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IMPACT OF FISHERIES BYCATCH ON ENDANGERED MIGRATORY SPECIES

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A review report of fishery-related bodies, prepared by MacAlister Elliot and Partners Ltd within the same commission, had been distributed at the 11th Meeting of the Scientific Council as document ScC11/Inf.6. Participants in ScC12 who are interested in that document can request it from the Secretariat.

**DEPARTMENT FOR ENVIRONMENT,
FOOD AND RURAL AFFAIRS**

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**IMPACT OF FISHERIES BYCATCH
ON ENDANGERED MIGRATORY SPECIES**

FINAL REPORT

BY

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IMPACT OF FISHERIES BYCATCH ON ENDANGERED MIGRATORY SPECIES

1) History and background of bycatch problem

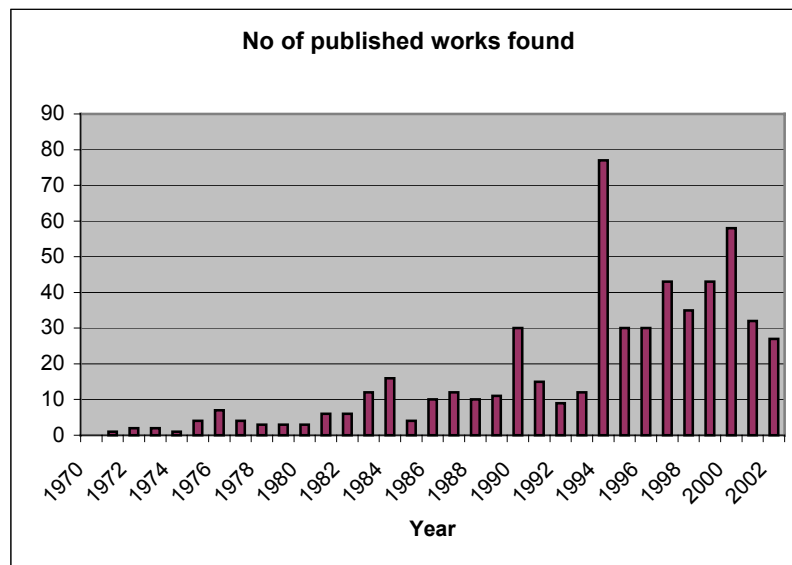
Although bycatch (unintended capture while fishing) has been a well-known phenomenon for centuries, it is only relatively recently that it has become a major focus both for scientific study and for conservation concern.

Initially concerns were focused on the accidental capture of dolphins in the Eastern Tropical Pacific Tuna fishery, which during the 1960s was responsible for the incidental mortality of some millions of common, striped, spinner and other dolphins (Perrin, 1968; Gosliner, 1999). During the 1970s the incidental capture of turtles, especially in shrimp trawls, became an important issue (Cox, 1976). At the same time significant levels of bycatch of several cetacean species (Lear and Christensen, 1975; Ohsumi, 1975) and also of birds (Bibby, 1972) first became conservation issues for a number of gillnet fisheries around the world. During the 1980s the topic became more widely researched, and by the 1990s it was firmly established as a major conservation issue. It was during this time that the issue of seabird bycatch in longlines became more widely known and was recognised as a major problem (Brothers 1991). The early 1990s also saw considerable interest in the bycatch of birds, mammals, turtles and sharks in driftnets, culminating in a UN Resolution introducing a worldwide moratorium on the use of driftnets on the high seas (Northridge 1991). Studies on the bycatch of marine birds, turtles and mammals during the last thirty years have therefore revealed many instances where these groups of animals are impacted by a wide range of fishing practices.

Examining the publication dates of research papers that have addressed the issue since 1970 provides some, necessarily imperfect, idea of the increasing profile of the issue since initial studies in the 1960s. Our database of bibliographic references (submitted electronically with this report) contains few references dating from the 1970s, averaging just over two published paper per year. Most of these were focused on cetaceans, but birds and turtles were also considered. By the 1980s interest had increased, with an average of nine papers published per year, and the species that were addressed were from all three groups, though again cetaceans dominated. In the 1990s we record a decadal average of around thirty publications per year, rising to forty per year since the turn of the millennium. The number of works dealing with birds has also increased, but in our database at least, which is not necessarily an unbiased sample of the available literature, marine mammal bycatch still dominates the literature. Figure 1 shows the progression of publications on this subject over a 32-year period.

Concerns about the conservation status of animals subject to bycatch have grown over this period. This is reflected in the adoption of several international agreements addressing the issue, and in the adoption of several Resolutions on the subject by, among other the International Whaling Commission (IWC), the International Union for the Conservation of Nature and Natural Resources (IUCN) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS). Bycatch is now recognised by the CMS and other organisations as being one of the key threats to species survival for several species, and as being the major cause of human-induced mortality among many other aquatic organisms.

Figure 1: Publications on bycatch, by year of publication



Bycatch of endangered or threatened species is also recognised by many nations as being a key conservation issue, and as a result there has been much attention given in recent years by both international and national agencies directed towards the development of methods of reducing or eliminating bycatch from specific fisheries. These are addressed further below.

In this report we focus mainly on the migratory species of interest to CMS, which include the turtles and cetaceans as well as some of the seabirds, notably the albatrosses and petrels. We also focus on those species and fisheries that occur in British Dependent Territories, and address how concerns for these interactions are being and might be addressed in the context of international agreements, conventions and fishery management regimes.

2) Main fisheries causing bycatch

The use of almost any type of fishing gear can lead to some bycatch (Northridge and Hofman, 1999; Alverson et al., 1994), but bycatch becomes a problem from a conservation perspective only when the numbers of animals being subject to bycatch becomes unsustainable, and leads to or threatens population decline, either globally or locally. There is no one gear type or group of gear types that can be identified as the most important cause for concern globally, as for each group of species certain gear types are seen to be more or less significant threats than others. However some gear types and some species groups have certainly been subject to more investigation or study than others.

The ways in which gears interact with cetaceans, sea birds and turtles are not always easy to predict, so it is worth addressing each of the most important gear types in turn.

2.1 Towed gear: demersal trawls

Shrimp trawls have been identified as a major source of mortality for a wide range on non-target species (Alverson et al., 1994), but have been specifically identified since the 1970s as a major concern for turtles. These are mostly an issue in tropical or sub-tropical regions. Demersal trawls are also known to take some cetaceans (and pinnipeds) (Fertl, 1997) and more rarely birds (Tasker et al., 2000). Clearly demersal trawls are most likely to catch animals that forage on or near the seabed, and this will include several turtle species, some of the smaller cetaceans notably phocoenids, and perhaps some of the auks. Pinnipeds are also vulnerable.

2.2 Towed gear: pelagic trawls

Pelagic trawls have only relatively recently been investigated as a source of bycatch for some groups of animals, especially delphinids in the North Atlantic (Waring et al., 1990; Couperus, 1997; SEC, 2002). Trawls may be a significant cause of mortality of seabirds in the southern ocean, and albatross may be particularly susceptible to being injured or killed by trawl warps (J. Barton, Pers. Comm.). We found no records of turtle bycatch in pelagic trawls though it would seem reasonable to suppose that such catches may occur where there is an overlap in the foraging range of this group with pelagic trawl fisheries.

2.3 Purse seines

Purse seines are usually fairly selective gears, but where purse seine fishermen exploit the naturally occurring association between dolphins and tunas, setting nets around dolphin schools as a way of catching tuna schools below them, there have been large scale mortalities of dolphins. Although annual mortalities in the Eastern Tropical Pacific still run into the thousands per year, they have been greatly reduced by initiatives taken by the IATTC (see below). Purse seines are also known to take turtles, especially loggerhead and leatherback turtles (Hall 1998), but few bird mortalities are documented.

2.4 Longlines

Longlines are a particular problem both for surface foraging sea birds, notably albatrosses and shearwaters, and also loggerhead turtles. The issue of seabird bycatch was first raised by Brothers (1991) in relation to albatrosses being caught in longline fisheries for tuna in the southern ocean. Subsequently it has become clear that longline fisheries for tuna and other large pelagic fish, as well as some for demersal fish such as Patagonian toothfish, also have significant levels of seabird bycatch, including various species of both albatrosses and petrels (Tasker et al. 2000). Longlines in warm water areas also impact upon turtles, notably loggerheads (Witzell, 1984; Witzell, 1995; Caminas and Valeiras, 2001). There are also some records of cetacean bycatch in longline fisheries (Johnson, 1999; Yeung et al., 1999), but as far as is currently known, none of these pose a major conservation threat.

2.5 Gillnets

Gillnets are widely used by coastal fishermen. The UN Resolution 44/225 has restricted the use of driftnets on the high seas. Bycatches of all the major groups have been reported. Driftnets are more likely to be fished near the surface and can and do take a wide variety of air-breathing marine animals (Northridge, 1991). Set nets or fixed nets are usually fished near or on the seabed, even at depths that can exceed several hundred metres in places. Bycatches of marine mammals in bottom set gillnets are widely reported and include especially the bottom feeding species of cetaceans such as the porpoises (Jefferson and Curry, 1994); diving birds such as alcids are also vulnerable, as are most of the turtle species.

2.6 Other gear types

Other gear types less often associated with bycatch of air breathing animals include lobster pot fisheries and beach seines. The former are responsible for annual mortalities of northern right whales in the Gulf of Maine, USA (Caswell et al., 1999), while the latter are responsible for mortalities of coastal dolphin species in India (Jones, 1976). Trap fisheries, such as herring weirs, are also known to have a bycatch of some cetacean species in Canada and Denmark (Anonymous 1994). One of the most critically endangered marine mammals species, the beiji or Chinese river dolphin, is threatened by continued use of a fishing gear known as rolling hooks – sharp barbless and unbaited hooks attached in profusion to a line that is left in the muddy river bed of the Yangste River. This unusual gear type could be the most significant in terms of the conservation threat that it poses to a single species.

The significance of each gear type as a source of bycatch does depend on the conservation status of the species that is subject to bycatch, and upon the bycatch rate of that species. Certain gear types, such as lobster pots, or rolling hooks, may pose little risk to most non-target species, and yet may threaten the survival of one peculiarly vulnerable species. Nevertheless we can make some generalisations about how often different gear types are implicated in bycatch of cetaceans, turtles and birds.

Table 2: Gear types mentioned in the bibliographic database

Gillnet Drift Set		Longline	Purse seine	Pelagic Trawls	Demersal trawls	Pots & Traps	Beach seine	Other
71	43	37	10	9	12	2	1	7*

**includes 5 anti-shark nets, 1 tangle net and 1 herring weir.*

Examining our bibliographic database we found that studies on gillnets, especially driftnets, dominated the reference list (Table 2). Clearly such an analysis is prone to biases in the selection of citations that are included, and it is probable that shrimp trawls, for example are under-represented with respect to the level of study that has been done. Nevertheless the database does indicate the particular interest that researchers have paid to both gillnets and longlines, and it is probably that these two gear types are the most significant overall in terms of the number of highly migratory species impacted. The fact remains that certain other gear types may be critically important for some species.

3) Species-groups exposed to bycatch

Of the species under consideration here, the marine turtles, seabirds and cetaceans, all of the turtles, most of the small cetaceans and many of the seabirds are vulnerable to some level of bycatch. Although in some cases it is clear that such levels are unsustainable and may be threatening local or global extinction, in the majority of cases it is probably fair to say that the significance of reported bycatch levels is unclear.

For the turtles, bycatches are widely reported in shrimp and other trawls and on longlines. Indeed the US National Research Council (Anon. 1990) determined that bycatch in shrimp trawls is likely to account for an order of magnitude higher mortality among Kemp's Ridley and Loggerhead turtles than any other identified source of mortality in US waters. Poiner and Harris (1996) concluded that drowning in fishing gear was also the main source of mortality for turtles in Northern Australia. Assessments have been made in few other places, but turtle populations are generally in decline throughout much of the world, and it seems not unreasonable to assume that in other areas too fisheries bycatch is likely to be a major contributing factor. Loggerheads and leatherbacks spend part of their lives in the open sea and are vulnerable there to longline hooks, whereas most of the other species live a more neritic existence for most of the time, and are therefore more exposed to trawls, especially shrimp trawls, and to gillnets.

Among the birds, the most frequently cited groups of species reported as being subject to bycatch are the albatrosses, shearwaters and petrels (Procellariiformes); many of which have the habit of following boats, and many of which are pre-adapted to feed on dead fish, a habit which leads them to try to take hooked bait on longline hooks as they are being set (Tasker et al., 2000), with often-fatal consequences. Auks are also subject to bycatch mortality, but mainly in gillnets. Our bibliographic database gave a breakdown according to groups of species with albatross bycatches being the most studied among the species groups identified in publication titles and abstracts (Table 3).

Table 3: Number of citations by bird group

Albatross	Shearwaters & petrels	Auks	Identified Others	"Sea birds"
20	12	18	8	35

Among the cetaceans, the bycatch of porpoises has been the most well-studied (see Table 4), notably that of the harbour porpoise (*Phocoena phocoena*). This species is adapted to forage on demersal fish in some of the most heavily netted areas of the world, and tens of thousands of porpoises have drowned annually in such fisheries throughout the Northern Hemisphere in recent decades, with several concomitant population declines. Its less numerous close relative the vaquita (*Phocoena sinus*), which has a restricted distribution, is threatened with imminent extinction in its limited range of the upper Gulf of California as a result of gillnet bycatch (Rojas-Bracho and Taylor, 1999). Other porpoises are also

likely to be vulnerable to bycatch where they overlap with gillnet fisheries (notably finless and Burmeister's porpoises (*Phocoena spinipinnis*)). Among the delphinids, bycatches in purse seines and pelagic trawls as well as longlines are all or have been potential threats to populations.

Table 4: Number of citations by cetacean group

Porpoises	Dolphins	Whales	River dolphin	“cetaceans”
80	65	25	2	41

4) Consideration of issues by geographic area

In considering UK dependent territories we have divided the Oceans into ten regions. We will address each of these in turn. We identify those vulnerable species present in each region, and the fisheries of the region that are most likely to impact them. Any data that we are able to find on observed bycatch rates, or on mitigation trials in these areas are also referenced.

To assist us in this task we have compiled a database of relevant species giving their distributions so that we can identify those species likely to be present in each of the regions under consideration. In each of the tables below we list the species under consideration (all cetaceans, all turtles and for seabirds, primarily the auks, albatrosses, shearwaters and petrels) as they are thought to occur in each sea area. Where they are either frequently recorded (in the case of cetaceans) and/or are thought to breed in significant numbers (in the case of turtles and seabirds) we also designate them as 'important' for that area. This is necessarily a subjective designation but should help the reader to identify those species that are more than simply occasional or infrequent visitors. Furthermore we also provide an indication of which if any Appendix of CMS and CITES each species is listed under, and report on IUCN categories and conservation criteria. In addition to our own database, we have also relied heavily upon the work of (Oldfield 1987) and (Oldfield 1999) who has summarised information on vulnerable or important species and conservation efforts in all the UK's Dependent Territories.

We have also compiled a database of relevant international organisations that might have some involvement in monitoring or controlling bycatch, and for each of the regions under consideration we provide a summary of the relevant organisations, and an indication as to whether the UK or its Dependent Territories are members. For certain fishery related organisations the UK is listed as a member where membership includes the EC, which has competence on fishery matters for all EU member states.

4.1 Northeast Atlantic, North Sea (UK)

4.1.1 Species present

The species distributions and status of migratory species most likely to be subject to fisheries bycatch are better understood here than in any of the remaining areas under consideration. The distribution of seabirds has been well studied by the JNCC (Stone et al., 1995), while cetacean presence and to a lesser extent distributions are also fairly well known (Reid et al., *in press*). Turtles, mainly leatherbacks, are regularly sighted in western and southern UK waters (Pierpoint, 2000), but are near the limits of their range in UK waters. Table 5 lists the main migratory species of concern for UK waters.

Table 5 – Potential bycatch species in the Northeast Atlantic

Order	Species	Common Name	Important	CMS Appendix	CITES Appendix	IUCN category	IUCN criteria
Anseriformes	Clangula hyemalis	Long-tailed duck					
Anseriformes	Somateria mollissima	Common eider	*				
Anseriformes	Melanitta nigra	Common scoter					
Anseriformes	Melanitta fusca	Velvet scoter					
Cetacea	Balaenoptera musculus	Blue whale		I	I	EN	A1abd
Cetacea	Eubalaena glacialis	Northern right whale		I	I	EN	C1, D
Cetacea	Megaptera novaeanglia	Humpback whale		I	I		
Cetacea	Balaenoptera acutorostrata	Northern minke whale	*		I/II	LR/nt	
Cetacea	Balaenoptera physalus	Fin whale		I/II	I	EN	A1abd
Cetacea	Physeter macrocephalus	Sperm whale		I/II			
Cetacea	Kogia breviceps	Pygmy sperm whale					
Cetacea	Ziphius cavirostris	Cuvier's beaked whale					
Cetacea	Hyperoodon ampullatus	North Atlantic bottlenose whale		II	I	LR/cd	
Cetacea	Mesoplodon mirus	True's beaked whale				DD	
Cetacea	Globicephala melas	Longfinned pilot whale	*	II			
Cetacea	Balaenoptera borealis	Sei whale		I/II	I	EN	A1abd
Cetacea	Phocoena phocoena	Harbour porpoise	*	II		VU	A1cd
Cetacea	Mesoplodon bidens	Sowerby's beaked whale				DD	
Cetacea	Orcinus orca	Killer whale	*	II		LR/cd	
Cetacea	Pseudorca crassidens	False killer whale					

Order	Species	Common Name	Important	CMS Appendix	CITES Appendix	IUCN category	IUCN criteria
Cetacea	Grampus griseus	Risso's dolphin		II		DD	
Cetacea	Lagenorhynchus acutus	Atlantic whitesided dolphin	*	II			
Cetacea	Lagenorhynchus albirostris	Whitebeaked dolphin	*	II			
Cetacea	Delphinus delphis	Shortbeaked common dolphin	*	II			
Cetacea	Stenella coeruleoalba	Striped dolphin		II			
Cetacea	Tursiops truncatus	Bottlenose dolphin	*	II			
Charadriiformes	Uria aalge	Guillemot	*				
Charadriiformes	Alle alle	Little auk					
Charadriiformes	Uria lomvia	Brunnich's Guillemot					
Charadriiformes	Fratercula arctica	Atlantic puffin	*				
Charadriiformes	Alle alle	Little auk					
Charadriiformes	Cephus grylle	Black guillemot	*				
Charadriiformes	Alca torda	Razorbill	*				
Pelecaniformes	Morus bassanus	Northern gannet	*				
Pelecaniformes	Phalacrocorax carbo	Great cormorant	*				
Procellariiformes	Fulmarus glacialis	Northern fulmar	*				
Procellariiformes	Puffinus griseus	Sooty shearwater					
Procellariiformes	Puffinus mauretanicus	Balearic shearwater				LR/nt	
Procellariiformes	Puffinus gravis	Great shearwater					
Testudinata	Dermochelys coriacea	Leatherback turtle			I	CR	A1abd

4.1.2 Bycatch information

Cetacean bycatches in UK waters are monitored by the Sea Mammal Research Unit under contract to DEFRA. Estimates of porpoise bycatch in some gillnet fisheries, and of

dolphin bycatch in the now terminated driftnet fishery for albacore have been made (Anon., 1995; Tregenza and Hammond, 1997; Northridge and Hammond, 2000). Estimates of dolphin bycatch in pelagic trawl fisheries are currently being prepared. Porpoise bycatches are thought to be unsustainable in gillnet fisheries in the North Sea and Celtic Shelf (SEC, 2002).

Assessments of seabird bycatch have been made for some gillnet fisheries (Robins, 1991) in the UK, but this has not been done systematically. The species most affected are guillemots and razorbills. Longline fisheries play a very minor role in UK fisheries and have not been assessed for seabird bycatch. Bycatches in longline fisheries have been studied in the Northeastern Atlantic (Dunn and Steel 2001), but this study was focused on Norwegian longlining. The UK does not have a National Plan of Action for the reduction of seabird bycatch in longline fisheries, as this is an area in which the EC has competence. However, as yet there has been nothing published or proposed on this issue by the European Commission.

Turtle bycatch in the UK has been reported by Pierpoint (2000), who provides a summary of knowledge on this subject. The report complements a database called 'TURTLE' (Pierpoint and Penrose, 1999), that holds 712 records of marine turtles in UK and Irish waters and includes 154 records of turtle bycatch, with 83 of these since 1980 – a rate of reporting of approximately 4 per year. Most bycatch records involve the leatherback turtle (94% of the records identified to species). There are also a small number of records of loggerhead, Kemp's ridley and hawksbill turtles. The most common method of incidental capture for leatherback turtles is entanglement in rope, particularly those used in pot fisheries targeting crustaceans and whelks. Recorded mortality overall was 61% of reports. There are no data on injury or post-release mortality. The database also includes records of leatherback capture in driftnets, trawls, set gill nets, purse seines and in longline fisheries.

The fisheries of the region are complex, diverse and intensive. Complexity arises partly because fisheries within the EU are managed by the Council of Ministers at an EU level, and vessels from many nations, fish in the UK's waters. The major gear types are demersal trawls, including beam trawls, shrimp trawls and standard otter trawls, demersal seines, pelagic trawls (pair and single boat), and pot or creel fisheries. Gillnets are also important in certain areas, especially the Channel and Cornwall and parts of the North Sea. Of lesser importance are longlines and purse seines.

The major concerns for bycatch relate to porpoises in gillnets, common dolphins, and to a lesser extent white-sided and white-beaked dolphins in pelagic trawls, guillemots and razorbills in set nets, and turtles in pot lines.

4.1.3 Addressing bycatch

The UK is a member of and signatory to many regional or sectoral organisations and agreements. We summarise the relevant ones below in Table 6, from the accompanying database.

Table 6: Relevant bodies and agreements – Northeast Atlantic

Organisation name	Acronym
AGREEMENT ON THE CONSERVATION OF SMALL CETACEANS OF THE BALTIC AND NORTH SEAS	ASCOBANS
CONVENTION FOR THE PROTECTION OF THE MARINE ENVIRONMENT OF THE NORTHEAST ATLANTIC	OSPAR
CONVENTION ON BIODIVERSITY	CBD
CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA	CITES
CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS	CMS
COORDINATING WORKING PARTY ON FISHERIES STATISTICS	CWP
EUROPEAN INLAND FISHERIES ADVISORY COMMISSION	EIFAC
FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS	FAO
GENERAL AGREEMENT ON TRADES AND TARIFFS	GATT
GLOBAL ENVIRONMENT FACILITY	GEF
INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA	ICES
INTERNATIONAL MARITIME ORGANISATION	IMO
INTERNATIONAL OCEAN INSTITUTE	IOI
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES	IUCN/SSC
INTERNATIONAL WHALING COMMISSION	IWC
NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION	NASCO
NORTH-EAST ATLANTIC FISHERIES COMMISSION	NEAFC
RAMSAR CONVENTION ON WETLANDS	RAMSAR
UN EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANISATION/GLOBAL OCEAN OBSERVATION SYSTEM	UNESCO/GOOS
UNITED NATIONS ENVIRONMENT PROGRAMME	UNEP

Under the rules governing fisheries management and regulation within the EU, member states have agreed to pool management responsibility, and the European Commission makes most of the decisions on regulating European fisheries. Member states still retain some authority over their own vessels, and this has enabled some member states to apply stricter conservation rules to their vessels compared with those of the rest of the Union.

