Delphinus delphis (Linnaeus, 1758)

English: Short-beaked common dolphin
German: Gemeiner Delphin mit kurzem Schnabel
Spanish: Delfín común a pico corto
French: Dauphin commun à bec court

Family: Delphinidae

1. Description

Common dolphins of both species are slender and have a long beak sharply demarcated from the melon. The dorsal fin is high and moderately curved backwards. Common dolphins are distinguished from other species by a unique crisscross colour pattern formed by interaction of the dorsal overlay and cape. This yields a four-part pattern of dark grey to black dorsally, buff to pale yellow anterior thoracic patch, light to medium grey on the flank and a white abdominal field. In the short-beaked species, *D. delphis*, the colour pattern is more crisp and colourful than in *D. capensis*. Body size ranges from 164 to 201cm and body mass to about 200 kg (Perrin, 2009).

The population in the Black Sea is separable from those in the Mediterranean and the eastern North Atlantic and has been described as an endemic subspecies *D.d. pontidus* Barabash, 1935. In the northeastern Pacific, three populations separated by latitude can be distinguished by body length and cranial features. A rare morph with a deviant pigmentation pattern has been found in several areas of the Atlantic and Pacific oceans (Rice, 1998 and refs. therein).

2. Distribution

http://www.iucnredlist.org/details/6336/0/rangemap

Distribution of Delphinus delphis*: warm temperate, subtropical, and tropical waters worldwide (Hammond et al. 2008; © IUCN).*

Delphinus delphis is widely but discontinuously distributed in warm temperate and tropical waters of the Atlantic and Pacific oceans. Its total distribution is uncertain because of past taxonomic confusion (Rice, 1998 and refs. therein). It regularly occurs in some enclosed seas, such as the Okhotsk Sea and Sea of Japan, and separate subpopulations exist in the Mediterranean and Black seas. Short-beaked common dolphins may occur in parts of the Indian Ocean around southeastern Africa and southern Australia, but previous records of this species in other parts of the Indian Ocean and in waters of Taiwan are now thought to have been of long-beaked common dolphins (*D. capensis*; Jefferson and Van Waerebeek 2002). The most northerly record from the North Pacific is from British Columbia, Canada, and in the North Atlantic, from the northern waters of Norway and Sable Island off Nova Scotia (Evans, 1994; Lucas and Hooker, 2000; Syvertsen et al. 1999).

As opposed to the distribution shown above, Jefferson et al. (2009) after a critical re-examination of records of the genus *Delphinus* from the western Atlantic Ocean present results which are very different from commonly-accepted distribution patterns. When plotting only validated records (n = 364), they found evidence of populations in only three areas:

1. Off the east coast of the US and Canada, from the Georgia/South Carolina border (32 °N) north to about 47-50 °N off Newfoundland.
2. In the Caribbean, only off central-eastern Venezuela (a coastal *D. capensis* population).
3. Off eastern South America, south of 20 °S. There is a coastal long-beaked population found in the South Brazil Bight, and one or more short-beaked populations south and offshore of this (ranging south to at least northern Argentina).

The genus *Delphinus* is apparently absent throughout much of the tropical/subtropical region in the Atlantic. Since the 1960s, they have apparently been absent from Florida waters, and there is no evidence that dolphins of the genus occur in the Gulf of Mexico. Reports of common dolphins from most of the Caribbean Basin are also rejected. Most areas of distribution coincide with moderate to strong upwelling, and common dolphins appear to avoid warm, tropical waters. Their study shows that great care must be taken in identification of similar-appearing long-beaked delphinids, and that uncritical acceptance of records at face value can lead to incorrect assumptions about the ranges of the species involved (Jefferson et al. 2009).

3. Population size

The species is very abundant, with many available estimates for the various areas where it occurs.

For the eastern tropical Pacific, Gerrodette et al. (2008) estimated 3,127,000 (CV=26%) in 2006 as opposed to 1,197,000 (CV 35.5%) in 2003 and 2,466,000 (CV 31.3 %) in 2000.

