

CETACEAN SIGHTINGS AND INTERACTIONS WITH FISHERIES IN THE ARCHIPELAGO PONTINO CAMPANO, SOUTHERN TYRRHENIAN SEA, 1991-1995.

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INTRODUCTION We chose this area because in the past it has never been object of a detailed systematic study on marine mammals. This is a preliminary report of five years observations.

The purpose of this project was to initiate a long term study on cetaceans in a sample area, to record the most common species, analyse seasonal variations in their presence, verify the existence of resident cetaceans and study interaction with fishery.

METHODS: The archipelago Pontino Campano is composed by nine volcanic islands, forming three distinct groups, old eruptive centres, separated from each other by about 40 km. During the research we adopted two different methods: between June 1991 and June 1993 data were collected by ferries, cargo and fishing boats sailing in the area. The recordings were discontinuous but allow to find out the winter presence of cetaceans in the area. From 1993 to 1995 to get more information we used a 15 m. sailing boat, "Barbarian", equipped for high seas navigation with a GPS, recording data base and a hydrophone system. A constant watch was kept for cetaceans and all sightings noted with their position, group size, behaviour, associated species, presence of juveniles, sea state and wind strength. Trips were conducted daily from May to October. No trip was started in conditions greater than sea state 5. Travel was always made by sails.

RESULTS A total of 330 sightings comprising 3494 individuals of seven cetacean species were recorded during the period of the research (fig.1). Seasonal changes in sightings frequency are presented in fig.2. We tried to quantify the observers' effort from 1993 to 1995. Despite all dependent variables (sea state, light condition, observers' height, boat and cetacean behaviour) a sightings frequency was calculated dividing the number of individuals by the travelled distance (Km). These indices varied between 0,09 in 1993, 0,12 in 1994 and 0,13 in 1995 (mean frequency 1,11).

Striped dolphins (*Stenella coeruleoalba*) They were the most frequent cetacean encountered, with a total of 183 sightings, comprising 2557 individuals. The great majority were sightings of groups of 6-10 individuals (mean group size = 13.97) with a maximum group of 350 animals and concentrated in the south waters of the islands, at an average depth of 700 m. The number of sightings increased to a peak in the month of September. In the same month we recorded the highest concentration of juveniles in striped dolphin's groups.

Bottlenosed dolphins (*Tursiops truncatus*) They were distributed in coastal waters particularly at the mouth of the river Volturno, and around Ventotene and Ischia islands at an average depth of 100 m. A total of 68 sightings comprising 501 individuals were recorded during the study. Most sightings were groups of 2-5 individuals (mean group size = 7.36) with a maximum group size of 100 individuals. Sightings frequency increase to a peak in June, with the highest concentration of juveniles from May to August. A resident group of 15 individuals had been photo-identified and studied since 1993: the group was composed of four females, six males, one subadult and four juveniles. The home range of this group was extended from Ischia to Ponza, but the most frequently observations were made around Ventotene.

Sperm whales (*Physeter macrocephalus*) They were recorded during the survey with 29 sightings of 39 individuals. Sightings were largely confined to the southern waters of the islands at an average depth of 700 m.; most sightings were of a single animal (mean group size = 1.34) and with

greatest frequency in August and September. They were recorded near the coast at night, during the breeding season of “European flying squids” (*Ommastrephes sagittatus*), making use of the high concentration of squids near fishermen's lights.

Risso's dolphins (*Grampus griseus*) They were relatively uncommon, with 13 sightings of 101 individuals. They were encountered very close to the shore of the islands, in groups of 7-10 individuals (mean group size = 7.76) with a maximum of 15 individuals. Sightings occurred in all years, decreasing in winter and increasing in September. Juveniles were recorded in April, May, June and September.

Long finned pilot whales (*Globicephala melas*) They were rarely encountered in the area, with six sightings comprising 64 individuals. They were observed most frequently in groups of 6 (mean group size = 10.66) with a maximum of 35 individuals and were most abundant in October, in south westerly waters of the islands. Photo-ID studies revealed the seasonal presence of recognisable individuals in a single location (around Ventotene).

Common dolphins (*Delphinus delphis*) They were the rarest cetacean in the area with only four sightings of seven individuals. They were always in association with large groups of striped dolphins. Two juveniles were recorded near Ponza, swimming near their mother. In 1996 (data still being analysed) one sighting of 15 individuals of common dolphin was recorded without any association with striped dolphin.

Fin Whales (*Balaenoptera physalus*) They were recorded throughout the area with 16 sightings of 28 individuals. The majority were sightings of single animals (mean group size = 1.75), with a maximum group size of three individuals. They were most abundant in summer time, from May to September. The number of juveniles reached a peak in the month of September.

Unidentified They were recorded mainly in 1991-1993 during the ferry-census, for a total of 12 sightings comprising 197 individuals.

Interactions with fishery were recorded in the area with illuminated handlines for squids, surface longlines, trawling nets, bottom gillnets and drift nets.

Illuminated handlines for squids: interactions occurred with striped dolphins, Risso's dolphins, long finned pilot whale and sperm whale. In all cases an opportunistic feeding was completed by small groups (of 2-5) or single animal (sperm whale); cetaceans waited near the fishing boats until gear's light had attracted a great number of squids under the boats and then they quickly swam to catch their prey; this technique may be repeated several times in one night.

Surface longlines: one interaction was recorded with a sperm whale. We found an abandoned gear in which a decomposed sperm whale was entangled, probably drowned in the course of capturing his prey.

Trawling nets: interactions were recorded with striped and bottlenosed dolphin, in both cases involving an opportunistic feeding by small groups (of 2-5): making long dives, dolphins fed all around and within the net especially at the end of the haul.

Bottom gillnets are used in the area only by artisanal fishermen. Around the island of Ventotene and Ischia, interactions were recorded with bottlenosed dolphins: every year, in the months of March, May and September they were observed preying from the nets. Dolphins made long dives around the net, and produced large rips to catch their prey.

Drift nets are used in all the area especially in June, July and August. Interactions recorded were with striped dolphin and sperm whale: we found on the high sea, two specimens of striped dolphin without their tails (sometimes fishermen cut the tail to more easily extract the cetacean from the net); a juvenile of sperm whale probably caught, was found dead near Naples with an oblique cut from throat to tail. In 1995 we spent 28 nights from June to August with the boat adrift, between

about 55 swordfish boats that were in the area. Our aim was to record the vocalisations of any cetaceans in difficulty. Every night, from Ponza to Capri (about 120 km.) fishermen set two interrupted barrages (exactly along 1000 m. and 700 m. depth's lines): the boats are co-ordinated by radio and the nets set one after another, leaving a minimal security distance between the boats; drift nets were set at 20:30 hours and retrieved at 03:00 hours. During 243 hours of workable underwater listening we never heard a click: cetacean biosonar regularly entered in our hearing range at 05:30 hours and disappeared at 21:00 hours.

CONCLUSIONS: Five years of observations have allowed to establish the rich variety of cetacean species around the archipelago Pontino Campano: seven species were identified in total, one baleen whale, three toothed whales and three small dolphins. We also verify the existence of resident bottlenosed dolphins and a seasonal presence of five photo-identified individuals of long finned pilot whale around Ventotene island.

Our main objective is to make a long-term study in a sample area of the Mediterranean sea. Long term study provides a powerful way for developing an understanding of the social lives of long lived animals such cetaceans, besides which we are interested in improving our knowledge about fishing interactions so that a conservation programme can be initiated despite all the difficulties involved. Of course, in general, several years will be necessary to adequately conduct analyses of such observations.

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