelphis hosei*) by the Taiwanese authorities. Three loci have been used so far to investigate species identities, mtDNA cyt*b* and control region loci, and the Y-chromosome DBY locus. Although the control region data were equivocal, the cyt*b* and DBY loci suggested that the confiscated samples were not Fraser's dolphin but more likely of a species in the genus *Stenella*, possibly *S. longirostris*. Further analyses and sequencing is planned to resolve this question. Progress on presentation of these results at regional meetings in Taiwan and Japan was also reported, as was progress towards the production of a report on the status of these species for Taiwanese authorities.

In discussion it was noted that although the results were preliminary, they served to emphasise the lack of reference sequences for many genes. The sub-committee commended the work by Chen and Hoelzel and recognised the efficient use of a relatively modest grant.

Porter provided an update on the project entitled 'A Pilot Study to Identify the Extent of Small Cetacean Bycatch in Indonesia using Fisher Interview and Stranding Data as Proxies' (Principal Investigator: Mustika). Recent activities include a workshop (November, 2013) where participants were trained to identify evidence of bycatch in strandings events. Interviews of fishers (50 per site) were completed at two sites: Paloh (West Kalimantan, south of Sarawak)

and Adonara (East Nusa Tenggara). The Paloh area fisheries focus on coastal areas using gillnets as the main fishing gear and interviews suggest that the species most effected are the finless porpoise (*Neophocaena phocaenoides*) and the Indo-Pacific humpback dolphin (*Sousa chinensis*). The Adonara fisheries operate both inshore and offshore with pole and lines and purse seine as the main gears utilised. The cetacean species most affected were the bottlenose dolphin (*Tursiops* spp.), the spinner dolphin (*Stenella longirostris*), some unidentified 'black fish', and sperm whales. Information from these interviews is being conducted in conjunction with WWF Indonesia. Data analyses are still underway and the final report will be submitted by the first week of June 2014.

In discussion Porter clarified that dolphins were actively targeted for consumption in some areas but were opportunistically used at other sites when landed. The use of terminology associated with catches was also discussed, with the need for care and consistency emphasised. Members of the sub-committee suggested that the term 'takes' and not 'bycatch' be used in this context.

8. PROGRESS ON PREVIOUS RECOMMENDATIONS

8.1 Vaquita

Rojas-Bracho reviewed developments in vaquita management and conservation in Mexico since SC/65a. The Advisory Commission of the Presidency of Mexico for the Recovery of the Vaquita (CAP) held its fourth meeting on 19 April 2014. Participants were advised of a recent dramatic escalation of illegal fishing and trade of totoaba (*Totoaba macdonaldi*), a CITES Appendix I species, in the Upper Gulf of California. This fishing involves the use of large-mesh gillnets which have a high entanglement risk for vaquita. The fishery is driven by the high price of swim bladders in Asian markets. The actions by the Mexican Government to combat this fishery were presented and discussed during the CAP meeting. Among these were strengthening the operational capacity of the Federal Attorney General for Environmental Protection (PROFEPA) and coordinating enforcement actions with the National Commission of Fisheries and Aquaculture (CONAPESCA), the Ministries of the Navy and Defense, the Attorney General of the Republic (PGR) and the Federal Police and Customs. Totoaba nets, fishing boats (pangas) and fish products have been confiscated through these actions.

The CAP created four working groups. The first group will propose further strategies and actions in regard to inspection and enforcement. The second group will propose actions to implement a comprehensive strategy for replacing shrimp gillnets with the alternative 'light trawl' gear. It will also propose a set of complementary economic activities to assess and balance the economic development of communities that are supporting vaquita conservation. The third group will be responsible for further development of vaquita-safe fishing technology and practices. The fourth group is expected to develop cost estimates associated with the performance of the programmes and actions generated by the other three groups. Progress of each of the groups is to be reported to the Chair of the CAP by 31 May. The next full meeting of the Advisory Commission will take place on 31 July 2014.

The sub-committee also received information on the Second Meeting of the Steering Committee of the Vaquita Acoustic Monitoring Programme held in La Jolla, California, in April 2014. The objectives of that meeting were to review and evaluate technical aspects of the passive acoustic monitoring project and to review results to determine if and how it should be adjusted. Technical aspects include the following:

- mooring of acoustic monitoring devices (C-PODs) within and outside the Vaquita Refuge and on the boundary marking buoys;
- performance of the C-PODs; and
- interpretation of the C-POD data.

The Steering Committee found that deployment and retrieval of C-PODs inside the Vaquita Refuge had been very successful in the first three years of the five-year project (six sampling periods); scientists conducting the study retrieved more than 90% of the deployed C-PODs. The C-PODs performed well and acquired sufficient data to detect a 4%/year increase in over a five-year interval (as it was designed by the group of experts in 2009), had such an increase occurred. This holds because it is expected that the addition (births) or removal (deaths) of animals from population does not change the individual rates of acoustic signals emission, which make the relationship between population level and acoustic detection rates linear (additive) and directly proportional. After reviewing the work to date, the Steering Committee agreed that the data were of high quality and that the performance of the entire team carrying out this project had been exceptional.

Mid-project results of the vaquita acoustic monitoring project indicate a substantial decline in vaquita numbers since 2011. Raw data indicate declines of 7.5% and 14.9% in average Detection Positive Minutes (an index of vaquita presence) from 2011 to 2012 and from 2012 to 2013, respectively. During SC/65a, a Bayesian estimate of vaquita abundance for 2013, as required by the Government of Mexico, was presented. The posterior distribution for that year's abundance indicated a best estimate of 189 vaquitas. Assuming a 14.9%/yr decline, the population could be reduced to fewer than 100 individuals in the next two years.

The Steering Committee examined summary statistics for the raw data and the results of detailed analyses to estimate the rate of change in vaquita abundance. All approaches indicate that the vaquita population is declining and the rate of decline appears to be greater than ever recorded. Among the factors that may confound interpretation of the data is that the highest detection rates came from the southernmost C-PODs, which could indicate that vaquitas have moved southward out of the monitoring area. However, past surveys have shown vaquita distribution to be remarkably consistent over a long time period. The visual survey data identify an area of longstanding low density next to the southwestern boundary of the Refuge. Currently, monitoring data for that area are not available because all C-PODs placed there (on or just outside the Refuge's southwestern boundary) have been lost. To confirm that relatively large numbers of vaquitas are not using the area around the southwestern boundary of the Refuge, the Steering Committee recommended adding 5 C-PODs just inside that boundary. The Steering Committee also recommended increased enforcement along the boundary during the monitoring season and replacing C-PODs frequently during the season to ensure quick recovery of the collected data.

Finally, the Steering Committee agreed that the estimated annual rates of decline from 2011 to 2013 are so severe and the vaquita's status so serious that immediate action is essential to save this species. Nonetheless, to confirm its findings, the Steering Committee is planning

an immediate review of the data, analyses and preliminary findings. Funding is being sought to support a small group of experts who are well suited to provide this review and it is expected that their conclusions will be available to the CAP for consideration at its meeting at the end of July.

In discussion the sub-committee agreed that the situation is extremely grave and requires immediate action. Suggestions for improving the effectiveness of the totoaba fishery closures included seeking action through alternative agencies and Conventions. This should include those with a role with managing trade in endangered species, such as CITES.

The sub-committee **supports** the actions taken and recommendations made by the Advisory Commission of the Presidency of Mexico for the Recovery of the Vaquita at its Fourth Meeting in April 2014.

The sub-committee **recognises and commends** the efforts being made by the Mexican Government to combat the illegal fishing of totoaba (a species also on the Red List as Critically Endangered). The sub-committee also expresses **grave concern** that the resurgence of illegal totoaba fishing with large mesh gillnets is driving the vaquita more rapidly toward extinction.

The sub-committee **recalls** and **repeats** its **recommendations** from 1991 that as the highest priority, 'further action be taken to stop the major cause of entanglement by fully enforcing the closure of the totoaba fishery' and that 'immediate action [be taken] to stop the illegal shipment of totoaba across the US border.'

In light of the apparent high demand from international markets, the sub-committee also **recommends** that the Governments of Mexico and the USA consult on this continuing illegal international trade in CITES Appendix I totoaba and, as necessary, raise it to CITES and its Party governments to highlight the effect of this trade in causing additional losses of the Critically Endangered vaquita, with the goal of enhancing enforcement efforts and awareness.

The sub-committee also **emphasises** that immediate implementation by the Government of Mexico of its strategy to replace gillnets with alternative fishing gear, as required by NOM-002-SAG-PESC-2013, is urgent, particularly given the recent major expansion of illegal totoaba fishing and the preliminary results of the acoustic monitoring programme, which indicate a rapid decline in vaquita abundance.

The sub-committee also **reiterates** its previous recommendation (IWC, 2012) to continue research on technologies to replace gillnetting for finfish or otherwise to remove all gillnets from the vaquita's entire range, reaffirming that the only reliable approach for saving the species is to eliminate vaquita bycatch by removing entangling gear from areas where the animals occur (mainly north of 30°45'N and west of 114°20'W).

The sub-committee **strongly endorses** continued investment by the Government of Mexico (and other sources of funding and technical support) in the work of the steering committee for the acoustic monitoring programme. It applauds the exceptionally high quality of the work by both the steering committee and the field team who have implemented the acoustic monitoring programme. The sub-committee **encourages** the Government of Mexico to maintain and, if and as necessary, refine or expand the acoustic monitoring programme, given that it is the only feasible way of evaluating effectiveness of the recovery plan contained in the federal Action Programme for the Conservation of Vaquita (PACE-Vaquita).

8.2 Hector's dolphin

Currey provided a summary of the Government of New Zealand Ministry for Primary Industries (MPI) report (2013) which summarises the science and management of Hector's (*Cephalorhynchus hectori*) and Maui's (*Cephalorhynchus hectori maui*) dolphins. The report reviews current legislation and policy, the biology of the species and subspecies, the nature and extent of fishing interactions, the approach taken to manage fishing impacts, modelling of population-level impacts and sources of uncertainty in assessing the impacts of fishing. Highlights include summaries of recent research, including the Maui's dolphin risk assessment (Currey *et al.*, 2012), recent aerial surveys for Hector's dolphin along the east coast of the South Island (ECSI) (Mackenzie and Clement, 2014), and an indicators and trends table. The latter includes the MPI evaluation of population size, population trends, status, fishing interactions and trends in fishing interactions for each sub-population. The decline of Maui's dolphin is demonstrated by multiple methods. Both the ECSI and west coast South Island (WCSI) populations are probably also in decline, although evidence is inconsistent and trends not entirely clear. Since 2008 there has been a substantial reduction in set net effort on the WCSI, while on the ECSI fisheries interactions have declined following the extension of set net area closures. The population trend for south coast South Island is unknown.

The sub-committee **respectfully requests** that the New Zealand Government provide updates of the MPI report on a regular basis.

Slooten called into question some of the information contained in the MPI report, noting that not all source material had been peer-reviewed, and stated that some errors were evident. For example, she questioned the method applied to the population survey data for Cloudy Bay, Clifford Bay and the south coast of the South Island to account for perception bias. The report presented indicates that MPI has allocated funding to assess the impact of alternative approaches to estimating perception bias and, if appropriate, produce revised abundance estimates. Further, Slooten pointed out that the map of Maui's dolphin distribution included data from alongshore surveys and off-effort sightings. In her view, the way in which this information was included had the effect of biasing what was conveyed in the map regarding the offshore distribution of Maui's dolphins. SC/65a/SM08 provides an analysis of offshore distribution using only data from line-transect surveys with equal survey effort with respect to distance from shore.

As mentioned above, Mackenzie and Clement (2014) reported the results of a programme to estimate the abundance and distribution of the ECSI population of Hector's dolphins. The programme involved two aerial surveys conducted over summer 2012/13 and winter 2013 in an area between Farewell Spit and Nugget Point and offshore to 20n.miles (covering ~42,677km^2). A total of 354 dolphin groups (7,156km total transect length) were sighted in summer and 328 dolphin groups (7,276km total transect length) were sighted in winter. Sightings data were analysed using mark recapture distance sampling and density surface modelling techniques to yield estimates of dolphin density and total abundance. The ECSI Hector's dolphin abundance estimate was 9,130 dolphins (CV=19%; 95% CI=6,342-13,144) in summer and 7,456 dolphins (CV=18%; 95% CI=5,224-10,641) in winter. These estimates were obtained via model averaging of four sets of mark recapture distance sampling results for each season, including two different truncation distances and two different methods of estimating availability (helicopter-based dive

cycle and survey aircraft circle-backs). The estimates suggest that numbers are substantially higher in both inshore and offshore areas than previously thought. The discrepancy is more likely attributable to differences in survey methodology (i.e. boat versus aerial surveys) and increased survey effort in offshore areas, rather than an indication of an increase in population size or a change in distribution.

In a brief discussion of the survey design and analysis in the paper by (Mackenzie and Clement, 2014) some members identified potential problems which could affect the abundance estimates. Currey pointed out that the work had already undergone rigorous review, including by international experts, but that the authors would also welcome any further comments.

The sub-committee **agreed** that this matter deserves closer scrutiny than was possible in the time available at this year's meeting. In the discussion it was noted that next year the sub-committee will make provision for cases like this that require evaluation of abundance estimates.

8.2.1 Maui's dolphin

Slooten presented estimates of the effectiveness of the extensions to protected areas for Maui's dolphin implemented in 2012 and 2013 in terms of reducing bycatch (SC/65b/SM08). An Expert Panel of New Zealand and international scientists, convened by the New Zealand government in 2012, estimated that five Maui's dolphins were killed each year in trawl and gillnet fisheries (Currey *et al.*, 2012). The level of trawl mortality is unchanged. Continued Maui's dolphin deaths in gillnets are due to a lack of protection in some areas and incomplete protection in others. Slooten estimates that the total number of fisheries mortalities per year has decreased from five per year to three-four per year, reducing the total level of bycatch from >75 times the PBR of 0.044-0.1 to >54 times the PBR. Bycatch could be reduced to below PBR by using science-based offshore boundaries for the protected areas and providing consistent regulation of gillnet and trawl fisheries. Data on offshore distribution of Maui's dolphins support using the 100m depth contour as an offshore boundary for protected areas and are consistent with data from Hector's dolphins off the South Island (Dawson *et al.*, 2004; Mackenzie and Clement, 2014; Rayment *et al.*, 2010; 2011; Slooten *et al.*, 2004). For both sub-species, almost all sightings are in waters less than 100m deep. Slooten stated that to reduce bycatch to levels approaching zero, protection would need to be extended from Maunganui Bluff to Whanganui in all waters less than 100m deep, including harbours. Within that area, the use of fishing methods that cause mortality of small cetaceans (i.e. gillnets and trawling) would need to be banned. In order to avoid further population declines it is also important to avoid adding new activities off the west coast of the North Island such as tidal turbines and marine mining, and to manage existing threats such as pollution.

Paper SC/65b/SM11 recognised the efforts of the Government of New Zealand to date, but concluded that current protection measures fall short of managing the impacts of set net fisheries and trawling. The authors referenced sightings data in areas where Maui's continue to be exposed to known threats outside the fisheries restrictions. Therefore a set net and trawling ban is urgently needed between Maunganui Bluff and Whanganui river (including harbours), out to the 100m depth contour, as well as full observer coverage in any remaining unprotected areas.

In discussion it was noted that the Maui's dolphin is considered to be in decline and that the current management situation falls short of that required to reverse this trend. Since the publication of the Expert Panel Report (Currey *et al.*, 2012) the New Zealand Government had closed additional fisheries, and a reduction in the number of predicted fisheries interactions is expected. It was noted that bycatch numbers would not be reduced to zero even with increased area closures.