Nevertheless the Commission is responsible for regulating most fishery activities and under a recent proposal the Commission has stated its intention to address the subject of bycatch of non-target species, notably cetaceans, birds and turtles. Up to the present however most such activities have been done at a national level.

Within the UK there have been voluntary agreements for over ten years to minimise bird bycatch in coastal set net fisheries by prohibiting gillnet fishing close to certain bird

breeding areas at certain times of year. With respect to cetacean bycatch, the UK is in the process of developing a cetacean bycatch reduction strategy that is due for publication in 2003. Options to reduce cetacean bycatch would include the use of acoustic deterrent devices (“pingers”) which have been shown to be effective in preventing porpoises from becoming entangled in gillnets (Sea Mammal Research Unit, University College Cork et al., 2001), exclusion grids, which are being tested in one pelagic trawl fishery, and possibly time/area closures for certain fishing activities (SEC 2002). With respect to turtles, the UK has a series of biodiversity action plans, one of which covers turtles, and proposals to try to minimise turtle mortalities in UK fisheries are currently being discussed under its aegis.

4.2 Mediterranean

Gibraltar is the only dependent territory in the Mediterranean, though the UK still maintains Sovereign Bases on the island of Cyprus that are administered by the Military.

4.2.1 Species present

We found no dedicated surveys of the species of relevance that are present in Gibraltar’s territorial seas. Instead we rely on our database to indicate which species are most likely present in the area.

Table 7 – Potential bycatch species in the Mediterranean – Gibraltar area

Order	Species	Common name	Important	CMS Appendix	IUCN category	IUCN criteria	CITES appendix
Cetacea	Balaenoptera acutorostrata	Northern minke whale			LR/nt		I/II
Cetacea	Balaenoptera borealis	Sei whale		I/II	EN	A1abd	I
Cetacea	Balaenoptera physalus	Fin whale		I/II	EN	A1abd	I
Cetacea	Delphinus delphis	Shortbeaked common dolphin	*	II			
Cetacea	Feresa attenuata	Pygmy killer whale			DD		
Cetacea	Globicephala macrorhynchus	Shortfinned pilot whale			LR/cd		
Cetacea	Globicephala melas	Longfinned pilot whale	*	II			
Cetacea	Grampus griseus	Risso's dolphin		II	DD		
Cetacea	Megaptera novaeanglia	Humpback whale		I			I
Cetacea	Mesoplodon densirostris	Blainville's beaked whale			DD		

Order	Species	Common name	Important	CMS Appendix	IUCN category	IUCN criteria	CITES appendix
Cetacea	Orcinus orca	Killer whale		II	LR/cd		
Cetacea	Physeter macrocephalus	Sperm whale		I/II			
Cetacea	Pseudorca crassidens	False killer whale					
Cetacea	Stenella coeruleoalba	Striped dolphin	*	II			
Cetacea	Steno bredanensis	Rough-toothed dolphin					
Cetacea	Tursiops truncatus	Bottlenose dolphin		II			
Cetacea	Ziphius cavirostris	Cuvier's beaked whale					
Charadriiformes	Alca torda	Razorbill					
Charadriiformes	Fratercula arctica	Atlantic puffin					
Charadriiformes	Uria aalge	Guillemot					
Pelecaniformes	Morua bassanus	Northern gannet					
Procellariiformes	Calonectris diomedea	Cory's Shearwater	*				
Procellariiformes	Puffinus griseus	Sooty shearwater					
Procellariiformes	Puffinus mauretanicus	Balearic shearwater			LR/nt		

In addition to the bird species given in the table above, four of five pairs of a threatened Mediterranean endemic subspecies of Shag *Phalacrocorax arsitotelis desmarestii* nest on the Rock. The Strait is the only passage between the Atlantic Ocean and Mediterranean for seabirds and is likely to see many more passing through at certain times of year.

Among the cetaceans, pilot whales (*G. melaena*) and common dolphins (*D. delphis*) are seen locally. Less frequently sighted species include Sei (*Balaenoptera borealis*), Fin (*B. physalus*), and Sperm whales (*Physeter macrocephalus*). There are resident common and striped dolphin populations; both species reportedly calve in Gibraltar Bay in summer months. A number of species have total protection in the waters of Gibraltar under the Nature Protection Ordinance 1991, including common dolphin, long-finned pilot whale, Risso's dolphin, killer whale, striped dolphin and bottlenose dolphin. No marine turtle nesting occurs in Gibraltar. Loggerhead and green turtles occur in surrounding waters and occasionally there are vagrant hawksbill and leatherback turtles reported.

4.2.2 Bycatch information

We could find no direct accounts of bycatch in the territorial waters of Gibraltar. There are no 200nm fishery zones in the Mediterranean and so fishing outside of territorial waters is essentially on the high seas and little regulated. A Spanish driftnet fishery for tunas was terminated in the 1990s but there has been a subsequent increase in Moroccan boats using this type of gear in waters adjacent to Gibraltar. Known Bycatches included common and striped dolphins, loggerhead turtles and the sunfish *Mola mola* (Silvani, Gazo et al. 1999). There are also longline fisheries in the region targeting tunas that are reported to have a bycatch of loggerhead and leatherback turtles, striped dolphins and Risso's dolphin, gannets and Cory's shearwater (Caminas and Valeiras, 2001).

There is very little local fishing by boats based in Gibraltar, with only six hawkers licences currently issued for the sale of fish (G. Titto, *pers. comm.*). Bycatch by local boats is therefore unlikely to present a problem.

4.2.3 Addressing bycatch

Gibraltar is a signatory to the Ramsar Convention, CITES, the Bonn Convention (CMS), CBD, International Convention on the Regulation of Whaling, and is also subject to the EU's Birds Directive and Habitats Directive. A number of other conventions and bodies also relevant (see Table 8), including some to which the EC is a signatory.

Table 8: Relevant bodies and agreements – Mediterranean

Organisation name	Acronym
AGREEMENT ON THE CONSERVATION OF CETACEANS OF THE BLACK SEA, MEDITERRANEAN SEA AND CONTIGUOUS ATLANTIC AREA	ACCOBAMS
BARCELONA CONVENTION AND MEDITERRANEAN ACTION PLAN; REGIONAL ACTIVITY CENTRE / SPECIALLY PROTECTED AREAS AND WILDLIFE	MAP RAC/SPA
CONVENTION FOR THE PROTECTION OF THE MARINE ENVIRONMENT OF THE NORTHEAST ATLANTIC	OSPAR
CONVENTION ON BIODIVERSITY	CBD
CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA	CITES
CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS	CMS
COORDINATING WORKING PARTY ON FISHERIES STATISTICS	CWP
FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS	FAO
GENERAL AGREEMENT ON TRADES AND TARIFFS	GATT
GENERAL FISHERIES COMMISSION FOR THE MEDITERRANEAN	GFCM
INTERNATIONAL COMMISSION FOR THE SCIENTIFIC EXPLORATION OF THE MEDITERRANEAN SEA	CIESM
INTERNATIONAL MARITIME ORGANISATION	IMO

Organisation name	Acronym
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES	IUCN/SSC
INTERNATIONAL WHALING COMMISSION	IWC
RAMSAR CONVENTION ON WETLANDS	RAMSAR
UN EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANISATION/GLOBAL OCEAN OBSERVATION SYSTEM	UNESCO/GOOS
UNITED NATIONS ENVIRONMENT PROGRAMME	UNEP

We could find no suggestion that Gibraltar has been involved in any attempts to mitigate bycatch, nor that this is an issue within territorial waters. The Nature Protection Ordinance of 1991 makes it illegal to kill certain species including some cetaceans and birds, and this extends to sea areas. The most pressing bycatch concern must be the activity of Spanish and Moroccan fishing vessels in adjacent international waters.

4.3 Western North Atlantic: Bermuda

Bermuda is the only Dependent Territory in this area. It is a self-governing, self-funding territory of the UK consisting of a group of 6 islands (and 120 islets) situated 570 miles off the Atlantic coast of North Carolina, USA. Bermuda has a 200nm EEZ and fishery zone.

4.3.1 Species Present.

Our database provides an overview of the species present in the seas around Bermuda (Table 9).

Table 9: Potential bycatch species in the Bermuda region

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Cetacea	Physeter macrocephalus	Sperm whale	*	I/II			
Cetacea	Stenella frontalis	Atlantic spotted dolphin					
Cetacea	Tursiops truncatus	Bottlenose dolphin		II			
Cetacea	Steno bredanensis	Rough-toothed dolphin					
Cetacea	Mesoplodon densirostris	Blainville's beaked whale				DD	
Cetacea	Mesoplodon europaeus	Gervais' beaked whale				DD	

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Cetacea	<i>Ziphius cavirostris</i>	Cuvier's beaked whale					
Cetacea	<i>Stenella clymene</i>	Clymene dolphin					
Cetacea	<i>Kogia breviceps</i>	Pygmy sperm whale					
Cetacea	<i>Stenella longirostris</i>	Spinner dolphin		II			
Cetacea	<i>Balaenoptera musculus</i>	Blue whale		I	I	EN	A1abd
Cetacea	<i>Balaenoptera physalus</i>	Fin whale		I/II	I	EN	A1abd
Cetacea	<i>Balaenoptera borealis</i>	Sei whale		I/II	I	EN	A1abd
Cetacea	<i>Balaenoptera edeni</i>	Bryde's whale			I	DD	
Cetacea	<i>Balaenoptera acutorostrata</i>	Northern minke whale			I/II	LR/nt	
Cetacea	<i>Megaptera novaeanglia</i>	Humpback whale	*	I	I		
Cetacea	<i>Kogia simus</i>	Dwarf sperm whale					
Cetacea	<i>Globicephala macrorhynchus</i>	Shortfinned pilot whale				LR/cd	
Cetacea	<i>Stenella attenuata</i>	Pantropical spotted dolphin		II			
Cetacea	<i>Globicephala macrorhynchus</i>	Shortfinned pilot whale				LR/cd	
Cetacea	<i>Stenella coeruleoalba</i>	Striped dolphin		II			
Cetacea	<i>Orcinus orca</i>	Killer whale		II		LR/cd	
Cetacea	<i>Pseudorca crassidens</i>	False killer whale					
Cetacea	<i>Feresa attenuata</i>	Pygmy killer whale				DD	
Cetacea	<i>Grampus griseus</i>	Risso's dolphin		II		DD	
Cetacea	<i>Lagenodelphis hosei</i>	Fraser's dolphin		II		DD	
Cetacea	<i>Delphinus capensis</i>	Longbeaked common dolphin					
Cetacea	<i>Delphinus delphis</i>	Shortbeaked common dolphin		II			
Cetacea	<i>Peponocephala electra</i>	Melonheaded whale					

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
	electra	whale					
Pelecaniformes	Morau bassanus	Northern gannet					
Procellariiformes	Calonectris diomedea	Cory's Shearwater					
Procellariiformes	Pterodroma caribbaea	Jamaica petrel				CR	D
Procellariiformes	Puffinus lherminieri	Audubon's shearwater					
Procellariiformes	Pterodroma hasitata	Black-capped petrel				EN	B1+2abcde, C2a
Procellariiformes	Puffinus gravis	Great shearwater					
Procellariiformes	Pterodroma cahow	Bermuda petrel	*	I		EN	D
Procellariiformes	Puffinus griseus	Sooty shearwater					
Testudinata	Chelonia mydas	Green turtle				EN	A1abd
Testudinata	Caretta caretta	Loggerhead turtle				EN	A1abd
Testudinata	Eretmochelys imbricata	Hawksbill turtle				CR	A1abd+2bcd
Testudinata	Dermochelys coriacea	Leatherback turtle			I	CR	A1abd

The Bermuda petrel, also known as the Cahow, was thought to be extinct until rediscovered in 1951, and only breeds in Bermuda. The population is currently estimated at 200 birds. This species ranges into the western edge of the Gulf Stream, approximately 40 miles off North Carolina. An intensive conservation programme has been successful in increasing the number of breeding pairs of this species. The White-tailed Tropic Bird (*Phaethon lepturus*) is the only resident seabird surviving in significant numbers, though it is threatened by dog predation, human disturbance and habitat destruction. It also causes inter nest competition for the Cahow. Three tern species, the Arctic Tern *Sterna paradisaea*, Least Tern *Sterna albifrons* and Roseate Tern *Sterna dougallii*, are transient visitors and are uncommon inshore on Bermuda.

Among the cetaceans, the northern right whale is legally protected in Bermudan waters. Humpback whales occur regularly between March-May, as do migrating sperm whales. Blue whales, northern right whales, Cuvier's beaked whale, short finned pilot whale, and minke whales are reported to occur less frequently (Oldfield, 1999).

Loggerhead turtles, green turtles, leatherback turtles and hawksbills occur in Bermuda waters. The green turtle population consists of post-pelagic juveniles, which are part of a long running mark-recapture study. There have been attempts to re-establish a green

turtle breeding population since 1968. The last Loggerhead turtle breeding attempt was in 1991. Hawksbills occur in low numbers.

4.3.2 Bycatch information

Fisheries in Bermuda include local inshore fisheries for groupers, snappers and other fish, but stocks have been severely over-exploited and restrictions have been imposed. All fishing vessels are now licensed. Further offshore there are tuna and billfish resources. Bermuda is (through the UK) a member of the ICCAT and has a bluefin tuna quota. Longlines and possibly pole and line would be the most likely methods of capture. Bermuda has a 200-mile fishery zone and until the early 1990s Taiwanese vessels were licenced to longline in Bermuda waters, but this fleet no longer operates in the region. During the mid 1990s several Canadian and a US vessel were also licenced to longline in Bermuda waters, but these vessels did not continue fishing here for long, and there have been no foreign vessel licences issued in the past three years. Limited observations were made during the mid 1990s by a single observer on board the North American vessels licenced at that time, and no cetacean turtle or bird bycatch was reported (Norbert Simmons pers. comm.).

4.3.3 Addressing bycatch

Table 10: Relevant bodies and agreements - Bermuda

Organisation name	Acronym
CONVENTION ON BIODIVERSITY	CBD
CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA	CITES
CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS	CMS
COORDINATING WORKING PARTY ON FISHERIES STATISTICS	CWP
FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS	FAO
GENERAL AGREEMENT ON TRADES AND TARIFFS	GATT
GLOBAL ENVIRONMENT FACILITY	GEF
INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS	ICCAT
INTERNATIONAL MARITIME ORGANISATION	IMO
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES	IUCN/SSC
INTERNATIONAL WHALING COMMISSION	IWC
RAMSAR CONVENTION ON WETLANDS	RAMSAR
UN EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANISATION/GLOBAL OCEAN OBSERVATION SYSTEM	UNESCO/GOOS
UNITED NATIONS ENVIRONMENT PROGRAMME	UNEP

Bermuda has two marine reserves, the North Shore Coral Reef Preserve and South Shore Coral Reef Preserve. In 1999 at the IWC meeting, held in Adelaide, Australia, officials from the UK Government announced that the island had designated its territorial waters as a sanctuary for cetaceans, backed by domestic environmental legislation.

If longline fisheries return to Bermuda's 200-mile fishery zone some bycatch of turtles and possibly of shearwaters and petrels might be expected. There has been no study of bycatch in the local fleet and we could find no statistics to describe the number or types of gear being used.

4.4 Caribbean

British dependent territories in the Caribbean include the British Virgin Islands, Anguilla, the Turks and Caicos Islands, Montserrat and the Cayman Islands.

4.4.1 Species Present

We found no comprehensive survey of the marine fauna of any of these territories, but many of the same species would be expected to occur throughout the Caribbean region. These are listed below in Table 11.

Table 11: Potential bycatch species in the Caribbean region

Order	Species	Common name	Important	CMS Appendix	IUCN category	IUCN criteria	CITES appendix
Cetacea	<i>Kogia breviceps</i>	Pygmy sperm whale					
Cetacea	<i>Stenella frontalis</i>	Atlantic spotted dolphin					
Cetacea	<i>Stenella attenuata</i>	Pantropical spotted dolphin		II			
Cetacea	<i>Tursiops truncatus</i>	Bottlenose dolphin	*	II			
Cetacea	<i>Steno bredanensis</i>	Rough-toothed dolphin					
Cetacea	<i>Mesoplodon densirostris</i>	Blainville's beaked whale			DD		
Cetacea	<i>Mesoplodon europaeus</i>	Gervais' beaked whale			DD		
Cetacea	<i>Stenella clymene</i>	Clymene dolphin					
Cetacea	<i>Kogia simus</i>	Dwarf sperm whale					

Order	Species	Common name	Important	CMS Appendix	IUCN category	IUCN criteria	CITES appendix
Cetacea	<i>Stenella coeruleoalba</i>	Striped dolphin		II			
Cetacea	<i>Physeter macrocephalus</i>	Sperm whale	*	I/II			
Cetacea	<i>Balaenoptera musculus</i>	Blue whale		I	EN	A1abd	I
Cetacea	<i>Balaenoptera physalus</i>	Fin whale		I/II	EN	A1abd	I
Cetacea	<i>Balaenoptera borealis</i>	Sei whale		I/II	EN	A1abd	I
Cetacea	<i>Balaenoptera edeni</i>	Bryde's whale		II	DD		I
Cetacea	<i>Balaenoptera acutorostrata</i>	Northern minke whale			LR/nt		I/II
Cetacea	<i>Megaptera novaeanglia</i>	Humpback whale	*	I			I
Cetacea	<i>Ziphius cavirostris</i>	Cuvier's beaked whale					
Cetacea	<i>Pseudorca crassidens</i>	False killer whale					
Cetacea	<i>Stenella longirostris</i>	Spinner dolphin		II			
Cetacea	<i>Orcinus orca</i>	Killer whale		II	LR/cd		
Cetacea	<i>Feresa attenuata</i>	Pygmy killer whale			DD		
Cetacea	<i>Peponocephala electra</i>	Melonheaded whale					
Cetacea	<i>Grampus griseus</i>	Risso's dolphin		II	DD		
Cetacea	<i>Lagenodelphis hosei</i>	Fraser's dolphin		II	DD		
Cetacea	<i>Delphinus capensis</i>	Longbeaked common dolphin					
Cetacea	<i>Delphinus delphis</i>	Shortbeaked common dolphin	*	II			
Cetacea	<i>Globicephala macrorhynchus</i>	Shortfinned pilot whale	*		LR/cd		
Procellariiformes	<i>Puffinus lherminieri</i>	Audubon's shearwater					
Procellariiformes	<i>Pterodroma hasitata</i>	Black-capped petrel			EN	B1+2abcde, C2a	
Procellariiformes	<i>Oceanites oceanicus</i>	Wilson's storm-petrel			EX		
Procellariiformes	<i>Pterodroma caribbaea</i>	Jamaica petrel			CR	D	

Order	Species	Common name	Important	CMS Appendix	IUCN category	IUCN criteria	CITES appendix
	caribbaea						
Sirenia	Trichecus manatus	West Indian manatee		I	VU	A2d	
Testudinata	Chelonia mydas	Green turtle	*		EN	A1abd	
Testudinata	Eretmochelys imbricata	Hawksbill turtle	*		CR	A1abd+2bcd	
Testudinata	Dermochelys coriacea	Leatherback turtle	*		CR	A1abd	I
Testudinata	Caretta caretta	Loggerhead turtle	*		EN	A1abd	

In addition to the seabird species listed above, the red-billed tropic bird (*Phaethon aethereus*), masked booby (*Sula dactylatra*), brown booby (*Sula leucogaster*) and brown pelican (*Pelecanus occidentalis*) breed on Anguilla and its surrounding islets. The magnificent frigate bird (*Fregata magnificens*) may also occur. Oldfield (1999) suggests that detailed ecological surveys of offshore islands, which hold significant breeding seabird colonies, and seabird counts are required. Offshore cays have large rookeries of sooty tern *Sterna fuscata*, brown booby, blue-faced booby *Sula dactylatra*, and noddy tern *Anous stolidus*. Among cetaceans, humpback whales and occasionally sperm whales are reported in March/April in Anguilla, and sei whales may also occur periodically though this requires confirmation. Anguilla is one of the best sea turtle nesting sites in the Caribbean. The principal nesting species is the hawksbill turtle, and this species and the green turtle are the most common species in Anguilla waters. Foraging hawksbills are present throughout the year. Smaller numbers of leatherback and loggerhead turtles also occur. Leatherback turtles are considered rare around Anguilla but have been recorded nesting on the main island and Scrub Island. The current status of the population requires evaluation. There is no evidence of loggerhead turtles nesting on the islands. A five-year moratorium on the harvesting of turtles was in place in 1999 (Oldfield 1999)..

There is a red-footed booby colony in Cayman Islands that is one of the largest in the Caribbean. Also breeding at the same location is the magnificent frigate bird The West Indian Whistling Duck *Dendrocygna arborea* is the only duck species that breeds on the islands. Migratory species include two breeding terns, Bridled Tern (*Sterna anaethetus*) and Least Tern (*Sterna antillarum*) and five non-breeding tern species (Sandwich, Caspian, Black, Royal and Gull-Billed). Sperm whales have been recorded in the Cayman Islands, while other whales and smaller cetaceans seem to be irregular to rare. Hawksbill, loggerhead and green turtles all occur, though in limited numbers at the Cayman Islands. Green turtles are commercially farmed for local consumption and several thousand of these farmed turtles have been released as part of a re-establishment program.

The British Virgin Islands are also important for seabirds. The sooty tern faces significant threats from egg collecting, habitat destruction and disturbance. Laughing gulls *Larus arcilla*, bridled terns, roseate terns, sooty terns, sandwich terns, and magnificent frigate

birds have all been monitored under Appendices I and II of CMS at the BVI. Humpback whales are seasonally present in the BVI. Bottlenose dolphin and common dolphin occur all year in the BVI, but not in large numbers. Sperm whales and sei whales are also recorded occasionally. Populations of all marine turtles in the BVI have declined drastically over recent decades. Green Turtles nest on a large number of the islands. The nesting population of leatherback turtles has declined heavily over recent decades, and less than ten females were nesting annually in the early 1990's. Loggerhead turtles occasionally forage around the islands. All turtles are protected during April- November, and turtle eggs are protected at all times.

There are no endemic seabird species in the Turks and Caicos. There is a colony of 125 magnificent frigatebirds that roosts at Bush Cay. Humpback whales are seasonally present in the Turks and Caicos Islands as the islands form part of their winter breeding range. Leeward and Grand Turk have resident bottlenose dolphin populations. Sperm whales and possibly sei whales occur occasionally too. Loggerhead turtles, green turtles and hawksbills nest, but leatherbacks are less common in TCI. Green Turtles are considered to be moderately abundant but it is thought that there may have been a decline in the nesting population. Hawksbills are the most abundant nesting species on the islands. Loggerhead turtles nest in regionally important numbers

Green turtles are resident and hawksbill turtles are common and both nest on Montserrat, while leatherback and loggerheads are rarely encountered. The number of turtles nesting on Montserrat was reportedly very low due to human disturbance. Sperm whales and sei whales are occasionally recorded, and there have also been several sightings of manatees.