Aguayo et al. (1998) reported that in the South Pacific one of the species mostly sighted between Valparaiso and Easter Island (Rapa Nui), during five cruises made during the winter seasons of 1993 to 1995 was *D.delphis* (1.01 sightings per day amounting to 213 animals per day).

The western North Atlantic stock was estimated from two 2004 US Atlantic surveys covering most completely the species' habitat at 120,743 (Waring et al. 2007).

In the North Sea, Hammond et al. (2002) found common dolphins almost exclusively in the Celtic Sea. Abundance was estimated as 75,450 (95% CI = 23,000-149,000). A sighting survey conducted in the Bay of Biscay in 1993 led to a population estimate of 62,000 short-beaked common dolphins in the fishing grounds of the albacore tuna driftnet fishery (Goujon, 1996).

De Boer et al. (2008) provided estimates from winter pelagic trawl fishing grounds in the English Channel with a mean abundance of 3,055 dolphins (95% CI = 1,425-6,544). The relative index for abundance (number of schools per 100km effort, mean school size 5.1) was the highest recorded from comparable surveys in the North Atlantic and shows that the Channel is a very important winter habitat for common dolphins.

Gannier (1998) conducted 22,769 kilometres of visual line transect on a small boat in the Ligurian basin (Mediterranean Sea), confirming that common dolphins accounted for only 0,3% of cetacean sightings. A large-scale population decline is believed to have occurred during the last century, and the Alboran Sea is now the most important remaining habitat for the species. Canadas and Hammond (2008) estimated an abundance of 19,428 (95% CI = 15 277 to 22 804) dolphins in this area. While no overall trend in abundance was observed in the Alboran area, further decline was observed in the Gulf of Vera, with a summer density 3-fold lower in the period from 1996 to 2004 than in 1992 to 1995.

The most recent survey in the northern part of the Black Sea was carried out in 1987 in an area of 70,000 square kilometres between the USSR and Bulgarian borders (Sokolov et al. 1997). The extrapolated population density for the whole area of the Black Sea led to an estimated total number of *D. delphis* of 96,000. Stanev (1996), however, reported that the number of sightings in the Bulgarian sector of the Black sea declined between 1992 and 1995.

4. Biology and Behaviour

Habitat: *D. delphis* is usually found where surface water temperature is 10°C-20°C, which limits the distribution north and south of the range, but it may follow warm water currents beyond the normal range. It is less commonly seen in water shallower than 180m. *D. delphis* occurs over the continental shelf, particularly in areas with high seafloor relief, but mainly offshore (Carwardine, 1995).

Off southern California the offshore form is associated with conspicuous features of the bottom relief such as sea mounts and escarpments, preying at night on organisms associated with the deep-scattering layer. In the eastern tropical Pacific it prefers equatorial and subtropical waters with a deep thermocline, relatively large seasonal changes in surface temperature and seasonal upwelling (Reyes, 1991 and refs. therein).

Waring et al. (2008) found that common dolphin distribution and density along the mid-Atlantic ridge was highest south of the Charlie Gibbs Fracture Zone in areas with warmer (12-22 °C) surface water temperatures and higher salinity (34.8-36.7 ppt). Morato et al. (2008) found that *D. delphis* associate with seamounts shallower than 400 m depth in the Azores, suggesting that these may reflect feeding stations.

Bourreau and Gannier (2003) found that Mediterranean common dolphins were more frequent in coastal and upper slope waters, the mean depth for sighting being 480m. Common dolphins were likely to be observed in areas where the continental shelf had some extension and was delimited by a gentle slope, whatever the temperature, a habitat type also favourable to small epipelagic fishes such as anchovies and sardines. In the Ligurian Sea, common dolphins seem to prefer pelagic areas (Azzelino 2008).

In the Black Sea, common dolphins may be found either in inshore waters or in the open sea (Reyes, 1991 and refs. therein)

Schooling: Often found in large, active schools: jumping and splashing can be seen and even heard from a considerable distance. Several members of a group often surface together. School size often varies seasonally and according to time of day. Animals bunch tightly together when frightened (Carwardine, 1995). Herds range in size from several dozen to over 10,000. Associations with other marine mammal species are not uncommon (Jefferson et al. 1993). Braeger and Schneider (1998) found that in summer common dolphins off the West Coast of New Zealand's South Island occurred almost exclusively in groups of 2-150 individuals, often with calves.

