

**PROPOSAL FOR INCLUSION OF SPECIES ON THE APPENDICES OF THE
CONVENTION ON THE CONSERVATION OF MIGRATORY SPECIES OF
WILD ANIMALS**

A. PROPOSAL: Add the Mediterranean population of *Grampus griseus* in Appendix II

B. PROPONENT: Government of Monaco

C. SUPPORTING STATEMENT:

1. Taxon

1.1 Classis	Mammalia
1.2 Ordo	Cetacea
1.3 Familia	Delphinidae
1.4 Species	<i>Grampus griseus</i> (G. Cuvier, 1812)
1.5 Common name(s)	English: Risso's dolphin Spanish: Delfín de Risso; Calderón gris French: Dauphin de Risso Italian: Grampo Croato: Pliscavica glavata

2. Biological data

Risso's dolphin (*Grampus griseus*) is abundant and widely distributed in tropical and warm temperate latitudes, (Jefferson et al. 1993), inhabiting mainly deep oceanic and continental slope waters (Baird 2002). Only in areas where the edge of the continental shelf is close to shore, are these animals likely to be observed in coastal waters.

Sighting records indicate this species occurs roughly between 60°N and 60°S latitudes, where surface water temperature are above 10 °C (Kruse et al. 1999). It ranges north to Newfoundland, the Shetland Islands, the North Sea (Weir et al. 2001), the Mediterranean Sea, 56°, 146° in the northern Gulf of Alaska, and Stuart Island (50°N) in British Columbia; and south down eastern South America as far as Cabo de Horns in Chile, to Cape Province in South Africa, Geographe Bay (33°S) in Western Australia, Sydney in New South Wales, North Island in New Zealand, and Valparaiso in Chile (Rice, 1998).

2.1 Distribution

In the Pacific ocean, water temperature appears to be a factor that affects the distribution of Risso's dolphins, the acceptable temperature range for the species being 7.5°C - 35°C (Kruse et al. 1999). In California, increasing numbers of Risso's dolphin and a shoreward shift in their distribution have been observed during periods of warm water, suggesting that seasonal patterns of distribution and abundance are associated with changing sea surface temperatures (Kruse et al. 1999).

Risso's dolphins occur in much of the Mediterranean Sea, although most reported sightings have been in the western basin. The greatest concentration is in the Ligurian-Corso-Provençal

basin, where the species is present all year-round. Risso's dolphins also occur seasonally in the southern Tyrrhenian Sea off the west coast of Ischia and between the island of Ustica and the Aeolian islands. They are observed regularly in the Balearic Sea and in the eastern half of the Alborán Sea (mainly from Seco de los Olivos to the Gulf of Vera) all year round. The apparent scarcity of Risso's dolphins in the eastern Mediterranean may be partly due to the paucity of observational effort there. A few sightings and strandings have been recorded along the coast of Israel and in the Aegean Sea. Risso's dolphins have been observed in the eastern Ionian Sea (Greece), around the western side of Crete and in the western Ionian Sea (Sicily). A few strandings have also been recorded in the northern Adriatic Sea. Few data are available for the southern Mediterranean Sea. This species is also found in Turkish coasts, such as Fethiye and Kalkan areas. Mixed-species groups of, striped and Risso's dolphins have been observed in the Ligurian sea, in the pelagic waters of the Gulf of Corinth, Greece (Frantzis and Herzing, 2002). They are absent from the Black Sea.

2.2 Population

No population estimates exist for this species in the Mediterranean. Line-transect abundance estimates exist only for the western central Mediterranean, where aerial survey from 2001-03 resulted in an estimate of 493 Risso's dolphins in an area of 32,270 km² (Gómez de Segura et al. *in press*). In all surveyed areas, encounter rates have been relatively low. There is no baseline information on abundance, and therefore it is not possible to assess trends for the Mediterranean population.

Risso's dolphins in the Mediterranean Sea are genetically differentiated from those in the eastern Atlantic. This implies that gene flow between the two areas is limited or negligible, and that the Mediterranean population, should be considered as a distinct "management unit" (Gaspari et al. 2007). Furthermore, there is also some evidence of population structuring within the Mediterranean (Gaspari et al. 2007).

2.3 Habitat

Risso's dolphins are pelagic, mostly occurring seaward of the continental slope. They frequent subsurface sea-mounts and escarpments where they are thought to feed on vertically migrant and mesopelagic cephalopods.

Davis et al. (1998) and Baumgartner (1997) report that in the Gulf of Mexico, these dolphins were mostly found over deeper bottom depths, concentrating along the upper continental slope, which may reflect squid distribution. In Monterey Bay, California, Risso's dolphins are concentrated over areas with steep bottom topography. Currents and upwelling causing local increases in marine productivity may enhance feeding opportunities, resulting in the patchy distribution and local abundance of this species worldwide (Kruse et al. 1999).