The sub-committee **commends** the New Zealand Government for maintaining initial and interim protection measures for Maui's dolphin, and adding an additional 350km^2 setnet restriction. However, the sub-Committee **emphasises** that these measures fall significantly short of the recommendations made in both 2012 and 2013 and **reiterates** its **extreme concern** about the continued decline of this small population. The human caused death of even one dolphin would increase the extinction risk for this subspecies.

The sub-committee **reiterates** its previous recommendation that rather than seeking further scientific evidence it is of highest priority to take immediate management actions that will eliminate bycatch of Maui's dolphins. This includes full closures of any fisheries within the range of Maui's dolphins that are known to pose a risk of bycatch of small cetaceans (i.e. setnet and trawl fisheries).

The sub-committee **re-emphasises** that the critically endangered status of Maui's dolphin and the inherent and irresolvable uncertainty surrounding information on small populations, require the implementation of precautionary measures.

Ensuring full protection of Maui's dolphins in all areas throughout their habitat, together with an ample buffer zone, would minimise the risk of bycatch and maximise the chances of population increase. The sub-committee notes that the current range of Maui's dolphins comprises the area from Maunganui Bluff in the north to Whanganui in the south, offshore to 20n.miles and including harbours. This range reflects all available sightings and strandings data for Maui's and Hector's dolphins along the west coast of the North Island. The sub-Committee **notes** that data from Hector's dolphins off the South Island, with most sightings in waters less than 100m deep and less than 20n.miles offshore support our understanding of the offshore distribution of Maui's dolphins and the recommendation that within this defined area, fishing methods other than setnets and trawling should be used.

The sub-committee **urges** the New Zealand Government to **commit** to specific population increase targets and timelines, and **respectfully requests** that reports be provided annually on progress towards conservation goals.

8.3 Beaked whales

SC/65b/SM01 presented a short review of strandings of Gervais' beaked whale (*Mesoplodon europaeus*) in the Atlantic Ocean since 1995.

SC/65b/SM02 presented a short review of stranding records in European waters of Sowerby's beaked whale (*Mesoplodon bidens*) since 1825.

See Item 6.1 for new information on Mediterranean beaked whales. See also the relevant discussions on beaked whales and anthropogenic noise in Annex K, items 8.3 and 9.4.

8.4 Beluga

SC/65b/SM14 provides information on recent captures of beluga whales (*Delphinapterus leucas*) in the western Okhotsk Sea (Russia). Recent studies have identified separate demographic units within the western Okhotsk

beluga population. The size of one of these, the summer aggregation in Sakhalin-Amur region (Sakhalinsky Bay, Okhotsk Sea), has been estimated as 1,977 (minimum abundance) and 3,954 (abundance estimate corrected for availability bias) animals (CV=0.24). The Potential Biological Removal (PBR) for this demographic unit has been estimated to be 42 (SC/65b/SM23). During 2013, three teams of local contractors, operating independently of one another, worked to capture belugas in the western Okhotsk Sea, focusing effort within a ~16km^2 area of Sakhalinsky Bay where live-captures have been conducted for over 25 years (SC/65b/SM14). A total allowable take of 360 belugas had been set for the 2013 capture season by the Russian Ministry of Agriculture, and 263 of these were allocated to the North-Okhotsk subzone.

SC/65b/SM14 also provides information on the number of deaths recorded or suspected to have occurred (based on interviews and indirect observations) during the capture and temporary holding operations. Competition amongst capture teams and limited capacity of holding facilities may be related to the relatively high levels of observed and suspected mortality in the past season.

At SC/65a (IWC, 2014) the sub-committee agreed that the current management scheme for live-capture of belugas in the Sea of Okhotsk was very likely to lead to unsustainable levels of removals, placing at least the Sakhalin-Amur summer aggregation in Sakhalinsky Bay at high risk of depletion. The sub-committee expressed **strong concern** that the removal of 81 living belugas, with an additional 12 confirmed and over 30 suspected deaths in summer of 2013, is unsustainable for this local summer aggregation. The subcommittee **reiterated** that removals should be reduced to a level that is more consistent with available scientific data and that at least four summer aggregations in the north Okhotsk subzone should be managed separately through separate quotas for Sakhalin-Amur region, Ulbansky Bay, Tugursky Bay and Udskaya Bay.

The sub-committee also **supports** the continuation of the beluga research projects conducted by the A.N. Severtsov Institute and the Marine Mammal Council and **recommends** expanding research efforts into all areas of potential beluga removals.

8.5 Killer whales

8.5.1 Russian Far East

Shpak presented SC/65b/SM07 which provided information on killer whales (*Orcinus orca*) in the Russian Far East, including details of recent captures. There is evidence for the presence of two killer whale ecotypes in the Russian Far East. Long-term studies have revealed that resident killer whales are encountered much more frequently than transients off eastern Kamchatka, the Commander Islands and Kuril Islands. Transient killer whales are more commonly encountered in the western and northern Okhotsk Sea and off Sakhalin Island. Mitochondrial control region haplotypes were different for resident and transient killer whales, and consistent with differences observed in Eastern Pacific Populations. Current analyses of microsatellites show that resident and transient killer whales belong to reproductively isolated populations (Filatova *et al.*, 2014). Values of the stable isotope δ15N were significantly higher in transients, indicating they forage at a higher trophic level.

During the period 2002-11, six killer whales were live-captured in different areas of the Russian Far East. In 2012-13, seven killer whales were reported to be captured in the western Okhotsk Sea: one young female in 2012, and six whales of unknown sex and age in 2013. Two killer whales were transported to China for public display and another two are suspected to be in Moscow; the fate of the remaining three animals is unknown.

In the western Okhotsk Sea, where recent live-capture operations have been conducted, the authors identified 55 transient killer whales through opportunistic studies; no resident killer whales were encountered in the area. Recaptures (within and between seasons), in the same and adjacent areas suggest that local stock size is limited. The live-captures raise concerns because they target transient killer whales. Differences in killer whale ecotypes are not officially recognised in Russia, and consequently not treated as different management units. No reliable abundance estimates of either killer whale ecotype in the Okhotsk Sea are available. The total allowable take for 2014 is zero, but will likely be reviewed before the 2014 season.

In discussion Shpak clarified that there were no reliable abundance estimates for killer whales in the Okhotsk Sea. Wade noted that information on population genetics is generally limited in the North Pacific, but there was a possibility that transient killer whales were distributed amongst several small populations and captures may have important consequences on social structure. It was also noted that populations in the Western Pacific have already been subject to extensive captures in Japanese waters (Nishiwaki and Handa, 1958). The sex of captured animals was also generally unknown and their removal could be of consequence for the demography of local populations.

The Committee **reiterates** its long standing recommendation that no small cetacean removals (live capture or directed harvest) should be authorised until a full and complete assessment has been made of their sustainability. This is especially true for killer whales because populations are generally small and have strong social bonds and removals have unknown effects on their demographic structure.

As noted above and based on the best available scientific data, there is clear evidence of two killer whale ecotypes in the Russian Far East (Filatova *et al.*, 2014; Ivkovich *et al.*, 2010), SC/65b/SM15, SC/65b/SM07), a situation similar to the transient and resident killer whales found in the Eastern North Pacific (Ford *et al.*, 1998; Saulitis *et al.*, 2000). In 2011 the Committee on Taxonomy of the Society for Marine Mammalogy has recognised the eastern resident and transient killer whales as two unnamed subspecies. However, others, based on similar genetic data, have suggested that these 'ecotypes' may qualify as full species (Morin *et al.*, 2010). Therefore the subcommittee **recommends** management of transient and resident killer whales as distinct units.

The sub-committee welcomed the presentation of the paper (SC/65b/SM07) and **recommends** that the study in the western Okhotsk Sea be continued and expanded

8.5.2 Antarctic killer whales

SC/65b/SM06 reported the preliminary results of a study conducted in January/February 2014 on Type B and Type C killer whales in McMurdo Sound and adjacent southwestern waters in the southern Ross Sea. This study is the first cetacean research project supported by the New Zealand Antarctic Programme. The main objective of the study was to assess the population status and diet of Type C killer whales through photo identification, biopsy sampling and behavioural observations. A total of 307 whales were observed, 297 Type C and 10 Type B killer whales. From direct observation of prey items, Type C killer whales were recorded consuming Antarctic toothfish (*Dissostichus*

mawsoni) and Type B killer whales were recorded hunting seals and penguins. Three biopsy samples were obtained. From photo-identification images, four killer whales were photographed with circular marks on the dorsal fins with a central piercing, indicative of previous tagging, however, the scarring pattern was not consistent with the most recently deployed LIMPET tags. This study will continue and expand in 2014-15.

SC/65b/SH12rev (annex 2, pp.14-19), summarised the progress of the IWC-SORP project: 'Distribution, relative abundance, migration patterns and foraging ecology of three ecotypes of killer whales in the Southern Ocean.' Since SC/65a, and despite budget cuts imposed by the US Federal Government 'shutdown' in 2013, fieldwork has been undertaken in the Ross Sea, the western Antarctic Peninsula, and Marion Island in the sub-Antarctic. Pitman and Durban have described five morphologically distinct types of killer whales from Antarctic waters, including three sympatric types in the coastal waters of the Antarctic Peninsula. Photo-ID data, satellite tagging, biopsy sampling, acoustic recordings and focal follow behavioural studies are being used to investigate the systematics and ecology of different killer whale types. Significantly, as a result of coordinated photo-ID records from directed research and collation of photographs collected by ships of opportunity, the team now rarely sees groups of killer whales that have not been encountered before. This indicates they have high capture probabilities and resighting rates that will facilitate the development of robust and precise population estimates of killer whales in the Antarctic Peninsula area.

Pitman and Durban also undertook five short expeditions to the Antarctic Peninsula between December 2013 and February 2014. Eighteen separate sightings of killer whales of varying ecotypes were recorded; 235 individual whales were photographed for inclusion in the Western Antarctic Peninsula Killer Whale photo-ID Catalogue; satellite tags were attached to two Type A and five small Type B killer whales, and biopsies were taken from two Type A and two small Type B individuals. Two Antarctic minke whales were also satellite-tagged and one biopsied.

In February 2014, Dalla Rosa *et al.* (Projeto Baleias, Brazilian Antarctic Programme), surveyed the waters of the Bransfield and Gerlache Straits at the western Antarctic Peninsula, and part of the Weddell Sea, including the Powell Basin. 318.6 n.miles (39 hours) of cetacean search effort resulted in 141 cetacean sightings, three of which were of killer whales. A further two killer whale sightings were made off effort. The project has been approved for a further three years. Ship time and partial funding have been secured for cetacean research in 2014/15 and 2015/16.

De Bruyn *et al.* conducted research from Marion Island, sub-Antarctic covering killer whale peak occurrences around the island associated with the presence of prey species during September to December and April to May. Structured observations, genetic- and photo-identification, and photogrammetry of killer whales have resulted in numerous published reports on social structure, abundance, diet and preliminary assessments of ecological role. Since 2011, satellite tagging has also been conducted. Results suggest that killer whale movements are localised during spring and autumn, but are more wide-ranging during late winter and summer, with some individuals heading towards the South African south-east coast. This year there have been: 399 sightings and 6,288 images collected during dedicated sessions; 153 opportunistic sightings generating 876 images; six satellite tags deployed that transmitted for between one and 23 days (average 8.24); and six biopsy samples collected.

Lauriano *et al.* will conduct research funded by the Italian National Antarctic Programme (PNRA) to study killer whales in Terranova Bay (TNB) (Ross Sea). The project will assess the role and dynamics of killer whales in the highly productive local marine ecosystem of Terranova Bay, through studies of their movements (satellite tagging), prey-related distribution (photo-ID and behavioural sampling), dietary preferences (fatty acids and stable isotopes), toxicological status, and abundance estimation via mark recapture methods.

SC/65a/SM12rev describes a subset of Antarctic killer whale signals recorded with a hydrophone array during the 2014 IWC-SORP-ABWP South American Consortium voyage. These included an unknown killer whale morphotype which produced high frequency modulated (HFM) signals similar to some recently described in the Northern Hemisphere, particularly the North Pacific (Filatova *et al.*, 2012; Samarra *et al.*, 2010; Simonis *et al.*, 2012). These down-swept signals had a peak frequency of 18.2kHz and mean duration of 140.7ms. HFM signals were produced in combination with echolocation clicks, pulsed calls and whistles and are the first described for an Antarctic morphotype. Given the location, candidates for the HFM signals could be Type A, B or D killer whales. Two echolocation click types were also recorded, one from the same unknown morphotype with peak frequency at 7.8kHz, duration 186s and interpulse interval (IPIs) of 4ms; the second type was produced by Antarctic Type A killer whales with peak frequency at 19.5kHz, duration 68s and IPI of 800ms. Three echolocation clicks and a pulsed call with fundamental frequency of 1.9kHz were recorded from a group of Type A killer whales.

SC/65b/SH05 provides an update of the CETA project, conducted in IWC Area V, between 65-66°S and 140-145°E. Its aim is to assess distribution patterns of four target species including the killer whale. Surveys were conducted from vessels and from fixed vantage points and 21 sightings of killer whales were recorded, making them the second most frequently sighted species (15% of sightings, n=144). Photo-identification data was collected and a species specific catalogue developed. The sightings data will be modelled with environmental data to build a better understanding the relationship between biological and physical parameters.

The sub-committee supports these projects on Antarctic and sub-Antarctic killer whales, encourages their continuation and recommends any further studies consider any impacts of tagging as part of their ongoing work.

8.5.3 Caribbean killer whales

Iñiguez summarised a recent paper that provides information on killer whales in the Caribbean (Bolaños-Jiménez *et al.*, 2014). The paper summarises 176 records of killer whales, comprising 27 captures or kills, four strandings and 145 sighting records; 81 of these records are newly reported. Killer whales appear to be widespread and occur year round in the Caribbean Sea. A diversity of prey items was recorded, including sea turtles, marine mammals and possibly fish and the possibility of ecotypes cannot be excluded in the Caribbean. A preliminary morphological analysis comprising 52 individuals from 21 different groups suggests that Caribbean killer whales do not match known ecotypes: some share a combination of characters typical of Type 2 killer whales in the North Atlantic, whereas others share those typical of 'offshore' killer whales in the northwest Pacific. The sub-committee welcomed the information and highlighted the need for additional research on tropical killer whales.

8.6 Irrawaddy dolphin (Mekong and Ayeyarwady dolphins)

Thomas presented an update on Irrawaddy dolphins (*Orcaella brevirostris*) in the Mekong and Ayeyarwady Rivers. At the biennial conference of the Society for Marine Mammalogy in Dunedin, New Zealand, in December 2013, an *ad hoc* group of scientists met to consider the critical situations of river dolphins in Cambodia/Laos and Myanmar. The number of dolphins in the Mekong River has declined to well below 100 and their survival is very much in doubt. The most recent reported counts of *O. brevirostris* in the Ayeyarwady River have been in the order of only 70 individuals (72 in 2004, 68 in 2014) and mortality appears to have increased in the last few years. Following the discussions in Dunedin, two meetings were organised under the aegis of WWF-Cambodia, both held in Phnom Penh, 23-24 March (Mekong) and 25 March 2014 (Ayeyarwady). Reports of both meetings will be available on the IUCN/SSC Cetacean Specialist Group website[1].

For the Mekong River the objective was to review and update the recommendations made in 2012 in the 'Kratie Declaration on the Conservation of the Mekong River Irrawaddy Dolphins'[2]. Although it was known that major conservation efforts had been made in Cambodia since the 2012 meeting, recent turnover in personnel at WWF and structural changes within the Cambodian Government (notably the abolition of the Commission for Dolphin Conservation and Development of Mekong River Dolphin Ecotourism Zone, and transferral of responsibility for river dolphin conservation to the Fisheries Administration of the Ministry of Agriculture, Forestry and Fisheries) gave reason for concern that the momentum achieved over the last two years could quickly be lost.