Reproduction: Breeding peaks in spring and autumn or summer have been reported for some stocks (Jefferson et al. 1993). Ferrero and Walker (1995) found that calving in the offshore waters of the North Pacific appeared to peak in May and June. Females in the eastern tropical Pacific average 197.2 cm at asymptotic body length. The estimated age at attainment of sexual maturity is 7.9 years and the oldest animal in the study was 25 years. Calving occurred throughout the year, with females producing a calf approximately every 2.1 years after a

gestation period of approximately 11.4 months, an average lactation period of 16.5months, and an average resting period of 2.8 months. A relatively high percentage (30.4%) of lactating females were simultaneously pregnant, which effectively shortens the average calving interval. No clear evidence of senescence was found (Danil and Chivers, 2007).

Food: The prey of common dolphins consists largely of small schooling fish (e.g. sardines) and squid. Co-operative feeding techniques are sometimes used to herd fish schools (Jefferson et al. 1993; Silva, 1999).

Off southern California, common dolphins eat mainly anchovies and squids during the winter, but in spring and summer deep-sea smelt and lanternfish are preferred (Reyes, 1991, and refs. therein). Based on radio-telemetric studies and analysis of stomach contents, short-beaked common dolphins off southern California start feeding at dusk and continue to feed throughout the night. They feed primarily on organisms in the migrating deep scattering layer, especially myctophiids and bathylagids (Evans, 1994).

For the western North Pacific off northern Honshu in Japan, Ohizumi and Watanabe (2004) found that prey species composition in the stomach contents was nearly identical to that of net samples taken from waters 1000-1300 m deep. In summer, common dolphins fed mainly on *Certoscopelus warmingi* which is distributed along a front of the Kuroshio Current facing the subarctic boundary.

On the east coast of New Zealand, common dolphins show preference for jack mackerel (*Trachurus novaezelandiae*), kahawai (*Arripis trutta*), yellow-eyed mullet (*Aldrichetta forsteri*), flying fish (*Cypselurus lineatus*), parore (*Girella tricuspidata*), and garfish (*Hyporamphus ihi*; Neumann and Orams 2003).

In the pelagic North Atlantic Ocean, diet was dominated by fish (90% by number and 53% by mass of total diet), while cephalopods played a secondary role (9%, 46%, resiectively). Crustaceans were of minor importance. At the species level, the myctophid fish (*Notoscopelus kroeyeri*) largely dominated the diet. Prey size ranged from 1 to 68 cm, but the majority of prey were from 2 to 30 cm long. Common dolphins forage preferentially on small schooling, vertically migrating mesopelagic fauna in the surface layer at dusk and early night (Pusineri et al. 2007).

Meynier et al. (2008) analysed stomach contents from 71 common dolphins stranded along the French coast between 1999 and 2002. The most important prey species were sardine, anchovy, sprat and horse mackerel, which represented 44.9, 22.6, 8.0 and 5.0% by mass of the fresh diet, respectively. In spite of the main prey species varying extensively, estimated daily food intakes changed relatively little, because all diets included a high proportion of fat fish (73 to 93% by mass).

Young and Cockroft (1994) reported that in Natal, southern Africa, the occurrence of common dolphins is strongly associated with an annual northward fish migration, the sardine run, along the east coast. Thirty-six fish and four cephalopod prey species were identified in stomach samples. Though 86.9% by weight of the diet was made up of only five prey species, common dolphins appeared to feed opportunistically, their diet reflecting local prey abundance and availability. Prey were primarily small, easily-caught, pelagic shoaling species, the main prey being South African pilchard (*Sardinops ocellatus*).

Epi- and mesopelagic fishes and squids are eaten in the western Mediterranean. In the Black Sea the diet consists of horse mackerel, anchovy, sprat, mullet and jack mackerel. Other

organisms such as crustaceans and benthic molluscs are considered of minor importance (Reyes, 1991, ad refs. therein).

