

Incidental captures of *Caretta caretta* (L.) with surface long-lines in the Western Mediterranean

J.A. CAMINAS

Instituto Español de Oceanografía, Centro Costero de Fuengirola,
Apartado 285, 29640 Fuengirola, Málaga (España)

The existence of loggerhead in the western Mediterranean its seems to indicate that's a generalized event, at least in some restricted areas around Balearic islands, however the bibliography about this subject it is not abundant. Recently other authors (Salvador, 1985; Mayol, 1986), have begun new works in the field of Mediterranean marine turtles, in Balearic islands and Alboran Sea. In 1986 the I.E.O. (Spanish Oceanographic Institute) started to collect information among the Spanish long-liners that were fishing in the area limited between Gibraltar Strait and the 6° East. The amount of turtles catches with surface long-lines could be evaluated sampling in the landing. The most of these turtles are liberated in the same moment they are fished. The surface long-line it is a fishing gear used to fish swordfish (*Xiphias gladius*) formed by a nylon line of different longness with 1000 or 2000 hooks, already described for the Spanish longliners by Rey and Alot, (1984). This fishing gear is used along the whole year, although in the period June-September the highest effort is registered (Caminas et al., 1986). Also turtles are fished along the whole year. Months with higher captures, it coincided with months of major fishing effort. Most important captures of loggerhead were on July 1986 as well as 1987. Alicante's port, placed in the middle of the Spanish Mediterranean coast, is the main point in swordfish's landings. The percent of the total Mediterranean swordfish's captures landing in Alicante is showed in table I. The estimation of loggerhead total captures could be obtained from Alicante's data.

Año	% Alicante	Nº Turtles.*
1986	42.74	7.478
1987	41.00	8.389

* Incidentally captured turtles and released. Fleet landing in Alicante's port.

Probably the increase observed in the loggerhead's incidental captures in 1987 can be due to a bigger size of the Mediterranean population according to direct observations of the fishermen.

Relation existence between incidental captures and fishing effort.-

Month variation of longliners fishing effort in the Spanish Mediterranean, bases on number of hooks x fishing days/1000, is showed in table II.

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1986	2	4	7	12	309	634	3654	2497	219	82	49	73
1987	-	1	22	115	739	2732	2306	1438	365	29	21	1
1986	252.8	378.7	381.9	509.9	1172.7	823.9	1385.1	1356	1224.9	761.3	658.5	680.6
Tot. Med.												

The effort values, lower in the beginning of the year, are increased on May-August, descending later until December. The maximum value become in August, with 1385 thousands the captures for turtles have a parallel variation to the annual increase of the effort, the maximum become on July, been lower on August and September, in which the efforts are still elevated.

Fishing area.-

The fishing area is very wide, but do not include the whole Spanish Mediterranean. Thanks to the fishing area was included in the surveys to the fishermen, it has been possible to delimitate, in a general way, the area where loggerhead are captured. In general, this area is the semen in which the longliners are fishing, though, there are some areas, i.e. Alboran Sea, with only a few capture's data. Waters around Balearic islands can be considered like the most important area, however we cannot forget that also in this waters is localized the

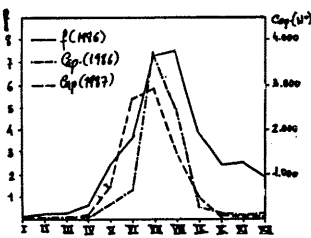


Fig. 1. Longliners effort and loggerhead capture relationship.