4.4.2 Bycatch Information

We found no evidence of any studies of bycatch in these territories, and there is little information available on local fisheries. Not all of these island territories yet have 200nm fishery zones, nor legislation to licence foreign vessels fishing in their waters.

Local fisheries consist mainly of small-scale fisheries for snapper, groupers, small pelagic fish and invertebrates. Further offshore there are tuna and billfish resources, and until the mid 1990s a Taiwanese fleet based in St Martins operated in the region. At BVI there is one locally based longliner, but as yet no licencing arrangements for foreign vessels (N. Georges, pers. comm.). The Cayman Islands have only a 12-mile fishery limit and no enforcement beyond that zone, as no EEZ has been ratified. Longliners are no longer present in the area, but other boats from the Dominican Republic may fish on remoter banks. Turtle harvesting is monitored and a current quota of 6 is taken by licence annually (P. Bush pers. Comm.). Licencing regulations are in place at TCI, and although there are currently no licenced foreign vessels fishing in TCI waters, Taiwanese longliners have been licenced in the past. There is reportedly some poaching by boats from the Dominican Republic fishing for conch, and with spear guns and deep water lines (P. Seymour, Pers. Comm.). At Anguilla local fishing is mainly confined to Antillean fish and lobster traps. Larger fish traps are used for the fish and smaller ones for the lobsters.

Statistics are very scant, but a baseline line survey was done in 1997 and there were some indicative figures for the numbers of traps, but we were unable to locate these. A longline survey made during 1997 made 85 sets with 3544 km of main line and 53,471 hooks. Catches consisted of tunas, marlin and sharks. There were no bycatches of dolphins or seabirds. On 2 occasions leatherback turtles were hooked. They were released alive with the hook caught in their front flippers and not in their mouths. (R. Lee Pers. Comm). We could find no recent information on Monsterrat, but the Caricom website indicates that in 1993 (before the volcanic eruption) there were 174 fishermen and 8 landing sites with coastal pelagic fishes accounting for 50% of the landings; methods of capture were not indicated. We assume that in common with other BDTs in the area, there are no current licences for foreign longlining vessels.

In other parts of the Caribbean, turtle bycatch in shrimp trawls is a major problem, but there does not appear to be much if any shrimp trawling in any of the BDT waters. Bycatches on longline vessels from distant water nations, should any return to the region, are also likely to affect turtles, and possibly the petrels and shearwaters listed above.

4.4.3 Addressing bycatch

Much attention has been given to reducing turtle bycatch in shrimp trawl fisheries throughout the Caribbean (see Annex) – mainly through the introduction of turtle exclusion devices into local shrimp trawlers in order to comply with import restrictions into the USA. Observer programmes on long-line vessels have been established under the aegis of ICCAT for some Caribbean countries, but we found no evidence of this for BDTs. None of the BDTs has developed a National Plan Of Action under the FAO's IPOA on Seabirds (see Annex).

Table 12: Relevant Bodies and Agreements for the Caribbean

Organisation name	Acronym
CARIBBEAN ACTION PLAN AND THE CARTAGENA CONVENTION; CARRIBEAN ENVIRONMENT PROGRAM	CEP
CONVENTION ON BIODIVERSITY	CBD
CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA	CITES
CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS	CMS
COORDINATING WORKING PARTY ON FISHERIES STATISTICS	CWP
FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS	FAO
GENERAL AGREEMENT ON TRADES AND TARIFFS	GATT
GLOBAL ENVIRONMENT FACILITY	GEF
INTER-AMERICAN CONVENTION FOR THE PROTECTION AND CONSERVATION OF SEA TURTLES	IAC
INTERNATIONAL CONVENTION FOR THE CONSERVATION OF ATLANTIC TUNA	ICCAT
INTERNATIONAL MARITIME ORGANISATION	IMO

Organisation name	Acronym
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES	IUCN/SSC
INTERNATIONAL WHALING COMMISSION	IWC
ORGANIZACION LATINO AMERICANA DE DESARROLLO PESQUERO	OLDEPESCA
RAMSAR CONVENTION ON WETLANDS	RAMSAR
UN EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANISATION/GLOBAL OCEAN OBSERVATION SYSTEM	UNESCO/GOOS
UNITED NATIONS ENVIRONMENT PROGRAMME	UNEP
WESTERN CENTRAL ATLANTIC FISHERY COMMISSION	WECAFC

4.5 Central Atlantic: Ascension

Ascension has a somewhat warmer climate than the remaining south Atlantic Islands, and consequently has a rather different range of species present. It is therefore treated here in a separate category.

4.5.1 Species present

We found no review of the marine species present in Ascension waters. The database suggests that the species listed in Table 13 should be present.

Table 13: Potential bycatch species in the waters around Ascension

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Cetacea	Stenella frontalis	Atlantic spotted dolphin					
Cetacea	Megaptera novaeanglia	Humpback whale	*	I	I		
Cetacea	Balaenoptera bonaerensis	Antarctic minke whale		II	I/II	LR/cd	
Cetacea	Balaenoptera edeni	Bryde's whale		II	I	DD	
Cetacea	Balaenoptera borealis	Sei whale		I/II	I	EN	A1abd
Cetacea	Balaenoptera physalus	Fin whale		I/II	I	EN	A1abd
Cetacea	Balaenoptera musculus	Blue whale		I	I	EN	A1abd
Cetacea	Physeter macrocephalus	Sperm whale	*	I/II			
Cetacea	Kogia breviceps	Pygmy sperm whale					
Cetacea	Kogia simus	Dwarf sperm whale					

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Cetacea	<i>Ziphius cavirostris</i>	Cuvier's beaked whale					
Cetacea	<i>Mesoplodon europaeus</i>	Gervais' beaked whale				DD	
Cetacea	<i>Mesoplodon densirostris</i>	Blainville's beaked whale				DD	
Cetacea	<i>Steno bredanensis</i>	Rough-toothed dolphin					
Cetacea	<i>Stenella attenuata</i>	Pantropical spotted dolphin		II			
Cetacea	<i>Peponocephala electra</i>	Melonheaded whale					
Cetacea	<i>Globicephala macrorhynchus</i>	Shortfinned pilot whale				LR/cd	
Cetacea	<i>Orcinus orca</i>	Killer whale		II		LR/cd	
Cetacea	<i>Tursiops truncatus</i>	Bottlenose dolphin		II			
Cetacea	<i>Feresa attenuata</i>	Pygmy killer whale				DD	
Cetacea	<i>Grampus griseus</i>	Risso's dolphin		II		DD	
Cetacea	<i>Lagenodelphis hosei</i>	Fraser's dolphin		II		DD	
Cetacea	<i>Delphinus capensis</i>	Longbeaked common dolphin					
Cetacea	<i>Delphinus delphis</i>	Shortbeaked common dolphin		II			
Cetacea	<i>Stenella coeruleoalba</i>	Striped dolphin		II			
Cetacea	<i>Stenella longirostris</i>	Spinner dolphin		II			
Cetacea	<i>Pseudorca crassidens</i>	False killer whale					
Procellariiformes	<i>Oceanites oceanicus</i>	Wilson's storm-petrel				EX	
Procellariiformes	<i>Calonectris diomedea</i>	Cory's Shearwater					
Procellariiformes	<i>Bulweria bifax</i>	St. Helena bulwer's petrel				EX	
Procellariiformes	<i>Puffinus griseus</i>	Sooty shearwater					
Testudinata	<i>Chelonia mydas</i>	Green turtle				EN	A1abd
Testudinata	<i>Eretmochelys imbricata</i>	Hawksbill turtle				CR	A1abd+2bcd

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
	imbricata						

There are over a million seabirds in breeding colonies on Ascension. These colonies consist of four tern species, three boobies, two tropicbirds, one storm petrel and one frigate bird. It is regarded as one of the most important seabird breeding localities in the South Atlantic. Boatswain-Bird Island and adjacent cliffs are Ascensions most important sites for seabirds; the Ascension Frigate bird *Fregata aquila* is endemic and only breeds at Boatswain-Bird Island. Wideawake terns *Sterna fuscata* were being heavily predated by feral cats, which may have also been predated young turtles and turtle eggs. In 2001 the Foreign and Commonwealth Office (FCO) awarded a grant of £500,000 for the restoration of sea birds. This money was used to eradicate feral cats and for planning a possible future eradication of rats.

Among the cetaceans rough toothed, common and bottlenose dolphins have all been recorded.

Green turtles breed on Ascension. Between 1,800-2,000 green turtles nest each year making it one of the worlds major rookeries for this species. There are no records of Hawksbill turtles breeding on the island, although they are common in the surrounding waters. Turtles have full legal protection in Ascension. Data collected by the University of Wales, Swansea and Cardiff suggest the Ascension stock make a substantial contribution to Green turtle populations in juvenile feeding grounds in West Africa.

4.5.2 Bycatch Information

Fishing around Ascension is controlled from the St Helena, and foreign vessels are licenced to fish with longlines for tuna within the 200-mile limit. Fishing licences for waters around Ascension did produce about £1 million for the St Helena economy annually. In 1994 there were 95 such vessels licenced, mainly fishing around Ascension. The resource has declined however, and in 2001 just 2 licences were issued. (G. Benjamin, Pers. Comm.).

There has not been any assessment of bycatch rates in foreign fleets, nor any observer schemes in operation, though operating an observer scheme 900km from the fishery office would be problematic. Bycatches of some turtles and several seabird species might be expected in longline fisheries in this area

4.5.3 Addressing bycatch

Table 14: Relevant bodies and Agreements - Ascension

Organisation name	Acronym
CONVENTION ON BIODIVERSITY	CBD
CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA	CITES
CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS	CMS
COORDINATING WORKING PARTY ON FISHERIES STATISTICS	CWP
FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS	FAO
GENERAL AGREEMENT ON TRADES AND TARIFFS	GATT
GLOBAL ENVIRONMENT FACILITY	GEF
INTERNATIONAL MARITIME ORGANISATION	IMO
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES	IUCN/SSC
INTERNATIONAL WHALING COMMISSION	IWC
RAMSAR CONVENTION ON WETLANDS	RAMSAR
SOUTH EAST ATLANTIC FISHERIES ORGANISATION	SEAFO
UN EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANISATION/GLOBAL OCEAN OBSERVATION SYSTEM	UNESCO/GOOS
UNITED NATIONS ENVIRONMENT PROGRAMME	UNEP

The major body with regard to managing bycatch will be SEAFO, which has only recently been established. It is important that this body should consider the issue of bycatch, especially of seabirds in tuna fisheries, at an early opportunity.

4.6 Southeast Atlantic: St Helena and Tristan da Cunha

4.6.1 Species Present

We found no review of the marine species present in the waters of St Helena or Tristan da Cunha. Some bird nesting sites have been subject to monitoring. Our database suggests that the species listed in Table 15 should be present.

Table 15: Potential bycatch species in St Helena & Tristan da Cunha

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Procellariiformes	Calonectris diomedea	Cory's Shearwater					

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Procellariiformes	Pterodroma mollis	Soft-plumaged petrel	*				
Procellariiformes	Puffinus gravis	Great shearwater	*				
Procellariiformes	Puffinus griseus	Sooty shearwater					
Cetacea	Caperea marginata	Pygmy right whale		II	I		
Cetacea	Megaptera novaeanglia	Humpback whale		I	I		
Cetacea	Balaenoptera bonaerensis	Antarctic minke whale		II	I/II	LR/cd	
Cetacea	Balaenoptera edeni	Bryde's whale		II	I	DD	
Cetacea	Balaenoptera borealis	Sei whale		I/II	I	EN	A1abd
Cetacea	Balaenoptera physalus	Fin whale		I/II	I	EN	A1abd
Cetacea	Balaenoptera musculus	Blue whale		I	I	EN	A1abd
Cetacea	Physeter macrocephalus	Sperm whale		I/II			
Cetacea	Kogia breviceps	Pygmy sperm whale					
Cetacea	Kogia simus	Dwarf sperm whale					
Cetacea	Ziphius cavirostris	Cuvier's beaked whale					
Cetacea	Hyperoodon planifrons	Southern bottlenose whale			I	LR/cd	
Cetacea	Mesoplodon europaeus	Gervais' beaked whale				DD	
Cetacea	Mesoplodon grayi	Gray's beaked whale				DD	
Cetacea	Mesoplodon layardii	Strap-toothed whale				DD	
Cetacea	Mesoplodon densirostris	Blainville's beaked whale				DD	
Cetacea	Steno bredanensis	Rough-toothed dolphin					
Cetacea	Tursiops truncatus	Bottlenose dolphin		II			
Cetacea	Stenella attenuata	Pantropical spotted	*	II			

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
		dolphin					
Cetacea	<i>Stenella frontalis</i>	Atlantic spotted dolphin					
Cetacea	<i>Stenella longirostris</i>	Spinner dolphin		II			
Cetacea	<i>Stenella coeruleoalba</i>	Striped dolphin		II			
Cetacea	<i>Delphinus delphis</i>	Shortbeaked common dolphin		II			
Cetacea	<i>Delphinus capensis</i>	Longbeaked common dolphin					
Cetacea	<i>Lagenodelphis hosei</i>	Fraser's dolphin		II		DD	
Cetacea	<i>Lissodelphis peronii</i>	Southern right-whale dolphin				DD	
Cetacea	<i>Grampus griseus</i>	Risso's dolphin		II		DD	
Cetacea	<i>Peponocephala electra</i>	Melonheaded whale					
Cetacea	<i>Feresa attenuata</i>	Pygmy killer whale				DD	
Cetacea	<i>Pseudorca crassidens</i>	False killer whale					
Cetacea	<i>Orcinus orca</i>	Killer whale		II		LR/cd	
Cetacea	<i>Globicephala macrorhynchus</i>	Shortfinned pilot whale				LR/cd	
Testudinata	<i>Chelonia mydas</i>	Green turtle				EN	A1abd
Procellariiformes	<i>Diomedea chrysostoma</i>	Grey-headed Albatross		II		VU	A1bd+2bd
Procellariiformes	<i>Diomedea dabbenena</i>	Tristan Albatross	*			EN	B1+2e
Procellariiformes	<i>Diomedea exulans</i>	Wandering Albatross		II		VU	A1bd+2bd
Procellariiformes	<i>Diomedea melanophrys</i>	Black-browed Albatross		II		LR/nt	
Procellariiformes	<i>Phoebastria fusca</i>	Sooty Albatross	*	II		VU	A1b
Procellariiformes	<i>Bulweria bifax</i>	St. Helena bulwer's petrel	*			EX	
Procellariiformes	<i>Oceanites oceanicus</i>	Wilson's storm-petrel				EX	

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Procellariiformes	<i>Procellaria aequinoctialis</i>	White-chinned petrel	*	II		VU	A1bcde+2bcde
Procellariiformes	<i>Procellaria cinerea</i>	Grey petrel	*	II		LR/nt	
Procellariiformes	<i>Procellaria conspicillata</i>	Spectacled petrel	*	II		CR	B1+2e
Procellariiformes	<i>Pterodroma incerta</i>	Atlantic petrel	*			VU	D2

Six seabird species breed on St Helena including Red-billed Tropic Birds *Phaethon aetherus* and Fairy Terns *Gygis alba*. Coastal waters reportedly support large numbers of spotted dolphins smaller numbers of bottlenose dolphin and occasionally spinner dolphins. Also Humpback whales migrate annually to the island from the southern Atlantic. Hawksbill and Green Turtles occur around the island but are rarely observed. Sea Turtles and their eggs are protected under the Wildlife Protection Ordinance of 1984 (Oldfield 1999).

At Tristan da Cunha and its outlying islands there are 20 species of seabird. The yellow-nosed albatross only breeds in the Tristan group and Gough Island. The Atlantic Petrel is endemic to Gough, and the Great Shearwater is common to these islands. The main southern ocean breeding site of the little shearwater *Puffinus assimilis* are Tristan da Cunha and Gough Island. The Tristan Albatross *Domedea dabbenena* is endemic and virtually restricted to Gough. The majority of the world population of sooty albatross *Phoebetria fusca* occurs on Tristan and Gough Island. A race of White-chinned Petrel *Procellaria aequinoctialis conspicillata* is confined to Inaccessible Island. 48% of the world's northern rockhopper penguin *Eudyptes chrysocome moseleyi* breed at Gough. A few hundred pairs of Southern Giant Petrel breed on Gough. The only breeding site for the spectacled petrel *Procellaria conspicillata* is also on Tristan da Cunha Island.

Southern Right Whales and sperm whales are reported to occur relatively frequently at Tristan, and dusky dolphins are also common.

4.6.2 Bycatch Information

Licensed fishing occurs around Tristan and St Helena, mostly involving pole and line and potting activities. Net fishing and gillnets in particular are banned. No assessment of bycatch has been made. Foreign vessels licenced to fish in St Helena waters in previous years were mainly attracted to Ascension's waters which are licenced from St Helena.

Tristan albatross populations are in decline and there is a belief that this may be due to fishery bycatch elsewhere. Spectacled petrels are categorised as critically endangered, with a declining population and strong evidence to suggest that bycatch in longline fisheries elsewhere in the South Atlantic may be to blame.

4.6.3 Addressing Bycatch

At St Helena and Tristan at least two bird populations being severely impacted by bycatch. There does not appear to have been any surveys of cetacean or seabird presence at sea (though some nesting sites are monitored), and there is little information on local fishing activities. However, in 1976 and then in 1997 conservation Ordinances were passed by the Administration which paved the way for the announcement in the Tristan Government Gazette on 5 March 2001 that the waters surrounding these islands are now declared a sanctuary for all cetaceans.

Table 16: Relevant Bodies and Agreements – St Helena & Tristan da Cunha

Organisation name	Acronym
INTERNATIONAL WHALING COMMISSION	IWC
UNITED NATIONS ENVIRONMENT PROGRAMME	UNEP
CONVENTION ON BIODIVERSITY	CBD
CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA	CITES
CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS	CMS
FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS	FAO
GENERAL AGREEMENT ON TARIFFS AND TRADE	GATT
GLOBAL ENVIRONMENT FACILITY	GEF
INTERNATIONAL MARITIME ORGANISATION	IMO
INTERNATIONAL OCEAN INSTITUTE	IOI
RAMSAR CONVENTION ON WETLANDS	RAMSAR
SOUTH EAST ATLANTIC FISHERIES ORGANISATION	SEAFO
UN EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANISATION/GLOBAL OCEAN OBSERVATION SYSTEM	UNESCO/GOOS
BIRDLIFE INTERNATIONAL	BLI
FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS	FAO
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES	IUCN/SSC
COORDINATING WORKING PARTY ON FISHERIES STATISTICS	CWP

4.7 Southwest Atlantic: Falkland Islands

4.7.1 Species present

The Falkland Islands have been well surveyed for both seabirds and mammals over a number of years, both by Falkland Conservation and by the JNCC (White et al., 2001). The following species are present in the waters around the Falkland Islands

Table 17: Potential bycatch species in the Falkland Islands

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category
Procellariiformes	Daption capense	Cape Petrel	*			
Procellariiformes	Pterodroma mollis	Soft-plumaged petrel				
Procellariiformes	Halobaena caerulea	Blue Petrel				
Procellariiformes	Puffinus gravis	Great shearwater	*			

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category
Procellariiformes	Puffinus griseus	Sooty shearwater	*			
Cetacea	Caperea marginata	Pygmy right whale		II	I	
Cetacea	Megaptera novaeanglia	Humpback whale		I	I	
Cetacea	Balaenoptera bonaerensis	Antarctic minke whale	*	II	I/II	LR/cd
Cetacea	Balaenoptera edeni	Bryde's whale		II	I	DD
Cetacea	Balaenoptera borealis	Sei whale		I/II	I	EN
Cetacea	Balaenoptera physalus	Fin whale		I/II	I	EN
Cetacea	Balaenoptera musculus	Blue whale		I	I	EN
Cetacea	Physter macrocephalus	Sperm whale		I/II		
Cetacea	Ziphius cavirostris	Cuvier's beaked whale				
Cetacea	Berardius arnuxii	Arnoux's beaked whale			I	LR/cd
Cetacea	Tasmacetus shepherdi	Tasman beaked whale				
Cetacea	Hyperoodon planifrons	Southern bottlenose whale			I	LR/cd
Cetacea	Mesoplodon hectori	Hector's beaked whale				DD
Cetacea	Mesoplodon grayi	Gray's beaked whale				DD
Cetacea	Mesoplodon layardii	Strap-toothed whale				DD
Cetacea	Cephalorhynchus commersonii	Commerson's dolphin	*	II		DD
Cetacea	Delphinus delphis	Shortbeaked common dolphin		II		
Cetacea	Delphinus capensis	Longbeaked common dolphin				
Cetacea	Lagenorhynchus obscurus	Dusky dolphin		II		DD
Cetacea	Lagenorhynchus australis	Peale's dolphin	*	II		DD
Cetacea	Lagenorhynchus cruciger	Hourglass dolphin	*			

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category
Cetacea	Lissodelphis peronii	Southern right-whale dolphin	*			DD
Cetacea	Grampus griseus	Risso's dolphin		II		DD
Cetacea	Orcinus orca	Killer whale		II		LR/cd
Cetacea	Globicephala melas	Longfinned pilot whale	*	II		
Cetacea	Phocoena dioptica	Spectacled porpoise	*	II		
Cetacea	Eubalaena australis	Southern right whale	*	I	I	LR/cd
Procellariiformes	Diomedea chrysostoma	Grey-headed Albatross		II		VU
Procellariiformes	Diomedea dabbenena	Tristan Albatross				EN
Procellariiformes	Diomedea epomophora	Southern Royal Albatross		II		VU
Procellariiformes	Diomedea exulans	Wandering Albatross		II		VU
Procellariiformes	Diomedea melanophrys	Black-browed Albatross	*	II		LR/nt
Procellariiformes	Diomedea sanfordi	Northern Royal Albatross				EN
Procellariiformes	Macronectes giganteus	Southern giant-petrel	*	II		VU
Procellariiformes	Macronectes halli	Northern giant-petrel		II		LR/nt
Procellariiformes	Oceanites oceanicus	Wilson's storm-petrel	*			EX
Procellariiformes	Procellaria aequinoctialis	White-chinned petrel	*	II		VU
Procellariiformes	Procellaria cinerea	Grey petrel		II		LR/nt
Procellariiformes	Procellaria conspicillata	Spectacled petrel		II		CR

The Falkland Islands are host to twenty-three species of seabirds; the islands are important breeding sites for the black-browed albatross (80% of the world population), southern giant petrel (20% of world's population), gentoo penguin *Pygoscelis papua* (quarter of the world's population), rockhopper penguin *Eudyptes chrysocome* (world's largest concentration), Magellanic penguin *Spheniscus magellanicus* (up to 10% of the world's population), king penguin *Aptenodytes patagonicus* (extremity of its global range) and thin-billed prion *Pachyptila belcheri*. The common diving petrel *Pelecanoides berard* exists in a few colonies but their distribution and size are uncertain.