Scott and Cattanach (1998) used data collected by scientific technicians aboard tuna purse seiners in the eastern Pacific Ocean since the early 1970s to study the biology and herd dynamics of pelagic dolphins. A pattern of increasing group size in the morning and subsequent decline in the late afternoon or night was evident for common dolphins, as well as for large yellowfin tuna that associate with dolphins. It appears that these diel patterns are produced by an interaction of predation pressure and prey distribution.

Kastelein et al. (2000) published food consumption data from common dolphins held in a delphinarium. The food intake quantities should be viewed as rough weight estimates of what wild conspecifics might eat (depending on their diet). Annual food intake of two dolphins increased to 3,300kg at around 12 years of age, after which it decreased, stabilising at around 2,200kg between the ages of 16 and 25 years.

5. Migration

Clear seasonal shifts in distribution are observed off southern California, where peaks of abundance are recorded in June, September through October, and in January. Sighting data also suggest seasonal movements of common dolphins in the eastern tropical Pacific (Reyes, 1991 and refs. therein). Delgado-Estrella (1994) reported that strandings on the Gulf of California coasts of Mexico peak in spring. Radio-telemetric and other studies (see Evans, 1994 for details) have indicated that common dolphins preferentially travel over underwater escarpments. In the Pacific Ocean off southern California and Baja California, Mexico, the main movement patterns are north-south, along the prominent bottom topographic features such as escarpments and sea mounts.

Neumann (2001) reported a seasonal offshore-shift in short-beaked common dolphins in New Zealand, which appears to be correlated with sea surface temperature. *D. delphis* moved from a mean distance of 9.2 km from shore in spring and summer to a mean distance of 20.2 km from shore in autumn. During warmer La Niña conditions, mean distance from shore was reduced to only 6.2 km, and offshore movement was delayed by a month. It is hypothesised, that SST influences the distribution of *D. delphis* prey, which in turn affects seasonal movements.

In the western North Atlantic, Gowans and Whitehead (1995) reported on seasonality of common dolphin abundance in the Gully off Nova Scotia. The animals arrive in July, when water temperatures have increased.

In the eastern North Atlantic, Goold (1998) used passive acoustic monitoring of common dolphins off the west Wales coast during the months of September, October, November and December 1994 and 1995. Distributions of common dolphins within the survey area showed a marked decrease in dolphin contacts between September and October of both years. These observations suggest offshore migration of the populations at that time of year. It is hypothesised that offshore migration of common dolphins coincides with a break-up of the Celtic Sea Front, a distinct oceanographic feature which crosses the survey area. Goold (1996) reported on southwesterly migratory behaviour of common dolphins monitored acoustically in the North Sea in the fall of 1995. Collet (1981, in Collet, 1994) supposed that *D. delphis* spends the winter on the French coast of the Bay of Biscay and leaves this area

after March. Goncalves et al. (1996) reported on a strong seasonality of *D. delphis* strandings on the Azores between February and April 1996.

Common dolphins spend the winter in the southern part of the Black Sea, between Trabzon and Batumi, and perform annual migrations from these wintering grounds to the waters of Crimea and back. Seasonality in prey availability may explain these movements (Reyes, 1991 and refs. therein).

Sightings in the western Mediterranean also indicate seasonal patterns in distribution. Common dolphins are more frequently observed in the southern part of the Mediterranean during the first half of the year. In the northern part of the Sea, sightings increase during the second half of the year (Reyes, 1991 and refs. therein). Goffman et al. (1995) surveyed wild dolphins along the Mediterranean coast of Israel. Common and striped dolphins as well as calves accompanying adults were reported mainly during the summer and early fall. Seventy-one percent of the reports came from the southern portion of the Mediterranean coast of Israel (south of Netanya). Finally, on a day- to day basis, Evans (1994) observed large herds of *Delphinus* (>200) from the Straits of Gibraltar to the Azore Platform moving west at sunrise and east at sunset, relating this to topographic features being oriented east-west.