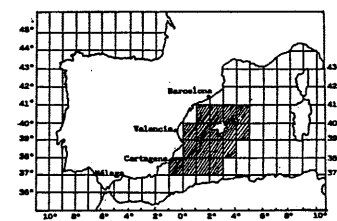


Fig. 2. Incidental loggerhead fishing area in 1987 Spanish Mediterranean long-liners.

biggest number of longliners. In the grid situated south Ibiza is where more turtles are captured. (Fig.2)

Mortality.-

Although a great number of loggerheads are captured with long-lines, only a few specimens appear dead in the beach. During 1986 and 1987 we have founded only two dead turtles in Alboran Sea beaches, one of them with a hook in the month. In a experiment realized by J. Mes (Pers. com.) with 6 turtles captured with long-lines, only one died during the way to the Recuperation Center, the rest could throw up the hook and later were liberated. In the same way, two turtles captured in Fuengirola, both with a hook, that were extracted were freed normally during three months and after to take some measurement were liberated.

Spawning areas.-

Although there are not pairings areas in Alboran Sea of *Caretta caretta*, the 29th of April in 1986 was captured a female turtle when was getting beach near Malaga, probably to search a place to spawning or to other reasons. It was liberated after to take some measurements. This event is important because in Zakynthos the spawning period starts on June and the turtle was captured on the last days of May. (Margaritoulis, 1985).

REFERENCES

- Caminas, J.A.; E. Alot; A. Ramos. 1986.- Análisis de los OPE del Pez Espada, *Xiphias gladius*, del área BIII-95 en el año 1984. Col. Doc. Cient. IOCAF. Vol. XXV: 175-184.
- Margaritoulis, D.N. 1985.- Factors affecting breeding and nesting population assessments of the long-necked sea turtle *Caretta caretta* (L.) in Greece. *Minist. of Phys. Plann. Periodic Report on Contrad n° ENW-790-CR*.
- Mayol, J. 1986.- Incidencia de la pesca accidental sobre las tortugas marinas en el Mediterráneo español. *Publ. Tec. SEDONA*. (En prensa).
- Rey, J.C.; E. Alot. 1984.- Contribución al estudio de la pesquería de palangre del pez espada (*Xiphias gladius*) en el Mediterráneo occidental. Col. Doc. Cient. IOCAF. Vol. XX(2): 428-434.
- Salvador, A. 1985.- Guía de campo de los anfibios y reptiles de la Península Ibérica. Isla de Baleares y Canarias. Eds. S. García León.

Mortality of Marine Turtles (*Caretta caretta* L. and *Dermochelys coriacea* L.) consequent to accidental capture in the Gulf of Taranto

G. DE METRIO* and P. MEGALOFONOU**

* Dipartimento di Produzione Animale, Università, Bari (Italia)

** Istituto Comunale di Biologia Marina, Nardo, Lecce (Italia)

A large number of marine turtles, prevalently of the *Caretta caretta* species with few specimens of *Dermochelys coriacea*, are present in the Gulf of Taranto and its immediate vicinity in the summer and autumn months. Trophic and reproduction factors are probably the cause of this. Although the phenomenon concerns the whole area it appears more evident off the Calabrian coast, probably due to the vast areas of sandy beach where the animals go to reproduce, even if this has yet to be demonstrated. Unfortunately the presence of the Cheloni in the area coincides with the fishing period for Big Pelagic (swordfish and albacore) which is carried out with long-line and travelling net and consequently causes the catch of high numbers of turtles which, although accidental, determines the death of many specimens for two main reasons. Firstly the flesh of *Caretta caretta* is considered a delicacy in some areas (Ionic coast of Apulia) for which consumers are willing to pay high prices so inducing fishermen to break the law (M.D. 21/5/1980 - U.G. n° 156 9/6/1980 forbidding the catch and sale of turtles) and land the captured animals. Secondly, the specimens caught with long-line generally swallow the hook which sticks in their oesophagus or stomach even after they have been freed, with obvious consequences (bleeding, starvation). It is difficult to say how many animals, freed in these conditions, manage to survive after the trauma. The travelling net, widely used by fishermen on the Ionic coast of Calabria, where fortunately the Cheloni are not eaten, causes death by suffocation of a certain percentage of captured animals. From our observations carried out directly on board vessels with this equipment, mortality resulted at 30%, mainly in the case of small to middling-sized specimens. Of the 31 specimens of *caretta* taken from the net in our presence, 9 were already dead. We believe that data and observations collected during our investigation on Big Scombroidei fishery in the Gulf of Taranto (DE METRIO et al., 1986;1987) may give an idea of the entity of catch and consequently of mortality of *Caretta*. Big Scombroidei fishery is carried out seasonally here by 88 vessels from Apulian and Calabrian harbours as well as by an unknown number of boats from Sicilian harbours. Of these 88 vessels, 59 are equipped with long-line while 29 have travelling nets. For the long-line fishery, data were collected on landing in the harbour of Porto Cesareo on the Ionic coast of Apulia and those relative to the four-year period 1978-1981 have already been reported (DE METRIO et al., 1983). We reproduce here the number of individuals caught for each single year for a comparison with the figures for the following five-year period:

year	no vessels	no <i>C. caretta</i>	no <i>D. coriacea</i>
1978	36	226	0
1979	27	964	4
1980	32	286	1
1981	23	341	1
1982	31	139	1
1983	27	0	0
1984	29	110	0
1985	36	29	0
1986	34	6	0

A reduction of catch in the last five years appears evident by we are not convinced that the data for these years are completely accurate. The fact that no specimen was caught in 1983 is totally impossible. Actually with the coming in force of the above-mentioned law and the resulting control by the authorities together with active propaganda campaigns by protection bodies induce fishermen to keep the real entity of catch from even researchers and we believe the catch to be much greater than that reported. Fortunately the phenomenon is not generalized to all the ports in Apulia in fact at S.Maria di Leuca, a harbour a few miles from P. Cesareo, the fishermen collaborate enthusiastically with Prof. ARGANO in the marking and freeing of the turtles caught. Bigger catches are obtained with travelling nets but they are difficult to assess as all the animals caught in the nets are freed by the fishermen, indiscriminately, when they are brought in and are not found in the landed catch. However, from personal observations directly on board and from what trustworthy, expert fishermen say we have calculated that the 29 vessels studied, working with nets along the Ionic coast of Calabria, catch (and re-catch?) 16000 specimens totally for each season. One vessel with 12000 metres of net, catches from 3 to 50 specimens on an average in one trip. Calculating that for every fishing season a vessel totals 60 working days it is evident that our figures are lower than might be calculated. Calculating only a 10% mortality and therefore 2/3 inferior to that observed, the result is still alarming. We believe that this phenomenon is not to be overlooked when studying the numerous cases of stranded turtles which the media have only just started to report, superficially attributing the cause to hypothetical problems of pollution. The high mortality due to accidental catch together with other causes of death which we will report in an extenso work, and with the increasing anthropization of even the remotest beaches constitute a difficult problem for the survival and protection of the species in question. On the other hand the great importance of Big Scombroidei fishery for the economy of southern Italy cannot be ignored.

REFERENCES

- DE METRIO G., PETROSINO G., MATARESE A., TURSI A., MONTANARO C.; 1983. Importance of the fishery activities with drift lines on the populations of *Caretta caretta* L. and *Dermochelys coriacea* L. (Reptilia, Testudines), in the Gulf of Taranto. *Oebalia vol. IX*, n.s.
- DE METRIO G., FILANTI T., MEGALOFONOU P., PETROSINO G.; 1986. Valutazione sull'entità, la composizione strutturale e la dinamica biologica degli Stock dei Grandi Scombroidei (*Thunnus thynnus* L., *Thunnus alalunga* (Bonn.), *Xiphias gladius* L.) nel Golfo di Taranto. *Relazione preliminare C.N.R.*, Roma 10/11 novembre 1986.
- DE METRIO G., MEGALOFONOU P.; 1987 (In press.). Catch, size distribution, growth and sex ratio of swordfish (*Xiphias gladius* L.) in the Gulf of Taranto. *Tech. Consul. Adriatic Sea, FAO - C.G. P.M.*, Bari 17 pag.