Among marine mammals, all cetacean species are protected in the Falklands under the Marine Mammals Ordinance 1992. Sperm whale, killer whale, Peale's dolphins, dusky dolphin and Commerson's dolphin are frequently recorded, while there are fewer records of southern right whale, blue whale, fin whale, sei whale, minke whale, humpback whale, Cuvier's beaked whale, southern bottlenosed whale, Hector's beaked whale, Gray's whale, straptoothed whale, southern right whale dolphin and spectacled porpoise

4.7.2 Bycatch information

At the Falkland Islands observers sample all the fisheries within the 200-mile fishery limit. No cetacean bycatches have been observed in over 10 years of monitoring, (J. Pompert, pers. comm.). Most of the fishing consists of squid jigging and trawling for hake and other demersal species. There is a small long-line fishery, but bycatch mitigation measures have been put in place. . Around 130 albatrosses may have been killed accidentally in this fishery in 2001/2002, but in the subsequent season with increased observer coverage and more assiduous application of the mitigation measures, bycatch has effectively been eliminated (J. Pompert, Pers. Comm.). There is a significant problem of Albatross mortality associated with trawlers with; birds being injured or killed whilst feeding behind vessels through collisions with the trawl warps (J. Barton, pers comm.). A similar problem was noted with Netsonde cables being deployed behind trawlers in CCAMLR waters, which led to such cables being banned in CCAMLR waters. In the Falkland Islands mitigation measures for cable collisions are currently being developed (P. Brickle, Pers. Comm.). The Falkland Islands alone among the BDTs are in the process of developing a national plan of action on seabird bycatch.

Outside the FI fishery zone black browed albatrosses are known to forage in areas fished by longline vessels and bycatches are expected to be high (Gremillet et al., 2000) though they remain unquantified. Schiavini et al. (1999), report on bycatches of dusky dolphins in Patagonian trawl fisheries.

4.7.3 Addressing bycatch

The Falkland Islands have well documented fisheries, an extensive on-board observer programmes and an NPOA for seabirds under development. In addition the only company fishing with longlines has taken precautions to ensure bycatch is limited. The Falklands Conservation Sea Birds at Sea Team have trialled scaring devices to reduce mortality of Albatross in trawling operations and the results look promising (J Barton, pers comm.). Furthermore, offshore surveys of birds and mammals have been conducted, so that there is some baseline information distribution and relative abundance, and onshore sea bird colonies are monitored. In short there is not much more that could be done to address this issue in the Falkland Islands especially when compared to all the other BDTs. The following organisations are relevant in this region:

Table 18: Relevant bodies and Agreements – Falkland Islands

Organisation name	Acronym
INTERNATIONAL WHALING COMMISSION	IWC
UNITED NATIONS ENVIRONMENT PROGRAMME	UNEP
CONVENTION ON BIODIVERSITY	CBD
CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA	CITES
CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS	CMS
FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS	FAO
GENERAL AGREEMENT ON TARIFFS AND TRADE	GATT
GLOBAL ENVIRONMENT FACILITY	GEF
INTERNATIONAL MARITIME ORGANISATION	IMO
INTERNATIONAL OCEAN INSTITUTE	IOI
RAMSAR CONVENTION ON WETLANDS	RAMSAR
UN EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANISATION/GLOBAL OCEAN OBSERVATION SYSTEM	UNESCO/GOOS
BIRDLIFE INTERNATIONAL	BLI
FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS	FAO
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES	IUCN/SSC
COORDINATING WORKING PARTY ON FISHERIES STATISTICS	CWP

4.8 Southern Ocean

4.8.1 Species Present

British Dependent Territories in the southern Ocean include South Georgia and the South Sandwich Islands, and British Antarctic Territory and the South Shetland Islands.

Avifauna and marine mammal fauna are well studied on land, but less so at sea, except where telemetry studies have been involved.

Table 19: Potential bycatch species in the Southern Ocean

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Cetacea	Lissodelphis peronii	Southern right-whale dolphin	*			DD	
Cetacea	Caperea marginata	Pygmy right whale		II	I		
Cetacea	Megaptera novaeanglia	Humpback whale	*	I	I		

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Cetacea	Balaenoptera bonaerensis	Antarctic minke whale	*	II	I/II	LR/cd	
Cetacea	Balaenoptera borealis	Sei whale		I/II	I	EN	A1abd
Cetacea	Balaenoptera physalus	Fin whale	*	I/II	I	EN	A1abd
Cetacea	Balaenoptera musculus	Blue whale	*	I	I	EN	A1abd
Cetacea	Physeter macrocephalus	Sperm whale	*	I/II			
Cetacea	Berardius arnuxii	Arnoux's beaked whale			I	LR/cd	
Cetacea	Tasmacetus shepherdi	Tasman beaked whale					
Cetacea	Hyperoodon planifrons	Southern bottlenose whale			I	LR/cd	
Cetacea	Mesoplodon grayi	Gray's beaked whale				DD	
Cetacea	Mesoplodon layardii	Strap-toothed whale				DD	
Cetacea	Delphinus delphis	Shortbeaked common dolphin		II			
Cetacea	Lagenorhynchus cruciger	Hourglass dolphin	*				
Cetacea	Orcinus orca	Killer whale	*	II		LR/cd	
Cetacea	Globicephala melas	Longfinned pilot whale		II			
Cetacea	Phocoena dioptrica	Spectacled porpoise	*	II			
Cetacea	Eubalaena australis	Southern right whale	*	I	I	LR/cd	
Cetacea	Delphinus capensis	Longbeaked common dolphin					
Procellariiformes	Diomedea exulans	Wandering Albatross	*	II		VU	A1bd+2bd
Procellariiformes	Halobaena caerulea	Blue Petrel	*				
Procellariiformes	Procellaria cinerea	Grey petrel		II		LR/nt	
Procellariiformes	Procellaria aequinoctialis	White-chinned petrel	*	II		VU	A1bcde+2bcde
Procellariiformes	Oceanites oceanicus	Wilson's storm-petrel	*			EX	

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Procellariiformes	Macronectes halli	Northern giant-petrel	*	II		LR/nt	
Procellariiformes	Macronectes giganteus	Southern giant-petrel	*	II		VU	A1abde+2bde
Procellariiformes	Diomedea melanophrys	Black-browed Albatross	*	II		LR/nt	
Procellariiformes	Procellaria conspicillata	Spectacled petrel		II		CR	B1+2e
Procellariiformes	Diomedea dabbenena	Tristan albatross				EN	B1+2e
Procellariiformes	Diomedea chrysostoma	Grey-headed Albatross	*	II		VU	A1bd+2bd
Procellariiformes	Daption capense	Cape petrel	*				
Procellariiformes	Phoebetria palpebrata	Light-mantled Sooty Albatross	*	II		LR/nt	

There are 17 breeding seabird species at South Shetland and South Orkney Island, including small numbers of McCormick's Skua *Catharacta maccormicki*. Five species of penguin breed in the BAT; Emperor *Aptenodytes forsteri*, Adelie *Pygoscelis adeliae*, Chinstrap *P. Antarctica*, Gentoo *P. papua* and Macaroni *Eudyptes chrysolopus*. At South Georgia there are 29 breeding species. South Georgia is a particularly important breeding area for the Wandering Albatross, Grey-headed Albatross, Light-mantled Sooty Albatross, Northern Giant Petrel and Antarctic Prion. Four penguin species breed regularly: the King Penguin *Aptenodytes patagonicus*, Chinstrap Penguin *Pygoscelis antarctica*, Gentoo Penguin *P. papua* and Macaroni Penguin *Eudyptes chrysolopus*. Rockhopper Penguins also occur.

Whales present include blue whales, fin whales, minke whales, sei whale, humpback whale, Southern Right Whale, Sperm Whale, Killer Whale and southern beaked whales.

4.8.2 Bycatch information

There do not appear to be any records of cetacean bycatch in this area. In contrast there has been much concern about seabird bycatches, especially albatrosses, in longline fisheries. The history of these bycatches has reviewed by (Kock, 2001). The major problem has been associated with the longline fishery for toothfish, much of which has been illegal, unreported and unregulated until very recently. There is also a problem with seabird bycatch in the South Georgia Icefish fishery, as a result of net entanglement (J Barton, pers comm.).

4.8.3 Addressing bycatch

CCAMLR has an observer scheme on board vessels fishing legally in this region for more than a decade, there has been good monitoring of seabird bycatch over this time, and many papers have been published on the effects of such bycatch on many of the bird species that forage in this region (see accompanying bibliographic database). Furthermore a variety of mitigation methods have been tested and found to be effective, including streamer lines (bird scarers), weighted lines and underwater setting of hooks, coupled with restrictions on discharge of fish offal during setting. The main problem has been the illegal fishing activity that proliferated in the region in the late 1990s. With the accession to CCAMLR of Mauritius, the main landing port for illegally caught fish, illegal fishing may be reduced. Investigations into bycatch mitigation continue under the auspices of CCAMLR in the waters of BAT and South Georgia .

The organisations in Table 20 have been identified as having some relevance to bycatch in this area.

Table 20: Relevant Bodies and Agreements: Southern Ocean

Organisation name	Acronym
ANTARCTIC TREATY	ATS
CONVENTION ON BIODIVERSITY	CBD
CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA	CITES
CONVENTION ON THE CONSERVATION OF ANTARCTIC MARINE LIVING RESOURCES	CCAMLR
CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS	CMS
COORDINATING WORKING PARTY ON FISHERIES STATISTICS	CWP
FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS	FAO
GENERAL AGREEMENT ON TRADES AND TARIFFS	GATT
GLOBAL ENVIRONMENT FACILITY	GEF
INTERNATIONAL MARITIME ORGANISATION	IMO
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES	IUCN/SSC
INTERNATIONAL WHALING COMMISSION	IWC
RAMSAR CONVENTION ON WETLANDS	RAMSAR
UN EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANISATION/GLOBAL OCEAN OBSERVATION SYSTEM	UNESCO/GOOS
UNITED NATIONS ENVIRONMENT PROGRAMME	UNEP

In 2000 Administration in the Falklands passed an Ordinance on fisheries for South Georgia and South Sandwich Islands, which effectively protects all cetaceans in its waters.

4.9 Indian Ocean

4.9.1 Species Present

The British Indian Ocean Territory (BIOT) covers the Chagos archipelago in the mid-Indian Ocean. Once again we could find no dedicated survey of marine mammals, birds or turtles in the offshore waters of this territory.

Table 21: Potential bycatch species in the BIOT

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Cetacea	<i>Physeter macrocephalus</i>	Sperm whale	*				
Cetacea	<i>Steno bredanensis</i>	Rough-toothed dolphin					
Cetacea	<i>Mesoplodon densirostris</i>	Blainville's beaked whale				DD	
Cetacea	<i>Mesoplodon ginkgodens</i>	Ginkgo-toothed whale				DD	
Cetacea	<i>Indopacetus pacificus</i>	Longman's beaked whale				DD	
Cetacea	<i>Ziphius cavirostris</i>	Cuvier's beaked whale					
Cetacea	<i>Stenella attenuata</i>	Pantropical spotted dolphin		II			
Cetacea	<i>Kogia breviceps</i>	Pygmy sperm whale					
Cetacea	<i>Stenella longirostris</i>	Spinner dolphin		II			
Cetacea	<i>Balaenoptera musculus</i>	Blue whale		I	I	EN	A1abd
Cetacea	<i>Balaenoptera physalus</i>	Fin whale		I/II	I	EN	A1abd
Cetacea	<i>Balaenoptera borealis</i>	Sei whale		I/II	I	EN	A1abd
Cetacea	<i>Balaenoptera edeni</i>	Bryde's whale		II	I	DD	
Cetacea	<i>Balaenoptera acutorostrata</i>	Northern minke whale			I/II	LR/nt	

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Cetacea	Megaptera novaeanglia	Humpback whale	*	I	I		
Cetacea	Kogia simus	Dwarf sperm whale					
Cetacea	Peponocephala electra	Melonheaded whale					
Cetacea	Globicephala macrorhynchus	Shortfinned pilot whale				LR/cd	
Cetacea	Orcinus orca	Killer whale		II		LR/cd	
Cetacea	Tursiops truncatus	Bottlenose dolphin		II			
Cetacea	Feresa attenuata	Pygmy killer whale				DD	
Cetacea	Grampus griseus	Risso's dolphin		II		DD	
Cetacea	Lagenodelphis hosei	Fraser's dolphin		II		DD	
Cetacea	Delphinus tropicalis	Arabian common dolphin					
Cetacea	Delphinus capensis	Longbeaked common dolphin					
Cetacea	Delphinus delphis	Shortbeaked common dolphin		II			
Cetacea	Stenella coeruleoalba	Striped dolphin		II			
Cetacea	Pseudorca crassidens	False killer whale					
Procellariiformes	Oceanodroma matsudairae	Matsudaira's storm-petrel				DD	
Procellariiformes	Puffinus lherminieri	Audubon's shearwater					
Procellariiformes	Bulweria fallax	Jouanin's petrel				LR/nt	
Procellariiformes	Oceanites oceanicus	Wilson's storm-petrel				EX	
Testudinata	Chelonia mydas	Green turtle				EN	A1abd
Testudinata	Eretmochelys imbricata	Hawksbill turtle				CR	A1abd+2bcd

The Chagos Islands are considered internationally important for seabirds. At least thirteen different species breed on the islands, (Oldfield, 1987). BIOT has large populations of a

number of species that are declining in other parts of the Indian Ocean such as the Red-footed booby *Sula sula*, Masked booby *S. dactylatra* and Lesser Noddy *Anous tenuirostris*. Green and Hawksbill Turtles nest on the islands with about 300 females of each species breeding annually, (Oldfield, 1987). Leatherback Turtles may occur in offshore waters. Hunting of Green Turtles has been banned since 1968. There is virtually no information on cetaceans in these waters.

4.9.2 Bycatch information

There is no published information on bycatches of highly migratory species in this region.

The BIOT has an extensive fishery zone and fishing is licensed, both to inshore vessels handlining for snappers and reef fishes, and to pelagic vessels targeting tunas with longlines and purse seines. In the 2001/2002 season 36 longline vessels and 50 purse seine vessels were licensed to fish in BIOT waters. The number of licences varies from year to year, but there has been no particular trend over the past 5 years. A UK company provides observers to monitor some of these fishing operations. All bycatches are recorded, but there have been no records of cetacean or bird bycatch; a few turtles have been recorded, but these are apparently all released (G. Kirkwood, Pers. comm.).

The regional management authority (IOTC) has recently set up a new working group of its Scientific Committee to look at bycatch; its initial mandate is to look at the issue of shark bycatch. The Scientific Committee has also recommended that each member should develop a National Plan of Action on sharks, and that IOTC should also develop a regional plan of action on sharks to present to FAO. So far the issues of cetacean and bird bycatch have not been addressed by IOTC. Depredation of longlines by odontocetes is a major concern, however, and one that the IOTC is currently considering.

In inshore fisheries at BIOT there is a ban on the use of metal traces on fishing lines to minimise shark bycatch.

4.9.3 Addressing bycatch

Table 22: Relevant Bodies and Agreements – British Indian Ocean Territory

Organisation name	Acronym
ASIA-PACIFIC FISHERIES COMMISSION	APFIC
CONVENTION ON BIODIVERSITY	CBD
CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA	CITES
CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS	CMS
COORDINATING WORKING PARTY ON FISHERIES STATISTICS	CWP

Organisation name	Acronym
FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS	FAO
GENERAL AGREEMENT ON TRADES AND TARIFFS	GATT
GLOBAL ENVIRONMENT FACILITY	GEF
INDIAN OCEAN TUNA COMMISSION	IOTC
INTERNATIONAL MARITIME ORGANISATION	IMO
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES	IUCN/SSC
INTERNATIONAL WHALING COMMISSION	IWC
RAMSAR CONVENTION ON WETLANDS	RAMSAR
SOUTHWEST INDIAN OCEAN FISHERIES COMMISSION	SWIOFC
UN EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANISATION/GLOBAL OCEAN OBSERVATION SYSTEM	UNESCO/GOOS
UNITED NATIONS ENVIRONMENT PROGRAMME	UNEP
WESTERN INDIAN OCEAN TUNA ORGANIZATION	WIOTO

For offshore tuna fisheries the most appropriate body to address the bycatch issue would be the IOTC, but so far has not been any assessment of the issue by IOTC. Neither could we find any evidence of a response to the FAO's IPOA on seabirds.

For inshore fisheries it must be assumed that if turtle or seabird bycatch (in the handline fishery) was a problem, that this would have been monitored and recognised by the observer programme, in the same way that shark bycatch has been recognised as an issue and addressed.

4.10 Pacific Ocean

4.10.1 Species present

This section addresses the small Island of Pitcairn and its dependencies, Henderson and Ducie. We found no evidence of any systematic survey of the birds or mammals present in the waters of this territory.

Table 23: Potential bycatch species in the Pacific region (Pitcairn)

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Cetacea	Kogia breviceps	Pygmy sperm whale					
Cetacea	Stenella coeruleoalba	Striped dolphin		II			

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
Cetacea	<i>Stenella longirostris</i>	Spinner dolphin		II			
Cetacea	<i>Stenella attenuata</i>	Pantropical spotted dolphin		II			
Cetacea	<i>Steno bredanensis</i>	Rough-toothed dolphin					
Cetacea	<i>Mesoplodon densirostris</i>	Blainville's beaked whale				DD	
Cetacea	<i>Megaptera novaeanglia</i>	Humpback whale	*	I	I		
Cetacea	<i>Kogia simus</i>	Dwarf sperm whale					
Cetacea	<i>Lagenodelphis hosei</i>	Fraser's dolphin		II		DD	
Cetacea	<i>Physeter macrocephalus</i>	Sperm whale	*	I/II			
Cetacea	<i>Balaenoptera musculus</i>	Blue whale		I	I	EN	A1abd
Cetacea	<i>Balaenoptera physalus</i>	Fin whale		I/II	I	EN	A1abd
Cetacea	<i>Balaenoptera borealis</i>	Sei whale		I/II	I	EN	A1abd
Cetacea	<i>Balaenoptera edeni</i>	Bryde's whale		II	I	DD	
Cetacea	<i>Balaenoptera bonaerensis</i>	Antarctic minke whale		II	I/II	LR/cd	
Cetacea	<i>Ziphius cavirostris</i>	Cuvier's beaked whale					
Cetacea	<i>Globicephala macrorhynchus</i>	Shortfinned pilot whale				LR/cd	
Cetacea	<i>Grampus griseus</i>	Risso's dolphin		II		DD	
Cetacea	<i>Peponocephala electra</i>	Melonheaded whale					
Cetacea	<i>Feresa attenuata</i>	Pygmy killer whale				DD	
Cetacea	<i>Pseudorca crassidens</i>	False killer whale					
Cetacea	<i>Orcinus orca</i>	Killer whale		II		LR/cd	
Cetacea	<i>Delphinus capensis</i>	Longbeaked common dolphin					
Cetacea	<i>Delphinus delphis</i>	Shortbeaked common dolphin		II			
Procellariiformes	<i>Pterodroma ultima</i>	Murphy's petrel				LR/nt	

Order	Species	Common Name	Important	CMS Appendix	CITES appendix	IUCN category	IUCN criteria
	<i>ultima</i>						
Procellariiformes	<i>Pterodroma cooki</i>	Cook's petrel				EN	B1+2abd
Procellariiformes	<i>Pterodroma cervicalis</i>	White-necked petrel				VU	D2
Procellariiformes	<i>Pterodroma atrata</i>	Henderson petrel				EN	B1+2e
Procellariiformes	<i>Pterodroma arminjoniana</i>	Herald petrel				VU	D2
Procellariiformes	<i>Pterodroma alba</i>	Phoenix petrel				VU	A1abce, B1+2abde, C1
Procellariiformes	<i>Oceanites oceanicus</i>	Wilson's storm-petrel				EX	
Procellariiformes	<i>Puffinus bulleri</i>	Buller's shearwater				VU	D2
Procellariiformes	<i>Procellaria parkinsoni</i>	Black petrel		II		VU	D2

Henderson Island is reported to support large numbers of seabirds (Oldfield, 1987). Ducie is possibly the world's main breeding station of Murphy's petrel *Pterodroma ultima* (200,000+ breeding pairs). Among cetaceans blue whale, humpback whale and right whales are protected, but there is little further information available on cetaceans occurring in these waters. Both Green and Hawksbill Turtles occur around the Islands. A few Green Turtles (c.10) nest at Henderson.

4.10.2 Bycatch Information

There is reportedly some inshore subsistence fishing at Pitcairn, but although the Islands have a 200 mile fishery zone, there does not appear to be any licensed fishing within it, and recent statistics from the SPC show zero returns for tuna landings from Pitcairn, suggesting that the resource here has not attracted interest from distant water fleets, or that there is unregulated and unreported fishing. Not surprisingly we found no information on bycatch at Pitcairn.

4.10.3 Addressing bycatch

Should fishery development proceed in this region, then the appropriate bodies to address the issue of bycatch would be the SPC, as well as the FFA and possibly SPREP, all of whom have demonstrated an ability to address this issue at a regional level.

Table 24: Relevant bodies and agreements in the Pacific

Organisation name	Acronym
CONVENTION FOR THE CONSERVATION AND MANAGEMENT OF HIGHLY MIGRATORY FISH STOCKS IN THE WESTERN AND CENTRAL PACIFIC OCEAN	MHLC
CONVENTION ON BIODIVERSITY	CBD
CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA	CITES
CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS	CMS
COORDINATING WORKING PARTY ON FISHERIES STATISTICS	CWP
FOOD AND AGRICULTURE ORGANISATION OF THE UNITED NATIONS	FAO
FORUM FISHERIES AGENCY	FFA
GENERAL AGREEMENT ON TRADES AND TARIFFS	GATT
GLOBAL ENVIRONMENT FACILITY	GEF
INTERNATIONAL MARITIME ORGANISATION	IMO
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES	IUCN/SSC
INTERNATIONAL WHALING COMMISSION	IWC
RAMSAR CONVENTION ON WETLANDS	RAMSAR
SECRETARIAT OF THE PACIFIC COMMUNITY	SPC
SOUTH PACIFIC REGIONAL ENVIRONMENT PROGRAMME	SPREP
UN EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANISATION/GLOBAL OCEAN OBSERVATION SYSTEM	UNESCO/GOOS
UNITED NATIONS ENVIRONMENT PROGRAMME	UNEP

5) Solutions to bycatch

5.1 General approaches

There have been many attempts to mitigate bycatch, and a number of these have been successful. One of the important precepts here is that solutions to bycatch are often specific to individual fisheries. Despite this there is at least one general approach that is often cited – the potential for seasonal or area closures of a fishery. The supposition here is that if most of the highly migratory species bycatch occurs either in a small space or a restricted time, that by excluding fishing from such a time or area, bycatch can be minimised.