6. Threats

Direct catch: A fishery for common dolphins operated in the USSR and Turkey coasts of the Black Sea from 1870 to 1983. However, the full extent of this fishery is unknown. Direct catches of common dolphins are also reported from several other areas. In Peru, where dolphins are used for food, about 15,000 – 20,000 were landed in 1993. After direct killing was banned by law in 1996, and following a public campaign of environmental education, dolphin meat consumption has diminished dramatically and the meat is no longer sold in supermarkets (Mundo Azul, 2009).

In the western Mediterranean, small numbers were taken off Spain up to 1988 when this practice was banned. Off the Atlantic coast of France, some were harpooned by fishermen for consumption at sea. Other reported takes come from Japan and elsewhere in the range (Reyes, 1991 and refs. therein; Jefferson et al. 1993).

Incidental catch: The common dolphin is one of the most prominent by-catches of both the world-wide pelagic purse-seine and drift net fisheries. This is due in part to its abundance and possibly because of a shared feeding ecology with the targets of those fisheries, large migratory pelagic fish (e.g. tuna). The largest impacts have been in the eastern Pacific and the Indian Ocean and Mediterranean, with some takes associated with the tuna purse-seine fishery off the west coast of Africa.

In 1988 an estimated 16,189 common dolphins were killed in the eastern tropical Pacific tuna purse-seine fishery. Although this is less than 0.5% of the total population, the catch could be highly detrimental if each herd is a genetically discrete breeding population (Evans, 1994 and refs. therein). The average herd size for common dolphins (approx. 500) is greater than that for the other stocks or species, and their more active diving behaviour in the net makes them more susceptible to becoming trapped or tangled. In the 1980's, 4.9% of the sets in the fishery involved common dolphins, but in the 1990's this proportion increased. This indicates that the fishing effort concentrated in areas where the species was more abundant, mainly as a result of enlargement of the Mexican fleet. A large part of the sets on common dolphin schools

occurs in coastal waters, where stock structure and movements are poorly understood, and three or more populations may be involved (Reyes, 1991 and refs. therein).

Bratten and Hall (1997) summarised that in the tuna purse seine fisheries, tuna and dolphins are herded and captured together in the net. Prior to retrieving the entire net and the tuna, the crew attempt to release the dolphins by a procedure called "backdown," while utilising various dolphin safety gear. Though a great majority of the dolphins are released unharmed, some die during the fishing operation. Since 1986, dolphin mortality has been reduced by 97%. Analyses of observer data show that many factors cause dolphin mortality, such as fishing areas; dolphin species and herd sizes; environmental factors; gear malfunctions; and crew motivation, skill, and decision-making. Given this, it is clear that there can be no simple solution to this problem. A combination of major and minor technological developments, training in their use, better decision-making skills, and constant pressure to improve performance are the basis of the current success.

More recently, Carretta et al. (2004) estimated incidental mortality in the California drift gillnet fishery for broadbill swordfish, *Xiphias gladius*, and common thresher shark, *Alopias vulpinus*, for the 7-year period, 1996 to 2002. A total of 861 common dolphins were taken during this period. An experiment to test the effectiveness of acoustic pingers on reducing marine mammal entanglements in this fishery began in 1996 and resulted in statistically significant reductions in marine mammal bycatch.