In the Mediterranean Sea, Risso's dolphin show a preference for deep pelagic waters, in particular over steep shelf slopes and submarine canyons (Cañadas et al. 2002; Azzellino et al. 2008). They are distributed on an area of well-defined physiographic characteristics, particularly along the steeper sections of the upper continental slope. Their occurrence is higher where the slope gradient is steeper (Azzellino et al. 2008). Azzellino et al. (2008) also suggested a "transient" use of habitat in the Ligurian sea, to maximize food exploitation.

Blanco et al. (2003) analysed stomach contents of 13 Risso's dolphins stranded on the west Mediterranean coast between 1987 and 2002 and found only cephalopod remains: 25 species belonging to 13 families were found in the samples, mostly Argonautidae, Ommastrephidae, Histioteuthidae and Onychoteuthidae. Despite the numerical importance and high frequency of small pelagic octopods, Blanco et al. (2003) assume that greater nutritional content came from of ommastrephids, because of their larger size of some specimens. According to the distribution records of prey in western Mediterranean, Risso's dolphins more frequently inhabit the outer continental slope and shelf break region. The preference for this habitat may be explained by the high marine productivity that enhanced feeding opportunities and this agrees with results from other countries and sightings in the area.

In the Mediterranean, Risso's dolphin groups size tend to be small to moderate in size, usually less than 100 (Azzellino et al 2008; Gaspari et al. *in prep*). Groups larger than 30 individuals are not common (Gaspari et al. *in prep*). In the Ligurian Sea, inter-individual associations within groups are mostly weak. However, some consistent relationships between individuals over periods of months and, in a few cases, years, exist (Gaspari, 2004). Limited evidence on genetic similarity among individuals within and among groups in the northwestern Mediterranean suggests that Risso's dolphins have a fluid social structure, but further investigation is needed (Gaspari, 2004). Hartman et al (2008) report groups ranging from two to 61 in the Azores.

2.4 Migrations

Although *Grampus* is present year round in most of its range, there may be seasonal onshore - offshore movements in some areas (Carwardine, 1995). *Grampus griseus* seems to be more abundant around northern Scotland in the summer and in the Mediterranean in the winter (Gannier 1998; Evans 1998). Similar seasonal shifts in abundance have been reported from the Northwest Atlantic, British coastal waters, and the south-east coast of South Africa. Summer "reproductive migrations" (characterised by schools of 20 - 30 animals with empty stomachs and females carrying large foetuses), and winter "feeding migrations" (characterised by schools of nearly 200 animals with full stomachs and females carrying smaller foetuses) have been observed off Japan (Mizue & Yoshida 1962). Dohl *et al* (1983) describes a correlation between population size, distributional expansion/contraction and water temperature in the southern Carolina Bight area, USA. They found that as the water cooled, Risso's dolphins appear to leave the Bight, moving offshore and to the south. Thus, it appears that abundance patterns fluctuate with sea surface temperatures independent of the season (Dohl *et al* 1983). Kruse (1989) reports that the dolphins were more abundant when the temperatures were stable than when large temperature fluctuations were recorded, suggesting that they prefer warmer well-mixed surface waters. Dohl *et al* (1983) reported that between 1980-1983, Risso's were moderately abundant all year on the north and central California coast during which time records showed only minor seasonal fluctuations. On the other hand, Forney and Barlow (1998) found no significant difference in distribution of Risso's dolphins in Californian waters. In both summer and winter, they were seen most frequently in the Southern California Bight and were also observed off central California. Risso's dolphins may also migrate regionally when environmental conditions change and in search for warmer waters and more prey.

In the Ligurian-Corso-Provençal basin, a core group of individuals is present during the summer and this group shows a degree of site fidelity (Airoldi et al. 2005). However, additional Risso's dolphins probably visit the area. Genetic data suggest a possible migration

during summer, to the Ligurian sea from other site of the Mediterranean Sea (Gaspari 2004). This aspect should be further investigated in order to understand Risso's dolphins population structure and possible patterns of seasonal migration.

3. Threat data

3.1 Direct threat to the population

Getting trapped as bycatch, entanglement, and pollution from coastal development pose the greatest threats to Risso's dolphins in the Mediterranean Sea. Evidence of by-catch of the species in swordfish driftnet fishery in the Mediterranean exists for the Aegean Sea, and along the coast of Spain and nord Africa.

Bycatches in longlines and gillnets have been reported in Spain (Valeiras *et al* 2001) and Italy (Notarbartolo di Sciara, 1990). There have been also some instances of accidental capture in fishing gear in Turkish coasts (Öztürk &Öztürk 1998).

3.2 Habitat destruction

Increasing levels of plastics and other refuse at sea may pose a threat to wild populations. Necropsies of specimens from Japan revealed that they had eaten foreign materials such as plastic bags, soda cans, and pieces of rope, which may have been fatal (Kruse et al. 1999).