This approach has been adopted in the UK to minimise auk mortalities in set net fisheries (Robins, 1991), and has been used in New Zealand to minimise sea lion mortalities around islands with pupping beaches (Baird, 1996). The approach can be a general one for any type of fishery, provided the area or time period from which the fishery is excluded is responsible for a high enough proportion of the total mortality for a closure to

meet management objectives. It may work best where there is some migration or seasonal aggregation of a species into one area, which if closed to fishing can protect a large proportion of the population at a vulnerable time. In practice this is unusual, as bycatch tends to occur in a dispersed manner, making technical solutions preferable.

We can address technical solutions by gear type:

5.2 Purse seines

The major bycatch concern with purse seines has been due to the deliberate corralling of dolphins in order to set nets around them to catch tuna schooling underneath the dolphins. To overcome the ensuing mortalities when dolphins panic and become entangled in the walls of the purse seine net, fishermen developed two bycatch reduction methods. The first was a fishing practice known as the back down procedure, whereby a part of the encircled purse seine net float rope is forced below the surface to create a shallow channel for the dolphin school to escape through back to the open sea. The second was the 'Medina panel' – a small meshed net panel fitted into the net in the area where the backdown occurs, which helps guide the animals out of the net and prevents them from becoming entangled as they do so. These techniques have been taught by the IATTC to all the skippers involved in the fishery concerned and as a consequence dolphin mortalities have been very greatly reduced (AIDCP 2002).

5.3 Gillnets

The major bycatch problem with gillnets has been the bycatch of small cetaceans, especially porpoises. The most promising method of minimising bycatch has been the use of acoustic deterrent devices or pingers. These small battery powered devices emit a relatively low powered acoustic signal at predetermined intervals and frequencies that are thought to act as a local deterrent to cetaceans. These devices have been shown to work with at least three species of small cetaceans in several gillnet fisheries around the world, reducing bycatch by 80-95% when compared with nets with no such devices (SEC, 2002).

Another recently developed technique has been the use of nets made from altered nylon, where a filler of some sort has been used in the polyamide. The original idea behind this was to make the net filaments denser and thereby more acoustically reflective. Several studies have shown that porpoise bycatch can be partly reduced by using this type of netting, though there is still some debate as to how it works to reduce bycatch (Trippel, Palka et al. 2000).

Melvin et al. (1999) examined possible means of reducing sea bird bycatch in gillnets in Alaska, and found lowered bycatches of murrelets when acoustic signals were used. However, they found that the best overall strategy was to minimise fishing when bird abundance was locally highest, and control the time of day of fishing too.

There does not appear to have been any development of methods to minimise turtle bycatch in gillnets

5.4 Longlines

There are three principle means that have been developed to minimise seabird mortalities on longline hooks, and these have been reviewed by Brothers et al. (1999). The first involves limiting the attraction that the fishing activity has to the birds in the first place by judicious disposal of fish offal, and most especially not jettisoning it overboard as lines are being set.

The second involves scaring the birds away, and a number of techniques including streamers and ‘tori lines’ have been developed to do this. This method seems to be very effective (Lokkeborg and Robertson, 2002).

The third approach involves trying to get the hooks below the water fast enough or directly so that birds cannot see or catch the bait on the hooks. Different weighting regimes have been tried to accomplish this (Agnew et al., 2000), and a variety of funnels have also been devised to achieve the same end (Ryan and Watkins, 2002).

A combination of techniques can be used to reduce seabird bycatch to very low levels. In contrast there has been little progress in minimising cetacean or turtle bycatch on longlines, through education of fishermen on releasing turtles from hooked lines may be one way forward.

5.5 Trawls

Exclusion devices or grids have been widely used for over twenty years to keep turtles out of the cod end of shrimp trawls, and these devices appear to be very effective, as long as they are installed and used correctly (Oravetz, 1984; Brewer et al., 1998; Pillai, 1998).

More recently there have been attempts to use the same technology to minimise sea lion and fur seal mortalities in trawl fisheries in New Zealand (Gibson, 1998), and to minimise dolphin mortalities in pelagic trawling in the UK ((SEC 2002)).

Attempts have also been made to reduce dolphin bycatches in trawls using acoustic devices but experimental trials are still at an early stage.

Seabird bycatch in trawls has been reduced by a ban on netsonde cables in CCAMLR waters and in some adjacent areas. However, there is still considerable mortality caused by trawl warps and by nets during shooting in the southern ocean. A number of methods to reduce this mortality are currently being trialled. These include the use of scaring devices and limiting the disposal of fish offal until the net is hauled (J Barton, pers comm.) .

5.6 Pot lines

The capture of right whales in lobster pot lines has been the subject of much recent discussion, and suggestions have been put forward to include break-away sections of line, and to minimise the floatation of ropes used to link pots by switching away from polypropylene rope. However, there have been no published trials yet based on any of these discussions.

6) The UK's Role in Global Bycatch Reduction

The UK plays a role in bycatch reduction through work ongoing in the UK itself, through participation in numerous international bodies and agreements, and through work on minimising seabird bycatch in South Georgia and the Falklands. Here we try to address how well the UK is meeting its commitments under the CMS, especially with respect to the Dependent Territories.

One of the first and striking issues is that in only two of the ten sea areas have there been any dedicated programmes to characterise the distribution and relative abundance of cetaceans, birds and turtles in the waters of UK territories. Clearly better knowledge of what species are present and at what approximate levels of abundance would be a useful first step to determining vulnerability to bycatch. Further at sea monitoring of seabirds, cetaceans and turtles, especially in areas likely to be subject to most fishing, such as BIOT and around Ascension, would therefore be useful practical steps to take.

Under CMS Recommendation 7.2, adopted at the 7th Meeting of Parties and addressing the Implementation of Resolution 6.2 on Bycatch, Range State Parties are called upon to undertake several tasks. These include (a) compiling information on vessels fishing in their waters or under their flag regarding the resource being targeted, bycatch, the impact of the bycatch and whatever mitigation measures are being adopted, (b) implementing observer schemes as appropriate and in the context of FAO's IPOA on seabirds and sharks, (c) promoting research into bycatch in various fisheries, and (d) consider ways to minimise gear lost from fishing vessels.

It is clear from the preceding review that in most of the UKDTs much of this work remains to be done. The Falkland Island fishery seems to be the only one where most of these tasks have been undertaken. Even within the UK itself, there is not a co-ordinated approach to addressing the issue of bycatch for all species groups, though a considerable amount of work has been done in some areas, especially in response to ASCOBANS and the Habitats Directive.

The initial stages of addressing the bycatch problem should be to inventory the scale of fishing operations within each 200-mile fishery zone, explicitly by gear type as well as by target species. There does not appear to be any co-ordinated UK approach to compiling information on the types of vessels operating in UK and Dependent Territory waters. For some areas like the Falkland Islands, where the information is published, it would not be difficult to achieve this. For other areas, like the Caribbean, more effort would be

required to collate information especially on local fishing activities that are poorly described.

Where there are either significant fisheries with a likelihood of bycatch, or where there are species that may be particularly vulnerable to bycatch, observer schemes on board a representative sample of boats with a protocol for sampling bycaught mammals, birds and reptiles are required. Assuming the relevant fishery authorities have the appropriate information on fishing effort and distribution, bycatch estimates for all vulnerable species can be made. Although observer schemes are in operation in at least four of the ten areas, co-ordinated reporting of bycatches is lacking.

Often it will be appropriate to integrate an observer scheme over that part of an ocean basin in which a fishery operates. Thus monitoring long line activity within the fishery zones of any of the Caribbean territories (if and when such activity is resumed) would be most productive if conducted alongside observations conducted in the waters of neighbouring states or territories, and under the aegis of the relevant fishery management body.

Some fishery management bodies, such as SPC and IATTC have taken on this role to a significant degree, others like the ICCAT and the IOTC to a lesser extent, and with little evidence of a co-ordinated approach to address bycatch of birds, mammals and turtles. The IOTC is currently addressing shark bycatch, but not the other groups of animals.

In some areas birds, turtles and mammals that breed in UK Dependent Territories are being impacted by fishery bycatches in adjacent or remote areas: both Gibraltar and Tristan da Cunha are examples where Spanish and Moroccan and South American fisheries respectively impact migratory species that breed in UKDT waters or on land. To address these issues the UK would need to take a more active role in the fishery management bodies concerned, such as CIESM or CARPAS.

Within a regional framework the UK might also work to improve the integration between fishery bodies and other bodies with a marine conservation interest. In some areas, such as the Caribbean, there are several international initiatives to address bycatch and related issues that emanate from a Regional Seas Programme or from International NGOs, and such initiatives could well be taken up and assisted by regional fishery bodies, many of which, globally, appear to be less than fully aware of the issue. The UK is in fact a member of most of these organisations and could use its position to improve the working links between the various bodies addressing these issues at a regional level.

Finally, and more generally, there is a role that the UK might adopt to ensure that the objectives of CMS Resolution 6.2 on bycatch are taken up at a global level. The FAO has already adopted a plan of action for addressing seabird bycatch, but has not so far done so for turtles or marine mammals. This is something that will only be progressed if FAO member states have the will to do so. At present there are several initiatives to address seabird bycatch around the world that have been sparked by the FAO IPOA, and

it is perhaps strange that there is as yet no such IPOA for turtles and cetaceans, when the problems faced by these two groups are just as severe as those faced by seabirds.

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ANNEX – Review of International Organisations

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Introduction

The accidental capture of non target animals in fishing activities (by-catch or incidental capture) represents one of the most significant threats to the conservation of many marine vertebrate species, including many fish species, but marine mammals, birds and reptiles seem to be especially vulnerable to unreported and unregulated mortalities.

Numerous organisations around the world have recognised this fact in resolutions, statements and action plans. Several have developed programmes of work to address the issue. In this report we attempt to provide an overview of what actions are currently being undertaken by which organisations. We cannot hope to address all the individual actions of all organisations, and have focused our attention on the Intergovernmental Organisations (IGOs), especially those constituted under the UN system, as well as one or two of the larger non-governmental organisations (NGOs). Most of this research has been achieved by accessing appropriate information on the World Wide Web, but this has been supplemented by contacts with individuals in many of the organisations concerned.

The activities or interests of the organisations can be classified in terms into three broad areas: 'capacity building', research and management. In the first group there are many organisations that explicitly or implicitly express a concern for the potential impact of fisheries on non-target species; some of these have directed subsidiary bodies to take a variety of actions, including organising conferences and workshops, establishing databases and promoting contacts with other organisations; many have made explicit declarations on the subject.

Far fewer organisations have actually implemented any original research or monitoring of the situation, and fewer still have been involved in developing or implementing practical mitigation measures. Organisations are considered below under several headings, and are summarized in Table 1.

REVIEW OF FISHERY BODIES

United Nations Food and Agriculture Organisation

The Food and Agriculture Organization of the United Nations ([FAO](#)) was founded in 1945 with a mandate to raise levels of nutrition and standards of living, to improve agricultural productivity, and to better the condition of rural populations. FAO has 183 [member countries](#) and is the lead agency under the UN system for matters related to [fisheries](#). The Fisheries Department aims to “promote sustainable development of responsible fisheries and contribute to food security”.

FAO has had some interest in bycatch over a number of years, and has commissioned or published several technical reports on the subject. The FAO is also responsible for the establishment and for running the secretariat of a number of Regional Fishery Bodies that provide management advice to fishing states. A number of these RFBs are also active in addressing bycatch issues (see below). FAO has also signed a memorandum of understanding with UNEP's RAC/SPA in Tunis (see below) to produce technical documents and guidelines aimed at addressing the impact of fishing activities on biological diversity in the Mediterranean. Perhaps the most significant involvement of FAO in the issue of bycatch comes under the Code of Conduct for Responsible Fishing.

FAO's [Code of Conduct for Responsible Fisheries](#) was adopted by the Twenty-eighth Session of the FAO Conference on 31 October. The Code sets out principles and international standards of behaviour for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity. States and all those involved in fisheries are encouraged to apply the Code and give effect to it, though it is not a binding agreement. Part of the code stipulates that catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species should be minimized, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost-effective fishing gear and techniques

Further to the Code of Conduct, FAO has developed through a series of inter-governmental meetings, several International Plans of Action (IPOAs) each addressing some aspect of the Code of Conduct. One of these is the [IPOA-Seabirds](#).

The International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-Seabirds). The objective of this voluntary program, adopted by the 23rd session of the FAO Committee on Fisheries (COFI) in 1999 and endorsed by the FAO Council at its session in November 2000, is to reduce the incidental catch of

seabirds in longline fisheries where this occurs. IPOA-Seabirds applies to States in the waters of which longline fishing is conducted by their own or foreign vessels. The role of FAO is to support states in the implementation of the IPOA-Seabirds as National Plans of Actions (NPOA-Seabirds) through specific, in-country technical assistance and extra-budgetary funding made available to the FAO for this purpose. At the 24th COFI session in Feb - Mar 2001, several countries indicated that incidental catch of seabirds is not an issue, and some nations (Argentina, Barbados, China, Cuba, Cyprus, Dominica, Iceland, Panama & Uruguay) stated that a NPOA was not required. A few other countries (Australia, Brazil, Canada, Japan, New Zealand, USA & Vietnam) have developed or are developing NPOA's. Measures already applied include observer coverage on longline vessels, the use of tori-streamers and other bird-scaring devices, night setting, the strategic dumping of offal, the use of fully thawed baits, removal of hooks from discarded offal, and mandatory handling and release of birds that come on board alive.

FAO currently has an ongoing project called [FishCode](#), one of the components of which is [Support for the Implementation of the International Plan of Action for reducing Incidental Catch of Seabirds in Longline Fisheries](#), which has a budget of \$350,000 per fishery region.

Regional Fishery Bodies (RFB's)

The need for regional, international cooperation for the proper management of common fishery resources has led to the establishment of regional fishery bodies (RFB's) in all regions of the world where fishing is undertaken. The 100 years since the establishment of the first RFB (International Council for the Exploration of the Sea, ICES) in 1902 can be generally divided into three periods. While RFB's established during the first period (before the UN negotiations on the Law of the Sea (UNCLOS) in the 1950s), emphasised scientific data collection and collaboration (e.g. ICES), most bodies established during the UNCLOS negotiations have advisory and/or regulatory powers, while most RFB's established since the 1982 Law of the Sea Convention in 1982 have clear management functions.

The gradual change of focus began with the creation of the FAO as a specialised agency of the United Nations in 1945. The FAO is now the principal umbrella organisation responsible for the coordination of fishery management measures undertaken by regional and national fishery bodies. Of the 27 RFB's currently active, seven have been established either under Article VI or XIV of the FAO Constitution. These subsidiary FAO bodies have only advisory functions, and do not have any regulatory powers. The FAO has also facilitated and assisted in the establishment of many of the other RFB's and serves as the depositary for the instrument of acceptance of such bodies. While some RFB's have mandates covering specific geographic areas, others are concerned with the conservation and management of specific species or groups of species.

The following section gives a brief description of specific actions taken by individual RFB's.

Atlantic Africa Fisheries Conference ([AAFC](#))

The AAFC is the Ministerial Conference on Fisheries Cooperation among African States bordering the Atlantic Ocean. Its objectives are to promote regional cooperation among African South Atlantic States on the management and development of fisheries in the Southeast Atlantic, especially concerning the exploitation of marine resources occurring within the waters under the sovereignty or jurisdiction of more than one Member State. We were unable to find any references to specific actions related to bycatch of cetaceans, turtles or seabirds.

Asia-Pacific Fisheries Commission ([APFIC](#))

As the regional FAO body for the Asia-Pacific region, the aims of APFIC are to develop and manage fishery and aquaculture operations and to develop related processing and marketing activities in conformity with the objectives of its members. We were unable to find any references to specific actions related to bycatch.

Regional Fisheries Advisory Committee for the Southwest Atlantic ([CARPAS](#)). The objectives of CARPAS are to develop an organized approach among members States for the management and regional exploitation of marine and inland fishery resources, and to encourage training and cooperative investigation. We were unable to find any references to specific actions taken related to bycatch.

The Convention on the Conservation of Antarctic Marine Living Resources

[CCAMLR](#) was established in response to the periodic intense exploitation and consequent depletion of Antarctic marine living resources (most notably pinnipeds in the 19th and cetaceans in the 20th century). It has authority to implement conservation measures that are binding on its Members over all marine areas within a designated area encompassing the essentially closed Antarctic marine ecosystem (i.e south of the Antarctic Polar Front, APF). Most of the areas over which CCAMLR has conservation and management mandate are high-seas areas.

CCAMLR does not have legal mandate or managerial responsibilities for cetaceans or seals within its area of jurisdiction. These groups are instead covered by the International Convention for the Regulation of Whaling and the Convention for the Conservation of Antarctic Seals, respectively. However, CCAMLR has been instrumental in the identification, monitoring and mitigation of incidental mortality of Antarctic seabirds (mainly albatross and larger petrel species) in longline fisheries for [Patagonian toothfish](#) (*Dissostichus eleginoides*).

Vessels deploying longlines in the Convention Area now use various methods to mitigate adverse effects on seabirds. For example, longlines are set at night, offal is not disposed during setting and streamer lines (or "scare" devices) are deployed to prevent foraging from taking baited hooks. The opening of the toothfish season has also been moved to outside the breeding season when fewer birds are likely to be in the Convention Area or

proximal to fishing vessels. As one of their designated functions, scientific observers serving on board all Members' longline vessels in the Convention Area monitor and record any deaths of seabirds during longline operations. Results from this observer program indicate that night-time setting alone has reduced albatross deaths by about 80% over the past three years. CCAMLR is also encouraging and recommending steps to be taken by other agencies (including FAO), fisheries commissions and organisations to protect Antarctic seabirds feeding and/or wintering in areas outside the Convention Area.

Commission for the Conservation of Southern Bluefin Tuna (CCSBT). The commission was established to ensure, through appropriate management, the conservation and optimum utilisation of the global [Southern Bluefin Tuna](#) (SBT) fishery. It has a working group on Ecologically Related Species (ERS) that collects and analyses information on species which may be affected by the SBT fishery (ecologically related species and/or bycatch), and provides information and recommendations on data collection, mitigation measures (including gear modifications and fishing practices) and other conservation measures relating to ERS. As part of these recommendations, the CCSBT sets guidelines for scientific observer programs to be implemented by Member countries on their own flag vessels. Following such recommendations, many Member countries (notably New Zealand) have adopted voluntary measures or “Codes of practice”, including gear modifications, area closures, environmental standards and fishing practices (e.g night-setting). These measures are reviewed at the CCSBT annual meetings.

The **Committee for the Eastern Central Atlantic Fisheries (CECAF)** was created in 1967 as a subsidiary body of the FAO (under Article VI of the FAO Constitution), to promote the optimum utilization of the living aquatic resources by the proper management and development of the fisheries and fishing operations, and the improvement of related processing and marketing activities in conformity with the objectives of its members. Since then, it has played an important role in research and development support for the many developing coastal States in the region. However, CECAF was established without any regulatory function and its role in fisheries management has increasingly been called into question in recent years. We could find no references to issues related to bycatch.

International Commission For The Scientific Exploration Of The Mediterranean Sea (CIESM). The CIESM was founded in 1910, and is currently funded by 22 member States, which helps to support a large network of over 2500 researchers at some 500 Institutes. Their aim is to “promote marine science for the lasting protection of the Mediterranean Sea and for the well-being of its coastal populations”. There are several Committees that deal with various aspects of the biological and physical sciences, and a Marine Mammal Task Force. There are regular meetings and symposia, and CIESM has been a focus of much of the scientific research work on bycatch in the Mediterranean. There are plans to initiate a formal link between CIESM and the newly established ACCOBAMS.

The **Committee for Inland Fisheries of Africa (CIFA)** was established as a regional FAO body to promote, coordinate and assist national and regional fishery surveys and research and development programmes designed to rationally utilize inland fishery resources. We could find no references to issues related to bycatch.

The **Comisión de Pesca Continental para América Latina (COPESCAL)** is the principal body responsible for the management of inland fisheries in Latin America. We could find no references to issues related to bycatch.

The **Regional Fisheries Committee for the Gulf of Guinea (COREP)** is open for signature and accession to States bordering the Gulf of Guinea, but is not yet in force. Its main objectives are to determine a concerted attitude towards the activities of foreign fishing vessels and to give priority to the needs of the fishing vessels originating from member countries; to harmonize the national regulations with a view to having a unified regulation fixing the conditions of fishing and the control of fishing operations in the area covered by the Convention; and to collect the maximum scientific, technical and economic data on fishing operations. We could find no references to issues related to bycatch.

The **Permanent Commission for the South Pacific (CPPS)** entered into force 18 August 1952, with the objectives of obtaining the greatest benefits from the conservation, protection and regulation of the utilization of the natural resources off the coasts of the party States up to the 200-mile limit. While initially interested in managing shared stocks in the extended zone, since 1982 the CPPS has sought to conserve the species in the areas adjacent to their respective EEZs. The functions of the Commission are, inter alia: (a) to determine protected species, open and closed seasons and areas, fishing and hunting times, methods and equipment; prohibited gear and methods; and to lay down general rules for fishing; (b) to study and propose to the Parties such measures as it considers suitable for the protection, defence, conservation and use of marine resources; (c) to encourage scientific and technical study of and research into biological phenomena in the South Pacific; and (d) to prepare general statistics of the industrial use of marine resources by the Parties, and to suggest protective measures based on the study of such species. CPPS also provides the Secretariat (RCU) for the Regional Seas Action Plan under the Lima Convention, and the RCU has been active in organising workshops on bycatch issues (see below under Regional Seas).

The **Joint Technical Commission for the Argentina/Uruguay Maritime Boundary (CTMFM)** is responsible for issues relating to fisheries by the two countries and foreign vessels within the Common Fishing Zone, with the aim of ensuring the long term sustainability of straddling and highly migratory stocks, allocating allowable catches, or levels of fishing effort, obtaining and evaluating scientific advice on the impact of fishing, and establishing cooperative mechanisms for monitoring, control, surveillance and enforcement. We could find no references to issues related to bycatch.

The **Coordinating Working Party on Fishery Statistics (CWP)** keep under continuous review the requirements for fishery statistics for research, policy-making and

management. They agree standard concepts, definitions, classifications and methodologies for the collection and collation of fishery statistics, make proposals for the coordination and streamlining of statistical activities amongst relevant intergovernmental organizations.

The **European Inland Fisheries Advisory Commission (EIFAC)** is the international forum for collaboration and information exchange among all European countries and for advice to member Governments on the management of inland fisheries and aquaculture. We could find no references to issues related to bycatch.

The **Forum Fisheries Agency (FFA)** was established in 1979 to aid Member States in the management, conservation and optimal use of tuna resources in their Exclusive Economic Zones of the South Pacific. The FFA hosted the Multilateral High Level Conference on South Pacific Tuna Fisheries, which eventually led to the formulation of the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (see below). The FFA has also developed and implemented the [FFA Vessel Monitoring System \(VMS\)](#), an automatic system for the analysis of vessel positions to enable the immediate identification of potential illegal fishing vessel activity, and for this information to be quickly distributed to surveillance and enforcement officers.