The principal conclusions of the Mekong meeting were as follows. Bycatch in gillnets remains the most critical documented threat to Mekong River dolphins (McLellan, 2010; Ryan *et al.*, 2011). Effective enforcement of existing dolphin conservation laws is the highest conservation priority and essential to the survival of dolphins in the Mekong River (Thuok *et al.*, 2014). The construction of any large hydropower projects in the Mekong basin, especially main stem dams, will have very serious impacts on the population of Irrawaddy dolphins in the Mekong River. The proposed Don Sahong dam is of immediate concern because Lao PDR has announced it will begin construction of the dam in the near future. The Thako Hydropower Project, which would not involve constructing a barrier across a main stem channel and would have far fewer impacts on Mekong dolphins, is a strongly preferable alternative to the Don Sahong dam (ICEM, 2010). Participants developed a set of specific high-priority recommendations on enforcement, hydropower development, and research and monitoring of dolphin behaviour and mortality.

In particular they called for an assessment of the effectiveness of the current dolphin conservation enforcement programme, including training, detections, arrests, and successful prosecutions meant to address the problem of illegal gillnets. They agreed that Cambodia, Lao PDR, Thailand and Vietnam should abide by the 10-year moratorium on the construction of dams in the mainstream of the Mekong River recommended in the 'Strategic Environmental Assessment of Hydropower on the Mekong Mainstream' (ICEM, 2010).

In discussion Thomas described the WWF-Cambodia Science Brief entitled 'The Don Sahong Dam and the Mekong dolphin: An updated review of the potential impacts of the Don Sahong Hydropower Project on the Mekong River's Critically Endangered Irrawaddy dolphins (*Orcaella brevirostris*)' (2014). This provides a qualitative risk assessment of the impacts of the Don Sahong hydropower project on both the trans-boundary sub-population on the Lao-Cambodia border and the Mekong River population as a whole. Considering the already Critically Endangered status of Mekong dolphins, the extinction risk posed by the Don Sahong dam to the trans-boundary sub-population –the last remaining dolphins in Lao PDR – is very high and risk to the overall Mekong population is high (Ryan, 2014).

The sub-committee **endorses** the conclusions and high priority recommendations that were highlighted in the report of the workshop.

Recalling its discussion from SC/65a, the sub-committee **re-emphasised** that the situation in Laos was of serious concern and that without urgent intervention in the trans-boundary pool, and the surrounding area, the dolphins there will be eradicated. The sub-committee noted that effective enforcement of gillnet fisheries is essential to the survival of dolphins in the Mekong River and **recommends** that the Governments of Cambodia and Laos to give the highest conservation priority to the effective enforcement of existing dolphin conservation laws. The sub-committee **notes with concern** the results of the WWF-Cambodia assessment of the risk of the Don Sahong dam to the transborder sub-population and the Mekong River population as a whole, and called for full and transparent assessment of the environmental impacts of this and other less destructive options.

The objectives of the Ayeyarwady River session were to reconsider the conservation status of the dolphin population and make preliminary recommendations for evaluating and addressing emergent threats, including unregulated and rampant electro-fishing, particularly within what had previously been an effective protected area for the dolphins and the fishing communities who have long relied on a unique 'co-operative' fishing arrangement with the dolphins. This situation has been recently described by the President of the Society for Marine Mammalogy[3].

A small set of recommendations on improved assessment surveys, mortality monitoring and carcass recovery, and ecological impacts of proposed dams were developed for the Ayeyarwady population, on the understanding that Marsh would take the lead with Myanmar colleagues in planning a more in-depth investigation by an international team in Myanmar later in 2014 or early in 2015. Immediately after the workshop, Marsh travelled to Myanmar and met with local scientists as well as local government officials and NGOs. Plans for follow-up actions are under way.

The sub-committee **welcomed** this report and **requested** that Marsh and colleagues provide a report on these activities to the next meeting (SC/66a).

8.7 Yangtze finless porpoise

SC/65b/SM22 provided recent information on the Yangtze finless porpoise (*Neophocoena asiaeorientalis asiaeorientalis)*, listed as Critically Endangered by IUCN and endemic to the middle and lower reaches of the Yangtze River (China) and its two adjoining lakes (Poyang Lake and Donting Lake). A series of studies has revealed a continuous

[1] *http://www.iucn-csg.org/.*
[2] See *http://www.iucn-csg.org/wp-content/uploads/2010/03/Kratie-Declaration-signed-with-appendices-1.pdf.*
[3] *http://www.marinemammalscience.org.*

decline of this subspecies of finless porpoise within the main stem of the Yangtze River between Yichang and Shanghai since the early 1980s, from more than 2,500 porpoises in 1991 (Zhang *et al.*, 1993) to 505 porpoises (Mei *et al.*, 2014). Data suggest an annual decline in abundance of 14%, and a population reduction of more than half between 2006-12. There is an estimated 86% probability of extinction in the next 100 years. Bycatch in non-selective fishing gear is the main cause of the decline. Vessel collision related mortality has also increased in recent years. Lack of enforcement of existing legislation as well as a lack of awareness among fishermen are considered the main obstacles to success of conservation measures.

The authors emphasised that the Yangtze finless porpoise is considered to be on an accelerating path to extinction. They highlighted the need for immediate action and recommended continued *in situ* conservation to save 'seed populations', increased *ex situ* conservation efforts, and strengthened measures to protect the subspecies through national legislation.

The sub-committee **noted** that given the scale of anthropogenic pressures, which include bycatch, pollution and vessel traffic, preventing the extinction of the Yangtze finless porpoise will be a daunting task. Garnering the support of government officials in China at the highest levels was considered crucial to ensuring success for the conservation of this subspecies. Moreover fisheries associated mortalities and other threats need to be urgently addressed at regional and national levels. Efforts must include identification of less harmful alternatives to the fishing practices that entangle or otherwise kill porpoises. Current conservation measures include reserves in the main stream that may not be appropriately sited or not sufficiently enforced. The difficulty of implementing management scenarios was discussed in light of the inexorable development pressure in the region, the lack of suitable places to protect porpoise populations (whether ex-situ, in oxbows, or in the main channels), and the lack of commitment or political will from the Chinese government. The recent IUCN listing documentation stated that a number of conservation recommendations have been made, but to no effect.

In the continuing discussion it was pointed out that although management recommendations would be appropriate, it would be useful to provide them in the context of specific management objectives. The sub-committee agreed that due to the critical situation of the Yangtze finless porpoise further research is not needed, but action is required.

The sub-committee expressed **grave concern** about the rapid, ongoing decline of Yangtze finless porpoises throughout their range which demonstrates that the conservation measures implemented to date have been both ineffective and inadequate. In view of this, the sub-committee **recommends** to the Chinese government that stronger and immediate measures be taken, beginning by upgrading the Yangtze finless porpoise subspecies to State I Protected status in Chinese legislation and by implementing a national action plan for Yangtze porpoise conservation without delay, buttressed by the necessary policy and financial support.

In order to maximise the chance of reversing the current population decline and enabling population recovery in the long term, the sub-committee also **recommends** that every possible effort be made to protect Yangtze finless porpoises in their natural habitat. Among the ways to help achieve this are by: (a) identifying river and lake segments with the highest porpoise concentrations and enforcing appropriate protection measures (including fishing bans) there year-round; (b) vigorously enforcing basin-wide prohibitions on electro-fishing and other fishing activities known or suspected to threaten porpoises; (c) vigorously enforcing regional and seasonal closures of sand-mining; (d) strengthening pollution control measures; and (e) ensuring that before any further modification of the natural flow regime (or other natural features) of the Yangtze ecosystem are allowed to take place, the implications for finless porpoises are investigated and taken into account.

The sub-committee **recommends** that the Secretariat send a letter to the appropriate Chinese Government authorities, drawing their attention to these recommendations.

8.8 Franciscana

The franciscana (*Pontoporia blainvillei*) is endemic to the eastern coasts of Brazil, Uruguay and Argentina, and is regarded as one of the most threatened small cetaceans in South America due to high bycatch levels as well as increasing habitat degradation throughout much of its range. Due to their coastal and estuarine habits, franciscanas tend to inhabit areas of heavy human activity, which poses several threats to their conservation, particularly bycatch in gillnets.

SC/65b/SM18 reports on helicopter experiments partially funded by the IWC Small Cetacean Research Fund to evaluate availability bias in franciscana observations made from an aerial survey platform. Aerial surveys using line transect methodology have been considered the most appropriate way to estimate franciscana abundance. However, most of the available estimates are of limited use in the absence of appropriate corrections for visibility bias. The need for improved methods of adjusting franciscana aerial survey data for both perception and availability bias has long been acknowledged by the Scientific Committee. In January 2014, nine days of survey experiments were conducted in Babitonga Bay in southern Brazil to determine dive parameters of franciscana groups seen from the air. These were designed to assess availability bias including factors potentially affecting surface/dive times. Perception bias was estimated using a method proposed by Barlow *et al.* (1988) and mixed-effects models were used to investigate which biological or environmental variables influence time at the surface. Results showed that the proportion of time at surface observed from a helicopter is greater than that observed from surface platforms, leading to higher estimates of availability bias. It was concluded that availability bias is underestimated when using data from surface platforms, resulting in overestimation of abundance. Therefore it is recommended that estimates of availability bias derived from aerial platforms be used when analysing aerial survey data for abundance estimation. Results from mixed-effect models showed that only group size significantly affects the proportion of time franciscana groups spend at the surface.

Zerbini presented a short summary of Cunha *et al.* (2014), which had been discussed in SD (Annex I, item 3.1.3). This paper addresses previous Scientific Committee recommendations for assessment of genetic sub-structuring and gene flow along the range of the franciscana (IWC, 2004; 2010). This study suggested that there is substructure within the four Franciscana Management Areas (FMAs) (Secchi *et al.*, 2003a; 2003b) currently recognised and recommended the division of these areas into smaller management units.

Discussion initially focused on FMA I (Franciscana Management Area I), an area where franciscana densities are believed to be low. Genetic MtDNA and other data indicate very limited movement of franciscanas between the two sub-areas, (FMA Ia and FMA Ib), proposed by Cunha

et al. (2014), raising concerns over the effects of localised bycatches. Palsbøll pointed out that consideration of nuclear genetic data (representing both males and females) would add resolution to future analyses, allowing exploration of dispersal and connectivity rates and how they affect demography, all important details for management. Zerbini noted that available tagging data showed very limited movement of both males and females (Wells *et al.*, 2013).

The sub-committee expressed its **concern** regarding the increase of reported franciscana entanglements in sub-regions within FMA I. The possibly resident sub-populations inhabiting such sub-regions are thought to be at risk from harbour development activities in coastal and estuarine environments, which may include dredging, blasting, toxic contamination, noise and mangrove degradation or destruction (IWC, 2008). The sub-committee **recommends** that the impacts of bycatch and other potential threat factors on franciscanas in these sub-regions be assessed and that measures to reduce bycatch (such as the implementation of alternative fishing gear) be adopted.

The sub-committee **recommends** the assessment of finer-scale management area boundaries and that FMA definitions be supported to the greatest extent possible by analyses of both nuclear and mitochondrial markers. It might also be useful to explore other indicators of demographic distinctness between populations (e.g. pollutant loads).

Given the evidence for ongoing bycatch over the entire range of franciscanas, and some indications of genetic sub-structuring within currently recognised FMAs, the sub-committee **agrees** that the goal of conservation effort for the species is to maintain viable franciscana populations in all areas where they occur. The sub-committee **reiterates** previous recommendations (IWC, 2005) on the need to gather additional basic data on franciscana demography and life history, as well as on human-related mortality, so that the conservation status of each management unit can be evaluated and appropriate conservation measures designed and implemented.

The sub-committee also **reiterates** (IWC, 2010) the need for bycatch to be estimated in additional areas and for assessment of other possible threat factors, such as underwater noise, chemical pollution from coastal development and industrial and human waste discharge, oil and gas exploration activities and vessel traffic.

The sub-committee **reiterates** (IWC, 2008) that international collaboration is needed to continue and expand the investigations into franciscana population structure and to assess its implications for conservation. In addition, the sub-committee **recommends** strengthening regional collaboration between Argentina, Uruguay and Brazil to implement conservation management actions that address franciscana bycatch as well as other threat factors.

8.9 Amazon river dolphins: boto and tucuxi

SC/65b/SM24 provides an update on recent conservation efforts for Amazon River dolphins. The combined efforts of regional NGOs have resulted in over 15 scientific expeditions between 2006 and 2014. These efforts have recorded sightings of the three species recognised (*I. geoffrensis, I. boliviensis, S. fluviatilis)*, as well as the recently described but not yet evaluated Araguaia dolphin (*Inia araguaiaensis*). Over 5,700km of the wider Amazon basin have been covered so far. The authors encourage strengthening of regional collaboration to manage direct threats, such as mercury contamination associated with mining and the hunting of dolphins for use as bait in the piracatinga (*Calophysus macropterus*) fishery.

Sub-committee members suggested that survey data be assessed for their suitability for abundance estimations and trends. As an example Williams referenced Bayesian trend estimates presented at SC/65a (Williams *et al.*, 2012) which provided trend estimates for the border region of Colombia and Peru.

SC/65b/SM10 provided information on recent work to limit the use of river dolphins as bait in piracatinga traps. Piracatinga are distributed throughout the Amazon Basin, occurring in Brazil, Bolivia, Colombia, Peru and Venezuela. Each of these countries is a signatory to the Amazon Cooperation Treaty Organisation (ACTO), which aims to promote the harmonious and integrated development of the Amazon Basin. Many fish stocks, including piracatinga and other catfish species, are independently regulated, and are declining. The piracatinga fishery has been established for more than a decade, but there are no regulations or management procedure in place, nor rules of closure/moratorium established. Under Brazilian law, the killing of threatened species, such as the Amazon River dolphin, is a crime punishable with imprisonment and fine (5,000 Brazilian Reals) and the Brazilian government is adopting a multi-process and multi-institutional approach to address this problem of their use as bait. The Federal Ministry of the Environment and the Ministry of Fisheries and Agriculture have proposed regulation to prohibit the use of baited cages in the piracatinga fishery, establish a fishery moratorium, and prohibit their sale and export (on the basis of high mercury levels in piracatinga flesh). As much of the piracatinga fishery is cryptic (with fisheries products deliberately mislabelled), enforcement efforts will also target supply chains. The Brazilian National Action Plan for Small Cetaceans, reviewed in 2013 and running through 2015, outlines required conservation needs for river dolphins, including trap bans. Developing an understanding of the dynamics of the piracatinga fishery is a key component of the action plan and targeting of centralised markets (e.g. Manaus, Belem) should facilitate implementation of control measures.

The sub-committee **commended** the actions of the Government of Brazil in responding to the current situation. The authors see cooperative efforts amongst the range states of the Amazon basin as a cause for optimism. The Brazilian Ministry of Foreign Affairs could play a role in encouraging cooperation with other governments.

The sub-committee **encouraged** further coordination between governments as a means to strengthen the effectiveness of conservation actions. The Buenos Aires Group was recognised as a useful caucus for discussions to take place on conservation actions for the Amazon River dolphins and it was reported that prior recommendations of the sub-committee have been noted by the Buenos Aires group.

The sub-committee **commended** the actions of the Government of Brazil in responding to the current situation. Additional attention was drawn to dolphin watching and hand feeding tourism activities in Brazil as described in SC/65b/WW1 and discussed in the sub-committee on Whalewatching (Annex M, item 5). It appears that only boto males approach feeding platforms. This raises concerns over possible social impacts of such feeding practices.

Recalling its previous recommendations (IWC, 2011; 2012; 2013), the sub-committee **reiterated** its **serious concerns** about the potential population implications of the intentional killing of both botos and tucuxis for use as bait in the piracatinga fishery.