Drift net fishery for swordfish in the waters surrounding the Italian Peninsula is estimated to kill thousands of dolphins and it is likely that common dolphins are caught in these nets. Silvani et al. (1999) calculated that by-catch rates of the illegal Spanish driftnet fishery operating since 1994 on the Mediterranean side of the Gibraltar Straits, aimed at swordfish (*Xiphias gladius*) amounted to 366 dolphins for the 1993 fishing season and 289 for that of 1994. Tudela et al. (2005) reported that illegal, large-scale driftnets are still used in several Mediterranean areas. Morocco harbours the bulk of this fleet targeting swordfish in the Alboran Sea and the Strait of Gibraltar. The active driftnet fleet was conservatively estimated at 177 units. Estimated average net length ranges from 6.5 to 7.1 km, depending on the port, though actual figures are suspected to be much higher (12-14 km). Most boats perform driftnet fishing all year round, resulting in very high annual effort levels. A total of 237 dolphins (short-beaked common dolphin and striped dolphins) were killed by the boats between December 2002 and September 2003. Estimates for a 12-month period by the whole driftnet fleet yielded 3,110-4,184 dolphins (both species) in the Alboran Sea alone; a further 11,589-15,127 dolphins may be killed annually around the Straits of Gibraltar. Dolphins suffer from annual take rates exceeding 10% of their population sizes in the Alboran Sea; this unsustainable impact is particularly worrying for *D. delphis*, because its last remnant healthy population in the Mediterranean occurs in this area. The average catch rate for swordfish, the main target species, amounted to 0.8 individuals/km net set.

Small-scale incidental catches in gillnets occur elsewhere in the range. Some are taken in trawl and purse seine fisheries, particularly in the Black Sea and waters off Northwest Africa, South America and New Zealand (Reyes, 1991, and refs. therein). This is confirmed by by-catch assessments from various sources: Antoine et al. (2001), from the north-east Atlantic, Chivers et al. (1997) from California, Berrow and Rogan (1998) and Couperus (1997) from Irish waters, Goffman et al. (1995) from the Mediterranean coast of Israel, and Kuiken et al. (1994) from the coast of Cornwall, England and Crespo et al. (2000) for Argentinean waters.

In northern Portuguese waters the common dolphin accounted for 60% of all reported strandings. Confirmed bycatch was responsible for 34% of all strandings, and up to 18% of the deaths were suspected to have been caused by interactions with artisanal fishing gear (Ferreira et al. 2003). Silva and Sequeira (2003) found that larger numbers of strandings were recorded in the northern and central Atlantic portuguese coast and showed a significant degree of seasonality, with 37% occurring in the spring and 33% in the winter months. Their stranding data suggest that fishery interactions could be responsible for up to 44% of mortality for this population. Goujon (1996) reported that in 1992 and 1993 on average 1.7 common dolphins were incidentally caught per trip by the French driftneters targetting albacore tuna off the Bay of Biscay. The annual additional mortality linked to the driftnets was estimated at 0.8%. By-catch in the Albacore tuna (*Thunnus alalunga*) drift net fishery in the eastern North Atlantic was estimated at 11,723 common dolphins during the period 1990-2000 (Rogan and Mackey 2007).

Tregenza and Collet (1998) found that pelagic trawl bycatches of dolphins are widespread in the Bay of Biscay, Western Approaches and Celtic Sea and are likely to be the largest of several fishery bycatches of common dolphins which together probably exceed 1% of the local summer population. Tregenza et al. (2003) analysed stranding records in the southwest of England and found a disproportionate increase in the first four months of the year since 1970. Parsons et al. (2007) found high dolphin bycatch rates in the UK pelagic pair trawl fishery for sea bass in the western English Channel. The small UK fishery is estimated to have killed over 900 common dolphins in the five years from 2000 to 2005.

Interactions between short-beaked common dolphins and the fishing industry of South Australia have lead to serious concerns over the long-term viability of the local dolphin population. Bilgmann et al. (2008) detected marked differentiation between dolphins from South Australia and south-eastern Tasmania, suggesting a minimum of two genetic populations. These findings have important consequences for developing conservation management strategies, because Southern Australia has the largest purse-seine fishery by weight in Australia, and substantial numbers of fatal common dolphin interactions have occurred: In 2004/2005 alone, an estimated 1,728 common dolphins were encircled and 377 died over a 7-month period. If these impacts lead to a reduction in population size, it is unlikely that dolphins from the adjacent south-eastern Tasmanian population will replace the lost individuals (Bilgmann et al. 2008).

Baker et al. (2006) reported on common dolphins found via molecular monitoring of 'whalemeat' markets in the Republic of (South) Korea based on nine systematic surveys from February 2003 to February 2005. As Korea has no programme of commercial or scientific whaling and there is a closure on the hunting of dolphins and porpoises, the only legal source of these products was assumed to be incidental fisheries mortality ('bycatch') as reported by the government to the International Whaling Commission.