The **General Fisheries Commission for the Mediterranean (GFCM)** was established in 1949 as the regional FAO body, to promote the development, conservation, rational management and best utilization of living marine resources of the Mediterranean and the Black Seas. In 1997, a Scientific Advisory Body was established, and steps were taken to strengthen the collaboration with other scientific and advisory bodies such as CIESM, CIHEAM and COPEMED. One of the functions of the GFCM is to formulate and recommend appropriate measures for the conservation and rational management of living marine resources, including measures regulating fishing methods and gear. At the 21st Session of the GFCM in Alicante, Spain, 1995, it was suggested that the GFCM should encourage Member States to enact legislation aiming at regulating the use of gears and fishing effort to minimise the impact of fishing activity on non-target species (including marine mammals, turtles and seabirds). In relation to this, it was also suggested that special emphasis should be given to coordination between GFCM and UNEP's Mediterranean Action Plan (MAP). However, we could find no references to specific actions that have been undertaken related to bycatch.

Inter-American Tropical Tuna Commission (IATTC)

The IATTC was formed in 1950 as an intergovernmental organisation responsible for the conservation and management of fisheries for tunas and other species taken by tuna-fishing vessels in the eastern Pacific Ocean. The Tuna-Dolphin programme of the IATTC has responsibilities to monitor the abundance of dolphins and their mortality incidental to purse-seine fishing in the eastern Pacific Ocean, to study the causes of mortality of dolphins during fishing operations, to promote the use of fishing techniques and equipment which minimize these mortalities, and to study the effects of different modes of fishing on the various fish and other animals of the pelagic ecosystem. The

Programme also has significant responsibilities for the implementation of the [International Dolphin Conservation Program \(IDCP\)](#), for which the IATTC also provides the secretariat. Although the IATTC does not have legal authority, the AIDCP (Agreement on the International Dolphin Conservation Program) is a legally binding, multilateral agreement that entered into force in February 1999 as the successor to the 1992 Agreement on the Conservation of Dolphins (La Jolla Agreement). The objectives of the IDCP are: 1) To progressively reduce incidental dolphin mortalities in the tuna purse-seine fishery to levels approaching zero through the setting of annual limits; 2) To seek ecologically sound means of capturing large yellowfin tunas not in association with dolphins; and 3) To ensure the long-term sustainability of the tuna stocks in the Agreement Area, as well as that of the marine resources related to this fishery, with special emphasis on, inter alia, avoiding, reducing and minimizing bycatch and discards of juvenile tunas and non-target species. Among the actions taken are: the setting and allocation of [Dolphin Mortality Limits \(DML's\)](#), the monitoring of dolphin bycatch by on-board observers and the development of the [AIDCP Dolphin Safe Tuna certification](#).

The IATTC also has a Bycatch Working Group, established in 1997, which monitors and assesses bycatch of other species including sharks and turtles. Purse seine vessels of IATTC member states fishing in the Eastern Pacific agree to release sea turtles that are caught and report on numbers and conditions of animals caught. Specific release measures have been drawn up and the Working Group continues to assess the effectiveness of these methods at its [meetings](#).

The **International Baltic Sea Fishery Commission (IBSFC)** was established under the Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and the Belts (the Gdansk Convention), which entered into force in 1974. It has as its objectives the promotion of close cooperation amongst its members with a view to preserving and increasing the living resources of the Baltic Sea and the Belts and obtaining the optimum yield, and, to coordinate the management of the living resources in the Convention area by collecting, aggregating, analyzing and disseminating statistical data. Since all of the Convention Area is in areas under national jurisdiction, the main issues dealt with by the Commission are of transboundary nature. We were unable to find any references to specific actions related to bycatch.

International Council for the Exploration of the Sea (ICES). ICES is the oldest and one of the leading advisory RFB's, especially in European waters. One of its main areas of work is to coordinate and promote marine research in the North Atlantic, the Baltic Sea and the North Sea. ICES has played a pioneering role in the establishment of an ecosystem approach to fishery management and the development of [Ecological Quality Objectives \(EcoQO's\)](#) as a common index of species and habitat status. In 2001, the ICES Advisory Committee on Ecosystems (ACE) was requested by the EC to provide information and advice on fisheries having a significant impact on small cetaceans. Two reports were produced by the ICES Working Group on Marine Mammal Populations and Habitat, and were submitted via ACE to the EC. ICES were also requested by OSPAR to develop EcoQO's, including characterisation of the population status and habitat quality of marine mammals and seabirds in the North Sea. These objectives addressed bycatch

issues and population size/distribution for marine mammals, while issues addressed in connection with seabirds focused on pollution as well as population size/distribution. ICES work in this area is confined to collating studies and information provided by representatives of the member states, as it has very few independent resources to commission work.

International Commission for the Conservation of Atlantic Tunas (ICCAT)

ICCAT is an inter-governmental fishery organization responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas. Although ICCAT does have a [subcommittee on bycatch](#), this is mainly focussed on shark bycatch. The subcommittee also publish and maintain an updated list of species (including marine mammals, turtles and seabirds) caught as bycatch in major tuna fisheries in the Atlantic/Mediterranean. However, this list is only qualitative, and includes all species ever recorded as bycatch. It is thus of limited value as an indication of current levels of bycatch of specific species. Annual [meetings](#) of the Sub-Committee on Bycatch provide a focus for work on bycatch of sharks, turtles and other species in the ICCAT area, and some of these contributions have addressed mitigation methods, for turtles and other species. ICCAT does not appear to be actively involved in bycatch mitigation of turtles, seabirds or marine mammals.

Indian Ocean Tuna Commission (IOTC)

The IOTC is responsible for the management of tuna and related species in the Indian Ocean. The IOTC was involved in the development of the IPOA-Seabirds initiative, but since its jurisdiction is confined to tropical waters, seabird bycatch is reported not to be a significant problem. However, the IOTC has conducted studies on the impacts of predatory species (including false killer whales and possibly pilot whales) on the increased fishing mortality of target species.

International Pacific Halibut Commission (IPHC)

The IPHC is responsible for research on and management of the stocks of [Pacific halibut](#) (*Hippoglossus stenolepis*) within the Convention waters of the United States and Canada. IPHC staff prepared a [feasibility study](#) in 2001 commissioned by the NMFS (U.S. National Marine Fisheries Service), on various options for monitoring the incidental capture of the endangered short-tailed albatross (*Diomedea albatrus*) in the Pacific halibut fishery. Methods evaluated were 1) self-monitoring by the fleet, 2) monitoring by IPHC port samplers, 3) on-board observers and 4) technological monitoring using e.g. video systems. The last option was considered as having the greatest potential in terms of cost-effectiveness and fleet coverage. However, we could find no information as to whether these measures have yet been implemented by the fishery.

The **Lake Victoria Fisheries Organisation (LVFO)** was established by a Convention signed in 1994. Its main objectives are to foster co-operation amongst the Contracting Parties in matters regarding Lake Victoria, to harmonise national measures for the sustainable utilisation of the living resources of the Lake, to develop and adopt

conservation and management measures to assure the health of the Lake's ecosystem and the sustainability of its living resources. We are not aware of any bycatch concerns.

Multilateral High Level Conferences ([MHLC](#)) on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean was a series of conferences, the first of which (the Multilateral High Level Conference on South Pacific Tuna Fisheries) was held in Honiara, Solomon Islands in December 1994. The aim of these conferences was to provide for a regional implementation of the Provisions of the United Nations Convention on the Law of the Sea of (1982), relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. These conferences led to the formulation of the [Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean](#). The convention was opened for signature at Honolulu on Sept. 5 2000, and one objective of the associated commission (commonly referred to as the “Tuna Commission”) will include the monitoring and assessment of the effects of fisheries on non-target and ecologically related species. As yet, the Convention has only been ratified by Fiji, Marshall Islands, Papua New Guinea and Samoa.

Northwest Atlantic Fisheries Organisation ([NAFO](#))

NAFO is concerned with the development and enforcement, based on scientific study, of conservation measures on fisheries in the Northwest Atlantic. The NAFO have an ongoing on-board observer program for monitoring the catch (including bycatch), mainly in the groundfish fisheries within the Management Area. However, it does not have a specific program on bycatch of marine mammals or seabirds.

North Atlantic Salmon Conservation Organization ([NASCO](#))

NASCO was established to promote the conservation, restoration, enhancement and rational management of salmon stocks in the North Atlantic Ocean. It has no program on bycatch, but NAMMCO (The North Atlantic Marine Mammal Commission) has observer status in NASCO.

North East Atlantic Fisheries Commission ([NEAFC](#))

NEAFC recommend management measures to Member States concerning fisheries beyond the areas under domestic jurisdiction. NEAFC provide recommendations on for instance quotas, gear regulations and area closures for commercial fish species in the Northeast Atlantic and the Barents Sea. We were unable to find any references to specific actions related to bycatch.

The North Pacific Anadromous Fish Commission ([NPAFC](#)) was created in 1992 to serve as a forum for promoting the conservation of anadromous stocks and ecologically-related species, including marine mammals, sea birds, and non-anadromous fish, in the high seas area of the North Pacific Ocean. However, we were unable to find any references of the NPAFC being directly involved in any bycatch issues, other than those involving the bycatch of salmon.

The Agreement Creating the Eastern Pacific Tuna Fishing Organisation (OAPO) aims to achieve the conservation, protection and optimum utilization of highly migratory fish species in the Eastern Pacific, to provide training, transfer of technology and to assist with development of fishing capacity and infrastructure of disadvantaged Latin American Eastern Pacific Coastal States. We are not aware that bycatch has been addressed.

The Organizacion Latino-Americana de Desarrollo Pesquero ([OLDEPESCA](#)) was established to promote adequate utilization of fishery resources, preserving the marine and freshwater environment; and to encourage collaboration and training within the Latin American nations and to increase trade in fisheries products. We were unable to find any references to specific actions taken related to bycatch.

North Pacific Marine Science Organisation ([PICES](#)). PICES is an intergovernmental organisation established to promote and coordinate marine research in the northern North Pacific and adjacent seas. It does not specifically address bycatch. PICES does not generally work on issues directly relating to commercial fishing. It has a working group on birds and mammals that has been involved in modelling relationship between marine mammals and seabirds as predators on fish stocks, but the working group has not specifically addressed bycatch issues.

Pacific Salmon Commission (PSC). The Pacific Salmon Commission was set up in 1985 to serve as a forum for cooperation between the United States and Canada in the establishment of conservation and management regimes for North Pacific salmon stocks. We were unable to find any references to specific actions taken related to bycatch.

The **Regional Commission for Fisheries (RECOFI)** covers fisheries in the Red Sea, Arabian Sea and Persian Gulf, and was approved by the FAO Council, Rome, 11 November 1999, but is not yet in force. Its main objective is the establishment of a regional fisheries commission with the aim of promoting the development, conservation, rational management and best utilization of living marine resources, as well as the sustainable development of aquaculture in the Agreement Area. We were unable to find any references to specific actions taken related to bycatch.

South East Asian Fisheries Development Center (SEAFDEC). SEAFDEC is an intergovernmental organisation whose ultimate goal is to assist Member Countries to develop fishery potentials for the improvement of food supply in the region through training, research and information programs and services. In collaboration with the [Association of South-East Asian Nations \(ASEAN\)](#) within the Fisheries Consultative Group (FCG), SEAFDEC has developed a [program for the conservation and management of sea turtles](#) in ASEAN countries. The objective of this program is to coordinate on a regional scale any conservation programs already developed by several nations in the area. The main emphasis appears to be on information gathering and networking. However, the SEAFDEC Training Department (TD) have also carried out sea trials of a variety of imported and locally manufactured Turtle Exclusion Devices (TED's) and Juvenile and Trash Exclusion Devices (JTED's), to determine the most suitable

configuration for the region's needs. SEAFDEC has also provided funding and logistics for personnel to attend training workshops in the use of TED's hosted by the U.S. NMFS.

Once operational, the **South East Atlantic Fisheries Organisation (SEAFO)** has the objective of promoting the long-term conservation and sustainable use of the high-seas fishery resources in the region, especially species which straddle national boundaries. One of its responsibilities will be to assess and account for the impact of fishing operations on ecologically related species such as seabirds, marine mammals and marine turtles. The SEAFO will implement a range of compliance and inspection strategies: 1) an international boarding inspector scheme, 2) a port inspection scheme 3) a scheme of scientific observation, to be implemented by each participating party, and 4) a satellite surveillance system.

The **Secretariat of the Pacific Community (SPC)** acts as the main regional technical and development organisation in the South Pacific Ocean. The Oceanic Fisheries Programme (OFP) has commissioned and helped develop a series of [documents outlining the issue of bycatch](#) in various fisheries in the region, including the [pelagic longline fishery for tuna](#). The SPC Regional Data Collection Committee develops logsheets for use in domestic tuna fishery observer programs.

The **Sub-Regional Commission on Fisheries (SRCF)** provides a framework for the harmonization of the long-term policies of its members (Western African States, including Cape-Verde) in the preservation, conservation and exploitation of the fisheries resources, and is generally mandated to strengthen cooperation in fisheries matters on a subregional basis. We were unable to find any references to specific actions taken related to bycatch.

Southwest Indian Ocean Fisheries Commission (SWIOFC). This organisation is not yet formally completed, and we could find no information on its objectives, bycatch related or otherwise.

The **Western Central Atlantic Fishery Commission (WECAFC)** is an advisory body, the main objectives of which are to facilitate the coordination of research and to encourage education and training; to assist its members in establishing rational policies to promote the rational management of resources that are of interest for two or more countries. We were unable to find any references to specific actions taken related to bycatch.

Western Indian Ocean Tuna Organization (WIOTO). The Western Indian Ocean Tuna Organization was created primarily in response to the perception of the small island states in the southwest Indian Ocean that the existing FAO regional initiatives (such as the Indian Ocean Fisheries Commission) were European-dominated and because of concerns surrounding the use of large-scale pelagic driftnets to fish for tuna in the region. The Organization is not currently operative, however, probably because of financial constraints, although a Ministerial Meeting of WIOTO was held in August 1994.

United Nations Environment Programme

UNEP has provided the Secretariat for the [UNEP/FAO Global Action Plan for the conservation and rational utilization of marine mammals](#) or Marine Mammal Action Plan, though there have been no recent meetings of the Planning and Co-ordinating Committee of the Plan. The Plan recognises bycatch as major threat to some marine mammals, but there has been little done to address this issue at a global level. Nevertheless, funds available under the plan have been directed towards projects in the past that have been effective in addressing some aspects of cetacean bycatch, including training workshops.

UNEP is involved in the UNEP/GEF project entitled "Reduction of Environmental Impact from Tropical Shrimp Trawling through the introduction of by-catch reduction technologies and change of management".

UNEP Regional Seas Programme

The UNEP Regional Seas Programme was initiated in 1974. The regional approach to the management of marine and coastal resources was endorsed by the UN General Assembly and the Governing Council of UNEP in view of the difficulties that exist with global instruments that are unable to address region-specific environmental issues. The scope and tasks undertaken through regional seas programmes are limited however by the desires of the Governments of participating states and implementation depends on their commitments.

There are currently 13 regional sea actions plans or conventions in place involving more than 140 nations, with three more being developed, and four additional regional agreements that do not come under the UNEP Regional Seas Programme, but which are nevertheless regional frameworks for marine conservation.

Under the UNEP regional seas programme, Action Plans are usually developed as a first step in the development of a regional programme. Action Plans usually include an assessment of regional capabilities and main factors influencing marine environmental quality, while a firm legal commitment on co-operation is provided through adoption of a Convention. Under such Conventions, various protocols may then be drawn up to address issues of special concern.

A full account of the current status of the various Action Plans, Conventions and Protocols can be found at <http://www.unep.ch/seas/main/hstatus.html>. Each of the regional seas areas is addressed briefly below, and their activities with regard to seabird, turtle and cetacean bycatch are described.

The Mediterranean Action Plan was adopted in 1975, and this led to the **Barcelona Convention** (the Convention for the Protection of the Marine Environment and the

Coastal Region of the Mediterranean). The Barcelona Convention led first to the Protocol concerning Specially Protected Areas (Geneva, 1982). Then in 1995, a new protocol, was adopted and opened for signature (Barcelona, June 1995): the Protocol Concerning

Specially Protected Areas and Biological Diversity in the Mediterranean. In December 1999, the new Protocol entered into force and replaced the Geneva Protocol. A Regional Activity Centre for Specially Protected Areas (RAC/SPA) was established by the contracting Parties to the Barcelona convention and its protocols in 1985, and is situated in Tunisia. RAC/SPA aims to assist Mediterranean countries with the implementation of the new Protocol concerning specially protected areas in the Mediterranean.

Under the Action Plan for the Conservation of Cetaceans in the Mediterranean Sea adopted in 1991, contracting parties are required to ban large-scale driftnets and to develop means of minimising cetacean bycatch. It is not clear how these objectives have been addressed in the intervening time period, though large-scale driftnetting for tunas was outlawed in EU member states in 1992. RAC/SPA has been involved in a project to minimise dolphin/fishery interactions in Tunisia through public awareness and training of fishermen. RAC/SPA has also concluded a memorandum of understanding with FAO to produce technical documents and guidelines aimed at addressing the impact of fishing activities on biological diversity in the Mediterranean. A series of documents is being prepared by FAO in collaboration with RAC/SPA as follows:

- Analysis of major threats of fishing gear and practices to biodiversity and marine habits.
- Fishing technologies affecting biodiversity and habitats.
- Legal analysis of the measures provided for by Mediterranean national regulations to minimise the impact of fishing activities on marine ecosystems and threatened and/or non-target species.
- Guidelines for the elaboration of national action plans for the control of fishing practices and gear harmful to threatened species and habitats and for the reduction of ecosystem alteration resulting from fishing pressure.
- Draft regional strategy to reduce the impact of fishing activities on sensitive habitat and species.

An Action Plan for the Conservation of Mediterranean Marine Turtles was also adopted within the framework of the Mediterranean Action Plan in 1999. The plan aims to assess fishery interactions and to minimise incidental catches. RAC/SPA has published an account of such interactions in the Mediterranean. (Gerosa, G. and Casale, P. 1999. Interaction of marine turtles with fisheries in the Mediterranean. UNEP (RAC/SPA), ISBN 9973-9926-6-0: 59pp) and a practical manual on the handling of marine turtles incidentally caught in fishing gears.

The Jeddah Convention and the Red Sea and Gulf of Aden Action Plan. PERSGA is the official regional organization based in Jeddah, Saudi Arabia, responsible for the development and implementation of regional programmes for the protection and conservation of the marine environment of the Red Sea and Gulf of Aden. It was formally established in September 1996, with the signing of the Cairo Declaration by all

cooperating parties to the Jeddah Convention. In 1998 PERSGA, with support from the countries in the region, the Global Environment Facility (GEF) and selected international development institutions and donor organisations, prepared a major new environmental initiative – the [Strategic Action Programme for the Red Sea and Gulf of Aden \(SAP\)](#). So far there do not appear to have been actions with respect to bycatch either planned or implemented, though it may be worth noting that under the plan of action, certain gillnet fisheries for lobsters in the Red Sea were replaced with trap fisheries.

The Kuwait Convention. The Regional Organization for the Protection of Marine Environment (ROPME) is the body responsible for implementing the Plan of Action for the Kuwait region and is the Secretariat for the Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution. Covering the waters of eight states in the region, the Kuwait Convention was one of the first Regional Seas Agreements, adopted in 1978. The associated Action Plan mainly covers programme activities relating to oil pollution, industrial wastes, sewage and marine resources. Projects range over coastal area management, fisheries, public health, land-based activities, sea-based pollution, biodiversity, oceanography, marine emergencies, GIS and remote sensing. Four protocols have been adopted, addressing marine emergencies, hazardous wastes, land-based activities and sea-based pollution. We could find no information suggesting that bycatch is actively being addressed under the current Plan of Action.

The **East Asian Seas Action Plan** area has no Convention; it was approved in 1981, and currently involves ten countries in the region. The Plan addresses concerns regarding the effects of human activities on the marine environment, control of coastal pollution, protection of mangroves, seagrasses and coral reefs, and waste management. The Action Plan was recently revised to include monitoring and environmental assessment, technology transfer, and environmental governance. The Action Plan is steered from Bangkok by its coordinating body, COBSEA, for which the Regional Coordinating Unit (RCU) acts as secretariat. Most of the activities under this Action Plan appear to be related to mangroves, coral reefs and pollution. A workshop on the biology and conservation of small cetaceans, however, was organised by UNEP in this region in 1995, in the Philippines. The report of this meeting was published by the UNEP Regional Seas Programme as one of the RCU/East Asian Seas Technical Reports. (Report of the Workshop on the Biology and Conservation of Small Cetaceans and Dugongs of Southeast Asia. UNEP(W)/EAS WG.1/2. Bangkok, 1996. 101 p.). No other work on cetaceans, birds or turtles is currently envisaged under the Plan.

The Caribbean Action Plan was adopted in 1981, and its legal framework was adopted as the **Cartagena Convention** (Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region) in 1983. The Caribbean Environment Programme (CAR/RCU) was established in 1986 as the Secretariat for the Plan and for the Convention. In 1990 the Specially Protected Areas and Wildlife (SPAW) Protocol was adopted and this entered into force in 2000. It is internationally recognised

as the most comprehensive treaty of its kind. In association with SPAW, the Wider Caribbean Sea Turtle Conservation Network (WIDECAST) was founded in Santo Domingo, Dominican Republic, in 1981 to prepare a "Wider Caribbean Sea Turtle Recovery Action Plan ... consistent with the Action Plan for the [UNEP] Caribbean Environment Programme". Twelve national sea turtle recovery plans have been developed with the assistance of WIDECAST and conservation activities at the national and regional level have been supported by CAR/RCU in support of those plans. Most of the plans call for implementation of Turtle Excluding Devices (TEDs) in trawl fisheries and monitoring of other forms of by-catch where necessary. The CEP has in the past supported work on research of TEDs with seed funding in the Gulf of Mexico. Less attention has been paid to birds, but there are plans for a marine mammal plan to be developed under SPAW. There do not appear to be any specific by-catch activities being co-ordinated at the regional level by the CAR/RCU.

The **South East Pacific Action Plan and the Lima Convention** is provided with a secretariat by the permanent Commission for the South Pacific (CPPS) through its Regional Coordination Unit (RCU). The region was the first of the Regional Seas areas to develop a Plan of Action for Marine Mammals. The Plan of Action for the conservation of Marine Mammals of the Southeast Pacific (PAMM/PSE) was adopted in 1991 by the governments of Colombia, Chile, Ecuador, Panama and Peru with the aim of stimulating and strengthening cooperation between the member nations in order to improve their marine mammal conservation policies. Cetacean bycatch has been identified as a major concern issue in the region and several workshops and meetings have addressed it.

The CPPS/RCU are also currently developing a Regional Program for Research and Conservation of Marine Turtles in the Southeast Pacific, which will include national workshops, diagnostic workshops and a regional workshop. Bycatch is also a major concern for turtles in this region. No efforts have been made so far to quantify marine bird mortality in fishing gear in the Southeast Pacific.

The **West and Central African Action Plan and the Abidjan Convention** were adopted in 1981 and the Convention came into force in 1984. The Plan is administered by the Regional Coordination Unit for the West and Central Africa Action Plan (WACAF/RCU). Projects on contingency planning, pollution, coastal erosion, environmental impact assessment, environmental legislation and marine mammals were initiated. Progress has until recently been slow due to the political problems in the area.