The sub-committee expressed its **support** for the priority actions to assess and mitigate the capture of dolphins for bait contained in the Brazilian National Action Plan for Small Cetaceans. The sub-committee also **reiterates** its previous recommendation that an international scientific workshop be organised involving scientists and managers from the range states, with the goal of addressing research and conservation priorities, standardising methodologies and planning long-term strategies.

In particular, the sub-committee **calls upon** the relevant authorities in each range state to continue and strengthen their efforts to:

- assess and monitor the impact of intentional and incidental river dolphin capture relative to the density of local populations;
- evaluate and monitor the use of botos and tucuxis as bait in fishing for piracatinga; and
- test alternative baits (e.g slaughter house waste products) for use in piracatinga fishing.

The sub-committee **encourages** the presentation of a report at its next meeting on progress in the development and implementation of the Inspection Plan to combat the targeted catch of Amazonian dolphins for bait.

8.10 Harbour porpoise

Tiedemann provided the sub-committee with a short summary of SC/65b/SD04 that describes population differentiation of Baltic Sea harbour porpoises using RAD-tag genotyping. Full technical details can be found in the report of the Stock Definition Working Group (Annex I, item 3.2.1). Participants noted that this is a promising method for the future.

8.11 Humpback dolphins

8.11.1 Eastern Taiwan Strait humpback dolphins

Information was provided on an expert workshop on 'Sustainable Fisheries and the Conservation of the Critically Endangered Taiwanese White Dolphin (*Sousa chinensis*)' that was held in Taiwan on April 28-May 2, 2014 under the auspices of the Eastern Taiwan Strait Sousa Technical Advisory Working Group (ETSSTAWG).

The workshop conducted an assessment of TWD population status, applying demographic analysis and two separate population viability analyses. Despite differences in model structure and underlying assumptions, all three approaches suggested that the TWD population is declining. The workshop recommended that the Government of Taiwan ban all gillnet and trammel net fishing in the habitat of this distinct and isolated population to prevent its extinction. To eliminate risk of injuries and death associated with bycatch, the workshop recommended compensation for those fishermen seeking to exit the fisheries and embark on alternative livelihoods and to other fishermen to encourage them to transition away from current fisheries practices to alternative (more dolphin-friendly) fishing techniques. Strict enforcement of a decades-old ban on trawling within 3 nm of shore is also essential. Only immediate action on these recommendations, as well as actions to mitigate the other anthropogenic threats, offers hope of a recovery for this population.

The workshop welcomed the recent decision of the Government of Taiwan to designate 'Major Wildlife Habitat' along a stretch of the dolphins' known current range in the nearshore waters of the west coast of Taiwan. However, the Workshop also highlighted the need to implement its recommendations well beyond the proposed MWH, so as to avoid edge effects. The workshop suggested a management target of recovering the population to 100 dolphins by the year 2030, which could result in its downlisting from Critically Endangered to Endangered by the IUCN.

The sub-committee **endorsed** the recommendations reached by the workshop:

- the immediate banning of all gill and trammel nets within the entire known habitat of the Taiwanese white dolphin (see Fig. 3 for boundaries);
- compensation for fishers willing to engage in alternative livelihoods;
- compensation to aid in the transition to alternative fishing gear that is both sustainable and dolphin-friendly, such as handlines; and
- a strict enforcement of the existing inshore (inshore of 3n.miles) trawler ban.

In further discussion the authors informed the sub-committee of three candidate windfarms planned for the Eastern Taiwan Strait, one of which overlaps with the northernmost range of the Taiwanese white dolphin. The impingement of this development on *Sousa* habitat is of clear concern, given the scale of habitat loss already experienced by the population, especially from extensive land reclamation. The subcommittee recognised that such threats were a global concern for coastal small cetaceans and agreed that future meetings of the sub-committee should include consideration of offshore renewables and land reclamation.

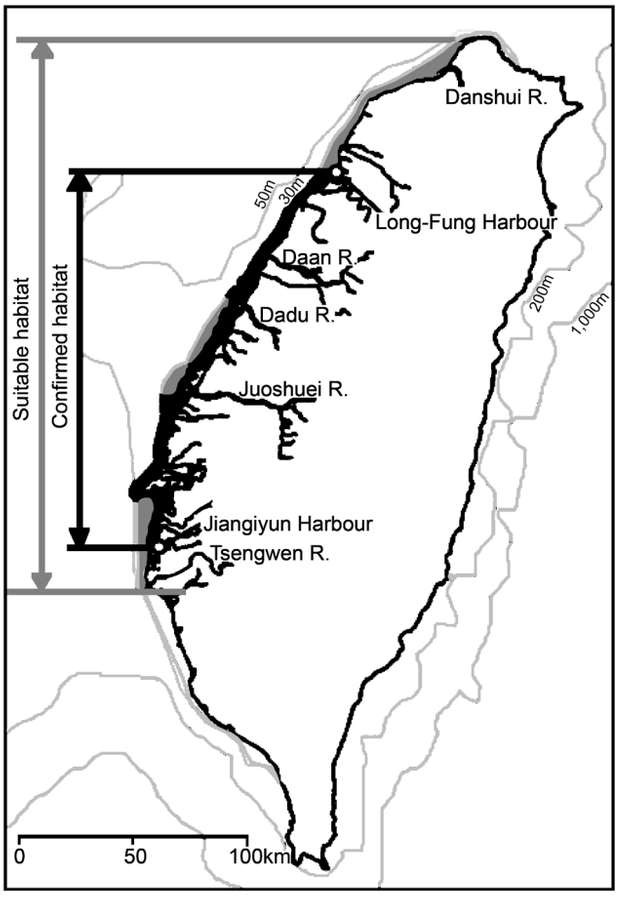

Fig. 3. The shallow (<30m), nearshore (<3n.miles) coastal waters of western Taiwan are home to an isolated population of dolphin, the 'Taiwanese white dolphin' (*Sousa chinensis*) [from Ross *et al.* (2010)].

8.11.2 Updates on Sousa taxonomy

The sub-committee welcomed a presentation of Mendez *et al.* (2013) which described multiple lines of evidence to re-evaluate the number of species within the genus *Sousa*. In discussion it was noted that clarifying the taxonomy of *Sousa* has clear resonance for conservation management. Protection can be enhanced if there is clear evidence of distinct management units with little or no reproductive exchange. Rosenbaum noted that *Sousa* exhibit some of the greatest degrees of genetic differentiation yet observed in small cetaceans, indicating that migration events are either very infrequent or may no longer occur. Assessment of these factors alongside spatial analyses of threats can spur more effective conservation action. Based on the results of Mendez *et al.* (2013), and the work of the Society for Marine Mammalogy Committee on Taxonomy, the sub-committee **recommends** that the IWC SC recognise and update the nomenclature of four *Sousa* species proposed in Mendez *et al.* (2013).

Porter provided a report on a workshop held in January 2014 on Marine Protected Areas (MPAs) for the Indo-Pacific humpback dolphin (*Sousa chinensis*) in the East Asia Ecoregion. The workshop was convened in the People's Republic of China and was facilitated by the International Marine Protected Area Capacity Building Programme of the United States National Oceanic and Atmospheric Administration. It was attended by management authorities, researchers and NGO's from Malaysia, Thailand, Philippines and China, including Taiwan and Hong Kong. The workshop focused on the usefulness of establishing a network of MPAs, which could be linked either spatially or through common management processes. Information on each population of *Sousa chinensis* in the East Asian Seas Ecoregion was documented and gaps in knowledge evaluated with a view to understanding where future research should focus and which management mechanisms had proved to be effective. Existing MPAs were mapped and assessed for habitat coverage and effectiveness. A Memorandum of Understanding between the three Chinese management authorities was signed which provided for sharing of expertise, data and resources for three MPAs in mainland China. A technical workshop was proposed for August 2014 which will focus on MPA management strategy and capacity building. The sub-committee welcomed these positive steps towards better protection for populations of *Sousa chinensis* which are under pressure from a multitude of threats associated with resource competition, coastal development and habitat loss throughout the East Asia region. The critically endangered status of Taiwanese white dolphin was highlighted and the need for expediency in MPA and other management strategies stressed.

8.12 Japanese drive fishery

In 1975, 1980, 1990, 1992, 1993 and 1996 the Commission passed resolutions on the Japanese drive fisheries in general or specifically on actions to better assess and prevent further depletion of striped dolphins taken in these fisheries. Those resolutions were based on the discussions and concerns related to the drive fisheries raised in the sub-committee. At its annual meeting in 2013 the sub-committee re-iterated its previous concerns and recommendations (IWC, 1992; 1993; 1998) including the following:

- 'up-to-date assessments of these exploited populations be undertaken, including studies of population structure and life-history';
- 'up-to-date data on struck and lost rates, bycatch rates, directed hunting effort, stock identity and reproductive status and age composition of catches be collected and made available'; and
- 'catch limits take into account struck and lost bycatch rates and be based on up-to-date population assessments, and be sustainable with allowance for population recovery.'

There is no struck and lost rates problem in the drive fisheries. However, there is an important related issue of the total removals in the drive fisheries which (landed plus cryptic mortality associated with driving, confining, handling and 'releasing' the animals) needs to be more critically examined and incorporated into population assessments. In the case of common bottlenose dolphins, there have been changes in drive fishery operations starting in the 1990s when live removal for aquariums within Japan and for overseas facilities became a regular practice.

Drive fisheries have occurred in various locations around Japan since at least the 17th century. Taiji has a long history of hunting cetaceans with harpoons, but the Taiji drive fishery began in 1969. In 1973, the drive fishery in Taiji expanded to target striped dolphins, with hunters that had previously operated off the Izu Peninsula. As the catches and the quotas for striped dolphins declined, the Taiji fishermen turned to other species of small cetaceans. Today, common bottlenose dolphins are one of the main targets of the Taiji drive fishery and they are now the most popular species in aquariums around the world.

Concerns have been raised by IWC and others that population assessments and the quota (catch limit) system in the region for direct takes are out of date or not valid for various reasons (IWC, 2014). Currently only dolphins that are either killed outright or removed alive for aquariums are counted against the catch limit. However, in addition to such direct removals, there are a number of aspects of the hunt, and of the long holding period before remaining dolphins are released, that likely lead to cryptic mortality (unobserved, unrecorded deaths) including: (1) stress caused by holding the animals for extended periods prior to release; (2) serious injury while held captive; (3) disruption of reproduction during the drive and during holding and/or handling (e.g. abortions caused by stress and mother/calf separation leading to the death of the calf) (Kita *et al.*, 2013); and (4) post-release deaths (e.g. due to pneumonia). None of these types of cryptic mortality is estimated and counted against annual catch limits or included in assessments of the effects of drive fisheries on the dolphin populations.

Between 2006 and 2012, 1,496 common bottlenose dolphins were reportedly taken in the drive fishery at Taiji and 468 (31%) of them were taken alive for aquariums. In recent years, more than half of the common bottlenose dolphins captured in Japan have been exported to China to supply the ever increasing number of new aquariums. Since 1995, the number of captive cetaceans in China has markedly increased and many of these are imported common bottlenose dolphins. As of May 2008, 80 common bottlenose dolphins were reportedly held in facilities in China (Zhang *et al.*, 2012).

The sub-committee noted that processing times for captured animals lasted up to five days. Stresses experienced during this period (including extensive handling) will increase the likelihood of post-capture mortality, including a high risk of mortality from pneumonia infection. Of additional concern was the lack of current data on either stock identity or stock size for the bottlenose dolphins in waters the off Taiji. It is understood that animals are selected for driving based partly on their proximity to shore. Based on the foregoing information, the sub-committee **reiterates** it previous concerns and recommendations that there is an **urgent need** for an up-to-date assessment of the targeted

species populations. This is especially needed for the common bottlenose dolphins subject to exploitation in the Japanese drive fisheries and live captures. Any new assessment must include, as indicated above, explicit consideration of cryptic mortality and subsequently consider the sustainability of removals for international trade.

9. TAKES OF SMALL CETACEANS

9.1 New information on takes

The sub-committee received from the Secretariat the summary of catches of small cetaceans in 2013 extracted from this year's online national Progress Reports (see Appendix 3, Table 1). Last year the sub-committee agreed to further explore, intersessionally, more specific terms of reference for evaluating direct take data, including the idea of developing case studies or other analyses from this information. However no progress has been made in this regard.

9.1.1 Direct takes

Funahashi presented a table of direct takes of small cetaceans in Japan from 2002 to 2012, together with the catch limits for each species from 2007 to 2013 (see Appendix 3, Table 2). The figures were compiled, edited and translated from websites of the Government of Japan. It is important to note that the catch limits given in the table are by season but the catch numbers are by calendar year.

The Committee **reiterates** its long standing recommendation that no small cetacean removals (live capture or directed harvest) should be authorised until a full and complete assessment has been made of their sustainability.

SC/65b/SM17 reports on small cetacean landings recorded in Dixcove Port (Ghana) in 2013-14. Over 263 days a fisheries officer recorded 743 landed cetaceans. Photographs of 109 specimens showed that nine Delphinid species were involved, including Clymene dolphin, *Stenella clymene* (32.1%), pantropical spotted dolphins, *Stenella attenuata* (17.4%), rough-toothed dolphins (12.8%), and melon-headed whales *Peponocephala electra* (14.7%). Assuming field observer data are broadly reliable, landings may have increased from 0.74 animals day^{-1} in 2001-03 (Debrah *et al.*, 2010) to 2.82 animals day^{-1} in 2013-14 (SC/65b/SM17). This information raises serious concern for these populations. All captured dolphins were mostly captured in large-mesh gillnets set for billfishes, tuna and sharks, the primary artisanal fishery operating from Dixcove. Several dolphins also showed lethal penetrating injuries likely inflicted by either hand-held harpoons or spears, demonstrating at least occasional directed captures. Dolphin carcasses were processed *in situ* and were typically smoked, together with the various species of billfish. The end product was traded for human consumption, as previously reported (Debrah *et al.*, 2010). The authors stress that sampling has to be improved, possibly by providing support to biology/fisheries faculty students trained to photograph and sample landings.

In discussion, clarification was sought on the proportion of total catches that these figures represented. The details were not clear but the authors do state that there are many deficiencies in the current monitoring system, including focal instead of national coverage and discontinuous monitoring effort over time.

The sub-committee received information on the on-going monitoring programme for Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) in Jeju-do, Korea. The three animals released into the wild in 2013 after two or three years in captivity have been relocated and currently appear to be interacting successfully with wild population. The overall population size was estimated at 104 animals using mark-recapture methods and the population is thought to be stable.

9.1.2 Accidental takes

SC/65a/SM05 documents the ongoing threat from illegal large-scale driftnetting to cetacean populations in the Mediterranean. Port inspection visits were conducted by an NGO in three countries, Italy, Albania and Tunisia, in 2013. These indicated that illegal driftnetting continues in Albania and Tunisia, at a potentially significant rate, with unconfirmed indications of illegal activity also documented in Italy. Such activities pose a continued threat to Mediterranean cetacean populations, some of which are threatened and others very poorly known (Notarbartolo di Sciara and Birkun, 2010). Recent public and political focus on illegal driftnetting has led to operations becoming increasingly covert, making assessment of the current level of illegal activity, and its impact on cetacean populations, difficult to determine. The authors recommend further research in order to better understand the threat from driftnetting, including that:

- methods be developed and applied to estimate driftnet-related mortality of cetaceans in the Mediterranean and the impact on populations, giving special attention to areas where driftnetting overlaps with known concentrations of cetaceans;
- scientists and other stakeholders collaborate to conduct a regional examination of the impacts of European small-scale driftnet fisheries on cetacean populations; and
- researchers and relevant national and international agencies collaborate to examine the extent of regulation and impacts of large-scale driftnetting within EEZs globally.