Culling: In the western Mediterranean, in particular off the coast of Spain, fishermen use harpoons to kill common dolphins and other small cetaceans that cause damage to fishing gear. Dolphins are considered a nuisance in the Black Sea, where they are said to consume an amount of fish greater than Turkey's annual fish production (Reyes, 1991).

Common dolphins have been reliably reported to occur in the shallow northern Adriatic Sea since the 17th century. However, the species has progressively declined and is now rare in the region. The systematic culling campaigns and other takes that occurred between the second half of the 18th century and the 1960s and habitat degradation in subsequent years are the most likely causes of the decline (Bearzi et al. 2004). Ross (2006) reported on deliberate and

illegal killing of *D, delphis* for sport, crayfish bait or as a perceived competitor in fisheries in Australian waters.

Competition with fisheries: Cañadas and Hammond (2008) observed a decline of common dolphins in the Gulf of Vera, with a summer density 3-fold lower in the period from 1996 to 2004 than in 1992 to 1995. Prey depletion due to the exponential growth of aquaculture in the area was seen as the most likely cause. Negative impacts of mariculture on common dolphins is also reported from Australia, where four animals were killed entangled in salmonid farms in south-eastern Tasmania. A further 29 dolphins (*T. aduncus* and *D. delphis*) were entangled and killed at southern blue-fin tuna feedlots (Ross, 2006)

Pollution: Pollution has increased dramatically in the Azov Sea, and this is the reason why common dolphins are no longer found there. Large amounts of domestic and industrial effluents have been dumped in the Mediterranean, and some areas are under severe ecological stress. High concentrations of PCBs were found in one common dolphin stranded on the French Mediterranean coast, showing the level of contamination of these waters (Reyes, 1991 and refs. therein). Viale (1994) even suggests using cetaceans as indicators of the progressive degradation of Mediterranean water quality.

Pierce et al. (2008) reported on high concentrations of polychlorinated biphenyls (PCBs) in blubber of 40% of female common dolphins from the Atlantic coast of Europe, above the threshold at which effects on reproduction could be expected. However, the average pregnancy rate recorded in common dolphins (25%) was similar to that of the western Atlantic population and only a few of the common dolphins sampled had died from disease or parasitic infection. Bioaccumulation of this family of man-made contaminants has also been recorded from *Delphinus* stranded in US waters (Evans, 1994 and refs. therein). Moessner and Ballschmiter (1997) found that animals from the western North Atlantic were contaminated about 15 times more with organochlorines than their conspecifics from the eastern North Pacific and the Bering Sea/Arctic Ocean. The total organochlorine burden and the 4,4'-DDE-percentage as well as the metabolic PCB patterns correlate with the trophic levels of the marine mammals studied.

Long et al. (1997) analysed cadmium levels in *D. delphis* from South Australia. Cadmium was accumulated mainly in the kidneys (range 0-38 μg/g), with levels in many individuals exceeding 20 μg/g (wet weight). On histological examination, 32% of adult dolphin kidneys showed pathological changes, proteinuria being the most common abnormality. High levels of cadmium were found in dolphins from widely spaced locations in South Australia. Holsbek et al. (1998) investigated heavy metal concentrations (total and organic Hg, Ti, Cr, Cu, Zn, Cd and Pb) in 29 common dolphins stranded on the French Atlantic coast and found no difference in contamination between the 1977-1980 and 1984-1990 periods.

Noise pollution: Evans (1994) feared that the development of the offshore petroleum industry is likely to have a negative effect on pelagic cetacean species such as *D. delphis*, and Goold (1996) as well as Stone and Tasker (2005) confirm this, describing the avoidance reaction of *D. delphis* to airguns used in the corresponding seismic surveys.