The **South Pacific Action Plan** is co-ordinated by the South Pacific Regional Environment Programme, which was established in 1978. SPREP has developed a marine turtle conservation strategy, a marine mammal conservation strategy and an avifauna strategy. A Regional Marine Turtle Conservation Programme is also operated by SPREP. The project provides support to Pacific Island countries to effectively conserve their marine turtles. SPREP has also commissioned work to analyse observer records held by the SPC Oceanic Fisheries Programme to examine the nature and extent of turtle bycatch in the region. Furthermore, a regional workshop to address bycatch

issues is planned for November 2002.

The Action Plan for Eastern Africa and the Nairobi Convention were adopted in 1985 and the Convention entered into force in 1996. The Convention and Action Plan are served by Regional Coordinating Unit of the Eastern African Region (EAF/RCU) based in the Seychelles. There is no direct involvement in work on bycatch by UNEP's Regional Seas Programme in this area.

The **Bucharest Convention** was signed in 1993 and the **Black Sea Action Plan** was adopted in 1996. The Plan is served by the Black Sea Environment Programme (BSEP) in Istanbul. Funding has been obtained from UNDP-GEF to finance the Black Sea Ecosystem Recovery Project. This programme will aim, among other things, to provide technical support to the currently ongoing negotiations for a new fisheries convention for the Black Sea. Part of this will entail convening a workshop on the local implementation of FAO's code of conduct on responsible fishing. No specific actions on bycatch are yet planned.

The Action Plan for the Northwest Pacific (NOWPAP) was adopted by the six countries of the region in 1996, but has yet to establish a regional co-ordination unit. The activities under this Plan have so far been focussed on pollution related topics.

South Asian Seas Action Plan was adopted in March 1995 by the region's five countries. The South Asia Cooperative Environment Programme (SACEP) serves as the Action Plan secretariat. There are no bycatch activities currently underway.

The Upper South-West Atlantic Action Plan has been in preparation since 1980 but no secretariat has yet been established.

Other Regional Conventions

The **Antarctic Treaty** was initially signed by 12 nations in 1959, but has since grown to include 45 nations. The Antarctic Treaty system includes CCAMLR, which is responsible for living marine resources, and this body, described above, has also taken responsibility for fishery bycatch issues.

Conservation of Arctic Flora and Fauna (CAFF) is a Working Group of the [Arctic Council](#). Its mission is to conserve Arctic biodiversity and to ensure that the use of Arctic living resources is sustainable. The CAFF Working Group (WG) consists of National Representatives, assigned by each of the eight Arctic Council Member States. The full CAFF WG meets biennially to assess progress of work, discuss program priorities, develop a Work Plan and elect a new Chair and Vice-chair. When appropriate, CAFF organises its work through the establishment of expert sub-groups. CAFF has hosted a number of workshops to address issues of concern to the member states, including in 2000 a workshop to address seabird bycatch. The [report of the workshop](#) includes a list of

recommendations for work to be addressed by member states. Bycatch of marine mammals has not been addressed.

The **Convention for the Protection of the Marine Environment of the Baltic Sea Environment**, or **Helsinki Commission (HELCOM)** was adopted with the objective of reducing the principal sources of marine pollution, namely land-based pollution, waste dumping at sea and pollution through shipping, as well as seeking to improve scientific control of pollution in the Baltic Sea. The activities of the Commission are not directly connected with living resources management, although the 1992 Convention introduced some additional elements in relation to nature conservation and the protection of biological diversity. HELCOM has, however, adopted one recommendation on living resources, following particular concerns over the effects of organochlorine substances, including PCBs, on ringed seals, harbour seals and grey seals in the Baltic Sea. HELCOM has also submitted a report to ASCOBANS regarding the bycatch of small cetaceans in the Baltic Sea.

The **Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR)** entered into force on 25 March 1998. Although the main objective of the Convention is to provide for the protection of the marine environment against anthropogenic pollution, Annex IV aims specifically at assessing the quality of the marine environment. As part of the 1998-2003 Action Plan, OSPAR adopted a Coordinated Environmental Monitoring Programme (CEMP) that encompasses monitoring activities within the Joint Assessment and Monitoring Programme (JAMP). Five regional [Quality Status Reports \(QSR's\)](#) were published in 2000, and included incidental mortality of marine mammals and turtles owing to fishing activities as one of the important parameters to be monitored under this scheme.

Other UN Bodies

The Convention on Biological Diversity (CBD) was one of the key agreements adopted at the Earth Summit in Rio de Janeiro in 1992. The CBD establishes three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources. The Convention identifies a common problem, sets overall goals and policies and general obligations, and organizes technical and financial cooperation. However, the responsibility for achieving its goals rests largely with the countries themselves.

In view of their common concern for the conservation and sustainable use of marine and coastal biodiversity, the Parties to the Convention on Biological Diversity agreed on a program of action for implementing the Convention. The programme, called "Jakarta Mandate on Marine and Coastal Biological Diversity" was adopted in 1995. Through its programme of work, adopted in 1998, the Convention focuses on integrated marine and coastal area management, the sustainable use of living resources, protected areas, mariculture and alien species.

The COP Decision V/3-13 suggests that the Subsidiary Body on Scientific, Technical and Technological Advice consider several issues and prioritise them as appropriate. These included the use of unsustainable fishing practices, including the effects on marine and coastal biological diversity of the discard of by-catch. However, we could find no evidence in their reports that the issue of bycatch has been considered by the SBSTTA.

The **Global Environment Facility (GEF)** was established in 1991 by the UN Development Program (UNDP) to help developing countries fund sustainable development projects that also protect the global environment. GEF's implementing bodies are UNDP, UNEP or the World Bank. Most GEF projects are large scale and address many issues, so that identifying specific bycatch actions is not easy. GEF has funded at least one project developing and promoting gear technology to reduce bycatch in tropical shrimp fisheries. A program on the conservation and management of marine turtles in the Gulf and Sea of Oman is also currently being considered for support.

The **UN Educational, Scientific & Cultural Organisation (UNESCO)** acts as an umbrella organisation for various programs for monitoring and managing marine ecosystems. The Intergovernmental Oceanographic Commission (IOC) was established in 1960 to promote and facilitate international oceanographic research, training and education programs, and to ensure that ocean data collected are efficiently handled and made widely available. To this end, the IOC promoted and supported the establishment of the **Global Ocean Observation System (GOOS)**, a permanent global system for observations, modelling and analysis of marine and ocean variables to support operational ocean services worldwide. The Living Marine Resources Panel (LMR) of GOOS is responsible for the biological component of such an observation system, and has identified bycatch as one important variable for the monitoring and assessment of the status of marine ecosystems.

Other Inter-governmental Bodies and Conventions

The **Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS)** was signed at Monaco in November 1996, and entered into force in 2001. Among other things, the Agreement requires signatory states to protect dolphins, porpoises and other whales, and to minimise incidental capture in fishing gear. ACCOBAMS is in the process of establishing a scientific committee, and several informal meetings have been held with CIESM to address this. The first meeting of parties was held in Monaco in early 2002, and a set of conservation strategies and priority [actions](#) was agreed, several of which include references to research on bycatch. Links are also being established with UNEP Regional Seas offices in Tunis (RAC/SPA) and Istanbul (Black Sea Commission Secretariat). A joint meeting was held with RAC/SPA in September 2001 to address the existing MAP Action Plan for the Conservations of Cetaceans in the Mediterranean Sea; the meeting focused on drafting national conservation plans. It is likely that ACCOBAMS will play a significant role in future with respect to cetacean bycatch in the Agreement area.

The Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas ([ASCOBANS](#)) was concluded in 1991 and entered into force in 1994. The secretariat is provided by UNEP/CMS at Bonn. The Agreement has stimulated research into and monitoring of cetacean bycatch in the Agreement Area. Several countries have developed bycatch reduction plans both as a result of ASCOBANS and EU legislation on conservation. A joint ASCOBANS working group was established with the IWC to determine safe levels of bycatch, and the MoP has agreed bycatch target levels, that are now widely incorporated into national plans of action. At the 9th Meeting of the Advisory Committee in 2002, the ASCOBANS Recovery Plan for Baltic Harbour Porpoise was completed. The plan, which is also known as the Jastarnia Plan after the Polish town where it was initially drafted by a workshop in January 2002, will be submitted to Parties for adoption at the 4th Meeting of the Parties in Esbjerg, Denmark, in August 2003. The objectives of the plan are to reduce bycatch to less than 2 porpoises per year through the use of pingers to minimise bycatch and fishery area closures. The Plan will not be binding, but relies on signatory states to implement national plans.

The **Convention on International Trade in Endangered Species of Wild Fauna and Flora** ([CITES](#)). CITES was drafted as a result of a resolution adopted in 1963 at a meeting of members of IUCN (The World Conservation Union). The [text of the Convention](#) was finally agreed at a meeting of representatives of 80 countries in Washington DC, United States of America, on 3 March 1973, and on 1 July 1975 CITES entered in force. The work of the Scientific Committee of CITES has included evaluation of the status of certain marine mammal species and CITES has participated as partner in the work of the Marine Mammal Action Plan. CITES also has a species programme on hawksbill turtles (*Eretmochelys imbricata*) which is subject to considerable bycatch in the Caribbean region. CITES aims to facilitate discussion between countries in the wider Caribbean region on issues relating to the conservation of the species in this region. At the 11th meeting of the Conference of the Parties, Cuba put forward a proposal to transfer from CITES Appendix I to Appendix II certain parts of the Caribbean population of hawksbill turtles inhabiting Cuban waters. This proposal was rejected, but it was suggested that a regional wide Caribbean meeting be held to strengthen regional cooperation on the Hawksbill Turtle issue.

The Convention on the Conservation of Migratory Species of Wild Animals ([CMS](#) or the Bonn Convention) aims to conserve terrestrial, marine and avian migratory species throughout their range. It is one of a small number of intergovernmental treaties concerned with the conservation of wildlife and wildlife habitats on a global scale. Since the Convention's entry into force on 1 November 1983, its membership has grown steadily to include 80 (as of 1 September 2002) Parties. The secretariat comes under the auspices of the United Nations Environment Programme (UNEP) and provides administrative support to the Convention. The decision-making organ of the Convention is the [Conference of the Parties \(COP\)](#). A [Standing Committee](#) provides policy and administrative guidance between the regular meetings of the COP. A [Scientific Council](#), consisting of experts appointed by individual Member States and by the COP, gives advice on technical and scientific matters. At its Sixth CoP, UNEP adopted Resolution

6.2 on Bycatch, which requests Member States to strengthen measures to protect cetaceans, birds and turtles from bycatch.

Several relevant agreements have been signed under the auspices of the CMS, including the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS – see below), the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS-see below), and the [Agreement on the Conservation of Albatrosses and Petrels \(ACAP\)](#), which was opened for signature on June 19, 2001. As of September 2002, the ACAP agreement on the conservation of albatrosses and petrels has been signed by eight parties, and ratified by two parties (Australia and New Zealand). The ACAP addresses a range of conservation issues for Albatrosses and Petrels, but also explicitly calls for implementation of the FAO's IPOA-Seabirds.

CMS has also drawn up a Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and Southeast Asia. CMS convened a conference on the conservation and management of turtles in the Indian Ocean and Southeast Asia in 2001 and a conservation and management plan was also drawn up there to underpin the MoU. The plan includes specific recommendations to develop and use bycatch mitigation methods.

CMS was responsible for drawing up a Memorandum of Understanding on Conservation Measures for Marine Turtles of the Atlantic Coast of Africa in 1999. In May 2002, experts from countries along the Atlantic coast of Africa agreed on a Conservation Plan for marine turtles linked to this MoU, which again addresses bycatch as an important issue for turtle conservation. This was endorsed by the First Meeting of Signatory States to the Memorandum of Understanding concerning Conservation Measures for Marine Turtles of the Atlantic Coast of Africa with the signing of the Nairobi Declaration.

UNEP/CMS has also funded a survey of the conservation status of cetaceans along parts of the West African coast, which included information on bycatch (Van Waerebeek K, Ndiaye E, Djiba A, Diallo M, Murphy P, Jallow A, Camara A, Ndiaye P, Tous P, 2000. A survey of the conservation status of cetaceans in Senegal, the Gambia and Guinea-Bissau. UNEP / CMS Secretariat, Bonn, Germany. 80 pp).

The **European Union** is a political entity grouping most of the nations of Western Europe, which is governed by a Council of Ministers drawn from each country, and serviced by the European Commission, which is effectively the Secretariat of the Council of Ministers. Under the Treaty on European Union, all international fishery management decisions are taken by the Union. Fisheries are therefore jointly managed by the Council of Ministers under the Common Fisheries Policy, but the Commission can take many decisions without involvement of the Council of Ministers. The Commission also funds research projects and monitoring schemes. The EC has been responsible for most of the work on bycatch in Europe over the past decade, having funded at least 40 projects addressing the issues of cetacean, turtle or bird bycatch, and also funded numerous discard and bycatch monitoring schemes. Several of these projects have aimed to reduce (or eliminate) bycatch of certain species in specific fisheries. Until recently, however, the

EC had made little attempt to capitalize on the wealth of research that it had funded. Under new proposals for the revision of the CFP, however, the EC is looking for ways to introduce management measures that will reduce bycatch in certain key fisheries, while at the same time is proposing to make bycatch observation schemes mandatory under the CFP. Bycatch observations schemes have in fact already been made mandatory for EU member states under the EU's Habitats Directive, legislation derived from the Commission's Environment Directorate, which calls for monitoring of bycatch and conservation of cetacean species. So far, however, most member states have failed to meet this statutory environmental obligation, and it remains to be seen what effect the inclusion of such a requirement in fisheries legislation will have.

The **General Agreement on Tariffs and Trade ([GATT](#))** covers international trade in goods. The workings of the GATT agreement are the responsibility of the Council for Trade in Goods (Goods Council), which is made up of representatives from all World Trade Organisation (WTO) member countries. Issues relating to sustainable development, trade and the environment have been discussed in the GATT and in the WTO for many years. Since 1995, the Committee on Trade and Environment (CTE) has conducted such work. In recent years, several governments, including the US, have come under increasing pressure from non-governmental organizations (NGOs) to review the environmental implications of trade agreements, some of which have been highly significant in terms of bycatch mitigation

For example, the [Dolphin-Tuna Case](#) highlights the potentially pivotal role GATT can play with respect to environmental policies of individual nations. In 1991, Mexico complained under the GATT dispute settlement procedure about a trade embargo placed against it by the US under the Marine Mammal Protection Act (MMPA) due to incidental capture and drowning of dolphins in the Mexican purse seine fishery for yellowfin tuna. The ruling went against the US on the basis that if their arguments were accepted, any country could ban imports of a product from another country merely because the exporting country has different environmental, health and social policies from its own. The dispute was eventually settled "out-of-court", but the US was again challenged over its trade embargoes by the [EC in 1994](#). Although both challenges resulted in decisions against the United States, neither Mexico nor the EC, for different reasons, pursued the matter further within the GATT Council. These cases led eventually to the [Agreement on the International Dolphin Conservation Program](#) (See IATTC, above).

In a [similar case](#) relating to bycatch, complaints were brought against the US by India, Malaysia, Pakistan and Thailand on embargoes on certain shrimp and shrimp products originating from countries that had not imposed on their fishermen the use of Turtle Exclusion Devices (TED's). Again, the US lost the case, on the grounds that their embargoes posed an arbitrary and unjustifiable discrimination between Members of the WTO. While the US provided countries in the western hemisphere — mainly in the Caribbean — technical and financial assistance and longer transition periods for their fishermen to start using TED's, it did not afford the same advantages to the four Asian countries. However, in June 2001, the dispute settlement panel agreed with the United States that it had remedied any unfair discrimination identified in the initial case.

The Inter-American Convention for the Protection and Conservation of Sea Turtles ([IAC](#)) is the only international treaty dedicated exclusively to the conservation of sea turtles and their habitats. After being on the verge of fading away without significant signatures before the December 31 1998 deadline, intensive campaigns by marine turtle advocates ensured further signatures and thereby the survival of the agreement. The treaty has been signed by 12 states of which nine has taken the legally binding step of ratification, and the treaty has now been in force since February 2001. However, the first meeting has yet to take place, and there is currently no established secretariat to administer the convention.

The **International Maritime Organisation** ([IMO](#)) established the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), which is the most important convention regulating and preventing marine pollution by ships. It covers accidental and operational oil pollution as well as pollution by chemicals, goods in packaged form, sewage, garbage and air pollution. We could not find any references specifically related to bycatch issues. The only mention of bycatch was found in a document prepared by the IMO for the GESAMP (Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection) for their 26th session in 1996. However, no reference is made to any suggestions for mitigation measures or fishery regulations.

The **International Whaling Commission** ([IWC](#)) was set up under the International Convention for the Regulation of Whaling which was signed in Washington DC on 2 December 1946. The IWC is recognised under the Law of the Sea as having management competence with respect to the harvesting of large whales. There is disagreement among member states as to whether or not small cetaceans also fall within its remit. The IWC has passed several resolutions over the years addressing bycatch, especially of small cetaceans. The Scientific Committee of the IWC, and in particular its standing sub-committee on small cetaceans, represents an important global focal point for the presentation and discussion of research into cetacean bycatch, and the expertise of the committee in this area is widely recognised. In recent years the Scientific Committee has also directed its attention to incidental catches of minke whales. The IWC has also established a joint working group with ASCOBANS to develop management strategies for addressing the bycatch of porpoises in the ASCOBANS area. The IWC maintains and publishes statistics on annual reported bycatches of cetaceans submitted by all member states.

The **North Atlantic Marine Mammal Commission** ([NAMMCO](#)) is an international body for cooperation on the conservation, management and study of marine mammals in the North Atlantic. [The NAMMCO Agreement](#), which was signed in Nuuk, Greenland on 9 April 1992 by Norway, Iceland, Greenland and the Faroe Islands, focuses on modern approaches to the study of the marine ecosystem as a whole, and to understanding better the role of marine mammals in this system. NAMMCO has convened a number of conferences, workshops and meetings of its Scientific Committee and its Working Groups, many of which have addressed interactions between fisheries and marine mammals, and some of these have addressed bycatch of marine mammals. In 2000 the

Management Committee of NAMMCO established a Working Group on Bycatch, and this Group has met twice since then, in 2000 and in 2002. Their reports are contained in the NAMMCO Annual Reports for 2000 and 2001. NAMMCO has set up a reporting system for bycatch through the Annual Progress Reports that each member country submits. At present the reporting is limited but further developments are planned. NAMMCO member countries are currently setting up national reporting schemes, which will consist mainly of logbook reporting systems with some limited observer coverage.

The [RAMSAR Convention on Wetlands](#) is an intergovernmental treaty provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. One reference to bycatch could be found to a project coordinated by the Hellenic Ornithological Society, with the aim of conserving and increasing the populations of the globally threatened white-headed duck (*Oxyura leucocephala*) and Pygmy Cormorant (*Phalacrocorax pygmeus*) in Greece, Romania, Bulgaria, and Turkey.

Other internationally active bodies

The U.S. National Marine Fisheries Service ([NMFS](#)) is the national fishery body of the United States. It has developed a strategic plan consisting of three specific goals: 1) to rebuild and maintain sustainable fisheries, 2) to promote the recovery of protected species, and 3) to protect and maintain the health of coastal and marine habitats. The NMFS International Fisheries Division is also involved in the conservation and management of transboundary living marine resources through participation in negotiations of international agreements and provides and coordinates support for the U.S. commissioners on international commissions for living marine resources. NMFS commissioners were involved in the formulation of IPOA-Seabirds, and the US has since adopted a NPOA-Seabirds based on the recommendations set out in the IPOA. NMFS had a leading role in the development and successful implementation of Turtle Exclusion Devices (TED's), and their use has been included in the regulations of fisheries in turtle-rich waters. The NMFS also organises international symposia and workshops on the implementation of mitigation measures related to bycatch of seabirds and turtles (e.g. the use of TED's). In August 2001, a final report from a collaborative study between NMFS, the Washington Sea Grant Program (WSGP) was made available. The report, [Solutions to Seabird Bycatch in Alaska's Demersal Longline Fisheries](#), presents results from a two-year scientific study that tested the efficacy of various seabird avoidance measures currently used in the demersal longline fisheries for groundfish and halibut in waters off Alaska. The results from this study were incorporated in a Draft Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) for a Regulatory Amendment to Revise Regulations for Seabird Avoidance Measures in the Hook-and-line Fisheries off Alaska To Reduce the Incidental Catch of the Short-tailed Albatross And Other Seabird Species, which was made available by NMFS around the same time. This draft, aimed at strengthening the seabird avoidance measures throughout the fleet, was prompted not only by the aforementioned

study, but also by the incidental capture of two short-tailed albatrosses in September 1998 along with the perception of the industry itself that certain portions of the fleet were not using seabird avoidance measures to the level that is required to effectively reduce bycatch.

BirdLife International is a global network of non-governmental organisations concerned with the conservation of birds worldwide. Although BirdLife International has been involved in the protection of seabirds for many years, its Save the Albatross Campaign was formally launched in 2000 with the aim of reducing the number of seabird deaths in longline fisheries to a sustainable level by ensuring that relevant international agreements are implemented. In 1998, BirdLife International prepared a technical report for UN-FAO on worldwide interactions between seabirds and longline fisheries worldwide to provide a basis for the establishment of IPOA-Seabirds. In 1999-2001 it helped shape the International Agreement on the Conservation of Albatrosses and Petrels (ACAP) under the Bonn Convention. BirdLife has funded or run several projects around the world addressing seabird bycatch.

The **Species Survival Commission (SSC) of the International Union for Conservation of Nature and Natural Resources (IUCN)** is a knowledge network of some 7000 volunteer specialists who provide a range of services to IUCN and the broader conservation community. The SSC secretariat is based in Gland, in Switzerland, and it maintains and publishes the Red List of Threatened Species, on the advice received from SSC members. The SSC has also established over 110 specialist groups on certain species or groups of species. The Specialist Groups provide technical advice to Governments and to conservation organisations, implement conservation projects, raise funds for research, convene workshops and some may also publish Action Plans, detailing priority conservation actions required for the species or groups for which they are responsible. The Cetacean Specialist Group has published two [Action Plans](#), and a third is currently awaiting publication. Issues relating to bycatch feature heavily in the Action Plans. These range from calls for further research to calls for specific bycatch reduction strategies to be put in place. The Marine Turtle Specialist Group and IUCN maintain and publish the [Marine Turtle Newsletter](#) as a web-based information bulletin to provide a forum for exchange of information about all aspects of marine turtle biology and conservation, and to alert the public to particular threats to marine turtles as they arise. Articles on bycatch of marine turtles and the use of mitigation procedures are common features. No Action Plans similar to that developed for cetaceans exist for marine turtles or seabirds. The IUCN itself has passed at least three Resolutions or Recommendations calling for action on bycatch since 1996 (Resolution 1.16 on Fisheries Bycatch, WCC, Montreal 1996; Recommendation 19.61 Bycatch of Non-target Species, IUCN Gen Assembly, Buenos Aires, 1994; Resolution 2.65 Incidental Capture of marine Turtles by Pelagic Longline Fisheries, WCC, Amman, 2000).