The sub-committee expressed its concern regarding the threat that ongoing illegal driftnetting poses to cetacean populations in the Mediterranean and **recommended** that countries increase enforcement capacity and penalties for such illegal, unreported and unregulated (IUU) fishing. It was **noted** that in addition to existing EU legislation, all Mediterranean countries are party to the General Fisheries Commission for the Mediterranean (GFCM) which bans the use of large pelagic driftnets (>2.5km long and mesh size >10cm).

The sub-committee **welcomed** the recent improvements in the implementation of the ban but **noted** that there were locations where illegal activity is likely to be high.

The sub-committee **agreed** that improving the identification of ports and areas affected by the illegal driftnet fishery was of considerable importance and should be pursued further.

Baulch indicated that additional monitoring by NGOs will be carried out in future years but that greater inspection and enforcement by the relevant authorities was essential. Smaller drift nets are also of concern and it was noted that certain types of driftnets are still legal and used within the Mediterranean Sea and Europe in general; a recent EU initiative to ban these[4] was also noted.

The sub-committee **noted** that the bycatch of finless porpoises in South Korean waters was still high. In this regard, information from South Korean scientists was received following up the Scientific Committee recommendations on finless porpoises bycatch from SC/65a. Acknowledging

[4] *http://europa.eu/rapid/press-release_IP-14-563_en.htm.*

those recommendations in the spring of 2014 the Korean Government has started a monitoring and mitigation programme on the stow net fisheries which are responsible for 95% of finless porpoise bycatch. The programme is designed to build understanding of the relationship between target species and finless porpoises and seasonal trends in catches and bycatch. The programme will also test the effectiveness of a jellyfish excluder device for mitigation of finless porpoise bycatch. Some results of the programme will be available to be presented at the next SC meeting.

9.2 Follow up on the Workshop on 'poorly documented hunts of small cetaceans for food, bait or cash'

No progress has been made on this standing agenda item since the last meeting of the Scientific Committee. Despite this members of the sub-committee agreed to consider a way forward. After discussion, the sub-committee decided to pursue this further by producing a scaled down agenda from that proposed at SC/65a with the intention that this may provide a structure for a series of regional workshops, including southeast Asia, Africa and South America.

New research in southeast Asia, some of which has been supported by the Small Cetacean Voluntary Fund, has led to an opportunity to organise an initial workshop (see Appendix 4). Members of the steering group will work to formalise a list of attendees and a detailed agenda. The sub-committee welcomed this new development.

10. UPDATE ON PROPOSED JOINT WORKSHOP ON MONODONTIDS

Bjørge reported that the proposal for a global review of Monodontids was discussed at the NAMMCO Council meeting in February 2014. The Council decided to convene a workshop to undertake a global review of narwhal and beluga. This will not be an IWC workshop. The workshop will be convened in connection with the meeting on Marine Mammals of the Holarctic in Russia in 2016.

11. CONSERVATION AND MANAGEMENT PLANS

Donovan presented a brief summary of IWC Conservation Management Plans (CMP), including an explanation of their rationale, utility and the process by which they can be adopted. He encouraged the subcommittee to further consider candidate populations of small cetaceans that might benefit from the implementation of a CMP.

In discussion members of the sub-committee **agreed** that CMP's for some threatened species and populations would be highly beneficial and would allow coordination of efforts. Their implementation is more problematic when species ranges are limited to a single country, as with the vaquita, Maui's dolphin and Yangtze finless porpoise. Donovan also emphasised that CMP's needed adoption by all range states members of the IWC. Sub-committee members noted that the situations of the boto and the franciscana might make them appropriate candidates to be suggested for CMP development.

In a related discussion on candidate CMP populations, the sub-committee **agreed** to trial a new intersessional approach for situations that are considered high priority from a conservation perspective at the species or population level, especially where the indications are that time is short and no mitigation actions are in place. The sub-committee would establish an intersessional 'task team' of appropriate experts from its membership. Task teams would undertake a thorough review of the situation, consulting with local research groups, authorities and others as appropriate, provide written information to the relevant authorities (through the chairs of the sub-committee and Committee in consultation with the Secretariat) if required, and provide scientific or mitigation advice as appropriate. Task Teams would report back to the sub-committee on progress at its next meeting. It was suggested that budgetary needs could be evaluated by the existing Small Cetacean Conservation Research Fund Review Group (*http://iwc.int/sm_fund*). Work will continue intersessionally to better define this task team approach.

12. OTHER INFORMATION ON SMALL CETACEANS

SC/65b/SM12rev describes two unknown beaked whale FM pulse types (Antarctic BW29 and BW37) recorded during the 2014 IWC-SORP-ABWP South American Consortium voyage. BW29 was the dominant type encountered, with a peak frequency of 28.7kHz, duration of 600μs and IPI of 400ms. BW37 had a higher peak frequency of 36.7kHz and shorter IPI of 120ms. The BW29 signal might be produced by Gray's beaked whale given that its spectral shape is reminiscent of other mesoplodonts, or it may be from a southern bottlenose whale (*Hyperoodon ampullatus*) given a possible negative correlation between body length and centre frequency (Baumann-Pickering *et al.*, 2013). Alternatively a single beaked whale species produced both signal types. The authors suggest that passive acoustic monitoring holds much potential for beaked whale research in Antarctic waters.

SC/65b/SM03 provided information on seven Longman's beaked whales (*Indopacetus pacificus*) that stranded in New Caledonia during November 2013, the first mass stranding recorded for this species. Although the whales stranded alive and were refloated, data was eventually collected on five dead animals. Total length for four females ranged between 5.64m -6.40m for the females and 5.90m for the only male. MtDNA sequences (680 bp) confirmed species identification and revealed that all individuals shared a single haplotype, a result that can be attributed to either a low level of population genetic diversity or matrilineal social structure. Animals were in good body condition. Stomachs were empty with the exception of a plastic bag and a plastic fragment. Results of trace element analyses suggest a diet rich in cephalopods. Necropsy results for one whale revealed multiple signs of acute pleurisy associated with morbilivirus and may be linked to the stranding event. Notably the strain of morbilivirus differed from that observed in an earlier morbilivirus linked stranding in Hawaii. These data will extend the information available on this poorly known species.

SC/65b/SM27 reviewed the information on cetacean strandings and mortality in Venezuela between 1988 and 2014.

13. WORK PLAN AND BUDGET REQUESTS

Participants discussed possible options for the sub-committee's work plan for SC/66a. During SC/65a the sub-committee deferred two previously identified priority topics, a review of Southern Hemisphere Ziphiids and an assessment of *Tursiops* systematics and associated conservation issues. The sub-committee agreed that the former remains a priority that should be taken up when the Scientific Committee next meets in the Southern Hemisphere.

The sub-committee discussed the *Tursiops* review as a possible priority topic. Members agreed that the topic is vast and complicated, and much of the data required, particularly

genetic and morphological information, are currently lacking for many regions and populations. Despite this some members agreed that the task could be staged, with first steps being the development of an assessment framework and general reviews of available information from key regions. Various ideas around these themes were discussed and it was decided to advance the discussion intersessionally.

14. ADOPTION OF REPORT

The Report was adopted at 22:50 on 20 May 2014.

REFERENCES

Barlow, J., Oliver, C.W., Jackson, T.D. and Taylor, B.L. 1988. Harbor porpoise, *Phocoena phocoena*, abundance estimation for California, Oregon, and Washington: II. Aerial surveys. *Fishery Bulletin* 86(3): 433-44.

Baumann-Pickering, S., McDonald, M.A., Simonis, A.E., Berga, A.S., Merkens, K.P.B., Oleson, E.M., Roch, M.A., Wiggins, S.M., Rankin, S., Yack, T.M. and Hildebrand, J.A. 2013. Species-specific beaked whale echolocation signals. *J. Acoust. Soc. Am.* 134(2293-2301).

Bearzi, G., Agazzi, S., Bonizzoni, S., Costa, M. and Azzellino, A. 2008a. Dolphins in a bottle: abundance, residency patterns and conservation of bottlenose dolphins *Tursiops truncatus* in the semi-closed eutrophic Amvarkikos Gulf, Greece. *Aquatic Conservation Marine and Freshwater Ecosystems* 18: 130-46.

Bearzi, G., Agazzi, S., Gonzalvo, J., Costa, M., Bonizzoni, S., Politi, E., Piroddi, C. and Reeves, R.R. 2008b. Overfishing and the disappearance of short-beaked common dolphins from western Greece. *Endangered Species Research* 5: 1-12.

Bearzi, G., Bonizzoni, S., Agazzi, S., Gonzalo, J. and Currey, R. 2011. Striped dolphins in the gulf of Corinth, Greece: Abundance estimates from dorsal fin photographs. *Mar. Mamm. Sci.* 27(3):165-84.

Bearzi, G., Fortuna, C.M. and Reeves, R.R. 2009. Ecology and conservation of common bottlenose dolphins *Tursiops truncatus* in the Mediterranean Sea. *Mammal Review* 39: 92-123.

Bearzi, G. and Notarbartolo di Sciara, G. 1995. A comparison of the present occurrence of bottlenose dolphins, *Tursiops truncatus*, and common dolphins, *Delphinus delphis*, in the Kvarneric (Northern Adriatic Sea). *Annales - Annals for Istrian and Mediterranean Studies* 7: 61-8.

Bolaños-Jiménez, J., Mignucci-Giannoni, A.A., Blumenthal, J., Bogomolni, A., J.J., C., Henríquez, A., Iñíguez Bessega, M., Khan, J., Landrau-Giovannetti, N. and Rinaldi, C. 2014. Distribution, feeding habits and morphology of killer whales Orcinus orca in the Caribbean Sea. Mammal Review *Mammal Review*: [doi: 10.1111/mam.12021].

Bonizzoni, S., Santostasi, N.L., Würsig, B. and Bearzi, G. 2014. Bottlenose dolphin abundance in the northern Evoikos Gulf, Greece. 28th Annual Conference of the European Cetacean Society, 7-9 April 2014, Liege, Belgium.

Cunha, H.A., Medeiros, B.V., Barbosa, L.A., Cremer, M.J., Marigo, J., Lailson-Brito, J., Azevedo, A.F. and Solé-Cava, A.M. 2014. Population structure of the endangered franciscana dolphin (*Pontoporia blainvillei*): Reassessing management units. *PLoS ONE* 9: e85633.

Currey, R., Boren, L., Sharp, B.R. and Peterson, D. 2012. *A risk assessment of threats to Maui's dolphins*. Ministry for Primary Industries and Department of Conservation, New Zealand. 51pp.

Dawson, S.M., Slooten, E., Du Fresne, S.P., Wade, P.R. and Clement, D. 2004. Small-boat surveys for coastal dolphins: line-transect surveys of Hector's dolphins. *Fishery Bulletin* 201: 441-51.

Debrah, J.A., Ofori-Danson, P.K. and Van Waerebeek, K. 2010. An update on the catch composition and other aspects of cetacean exploitation in Ghana. Paper SC/62/SM10 presented to the IWC Scientific Committee, June 2010, Agadir, Morocco (unpublished). 8pp. [Paper available from the Office of this Journal].

Filatova, O.A., Borisova, E.A., Shpak, O.V., Meschersky, I.G., Tiunov, A.V., Goncharov, A.A., Fedutin, I.D. and Burdin, A.M. 2014. Reproductively isolated ecotypes of killer whales Orcinus orca in the seas of the Russian Far East. *Zoologicheskii Zhurnal* 5pp.

Filatova, O.A., Deecke, V.B., Ford, J.K., Matkin, C.O., Barrett-Lennard, L.G., Guzeev, M.A. and Hoyt, E. 2012. Call diversity in the North Pacific killer whale populations: implications for dialect evolution and population history. *Animal Behaviour* 83(3): 595-603.

Ford, J.K., Ellis, G.M., Barrett-Lennard, L.G., Morton, A.B., Palm, R.S. and Balcomb III, K.C. 1998. Dietary specialization in two sympatric populations of killer whales (*Orcinus orca*) in coastal British Columbia and adjacent waters. *Can. J. Zoology* 76(8): 1,456-71.

Fortuna, C.M., Holcer, D., Filidei, E., Donovan, G. and Tunesi, L. 2011. The first cetacean aerial survey in the Adriatic sea: summer 2010. Paper presented to the 7th Meeting of the ACCOBAMS Scientific Committee. 16pp.

Frantzis, A. 2009. *Cetaceans in Greece: Present status of knowledge*. Initiative for the Conservation of. Cetaceans in Greece, Athens, Greece. 94pp.

Gaspari, S., Holcer, D., Mackelworth, P., Fortuna, C., Frantzis, A., Genov, T., Vighi, M., Natali, C., Rako, N., Banchi, E., Chelazzi, G. and Ciofi, C. 2013. Population genetic structure of common bottlenose dolphins (*Tursiops truncatus*) in the Adriatic Sea and contiguous regions: implications for international conservation. *Aquatic Conservation: Marine and Freshwater Ecosystems* DOI: 10.1002/aqc.2415.

Genov, T. 2011. Ecology of the bottlenose dolphin (*Tursiops truncatus*) in the northern Adriatic. Graduation thesis, University of Ljubljana, Ljubljana. 93pp.

Genov, T., Bearzi, G., Bonizzoni, S. and Tempesta, M. 2012. Long-distance movement of a lone short-beaked common dolphin (*Delphinus delphis*) in the central Mediterranean Sea. *Marine Biology Research* 5(e9): 1-3.

Genov, T., Kotnjek, P., Lesjak, J. and Hace, A. 2008. Bottlenose dolphins (*Tursiops truncatus*) in Slovenian and adjacent waters (northern Adriatic sea). *Annales, Series Historia Naturalis* 18(2): 227-44.

Genov, T., Wiemann, A. and Fortuna, C.M. 2009. Towards identification of the bottlenose dolphin (*Tursiops truncatus*) population structure in the north-eastern Adriatic Sea: preliminary results. *Varstvo narave* 22: 73-80.

International Centre for Environmental Management. 2010. Strategic environmental assessment of hydropower on the Mekong Mainstream: final report. Prepared for the Mekong River Commission by the International Centre for Environmental Management, Hanoi, Vietnam.

Ivkovich, T., Filatova, O.A., Burdin, A.M., Sato, H. and Hoyt, E. 2010. The social organization of resident-type killer whales (*Orcinus orca*) in Avacha Gulf, Northwest Pacific, as revealed through association patterns and acoustic similarity. *Mammalian Biology-Zeitschrift für Säugetierkunde* 75(3): 198-210.

International Whaling Commission. 1992. Report of the Scientific Committee. Annex G. Report of the Sub-Committee on Small Cetaceans. *Reports of the International Whaling Commission* 42:178-234.

International Whaling Commission. 1993. Report of the Scientific Committee, Annex G. Report of the sub-committee on small cetaceans. *Reports of the International Whaling Commission* 43:130-45.

International Whaling Commission. 1998. Report of the Scientific Committee. Annex M. Report of the Sub-Committee on Small Cetaceans. *Reports of the International Whaling Commission* 48:258-80.

International Whaling Commission. 2004. Report of the Scientific Committee. Annex L. Report of the Sub-Committee on Small Cetaceans. *Journal of Cetacean Research and Management (Supplement)* 6:315-34.

International Whaling Commission. 2005. Report of the Scientific Committee. Annex L. Report of the Sub-Committee on Small Cetaceans. *Journal of Cetacean Research and Management (Supplement)* 7:307-17.

International Whaling Commission. 2008. Report of the Scientific Committee. Annex L. Report of the sub-committee on small cetaceans. *Journal of Cetacean Research and Management (Supplement)* 10:302-21.

International Whaling Commission. 2010. Report of the Scientific Committee. Annex L. Report of the Sub-Committee on Small Cetaceans. *J. Cetacean Res. Manage (Suppl.)* 11(2):306-31.

International Whaling Commission. 2011. Report of the Scientific Committee. Annex L. Report of the Sub-Committee on Small Cetaceans. *J. Cetacean Res. Manage. (Suppl.)* 12:272-95.