Overfishing: In many areas, including the Mediterranean and Black Seas, common dolphins feed on schooling fish that are also the target for commercial fisheries. In the Black Sea, concern has been expressed about the recent increase in the anchovy and sprat fisheries, the main food supplies of the isolated population of common dolphins already overexploited by a direct fishery (Reyes, 1991 and refs. therein). According to Bourreau and Gannier (2003) The apparent rarefaction of common dolphins in the Mediterranean Sea may be due to heavy

exploitation of peri-coastal stocks of pelagic fishes. This suggests that suitable conservation policies for the near future in regions where the species is still well represented may be necessary. Bearzi et al. (2005) concluded that the present unfavourable status of common dolphins in eastern Ionian Sea coastal waters is largely a consequence of prey depletion.

Tourism: Neumann and Orams (2006) found that common dolphins can be affected by tourism, but that adherence to New Zealand's Marine Mammals Protection Regulations and the current low level of tourism appears to minimise the impact on this species. In tourist operations on the eastern coast of New Zealand, common dolphins responded with a relatively predictable pattern to approaching boats. Initial attraction typically was followed by neutral behaviour and eventually replaced by boat avoidance. Smaller dolphin groups showed boat avoidance sooner and more frequently than larger groups. When swimmers entered the water, dolphins only spent an average of 2 min in their vicinity. Throughout encounters, they maintained a distance of at least 3 m from the nearest swimmer.

7. Remarks

Range states:
Albania; Algeria; Argentina; Australia; Belgium; Bosnia and Herzegovina; Brazil; Bulgaria; Canada; Chile; China; Colombia; Costa Rica; Croatia; Cyprus; Denmark; Ecuador; Egypt; El Salvador; France; Gabon; Gambia; Georgia; Germany; Gibraltar; Greece; Guatemala; Guinea; Guinea-Bissau; Honduras; Ireland; Israel; Italy; Japan; Korea, Democratic People's Republic of; Korea, Republic of; Lebanon; Libyan Arab Jamahiriya; Malta; Mauritania; Mexico; Monaco; Montenegro; Morocco; Namibia; Netherlands; New Caledonia; New Zealand; Nicaragua; Norway; Palestinian Territory, Occupied; Panama; Peru; Poland; Portugal; Romania; Russian Federation; Senegal; Slovenia; South Africa; Spain; Syrian Arab Republic; Tunisia; Turkey; Ukraine; United Kingdom; United States; Western Sahara (Hammond et al. 2008).

Tighter fishery management is needed urgently for at least some populations of short-beaked common dolphins (Reeves et al. 2003). Tregenza et al (2003) summarized that a) strandings are still substantially under-reported, b) a recent real rise in common dolphin bycatch is likely, c) a mark-recapture or body loss rate approach to strandings might provide a useful basis for assessing true strandings rates, d) rigorously recording the reliability status of species, length, and sex data will enhance the long term value of these records, e) marking of discarded cetaceans by fisheries observers would be immensely valuable but is still not routinely practised, and f) accessible data on fishery location, effort and method would be valuable.

See further recommendations for South American stocks in Hucke-Gaete (2000) and for Southeast Asian stocks in Perrin et al. (1996) in Appendix 1 and 2 respectively.

The common dolphin is categorized as “least concern” by the IUCN. The species is listed in Appendix I of CITES. The North and Baltic Sea populations, the Mediterranean sea population, the Black Sea population and the eastern tropical Pacific population of *Delphinus delphis* are listed in Appendix II of CMS.

However, recent data indicate that the species may also migrate in the Strait of Gibraltar area (range states: Spain, Portugal, Algeria, Morocco), along the coast of southern California (range States US, Mexico), and in the Nova Scotia area (range states US and Canada). It is

therefore recommended that the species as a whole should be included in App. II of CMS, without restriction to particular stocks.

The Black Sea population of *D. d. ponticus* is considered endangered (Birkun 2006) based on a generation time of 20 years and very large take prior to 1983, a mass mortality by morbilivirus in 1994 and a significant degradation of the environment. Bearzi (2003) classified the Mediterranean sub-population also as endangered, based on a reduction in population size of more than 50% over a three-generation period (30-45 years with a generation time of 15 years) and habitat deterioration.

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