The **International Ocean Institute (IOI)** was created to promote education, capacity-building, and research as a means to enhance the peaceful and sustainable use and management of ocean and coastal spaces and their resources. It has prepared working papers for the 3rd United Nations Conference on the Law of the Sea (UNCLOS III: 1973-

1981), the Preparatory Commission for the International Seabed Authority, and for the International tribunal for the Law of the Sea (1982-1994). It has provided consultants to UNEP, the World Bank, the United Nations Industrial Development Organisation (UNIDO) and the Asian-African Legal Consultative Committee (AALCC). We could find no specific references to bycatch issues.

The **World Wide Fund for Nature** ([WWF](#)) has a global presence and it funds and runs numerous conservation projects throughout the world. On the issue of bycatch, WWF has a number of initiatives. WWF supports long-term monitoring of northern right whales in the Bay of Fundy, and its research there is helping to refine bycatch reductions strategies for the conservation these endangered whales. WWF has also funded work with fishermen to test new gear types to reduce bycatch. WWF is funding research into harbour porpoises in the Baltic, which are threatened with extinction largely through bycatch. WWF is also active in supporting conservation efforts, including changes in fishery practice, to eliminate bycatch of the highly endangered vaquita in the Gulf of California. WWF has published a recovery plan to complement work undertaken by ASCOBANS for the harbour porpoise in order to prevent further population erosion in the North Sea as a result of bycatch. In the Philippines WWF is conducting an in-depth national cetacean bycatch assessment and is helping to implement a long-term bycatch monitoring programme. There are also detailed research programmes with respect to bycatch underway on Irrawaddy dolphins, Hector's dolphins and Heaviside's dolphins. WWF also funds work on turtle conservation, and on sea birds with respect to bycatch in the Baltic. WWF convened an international workshop on cetacean bycatch in Annapolis, USA in January 2002, and as a result has drafted an International Call to Action on cetacean bycatch. It is intending to have this taken up by FAO at the next CoFi meeting. A website – a virtual [resource centre](#) has also been established by WWF.

Conclusions

It is unlikely that the above summary of activities relating to bycatch is complete, but the overview that it provides enables some conclusions to be drawn. Table 1 summarises some of the information that we have attempted to draw together in the preceding text. We attempt to identify those agencies that have been responsible for most progress in addressing bycatch issues.

Whereas many of the organisations surveyed have expressed some interest or concern about the subject, there are relatively few who have taken practical steps to address the problem. Of those organisations that have taken an interest in this issue, most have confined themselves to information collation and holding conferences. Few have actively researched the issue, established monitoring programmes, developed solutions or implemented management measures.

Fishery management bodies, such as IATTC, SBTC, CCAMLR, NMFS and the EU, have taken most of the practical steps, which is unsurprising, while FAO's IPOA-Seabirds has

also met with some success. Of less obvious effect have been the numerous action plans and agreements that have been drawn up to address the issue. This is not to suggest that all such activities serve no purpose, as it is probable that many of the actions taken by fishery bodies would not have been taken if there were not some pressure from other bodies. Such pressure builds up from the numerous conferences and workshops and action plans that are prepared by organisations without managerial responsibilities, as well as from non-governmental special interest groups actively addressing the issues.

It is also clear is that the *majority* of the fishery bodies reviewed above appear to have done very little if anything to address the issue. For some of them this is due to the fact that they merely represent a forum for discussion and scientific analysis. For others, notably those with management responsibilities, the lack of action is less easy to understand.

It is also clear that many of the Regional Seas bodies have done very little to address these issues, though there are at least three major exceptions to this.

It is worth noting that even apparently unconnected bodies like GATT can have a major influence on bycatch issues, and it seems likely that as eco-labelling becomes more prevalent, at least in Europe and North America, trade-driven decision will become more common.

There is no clear list of organisations that can do more as opposed to those that cannot, as it is probable that most organisations in Table 1 could do more to address the question of bycatch. It is clear that all but a few fishery bodies could be expected to do more on this issue, and all but a few regional seas bodies could also do more to influence and integrate with those fishery bodies. The Black Sea Environment Programme, who explicitly try to advise participants of ongoing discussions on the formulation of a new fisheries body for the Black Sea, provides a good example of how such integration might be achieved.

The FAO's IPOA on Seabirds has been successful in getting some countries to adopt National Plans of Action, but there remains the question as to why there are not similar plans for cetaceans and turtles. Perhaps the WWF-led International Call to Action on cetacean bycatch, which was based on the seabird Plan of Action, could be used to promote such an idea within CoFi.

The fledgling organisation the Inter-American Convention for the Protection and Conservation of Sea Turtles might also prove to be a useful vehicle for ensuring more is done to minimise turtle bycatch in the Caribbean.

Finally, one cannot escape noticing that the Convention on Biological Diversity appears to have ignored this issue; this is something that UNEP could and should be prevailed upon to force up the agenda of the Subsidiary Body on Scientific, Technical and Technological Advice.

TABLE 1: SUMMARY OF INTERNATIONAL ORGANISATIONS ROLES IN BYCATCH ASSESSMENT AND MITIGATION

ACRONYM	ORGANISATION NAME	AREA OF RESPONSIBILITY			TYPE OF BODY ⁶	SPECIES GROUP*	BYCATCH ACTION		
							Capacity building	Research	Management
FAO	FOOD AND AGRICULTURE ORGANISATION OF THE UN	GLOBAL	FAO		Advisory/Scientific/Advocacy	C, S, T			
AAFC	ATLANTIC AFRICA FISHERIES CONFERENCE	CENTRAL-EAST & SOUTH-EAST ATLANTIC		RFB	Advisory				
APFIC	ASIA-PACIFIC FISHERIES COMMISSION	INDO-PACIFIC	FAO	RFB	Managerial/Advisory/Scientific				
CARPAS	REGIONAL FISHERIES ADVISORY COMMITTEE FOR THE SOUTHWEST ATLANTIC	SOUTHWEST ATLANTIC & WATERS OUTSIDE CHILEAN 200 NM TERRITORIAL WATERS IN THE SOUTH PACIFIC		RFB	Managerial/Advisory				
CCAMLR	CONVENTION ON THE CONSERVATION OF ANTARCTIC MARINE LIVING RESOURCES	SOUTHERN OCEAN		RFB	Regulatory/Managerial/Advisory/Scientific	S	Information collation, Conferences, Networking	Monitoring, assessment, gear development	Fishery regulation
CCSBT	COMMISSION FOR THE CONSERVATION OF SOUTHERN BLUEFIN TUNA	SOUTHERN HEMISPHERE, 30-50 DEGREES SOUTH		RFB	Regulatory/Managerial/Scientific	S, M	Information collation	Monitoring, assessment, gear development	Fishery regulation
CIESM	INTERNATIONAL COMMISSION FOR THE SCIENTIFIC EXPLORATION OF THE MEDITERRANEAN SEA	MEDITERRANEAN SEA		?		C, T	Conferences, Networking	Assessment	
CECAF	FISHERY COMMITTEE FOR THE EASTERN CENTRAL ATLANTIC	EAST-CENTRAL ATLANTIC	FAO	RFB	Advisory				

ACRONYM	ORGANISATION NAME	AREA OF RESPONSIBILITY		TYPE OF BODY ⁶	SPECIES GROUP*	BYCATCH ACTION		
						Capacity building	Research	Management
CIFA	COMMITTEE FOR INLAND FISHERIES OF AFRICA	INLAND AFRICA	FAO	RFB	Advisory			
COPESCAL	COMISIÓN DE PESCA CONTINENTAL PARA AMÉRICA LATINA	INLAND SOUTH AMERICA	FAO	RFB	Managerial/Advisory/Scientific			
COREP	REGIONAL FISHERIES COMMITTEE FOR THE GULF OF GUINEA	GULF OF GUINEA & GUINEAN TERRITORIAL WATERS		RFB	Advisory/Scientific			
CPPS	COMISIÓN PERMANENTE DEL PACÍFICO SUR	SOUTHEAST PACIFIC		RFB	Advisory			
CTMFM	COMISION TECNICA MIXTA DEL FRENTE MARITIMO	ARGENTINEAN/URUGUAYAN COMMON FISHING GROUNDS		RFB	Advisory	?		
CWP	COORDINATING WORKING PARTY ON FISHERIES STATISTICS	GLOBAL	FAO	RFB	Scientific			
EIFAC	EUROPEAN INLAND FISHERIES ADVISORY COMMISSION HOME PAGE	EUROPEAN INLAND WATERS	FAO	RFB	Advisory			
FFA	FORUM FISHERIES AGENCY	WESTERN TROPICAL & SUBTROPICAL PACIFIC (SOUTHERN HEMISPHERE)		RFB	Advisory	C, S, T	Monitoring	
GFCM	GENERAL FISHERIES COMMISSION FOR THE MEDITERRANEAN	MEDITERRANEAN SEA	FAO	RFB	Managerial/Advisory	S, M, T	Conferences, Networking	

ACRONYM	ORGANISATION NAME	AREA OF RESPONSIBILITY		TYPE OF BODY ⁶	SPECIES GROUP*	BYCATCH ACTION			
						Capacity building	Research	Management	
IATTC	INTER-AMERICAN TROPICAL TUNA COMMISSION	EASTERN PACIFIC OCEAN		RFB	Managerial/Advisory	M	Conferences, Networking	Monitoring, Assessment, Gear development	Fishery regulation ¹ , Trade regulation
IBSFC	INTERNATIONAL BALTIC SEA FISHERY COMMISSION	BALTIC SEA AND THE BELTS		RFB	Managerial/Advisory/Scientific				
ICES	INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA	NORTH ATLANTIC, BALTIC SEA, NORTH SEA		RFB	Advisory/Scientific	S, M, T	Information collation, Conferences, Networking	Assessment	
ICCAT	INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS	ATLANTIC OCEAN		RFB	Managerial/Scientific	S, M, T ²	Conferences	Monitoring	
IOTC	INDIAN OCEAN TUNA COMMISSION	INDIAN OCEAN AND ADJACENT SEAS NORTH OF THE ANTARCTIC CONVERGENCE	FAO	RFB	Regulatory/Managerial/Scientific	S	Conferences	Monitoring	
IPHC	INTERNATIONAL PACIFIC HALIBUT COMMISSION	CANADIAN & US NORTH PACIFIC (INCL. ALEUTIANS)		RFB	Managerial/Scientific	S	Information collation, Networking	Monitoring, Assessment	
LVFO	LAKE VICTORIA FISHERIES ORGANISATION	LAKE VICTORIA		?	Advisory				
MHLC	CONVENTION FOR THE CONSERVATION AND MANAGEMENT OF HIGHLY MIGRATORY FISH STOCKS IN THE WESTERN AND CENTRAL PACIFIC OCEAN	WEST & CENTRAL PACIFIC		RFB	Managerial/Advisory/Scientific (Not yet implemented)	?		Monitoring, Assessment ³	
NAFO	NORTHWEST ATLANTIC FISHERIES ORGANIZATION	NORTH-WEST ATLANTIC, INCL. DAVIS STRAIT, GRAND BANK, SCOTIAN SHELF, GEORGES BANK		RFB	Managerial/Advisory/Scientific		Information collation, Networking	Monitoring	

ACRONYM	ORGANISATION NAME	AREA OF RESPONSIBILITY		TYPE OF BODY ⁶	SPECIES GROUP*	BYCATCH ACTION		
						Capacity building	Research	Management
NASCO	NORTH ATLANTIC SALMON CONSERVATION ORGANIZATION	NORTH ATLANTIC (NORTH OF 35 DEGREES N)		RFB	Managerial			
NEAFC	NORTH-EAST ATLANTIC FISHERIES COMMISSION	NORTHEAST ATLANTIC & ARCTIC OCEAN (NORTH OF 36 DEGREES N, EAST OF 42 DEGREES W)		RFB	Managerial			
NPAFC	NORTH PACIFIC ANADROMOUS FISH COMMISSION	NORTH PACIFIC		RFB	Regulatory/Managerial/Scientific	S, M, T ⁴	Networking	
OAPO	AGREEMENT CREATING THE EASTERN PACIFIC TUNA FISHING ORGANIZATION	EASTERN PACIFIC OCEAN			Not yet implemented			
OLDEPESCA	ORGANIZACION LATINOAMERICANA DE DESARROLLO PESQUERO	LATIN AMERICAN & CARIBBEAN WATERS		RFB	Advisory			
PICES	NORTH PACIFIC MARINE SCIENCE ORGANIZATION	NORTH PACIFIC		RFB	Scientific			
PSC	PACIFIC SALMON COMMISSION	FRASER, YUKON & TRANS-BOUNDARY RIVER SYSTEMS & WATERS OFF BRITISH COLUMBIA & S. ALASKA		RFB	Managerial			
RECOFI	REGIONAL COMMISSION FOR FISHERIES	RED SEA, ARABIAN SEA, PERSIAN GULF	FAO	RFB	Advisory			
SEAFDEC	SOUTH EAST ASIAN FISHERIES DEVELOPMENT CENTER	SOUTH CHINA SEA, INDO-PACIFIC		RFB	Advisory/Scientific	T	Information collation, Conferences, Networking	Monitoring, Assessment, Gear development

ACRONYM	ORGANISATION NAME	AREA OF RESPONSIBILITY		TYPE OF BODY ⁶	SPECIES GROUP*	BYCATCH ACTION		
						Capacity building	Research	Management
SEAFO	SOUTH EAST ATLANTIC FISHERIES ORGANISATION	SOUTHEAST ATLANTIC (BEYOND NATIONAL JURISDICTION)		RFB	Managerial			
SPC	SECRETARIAT OF THE PACIFIC COMMUNITY	TERRITORIAL WATERS OF MELANESIA, POLYNESIA & MICRONESIA		RFB	Scientific	S, T, M	Information collation, Conferences, Networking	Monitoring, Assessment
SRCF	SUB-REGIONAL COMMISSION ON FISHERIES	EAST CENTRAL ATLANTIC		RFB	Advisory			
SWIOFC	SOUTHWEST INDIAN OCEAN FISHERIES COMMISSION	SOUTHWEST INDIAN OCEAN	FAO	RFB	Managerial (Not yet formally completed)			
WECAFC	WESTERN CENTRAL ATLANTIC FISHERY COMMISSION	CARIBBEAN SEA & GULF OF MEXICO	FAO	RFB	Advisory/Advocacy			
WIOTO	WESTERN INDIAN OCEAN TUNA ORGANIZATION	WESTERN INDIAN OCEAN		RFB	Advisory			
MAP-RAC/SPA	MEDITERRANEAN ACTION PLAN	MEDITERRANEAN	UNEP	RSA	Advisory/Scientific/Advocacy	T, S	Information collation, Conferences, Networking	Monitoring, Assessment, Gear development
PERSGA	RED SEA AND GULF OF ADEN ACTION PLAN	RED SEA & GULF OF ADEN	UNEP	RSA	Advisory/Scientific/Advocacy			
ROPME	PLAN OF ACTION FOR THE KUWAIT REGION	PERSIAN GULF	UNEP	RSA	Advisory/Advocacy			
EASAP	EAST ASIAN SEAS ACTION PLAN	SOUTH CHINA SEA WESTERN PACIFIC	UNEP	RSA	Advisory/Advocacy	C	Conferences, Networking	

ACRONYM	ORGANISATION NAME	AREA OF RESPONSIBILITY		TYPE OF BODY ⁶	SPECIES GROUP*	BYCATCH ACTION			
						Capacity building	Research	Management	
CEP	CARIBBEAN ACTION PLAN	CARIBBEAN SEA	UNEP	RSA	Advisory/Scientific/Advocacy	T	Conferences, Networking	Gear development	
CPPS/RCU	SOUTH EAST PACIFIC ACTION PLAN	SOUTHEAST PACIFIC	UNEP	RSA	Advisory/Advocacy	T, M	Networking		
WACAF/RCU	WEST AND CENTRAL AFRICAN ACTION PLAN	SOUTHEAST & CENTRAL EAST ATLANTIC	UNEP	RSA	Advocacy				
SPRAP	SOUTH PACIFIC ACTION PLAN	SOUTH PACIFIC	UNEP	RSA	Advisory/Scientific/Advocacy	T, C	Information collation, Conferences, Networking	Monitoring, Assessment	
EAF/RCU	ACTION PLAN FOR EASTERN AFRICA	WESTERN INDIAN OCEAN	UNEP	RSA	Advocacy				
BSEP	BLACK SEA ACTION PLAN	BLACK SEA	UNEP	RSA	Scientific/Advocacy				
NOWPAP	ACTION PLAN FOR THE NORTHWEST PACIFIC	NORTHWESTERN PACIFIC	UNEP	RSA	Advocacy				
SACEP	SOUTH ASIAN SEAS ACTION PLAN	INDO-PACIFIC	UNEP	RSA	Advocacy				
	UPPER SOUTH-WEST ATLANTIC ACTION PLAN	WESTERN EQUATORIAL ATLANTIC	UNEP	RSA	Advocacy				
	ANTARCTIC TREATY	SOUTHERN OCEAN		ORC	See CCAMLR				

ACRONYM	ORGANISATION NAME	AREA OF RESPONSIBILITY		TYPE OF BODY ⁶	SPECIES GROUP*	BYCATCH ACTION			
						Capacity building	Research	Management	
CAFF	CONSERVATION OF ARCTIC FLORA AND FAUNA	ARCTIC		ORC	Advisory/Scientific/Advocacy	S	Information collation, Conferences, Networking	Assessment	
HELCOM	CONVENTION FOR THE PROTECTION OF THE MARINE ENVIRONMENT OF THE BALTIC SEA	BALTIC SEA		ORC	Advisory/Advocacy				
OSPAR	CONVENTION FOR THE PROTECTION OF THE MARINE ENVIRONMENT OF THE NORTHEAST ATLANTIC	NORTHEAST ATLANTIC		ORC	Advocacy	T, S	Information collation, Conferences		
CBD	CONVENTION ON BIODIVERSITY	GLOBAL	UNEP	OUN	Scientific/Advocacy				
GEF	GLOBAL ENVIRONMENT FACILITY	GLOBAL	UNEP	OUN	Funding	T		Assessment, Gear development	
UNESCO/GOOS	UN EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANISATION/GLOBAL OCEAN OBSERVATION SYSTEM	GLOBAL	UNESCO	OUN	Advisory/Scientific	S, M, T	Information collation, Conferences, Networking		
ACCOBAMS	AGREEMENT ON THE CONSERVATION OF CETACEANS OF THE BLACK SEA, MEDITERRANEAN SEA AND CONTIGUOUS ATLANTIC AREA	BLACK SEA, MEDITERRANEAN SEA & CONTIGUOUS ATLANTIC AREA	CMS	OIG	Advisory/Scientific/Advocacy	C	Information collation, Conferences, Networking	Assessment	
ASCOBANS	AGREEMENT ON THE CONSERVATION OF SMALL CETACEANS OF THE BALTIC AND NORTH SEAS	BALTIC SEA & NORTH SEA	CMS	OIG	Advisory/Scientific/Advocacy	C	Information collation, Conferences, Networking	Assessment	
CITES	CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA	GLOBAL	CMS	OIG	Regulatory/Advisory/Scientific/Advocacy	C, S, T	Information collation, Conferences, Networking		

ACRONYM	ORGANISATION NAME	AREA OF RESPONSIBILITY		TYPE OF BODY ⁶	SPECIES GROUP*	BYCATCH ACTION			
						Capacity building	Research	Management	
CMS	CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS	GLOBAL	CMS	OIG	Advisory/Scientific/Advocacy/Funding	C, S, T	Information collation, Conferences, Networking		
EC	EUROPEAN COMMUNITY	EUROPE	CMS	OIG	Regulatory/Managerial/Scientific/Funding	C, S, T	Information collation, Conferences, Networking	Assessment, Monitoring	Fishery regulation, Trade regulation
GATT	GENERAL AGREEMENT ON TRADES AND TARIFFS	GLOBAL	CMS	OIG	Regulatory	C, T			Trade regulation
IAC	INTER-AMERICAN CONVENTION FOR THE PROTECTION AND CONSERVATION OF SEA TURTLES	CARIBBEAN SEA, GULF OF MEXICO, COASTAL AREAS OF PACIFIC LATIN AMERICAN NATIONS	CMS	OIG	Regulatory, Managerial, Scientific/Advisory ⁵	T		Assessment, Gear development	
IMO	INTERNATIONAL MARITIME ORGANISATION	GLOBAL	CMS	OIG	Advisory/Scientific				
IWC	INTERNATIONAL WHALING COMMISSION	GLOBAL	CMS	OIG	Managerial	C	Information collation, Conferences, Networking	Assessment	Fishery regulation ⁶
NAMMCO	NORTH ATLANTIC MARINE MAMMAL COMMISSION	NORTH ATLANTIC	CMS	OIG	Advisory/Scientific	C	Information collation, Conferences, Networking	Monitoring/Assessment	
RAMSAR	RAMSAR CONVENTION ON WETLANDS	GLOBAL	CMS	OIG	Advisory/Scientific	S	Information collation, Conferences, Networking	Assessment	
NOAA-NMFS	NATIONAL ATMOSPHERIC AND OCEANIC ADMINISTRATION - NATIONAL MARINE FISHERIES SERVICE	US TERRITORIAL WATERS		O	Regulatory/Managerial/Advisory/Scientific/Funding	S, M, T	Information collation, Conferences, Networking	Monitoring/Assessment/Gear development	Fishery regulation

ACRONYM	ORGANISATION NAME	AREA OF RESPONSIBILITY		TYPE OF BODY ⁶	SPECIES GROUP*	BYCATCH ACTION			
						Capacity building	Research	Management	
	BIRDLIFE INTERNATIONAL	GLOBAL		O	Advisory/Scientific/Advocacy/Funding	S	Information collation, Conferences, Networking	Monitoring/Assessment	
IUCN/SSC	INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES	GLOBAL		O	Advisory/Scientific/Advocacy	S, M, T	Information collation, Conferences, Networking	Assessment	
IOI	INTERNATIONAL OCEAN INSTITUTE	GLOBAL		O	Advisory/Scientific/Advocacy				
WWF	WORLD WIDE FUND FOR NATURE	GLOBAL		O	Advisory/Scientific/Advocacy/Funding	C, T, S	Information collation, Conferences, Networking	Monitoring/Assessment/ Gear development	

Notes:

⁶ FAO = FAO Regional Subsidiary Body, RFB = Regional Fishery Body, RSA = Regional Seas Action Plan, ORC = Other Regional Conventions, OUN = Other UN Body, OIG = Other Inter-Governmental, CMS = CMS managed, OIB = Other International Body

* S=seabirds, M=marine mammals, T=turtles

¹ See text

² Emphasis on shark bycatch

³ Non-target and ecologically related species, fish and non-fish, not specified

⁴ According to OceanLaw summary, but no references to actual actions could be found

⁵ See text

⁶ Regulatory powers only in relation to large cetaceans