International Whaling Commission. 2012. Report of the Scientific Committee. Annex L. Report of the Sub-Committee on Small Cetaceans. *J. Cetacean Res. Manage. (Suppl.)* 13:263-91.

International Whaling Commission. 2013. Report of the Scientific Committee. Annex L. Report of the Sub-Committee on Small Cetaceans. *J. Cetacean Res. Manage. (Suppl.)* 14:273-317.

International Whaling Commission. 2014. Report of the Scientific Committee. Annex L. Report of the Sub-Committee on Small Cetaceans. *J. Cetacean Res. Manage. (Suppl.)* 15:345-79.

Kita, Y.F., Hosomichi, K., Suzuki, S., Inoko, H., Shiina, T., Watanabe, M. and Kulski, J.K. 2013. Genetic and family structure in a group of 165 common bottlenose dolphins caught off the Japanese coast. *Marine Mammal Science* 29(3): 474-96.

Mackenzie, D. and Clement, D. 2014. Abundance and distribution of ECSI Hector's dolphin. New Zealand Aquatic Environment and Biodiversity Report No. 123. *Ministry for Primary Industries*: 79pp.

McLellan, W. 2010. General observations of Cambodia river dolphin images. [Unpublished report to WWF Greater Mekong - Cambodia Country Programme].

Mei, Z., Zhang, X., Huang, S., Zhao, X., Hao, Y., Zhang, L., Qian, Z., Zheng, J., Wang, K. and Wang, D. 2014. The Yangtze finless porpoise: On an accelerating path to extinction? *Biological Conservation* 172: 117-23.

Mendez, M., Jefferson, T., Kolokotronis, S.O., Krutzen, M., Parra, G.J., Collins, T., Minton, G., Baldwin, R., Berggren, P., Sarnblad, A., Amir, O.A., Peddemors, V., Karczmarski, L., Guissamulo, A., Smith, B.D., Sutaria, D., Amato, G. and Rosenbaum, H. 2013. Integrating multiple lines of evidence of humpback dolphins along their entire distribution range: a new dolphin species in Australian waters? *Mol. Ecol.* 22(23): 5,936-48.

Ministry for Primary Industries. 2013. *Aquatic Environment and Biodiversity Annual Review 2013*. Fisheries Management Science Team, Ministry for Primary Industries, Wellington, New Zealand. 538pp.
Morin, P.A., Archer, F.I., Foote, A.D., Vistrup, J., Allen, E.E., Wade, P., Durban, J.W., Parsons, K., Pitman, R.L., Li, L., Bouffard, P., Abel Nielsen, S.C., Rassumssen, M., Willersley, E., Thomas, M., Gilbert, P. and Harkins, T. 2010. Complete mitochondrial genome phylogeographic analysis of killer whales (*Orcinus orca*) indicates multiple species. *Genome Research* 20: 908-16.
Nishiwaki, M. and Handa, C. 1958. Killer whales caught in the coastal waters off Japan for recent 10 years. *Scientific Reports of the Whales Research Institute, Tokyo* 13: 85-96.
Notarbartolo di Sciara, G. and Birkun, A. 2010. Conserving whales, dolphins and porpoises in the Mediterranean and Black Seas: an ACCOBAMS status report. *ACCOBAMS Document*: Monaco, 212pp.
Notarbartolo di Sciara, G., Venturino, M.C., Zanardelli, M., Bearzi, G., Borsani, F.J. and Cavalloni, B. 1993. Cetaceans in the central Mediterranean Sea: distribution and sighting frequencies. *Bollettino della Societa Zoologica Italiana* 60: 131-8.
Perrin, W., Robertson, K.M., Van Bree, P.J.H. and Mead, J.G. 2007. Cranial description and genetic identity of the holotype specimen of *Tursiops aduncus* (Ehrenberg, 1832). *Marine Mammal Science* 23(2): 343-57.
Rako, N., Holcer, D. and Fortuna, C.M. 2009. Long-term inshore observation of a solitary striped dolphin, *Stenella coeruleoalba*, in the Vinodol channel, northern Adriatic Sea (Croatia). *Natura Croatica* 18: 427-36.
Rayment, W., Clement, D., Dawson, S., Slooten, E. and Secchi, E. 2011. Distribution of Hector's dolphin (*Cephalorhynchus hectori*) off the west coast, South Island, New Zealand, with implications for the management of bycatch. *Marine Mammal Science* 27(2): 398-420.
Rayment, W., Dawson, S.M. and Slooten, E. 2010. Seasonal changes in distribution of Hector's dolphin at Banks Peninsula, New Zealand: implications for protected area design. *Aquatic Conservation Marine and Freshwater Ecosystems* 20: 106-16.
Rosel, P.E., Frantzis, A., Lockyer, C. and Komnenou, A. 2003. Source of Aegean Sea harbour porpoises. *Marine Ecology. Progress Series* 247: 257-61.
Ross, P.S., Dungan, S.Z., Hung, S.K., Jefferson, T.A., MacFarquhar, C., Perrin, W.F., Riehl, K., Slooten, E., Wang, J.Y., White, B.N., Würsig, B., Yang, S.C. and Reeves, R.R. 2010. Averting the Baiji syndrome: characterising habitat for critically endangered dolphins in eastern Taiwan Strait. *Aquatic Conservation: Marine and Freshwater Ecosystems* 20: 685-94.
Ryan, C., Cucknell, A.C., Romagosa, M., Boisseau, O., Moscrop, A., Frantzis, A. and McLanaghan, R. 2014. A visual and acoustic survey for marine mammals of the Aegean Sea and Levantine Sea, eastern Mediterranean conducted from R/V *Song of the Whale* July to September 2013. Report to the International Fund for Animal Welfare: 53pp.
Ryan, G.E. 2014. The Don Sahong Dam and the Mekong dolphin: An updated review of the potential impacts of the Don Sahong Hydropower Project on the Mekong River's Critically Endangered Irrawaddy dolphins *Orcaella brevirostris*. *WWF Science Brief* 2014. [Available from: *http://awsassets.panda.org/downloads/donsahong_dolphin_lr_feb2014.pdf*].
Ryan, G.E., Dove, V., Trujillo, F. and Doherty, P.F. 2011. Irrawaddy dolphin demography in the Mekong River: an application of mark-resight models. *Ecosphere* 2(5): 1-15.
Samarra, F.I., Deecke, V.B., Vinding, K., Rasmussen, M.H., Swift, R.J. and Miller, P.J. 2010. Killer whales (*Orcinus orca*) produce ultrasonic whistles. *Journal of the Acoustical Society of America* 128(5): EL205-EL10.
Saulitis, E., Matkin, C., Barrett-Lennard, L., Heise, K. and Ellis, G. 2000. Foraging strategies of sympatric killer whale (*Orcinus orca*) populations in Prince William Sound, Alaska. *Marine Mammal Science* 16(1): 94-109.
Secchi, E.R., Danilewicz, D. and Ott, P.H. 2003a. Applying the phylogeographic concept to identify franciscana dolphin stocks: implications to meet management objectives. *Journal of Cetacean Research and Management* 5(1): 61-68.
Secchi, E.R., Ott, P.H. and Danilewicz, D.S. 2003b. Effects of fishing by-catch and conservation status of the franciscana dolphin, *Pontoporia blainvillei*. pp.174-91. *In*: Gales, N., Hindell, M. and Kirkwood, R. (eds). *Marine Mammals: Fisheries, Tourism and Management Issues*. CSIRO Publishing, Collingwood, Australia.
Sharir, Y. 2008. Morphometric characteristics of the common bottlenose dolphin (*Tursiops truncatus*) population in the Levant Basin. Master's thesis, University of Haifa, Israel. [In Hebrew, with English abstract].
Sharir, Y., Kerem, D., Gol'din, P. and Spanier, E. 2011. Small size of common bottlenose dolphin (*Tursiops truncatus*) in the eastern Mediterranean: a possible case of Levantine nanism. *Marine Ecology. Progress Series* 438: 241-51.
Simonis, A.E., Baumann-Pickering, S., Oleson, E., Melcón, M.L., Gassmann, M., Wiggins, S.M. and Hildebrand, J.A. 2012. High-frequency modulated signals of killer whales (*Orcinus orca*) in the North Pacific. *Journal of the Acoustical Society of America* 131(4): EL295-EL301.
Slooten, E., Dawson, S.M. and Rayment, W.J. 2004. Aerial surveys for coastal dolphins: Abundance of Hector's dolphins off the South Island West Coast, New Zealand. *Marine Mammal Science* 20(3): 477-90.
Slooten, E., Wang, J., Dungan, S., Forney, K., Hung, S.K., Jefferson, T., Riehl, K., Rojas-Bracho, L., Ross, P., Wee, A., Winkler, R., Yang, S. and Chen, C. 2013. Impacts of fisheries on the Crically Endagered humpback dolphin *Sousa Chinesis* population in the eastern Taiwan Strait. *Endangered Species Research* 22: 99-114.
Thuok, N., Ath, C.S. and Reeves, R.R. 2014. Conclusions, recommendations and Working Group reports from the Workshop on the Conservation of Irrawaddy Dolphins in the Mekong River. Fishery Administration of Cambodia and WWF-Cambodia, 21pp.
Tonay, A.M., Dede, A., Maracı, Ö. and Bilgin, R. 2012. A preliminary genetic study on the harbour porpoise (*Phocoena phocoena*) in the Turkish Seas. *J. Black Sea/Mediterranean Environment* 18(1): 83-9.
Van Bressem, M., Minton, G., Sutaria, D., Kelkar, N., Rodriguez Vargas, L. and Rajamani, L. 2014. Cutaneous nodules in Irrawaddy dolphins: an emergency disease in vunerable populations. *Diseases of Aquatic Organisms* 107: 181-9.
Viaud-Martínez, K.A., Martínez Vergara, M., Gol'din, P.E., Ridoux, V., Öztürk, A.A., Öztürk, B., Rosel, P.E., Frantzis, A., Komnenou, A. and Bohonak, A.J. 2007. Morphological and genetic differentiation of the Black Sea harbour porpoise *Phocoena phocoena*. *Marine Ecology Progress Series* 338: 281-94.
Wells, R.S., Bordino, P. and Douglas, D.C. 2013. Patterns of social association in the franciscana, *Pontoporia blainvillei*. *Marine Mammal Science* 29(4): E520-E28.
Williams, R., Burt, L., Hedley, S., Marques, F. and Trujillo, F. 2012. Progress on data analysis from a 2002 Amazon river dolphin survey for boto and tucuxi in Colombia and Peru. Paper SC/64/SM24 presented to the IWC Scientific Committee, June 2012, Panama City (unpublished). 11pp. [Paper available from the Office of this Journal].
Zhang, P., Sun, N., Yao, Z. and Zhang, X. 2012. Historical and current records of aquarium cetaceans in China. Zoo biology. *Zoo Biology* 31(3): 336-49.
Zhang, X., Liu, R., Zhao, Q., Zhang, G., Wei, Z., Wang, X. and Yang, J. 1993. The population of finless porpoise in the middle and lower reaches of Yangtze River. *Acta Theriologica Sinica* 13: 260-70.

Appendix 1

AGENDA

1. Convenor's opening remarks
2. Election of Chair
3. Appointment of rapporteurs
4. Adoption of agenda
5. Review of available documents
6. Review of status of small cetaceans in the eastern Mediterranean and Red seas
   - 6.1 Review of status of small cetaceans in the Red Sea
     - 6.1.1 Spinner dolphin
     - 6.1.2 Pantropical spotted dolphin
     - 6.1.3 Common bottlenose dolphin
     - 6.1.4 Indo-Pacific bottlenose dolphin
     - 6.1.5 Risso's dolphin
     - 6.1.6 False killer whale
     - 6.1.7 Humpback dolphin
   - 6.2 Review of status of small cetaceans in the eastern Mediterranean Sea
     - 6.2.1 Striped dolphin
     - 6.2.2 Short-beaked common dolphin
     - 6.2.3 Common bottlenose dolphin
     - 6.2.4 Risso's dolphins
     - 6.2.5 Rough-toothed dolphin
     - 6.2.4 Harbour porpoise
7. Report on the voluntary Fund for Small Cetacean Conservation Research
   - 7.1 Update on the 2011 awarded projects
   - 7.2 Update on the 2013 awarded projects
8. Progress on previous recommendations
   - 8.1 Vaquita
   - 8.2 Hector's dolphin
     - 8.2.1 Maui's dolphin
   - 8.3 Beaked whales
   - 8.4 Beluga
   - 8.5 Killer whale
   - 8.6 Irrawaddy dolphin
   - 8.7 Yangtze finless porpoise
   - 8.8 Franciscana
   - 8.9 Amazon river dolphin and tucuxi
   - 8.10 Harbour porpoise
   - 8.11 Humpback dolphin
   - 8.12 Japanese drive fishery
9. Takes of small cetaceans
   - 9.1 New information on takes
     - 9.1.1 Direct takes
     - 9.1.2 Accidental takes
   - 9.2 Follow up on the Workshop on 'poorly documented hunts of small cetaceans for food, bait or cash'
10. Update on proposed joint Workshop on monodontids
11. Conservation Management Plans
12. Other information on small cetaceans
13. Work plan and budget requests
14. Adoption of report

Appendix 2

SMALL CETACEAN RESEARCH CONSERVATION FUND – LIST OF FUNDED RESEARCH PROJECTS (2010-13)

Table 1

Small Cetaceans Research Conservation Fund - list of funded projects (2010-13).

Project title (principal investigator; project duration)	Species	Geographic area	Funding year	Status (year)	Amount (£)
Defining the units of conservation and historic population dynamics for two small cetacean species affected by directed and incidental catches in the North Pacific (Chen; 1 year).	*Grampus griseus*, *lagenodelphis hosei*	North Pacific	2013	Final stage	6,070
A pilot study to identify the extent of small cetacean bycatch in Indonesia using fisher interview and stranding data as proxies (Mustika; 1 year).	All potential species (including *neophocaena sp.*)	Indonesia	2013	Final stage	15,000
Investigating the abundance of Ganges River and factors affecting their distribution in Indian Sundarban (Wakid; 1 year).	*Platanista gangetica gangetica*	India	2013	Ongoing	20,000
Capacity building in conducting cetacean abundance surveys in Southeast Asia through a training workshop and actual surveys (Rajamani; 1 year).	All small cetaceans	Southeast Asia	2013	Final stage	12,000
Strengthening the meaning of a freshwater protected area for the Ganges river dolphin: looking within and beyond the Vikramshila Gangetic Dolphin Sanctuary, Bihar, India (Kelkar; 1 year).	*Platanista gangetica gangetica*	India	2013	Ongoing	11,000
Ecology, status, fisheries interactions and conservation of coastal Indo-Pacific humpback and bottlenose dolphins on the west coast of Madagascar (Cerchio; 3 years).	*Sousa chinensis*, *tursiops aduncus*	Africa (Madagascar)	2011	Final stage	33,900
Abundance and distribution of the Atlantic humpback dolphin in Gabon and Congo, with a focus on improving field-survey methods and monitoring protocols (Collins; 1 year).	*Sousa teuszii*	Africa (Gabon, Congo)	2011	Final stage	27,900
Monitoring and threat assessment of coastal cetacean populations in Sarawak, Malaysia (Minton; 1 year).	Various species	Asia (Malaysia)	2011	Concluded (2013)	20,440
Investigation on the population identity of Indo-Pacific humpback dolphin in the northern Bay of Bengal, Bangladesh and implications for population-level conservation and taxonomy of the species (Smith; 2 years).	*Sousa chinensis*	Asia (Bangladesh)	2011	Final stage	31,700
Identifying conservation solutions for the Yangtze finless porpoise through community research (Turvey; 1 year).	*Neophocaena asiaeorientalis asiaeorientalis*	Asia (Yangtze River)	2011	Concluded (2014)	33,600
Photo-identification monitoring of the eastern Taiwan Strait population of Indo-Pacific humpback dolphins (Wang; 2 years).	*Sousa chinensis*	Asia (Eastern Taiwan)	2011	Final stage	32,500
Genetic and demographic assessment of dolphins taken in live-capture and traditional drive-hunt in the Solomon Islands (Oremus; 1 year).	*Tursiops aduncus*	Oceania (Solomon Islands)	2011	Concluded (2013)	28,250
Supporting the assessment of alternative fishing gears for replacing gillnets that cause bycatch of vaquita in the upper Gulf of California, Mexico (Aguilar-Ramirez; 1 year).	*Phocoena sinus*	North America (Mexico)	2011	Concluded (2013)	33,270
Estimating abundance of an isolated population of the threatened franciscana: moving towards conservation actions (Danilewicz; 1 year).	*Pontoporia blainvillei*	South America (Brazil)	2011	Concluded (2012)	31,255
Threatened franciscanas: improving estimates of abundance to guide conservation actions (Zerbini; 1 year).	*Pontoporia blainvillei*	South America (Brazil)	2010	Concluded (2011)	17,000
Total (2010-14)					**353,885**

Appendix 3

BYCATCH AND DIRECT CATCHES OF SMALL CETACEANS

Table 1

Data on bycatch and direct takes of small cetaceans from National Progress Reports.