3.3 Indirect threat

Accumulation of butyltin compounds, organochloride and DDT levels have been analysed in tissue samples from various specimens (Kruse et al. 1999). Risso's dolphins in the Mediterranean carry substantial contaminant burdens (Kim *et al* 1996, Marsili & Focardi 1997, Shoham-Frider *et al* 2002, Fossi & Marsili 2003). Mercury levels were determined in the tissues and organs (lung, liver, kidney, skin, muscle, bone) of Risso's dolphin by Frodello et al. (2000). The variation in mercury levels between the different tissues and organs (lung, liver, kidney, skin, muscle, bone) of the cetacean species are discussed as regards storage, biotransformation and elimination. The liver appears to be the preferential organ for mercury accumulation (with concentrations as high as 3298 mg Hg/g in the livers of *Grampus griseus*).

There are other several reports in the literature on beached *Grampus griseus* specimens, but not in the context of trace metals (Kim et al. 1996; Lawson and Eddington, 1998; Van Bressemer et al. 1989). Traces of metal concentrations were reported by Zonfrillo et al. (1988)10, Law (1997) and Law et al. (2001) in liver tissue of three *Grampus griseus* specimens from the UK, by Storelli et al. (1999) in various tissues of two specimens from the southern Adriatic Sea, and by Frodello et al. (2000) in one specimen from the western Mediterranean. High concentrations of trace metals were found in one *Grampus griseus* specimen, but no connection could be found between them and the autopsy results, which showed no remarkable findings in the internal organs. This and the similar high concentrations found in three other specimens from the Mediterranean led to the assumption that the high concentrations are a result of the high trophic level of this species, its diet and its old age (E. Shoham-Frider et al. 2002).

Sound pollution is a threat to deep-diving pelagic cetaceans, including Risso's dolphins. Although there are no records of Risso's dolphin strandings in the Mediterranean Sea directly attributable to noise, consistent with a syndrome related to exposure to high-intensity sonar has been described in this species in the UK (Jepson et al. 2005).

3.4 Threat connected especially with migrations

3.5 National and international utilization

There is no evidence of exploitation of the species in the Mediterranean. Elsewhere, these dolphins are killed for human consumption in some areas and have been sold on the open market in Taiwan. They are also caught in Japan and in Sri Lanka, where their commercial popularity increased when fisheries began selling their incidentally caught dolphins. In Sri Lanka, Risso's dolphins are apparently the second most commonly taken cetacean in fisheries, providing fish and meat for human consumption and fish bait; stocks there may be adversely affected (Jefferson et al. 1993). An estimated 1.300 Risso's dolphins may be landed annually as a result of this fishery and population estimates in these waters range only from 5.500 to 13.000 animals (Kruse et al. 1999). In Japan, Risso's dolphins are taken periodically for food and fertiliser in set nets and as a limited catch in the small-type whaling industry (Kruse et al. 1999).

4. Protection status and needs

4.1-2 National and International and protection status

Grampus griseus is listed in CITES Appendix II ; in Annex II of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean; in Appendix II of the Convention on the Conservation of European Wildlife and Natural Habitats. The North and Baltic Sea populations are included in Appendix II of CMS. The Mediterranean population is fully protected under ACCOBAMS.

Grampus griseus is assessed as "Data Deficient" in the IUCN Red Data list.

4.3 Additional protection needs

To date no specific conservation measures have been taken for Risso's dolphins in the Mediterranean Sea. The existence of a Marine Sanctuary for cetaceans in the Corso-Ligurian Basin, has proved to be of great value for the study of this species. In fact, the majority of detailed studies of Risso's dolphins within the Mediterranean, took place in the Sanctuary. It is therefore advisable to increase and geographically expand the research effort on the Risso's dolphin, to identify suitable habitats for the conservation of this species within the Mediterranean Sea. Furthermore, considering the relative low occurrence of the species in the Mediterranean, the lack of information on population trends, and the recent genetic findings; which define mediterranean Risso's dolphin as a distinct population, and assume the existence of sub-populations within the Mediterranean, it advisable to assess, whether distinct populations of Risso's dolphins do exist. The description of their genetic and demographic characteristics can help directing conservation efforts for the protection of distinct populations and the maintenance of biological diversity in Mediterranean Sea.

5. Ranges states¹

Occurrence of the species has been proved in the following Mediterranean riparian states: ALGERIA, CROATIA, CYPRUS, FRANCE, GREECE, ISRAEL, ITALY, LYBIA, MALTA, MAROCCO, MONACO, SPAIN, UNITED KINGDOM (Gibraltar).

6. Comments from Range States

7. Additional remarks

There is limited information regarding population size of Risso's dolphin. However, there is some evidence that this dolphin may be at risk of depletion if fishery-related mortalities remain at current levels. Pollution is the other major factor affecting the population of Risso's dolphins.

8. References

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¹ CMS Parties in capitals.

- results and trace metal concentrations *The Science of the Total Environment* 295 157–166 Elsevier Science B.V.
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