Year sub-mitted	Species	Large area	M: Dead	M: seriously injured	M: injured	M: Unk	F: Dead	F: seriously injured	F: injured	F: Unk	Unk: dead	Unk: seriously injured	Unk: Injured	Unk: Unk	RMP *Small Area*	Targeted species	Gear	How observed	Contacts	References	Comments	Local area
Australia																						
2014	Australian snubfin dolphin	Pacific Ocean, Coral Sea	0	0	0	0	1	0	0	0	0	0	0	0	Unk/ N/A	-	GN	Observer/ inspector	Queensland Dept. Agriculture, Fisheries and Forestry *strand.data@ehp.gov.qld.au*	-	-	-
2014	Common dolphin	Pacific Ocean, Coral Sea	1	0	0	0	6	0	0	0	1	0	1	0	Unk/ N/A	Tiger, white, whaler sharks	NSC; LX	Fisherman	As above	-	-	-
2014	Indo-Pacific humpback dolphin	Pacific Ocean, Coral Sea	1	0	0	0	0	0	0	0	0	0	0	0	Unk/ N/A	Tiger, white, whaler sharks	NSC	Fisherman	As above	-	-	-
2014	Unid. dolphin	Pacific Ocean, Coral Sea	1	0	0	0	0	0	0	0	0	0	0	0	Unk/ N/A	Tiger, white, whaler sharks	NSC	Fisherman	As above	-	Id'd as a bottle-nose dolphin, not id'd to species	
2014	Pantropical spotted dolphin	Pacific Ocean, Tasman Sea	1	0	0	0	1	0	0	0	0	0	0	0	Unk/ N/A	Shark	NSC	Scientist/ observer/ inspector	G. Ross	-	-	Sydney
2014	Common dolphin	Pacific Ocean, Tasman Sea	1	0	0	0	1	0	0	0	0	0	0	0	Unk/ N/A	Shark	NSC	Scientist/ observer/ inspector	G. Ross	-	-	NSW/Sydney/central coast
	Common dolphin	Pacific Ocean, Tasman Sea	0	-	-	-	0	-	-	-	2	-	-	-	-	-	-	-	-	-	-	Sydney
2014	Unid. dolphin	Pacific Ocean, Tasman Sea	0	0	0	0	0	0	0	0	1	0	0	0	Unk/ N/A	Demersal scalefish	TBB	Fisherman	S. Murphy	-	04/11/13 NOTE 1	-
2014	Unid. dolphin	Southern Ocean, Bass Strait	0	0	0	0	0	0	0	0	0	0	0	1	Unk/ N/A	Gummy shark	GNS	Fisherman	S Murphy	-	21/08/13 released alive	-
2014	Unid. dolphin	Pacific Ocean, Gulf of Carpentaria	0	0	0	0	0	0	0	0	0	0	0	1	Unk/ N/A	Prawns	TM	Fisherman	S. Murphy	-	30/10/13 released alive, swam away	-
2014	Common dolphin	Southern Ocean, Bass Strait	0	0	0	0	0	0	0	0	1	0	0	0	Unk/ N/A	Gummy shark	GNS	Fisherman/ observer/ inspector	S. Murphy	-	08/05/13	-
2014	Common dolphin	Southern Ocean, Bass Strait	0	0	0	0	0	0	0	0	1	0	0	0	Unk/ N/A	Gummy shark	GNS	Fisherman/ observer/ inspector	S. Murphy	-	27/02/13	-
2014	Common dolphin	Pacific Ocean, Tasman Sea	0	0	0	0	0	0	0	0	0	0	0	1	Unk/ N/A	Tunas	LLD	Fisherman/ observer/ inspector	S. Murphy	-	30/06/13 released alive	-

Cont.

Year sub-mitted	Species	Large area	M: Dead	M: seriously injured	M: injured	M: Unk	F: Dead	F: seriously injured	F: injured	F: Unk	Unk: dead	Unk: seriously injured	Unk: Injured	Unk: Unk	RMP *Small Area*	Targeted species	Gear	How observed	Contacts	References	Comments	Local area
Australia cont.																						
2014	Common dolphin	Pacific Ocean, Tasman Sea	0	0	0	0	0	0	0	0	1	0	0	0	Unk/ N/A	Gummy shark	GNS	Fisherman/ observer/ inspector	S. Murphy	-	24/01/13	-
2014	Common dolphin	Pacific Ocean, Tasman Sea	0	0	0	0	0	0	0	0	0	0	0	1	Unk/ N/A	Tunas	GNS	Observer/ inspector	S. Murphy	-	12/02/13 released alive and vigorous	-
2014	Common dolphin	Southern Ocean	0	0	0	0	0	0	0	0	1	0	0	0	Unk/ N/A	Gummy shark	GNS	Fisherman	S. Murphy	-	19/11/13 adult	-
2014	Common dolphin	Southern Ocean, Great Australian Bight	0	0	0	0	0	0	0	0	1	0	0	0	Unk/ N/A	Gummy shark	GNS	Fisherman	S. Murphy	-	08/04/13 adult	-
2014	Common dolphin	Southern Ocean, Great Australian Bight	0	0	0	0	0	0	0	0	1	0	0	0	Unk/ N/A	Gummy shark	GNS	Fisherman/ observer/ inspector	S. Murphy	-	12/01/13	-
2014	Common dolphin	Southern Ocean, Great Australian Bight	0	0	0	0	0	0	0	0	1	0	0	0	Unk/ N/A	Gummy shark	GNS	Fisherman/ observer/ inspector	S. Murphy	-	23/07/13	-
2014	Common dolphin	Pacific Ocean, Arafura Sea	0	0	0	0	0	0	0	0	0	0	0	1	Unk/ N/A	Prawns	TM	Fisherman	S. Murphy	-	15/08/13 alive	-
2014	Common bottlenose dolphin	Southern Ocean, Great Australian Bight	0	0	0	0	0	0	0	0	1	0	0	0	Unk/ N/A	Gummy shark	GNS	Fisherman/ observer/ inspector	S. Murphy	-	25/07/13	-
2014	Common dolphin	Southern Ocean, Bass Strait	-	-	-	-	-	-	-	-	-	-	-	-	-	-	HMD; GNS	-	-	-	08/05/13 operation date	-
2014	Common dolphin	Pacific Ocean, Tasman Sea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LLD	-	-	-	30/06/13 alive	-
2014	Common dolphin	Pacific Ocean, Arafura Sea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15/08/13	-
2014	Unid. dolphin	Pacific Ocean, Gulf of Carpentaria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GNS; TM	-	-	-	-	-
2014	Indo-Pacific bottlenose dolphin	Southern Ocean, Great Australian Bight	0	0	0	0	0	0	0	0	0	0	0	1	Unk/ N/A	Kingfish aquaculture	RG	Fisherman	C. Kemper	-	-	10km SSW Balgowan 34°24'25"S, 13°26'43"E
2014	Indo-Pacific bottlenose dolphin	Southern Ocean, Great Australian Bight	1	0	0	0	0	0	0	0	0	0	0	1	Unk/ N/A	Kingfish aquaculture	NK	Fisherman	C. Kemper	-	-	4.5km ENE Pt Lincoln 34°42'29"S; 135°54'09"E
2014	Indo-Pacific bottlenose dolphin	Southern Ocean, Great Australian Bight	0	0	0	0	0	0	0	0	0	0	0	1	Unk/ N/A	-	RG	Fisherman	C. Kemper	-	-	10km SSW Balgowan 34°24'25"S, 13°26'43"E
2014	Common dolphin	Southern Ocean, Great Australian Bight	1	0	0	0	0	0	0	0	0	0	0	1	Unk/ N/A	Sardine fishery	PS1; PS2	Fisherman	C. Kemper	-	-	67km ENE Pt Lincoln 34°30'S, 136°32'E

Cont.

Year sub-mitted	Species	Large area	M: Dead	M: seriously injured	M: injured	M: Unk	F: Dead	F: seriously injured	F: injured	F: Unk	Unk: dead	Unk: seriously injured	Unk: Injured	Unk: Unk	RMP *Small Area*	Targeted species	Gear	How observed	Contacts	References	Comments	Local area
Australia cont.																						
2014	Common dolphin	Southern Ocean, Great Australian Bight	0	0	0	0	1	0	0	0	0	0	0	1	Unk/ N/A	-	NK	Fisherman	C. Kemper	-	-	9.8km SSW Port Neill (township) 34°11'49"S, 136°17'58"E
2014	Common dolphin	Southern Ocean, Great Australian Bight	0	0	0	0	1	0	0	0	0	0	0	1	Unk/ N/A	Sardine fishery	PS1; PS2	Fisherman	C. Kemper	-	-	42.5km NNW Corny Pt lighthouse 34°02'06"S, 136°51'23"E
2014	Common dolphin	Southern Ocean, Great Australian Bight	0	0	0	0	0	0	0	0	0	0	0	1	Unk/ N/A	-	MIS	Fisherman	C. Kemper	-	-	1.5km NW Sullivan Beach (township) 35°06' 45"S, 38°27' 45"E
2014	Common dolphin	Southern Ocean, Great Australian Bight	0	0	0	0	1	0	0	0	0	0	0	0	Unk/ N/A	-	NK	Fisherman	C. Kemper	-	-	Pt Noarlunga (township) 35°09'13"S, 138°28'09"E
Belgium																						
2014	Harbour porpoise	N Atlantic Ocean	8	0	0	0	7	0	0	0	0	0	0	0	Unk/ N/A	-	NK	Scientist	J. Haelters	NOTE 1	NOTE 2	Belgian nat. waters
2014	Harbour porpoise	N Atlantic Ocean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	RG	Public	-	NOTE 3	-	-
2014	Harbour porpoise	N Atlantic Ocean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GTR	-	-	-	-	-
2014	Harbour porpoise	N Atlantic Ocean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GNS	-	-	-	-	-
2014	Harbour porpoise	N Atlantic Ocean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NK	-	-	-	-	-
2014	Harbour porpoise	N Atlantic Ocean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	RG	-	-	-	-	-
2014	Harbour porpoise	N Atlantic Ocean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GTR	-	-	-	-	-
2014	Harbour porpoise	N Atlantic Ocean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GNS	-	-	-	-	-
2014	Harbour porpoise	N Atlantic Ocean	0	-	-	-	0	-	-	-	-	-	-	-	-	-	RG	Scientist	-	-	NOTE 4	-
2014	Harbour porpoise	N Atlantic Ocean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	GN	Public	-	-	-	-
Brazil																						
2014	Guiana dolphin	S Atlantic Ocean	1	0	0	0	0	0	0	0	0	0	0	0	Unk/ N/A	Croacker	GND	Scientist	-	-	-	Boto-Cinza
2014	Guiana dolphin	S Atlantic Ocean	0	0	0	0	0	0	0	0	2	0	0	0	Unk/ N/A	-	GN	Scientist	A. Colosio	-	-	Abrolhos Bank
Denmark																						
2014	Harbour porpoise	N Atlantic Ocean	0	0	0	0	0	0	0	0	8	0	0	0	Unk/ N/A	-		Fisherman	L. fast Jensen	-	-	-

Cont.

Year sub-mitted	Species	Large area	M: Dead	M: seriously injured	M: injured	M: Unk	F: Dead	F: seriously injured	F: injured	F: Unk	Unk: dead	Unk: seriously injured	Unk: Injured	Unk: Unk	RMP *Small Area*	Targeted species	Gear	How observed	Contacts	References	Comments	Local area
Germany																						
2014	Harbour porpoise	Atlantic Ocean, North Sea	0	0	0	0	0	0	0	0	1	0	0	0	Unk/ N/A	-	GN	Fisherman	H. Feindt-Herr	-	-	-
2014	Harbour porpoise	Atlantic Ocean, Baltic Sea	0	0	0	0	0	0	0	0	7	0	0	0	Unk/ N/A	-	GN	Fisherman	H. Feindt-Herr	-	-	-
Korea, Republic of																						
2014	Dall's porpoise	Pacific Ocean, Sea of Japan/ East Sea	0	0	0	0	0	0	0	0	1	0	0	0	Unk/ N/A	-	TBB	Fisherman	-	-	-	-
2014	Pacific white-sided dolphin	Pacific Ocean, Sea of Japan/ East Sea	5	0	0	0	1	0	0	0	11	0	0	0	Unk/ N/A	-	FYK; FPO; GN	Fisherman	-	-	-	-
2014	Killer whale	Pacific Ocean, Sea of Japan/ East Sea	0	0	0	0	1	0	0	0	0	0	0	0	Unk/ N/A	-	FPO	Fisherman	-	-	-	-
2014	Finless porpoise	Pacific Ocean, Sea of Japan/ East Sea	1	0	0	0	5	0	0	0	7	0	0	0	Unk/ N/A	-	FYK; GN	Fisherman	-	-	-	-
2014	Finless porpoise	Pacific Ocean, Yellow Sea	126	0	0	0	58	0	0	0	1,273	0	0	0	Unk/ N/A	-	FSN; GN; TBB	Fisherman	-	-	-	-
2014	Harbour porpoise	Pacific Ocean, Sea of Japan/ East Sea	0	0	0	0	1	0	0	0	15	0	0	0	Unk/ N/A	-	FYK; GN	Fisherman	-	-	-	-
2014	Long-beaked common dolphin	Pacific Ocean, Sea of Japan/ East Sea	87	0	0	0	68	0	0	0	205	0	0	0	Unk/ N/A	-	FYK; FPO; GN	Fisherman	-	-	-	-
2014	Risso's dolphin	Pacific Ocean, Sea of Japan/ East Sea	0	0	0	0	0	0	0	0	2	0	0	0	Unk/ N/A	-	FYK	Fisherman	-	-	-	-
New Zealand																						
2013	Common dolphin	Pacific Ocean, NZ	8	0	0	0	5	0	0	0	0	0	1	0	ES	Jack mackarel	TM	Observer/ inspector	-	-	-	-
2013	Long- or short-finned pilot whale	Pacific Ocean, NZ	1	0	0	0	3	0	0	0	0	0	0	0	ES	Jack mackarel	TM	Observer/ inspector	-	-	-	-
2013	Maui's Dolphin	Pacific Ocean, NZ	0	0	0	0	1	0	0	0	0	0	0	0	ES	Jack mackarel	GNS	Fisherman	-	-	-	-
2013	Hector's dolphin	Pacific Ocean, NZ	0	0	0	0	1	0	0	0	1	0	0	0	ES	Jack mackarel	GNS	Fisherman/ observer/ inspector	-	-	-	-
2014	Common dolphin	Pacific Ocean, NZ	1	0	0	0	2	0	0	0	2	0	0	0	Unk/ N/A	*Trachurus novaezelandi*	TM	Fisherman	K. Ramm	-	-	-

Cont.

Year sub-mitted	Species	Large area	M: Dead	M: seriously injured	M: injured	M: Unk	F: Dead	F: seriously injured	F: injured	F: Unk	Unk: dead	Unk: seriously injured	Unk: Injured	Unk: Unk	RMP *Small Area*	Targeted species	Gear	How observed	Contacts	References	Comments	Local area
New Zealand cont.																						
2014	Long- or short-finned pilot whale	Pacific Ocean, NZ	1	0	0	0	0	0	0	0	0	0	0	0	Unk/ N/A	*Macruronus novaezelandi*	TM	Fisherman	K. Ramm	-	-	-
2014	Dusky dolphin	Pacific Ocean, NZ	0	0	0	0	0	0	0	0	1	0	0	0	Unk/ N/A	*Macruronus novaezelandi*	TM	Fisherman	K. Ramm	-	-	-
2014	Hector's dolphin	Pacific Ocean, NZ	0	0	0	0	1	0	0	0	0	0	0	0	Unk/ N/A	*Mustelus lenticulatus*	GNS; TM	Observer/ inspector	K. Ramm	-	-	-
UK																						
2013	Harbour porpoise	N Atlantic Ocean	6	0	0	0	6	0	0	0	0	0	0	0	Unk/ N/A	-	NK	Scientist	A. Brownlow; N. Davison; R. Deaville	-	Diagnosed at necropsy of stranded animals	-
2013	Common dolphin	N Atlantic Ocean	4	0	0	0	1	0	0	0	0	0	0	0	Unk/ N/A	-	NK	Scientist	R. Deaville	-	As above	-
2014	Harbour porpoise	N Atlantic Ocean	7	0	0	0	7	0	0	0	0	0	0	0	Unk/ N/A	Unknown	-	Scientist	A. Brownlow; N. Davison; R. Deaville	-	As above	-
2014	Common dolphin	N Atlantic Ocean	4	0	0	0	2	0	0	0	0	0	0	0	Unk/ N/A	Unknown	-	Scientist	A. Brownlow; N. Davison; R. Deaville	-	As above	-

NOTES: Australia: NOTE 1: Large dolphin came up in trawl net, appeared to have been dead some time. Sex/species not noted.

Belgium: NOTE 1: The diet of harbour porpoises bycaught or washed ashore in Belgium, and relationship with relevant data from the strandings database. NOTE 2: The total number of washed ashore (dead) harbour porpoises in 2013 was 149 (including inland waters). Detailed data are not available yet, but preliminary data indicate that at least 15 of the animals that had washed ashore along the coast had died due to bycatch in fishing gear (with indications of bycatch in a number of other animals). None of the bycaught animals were reported by fishermen, but there are indications that bycatch occurred in both recreational set net fisheries on the beach and in professional fisheries, both inside and outside Belgian waters. NOTE 3: The stranding anomaly as population indicator: the case of harbour porpoise *Phocoena phocoena* in North-Western Europe. NOTE 4: The total number of washed ashore (dead) harbour porpoises in 2013 was 149 (including inland waters). Detailed data are not available yet, but preliminary data indicate that at least 15 of the animals that had washed ashore along the coast had died due to bycatch in fishing gear (with indications of bycatch in a number of other animals). None of the bycaught animals were reported by fishermen, but there are indications that bycatch occurred in both recreational set net fisheries on the beach and in professional fisheries, both inside and outside Belgian waters.

KEY: [FPO] TRAPS – Pot.
[FSN] TRAPS - Stow nets.
[FYK] TRAPS - Fyke nets.
[GN] GILLNETS AND ENTANGLING GEAR - Gillnets (not specified).
[GND] GILLNETS AND ENTANGLING GEAR – Driftnets.
[GNS] GILLNETS AND ENTANGLING GEAR - Set gillnets (anchored).
[GTR] GILLNETS AND ENTANGLING GEAR - Trammel nets.
[HMD] HARVESTING MACHINES - Mechanised dredges.
[LLD] HOOKS AND LINES - Drifting longlines.
[LX] HOOKS AND LINES - Hooks and lines (not specified).
[MIS] MISCELLANEOUS GEAR.
[NK] GEAR NOT KNOWN OR NOT SPECIFIED.
[NSC] SHARK CONTROL NETS.
[PS1] SURROUNDING NETS - One-boat operated purse seines.
[PS2] SURROUNDING NETS - Two-boat operated purse seines.
[RG] RECREATIONAL FISHING GEAR.
[TBB] TRAWLS - Bottom trawls.
[TM] MIDWATER TRAWLS - Midwater trawls (not specified).
[TM] TRAWLS - Shrimp trawls (not specified).

Table 2
Direct takes of small cetaceans in Japan by type of fishery and Prefecture of departure port, 2002 to 2012.
Compiled, edited and translated by Naoko Funahashi

	Prefecture	Quota 2007/08	Quota 2009/10	Quota 2011/12	Quota 2013	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Baird's beaked whale																
SW	Hokkaido	14	14	14	14	10	10	10	14	12	14	13	14	14	30	14
SW	Miyagi+Chiba	52	52	52	52	26/26	26/26	26/26	26/26	25/26	27/26	25/26	27/26	26/26	5/26	31/26
Short-finned pilot whale (northern form)																
SW	Miyagi	36	36	36	36	47	42	13	22	7	-	-	-	-	-	-
Short-finned pilot whale (southern form)																
SW	Chiba+ Wakayama	36	36	36	36	1/35	27	29	25	-/10	-/16	-/20	-/22	-/10	-/-	1/15
D	Wakayama	277/254	230/207	184/161	150	55	55	62	40(2)	198(8)	243(5)	99(1)	219(1)	-	74(6)	172(7)
H	Okinawa	92/85	77/69	61/53	46	38	36	72	90	56	79	62	54	34	46	25
Risso's dolphin																
SW	Wakayama	20/-	-	-	-	12	19	7	8	7	20	-	-		-	-
D	Wakayama	295/290	285/280	275/270	265	221(1)	191(5)	437	340	232	312(8)	216(8)	336(8)	271(10)	273(17)	188(24)
H	Wakayama	246/242	238/234	230/226	222	154	168	60	46	105	185	122	94	126	104	52
False killer whale																
SW	Wakayama	-/20	20	20	20		-	-	-	-	-	-	-	-	-	-
D	Shizuoka	10	10	10	10	-	-	-	-	-	-	-	-	-	-	-
D	Wakayama	70	70	70	70	7	17(5)	-	-	30(24)	-	-	-	-	17(10)	-
H	Okinawa	20	20	20	20	-	4	3	1	5	4	5	1	-	3	-
Striped dolphin																
D	Shizuoka	63/56	49/42	35/28	21	-	-	-	-	-	-	-	-	-	-	-
D	Wakayama	450	450	450	450	565	382	554	397(2)	479	384	535(5)	321	458(2)	406(8)	508(2)
H	Chiba	72/64	56/48	40/32	24	-	-	-	-	-	-	-	-	-	-	-
H	Wakayama	100	100	100	100	77	68	83	60	36	86	65	98	100	96	94
Bottlenose dolphin																
D	Shizuoka	71/67	63/59	55/51	47	-	-	24(15)	-	-	-	-	-	-	-	-
D	Wakayama	842/795	747/700	652/604	557	760(72)	121(16)	475	285(36)	285(80)	300(77)	297(57)	352(98)	95(168)	76(25)	186(131)
H	Wakayama	95/89	84/79	73/68	63	38	52	43	66	75	97	93	77	38	40	73
H	Okinawa	9	8	7	6	3	7	10	10	12	4	1	4	1	3	3
Spotted dolphin																
D	Shizuoka	409/365	318/272	227/181	136	-	-	-	-	-	-	-	-	-	-	-
D	Wakayama	400	400	400	400	400	102	-	-	400(13)	-	329(6)	-	125(16)	106(2)	98
H	Wakayama	70	70	70	70	18	30	2	13	5	16	-	3	7	2	12
White-sided dolphin																
D	Shizuoka	36	36	36	36		-	-	-	-	-	-	-	-	-	-
D	Wakayama	134	134	134	134						-	21(16)	14(13)	27(17)	24(21)	2(2)
H	Iwate	154	154	154	154						-	-	-	-	-	-
H	Wakayama	36	36	36	36						-	-	7	-	-	2
Dall's porpoise (Dalli type)																
H	Hokkaido	1,451/ 1,399	1,348/ 1,296	1,244/ 1,192	1,141	1,328	1,655	647	1,240	719	841	467	308	116	-	-
H	Aomori	18/16	14/12	10/8	6	-	-	-	-	-	-	-	-	-	-	-
H	Iwate	6,969/ 6,721	6,472/ 6,224	5,975/ 5,726	5,478	6,057	6,427	3,796	5,394	3,312	2,975	1,947	1,362	1,140	89	29
H	Miyagi	269/260	250/241	231/221	212	229	226	171	246	181	254	180	103	-	-	-

Cont.

	Prefecture	Quota 2007/08	Quota 2009/10	Quota 2011/12	Quota 2013	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Dall's porpoise (Truei type)																
H	Hokkaido	98/95	92/89	86/83	80	89	84	66	51	44	44	66	-	2	-	-
H	Iwate	8,054/ 7,805	7,557/ 7,308	6,860/ 6,611	6,363	8,243	7,325	9,109	7,733	7,758	7,243	4,566	7,767	3,532	1,855	376
H	Miyagi	16	15	214	213	3	3	-	-	-	-	-	-	129	8	-

Notes: (N) shows number sold alive within all catch, and including research use. SW=Small type whaling. D=Drive fishery. H=Hand harpoon fishery.
For Baird's beaked whale, carry over is permitted. Year for quota is for each season, actual catch is for calendar year.
Sources: Japan. Progress reports on small cetacean research, Japan Fisheries Agency: *http://www.jfa.maff.go.jp/j/whale/w_document/pdf/h14_progress_report.pdf; http://www.jfa.maff.go.jp/j/whale/w_document/pdf/h15_progress_report.pdf; http://www.jfa.maff.go.jp/j/whale/w_document/pdf/h16_progress_report.pdf; http://www.jfa.maff.go.jp/j/whale/w_document/pdf/h17_progress_report.pdf; http://www.jfa.maff.go.jp/j/whale/w_document/pdf/h18_progress_report.pdf; http://www.jfa.maff.go.jp/j/whale/w_document/pdf/h19_progress_report.pdf; http://www.jfa.maff.go.jp/j/whale/w_document/pdf/h20_progress_report.pdf;http://www.jfa.maff.go.jp/j/whale/w_document/pdf/110425_progress_report.pdf; http://www.jfa.maff.go.jp/j/whale/w_document/pdf/120516_progress_report.pdf; http://www.jfa.maff.go.jp/j/whale/w_document/pdf/130531_progress_report.pdf;*
Small Cetacean Fisheries and Resource Study (in Japanese), Fisheries Research Agency: *http://kokushi.job.affrc.go.jp/H20/H20_45.pdf; http://kokushi.job.affrc.go.jp/H22/H22_45.pdf; http://kokushi.job.affrc.go.jp/H24/H24_45.pdf; http://kokushi.job.affrc.go.jp/H25/H25_45.pdf.*

Appendix 4

PROPOSAL FOR AN IWC SYMPOSIUM AND WORKSHOP ON THE ISSUE OF 'MARINE BUSHMEAT': *TACKLING 'MARINE BUSHMEAT' ISSUES THROUGH FOCUSED REGIONAL WORKSHOPS*

BACKGROUND

During SC/64, a workshop was proposed that would serve as an overarching forum from which exploitation of small cetaceans for food, bait or cash could be defined, explored and assessed. Part of this proposal was to provide detailed case studies from various regions. One of the projects funded through the 2013-14 Small Cetacean Voluntary Fund grants has highlighted an area in southeast Asia where this issue is emerging and some data has been gathered on the extent of the targeted catch. As interest in this issue is growing regionally, an opportunity has arisen to fund a detailed assessment and workshop for southeast Asia. After discussion, the sub-committee decided to pursue this further by producing a scaled down agenda from that proposed at SC/65a with the intention that this may provide a structure for a series of regional workshops which shall, eventually, contribute to the larger symposium (IWC, 2014).

WORK PLAN

Porter (working in southeast Asia with the University of St. Andrews) was nominated as the co-ordinator of this initiative and will work with Brownell to formalise the list of attendees and a detailed agenda for review by the steering group (Baker, Fortuna, Reeves, Ritter and Simmonds). It is anticipated that a three day Workshop will be conducted prior to the next Scientific Committee meeting in 2015. Key researchers, from ecological and social science backgrounds, management authorities and NGOs involved in community development, in addition to members of the steering committee, will be invited to the Workshop which will (tentatively) be held in Malaysia. A social scientist, Janie Tsonis-Liew (Director, Center for International Affairs, University Malaysia Sabah, Malaysia) has been working with the University of St. Andrews and has considerable experience with community interviews and rural lifestyle development. Tsonis-Liew has agreed to work further on this issue and will assist in the development of a work programme to include socio-economic research and existing studies, sustainability issues, poverty, human demographic change and growth. It is anticipated, therefore, that the main aim of the workshop will be to review the current state of knowledge and identify strategies to conduct a detailed analyses of the extent of this issue in southeast Asia.

In parallel with the southeast Asia initiative, Porter will work with a team from the Wildlife Conservation Society (Cerchio, Collins, Rosenbaum) who will also move forward with planning for a regional Workshop in Africa. Participants from countries where 'marine bushmeat' issues have been identified will be invited and the initiative will build on current recommendations articulated in other regional agreements. This will include the CMS Action Plan for the Conservation of Small Cetaceans of Western Africa and Macaronesia. The Workshop in Africa will build on lessons learned and key points from the southeast Asia Workshop and a target for completion set for late 2015 or 2016 (before SC/66b).

For both Workshops, the threat of disease transmission to humans and domestic animals (zoonoses) will be further explored via consultation with other experts in the SC and through review of terrestrial bushmeat initiatives. The relevant points from the existing agenda have been summarised below, however, detailed agenda, including detailed timeline and work plan, will be prepared by the end of July 2014 for the steering committee to review.

DRAFT BUDGET

Funding for these Workshops will be sought from independent funding sources. A possible funding body has been identified for the Asia Workshop and after full development of the Workshop agenda and identification of relevant participants, a detailed proposal shall be submitted to the IWC. The Chair and steering committee will be kept informed of any progress. If attendees from the IWC Secretariat or other members of the Scientific Committee require funding to observe at the Workshop, funds may be required from the Small Cetacean Voluntary Fund, or other IWC sources.

KEY AGENDA ITEMS

Overview
- Types of takes documented in the region (e.g. directed takes, opportunistic utilisation of by catch).

Mapping areas of historical hunts
- Mapping recent information on reported consumption.

Driving forces
- Overfishing (local artisanal *vs* foreign industrial etc.).
- Subsistence/poverty/human demographic change and growth.
- Economics: markets for small cetacean meat.

Impacts on cetacean populations
- Targeted species.
- Review of relevant population sizes and statuses.
- Cumulative effects/synergies with other known localised threats.

Mechanisms for detailed assessment
- Monitoring options, incorporating socio-economic research and existing studies.
- Capacity building (education, local management).
- Identifying research needs to investigate impacts on small cetaceans.
- Identifying research needs to inform mitigation and management.
- Summary, action points and conclusions.

Mechanisms for management
- Existing legislation and regulation.
- Management/conservation objectives.
- Co-operation with other international bodies/agreements.
- Alternative livelihoods.

REFERENCE

International Whaling Commission. 2014. Report of the Scientific Committee. Annex L. Report of the Sub-Committee on Small Cetaceans. *J. Cetacean Res. Manage. (Suppl.)* 15:345-79.