



SCIENTIFIC ADVISORY COMMITTEE (SAC)
SUB-COMMITTEE ON MARINE ENVIRONMENT AND ECOSYSTEMS (SCMEE)
SUB-COMMITTEE ON STOCK ASSESSMENT (SCSA)



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**Impact of marine mammals on purse seine:
evaluation of economic loss**

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← Introduction →

- ☀ **By-catches and incidental mortality of small cetaceans associated with fishing activities,**
- ☀ **The interference of small cetaceans with fishing activities,**
- ☀ **Negatively affect fisheries by resulting in loss of bait, damage to fishing gear, decreased catches and increased time spent in fishing operations.**
- ☀ **In North Est Tunisian water, data on stranding records and fishermen's reports indicate that incidental capture of small cetaceans and other operational interactions take place **mainly** in purse seine fisheries.**

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← Introduction →

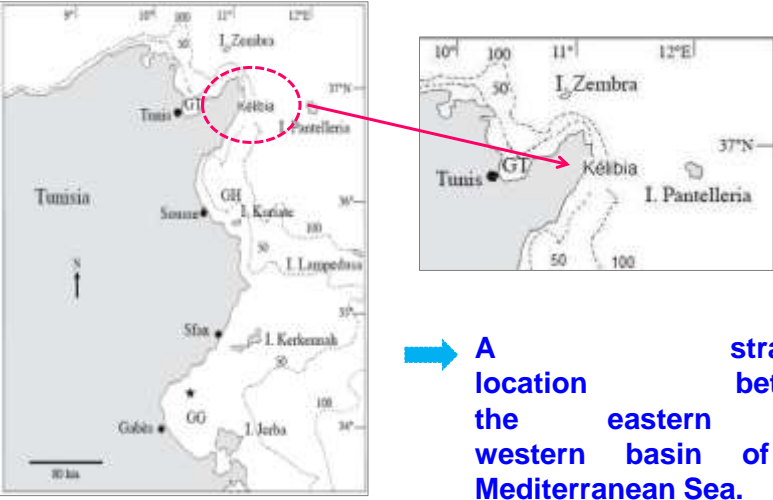
- ☀️ Tunisian fishermen using purse seine have repeatedly expressed concern about the **adverse effects** of bottlenose dolphins during purse seining.
- ☀️ To address this hypothesis, data were collected on dolphin's occurrence during purse-seining by:
 - * observers on board fishing vessels
 - * study done in Kelibia (Benmessaoud, 2008)
 - * interviews to skippers.

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← Introduction → **Material& methods** →

Study Area

Kelibia's harbour (North Est).



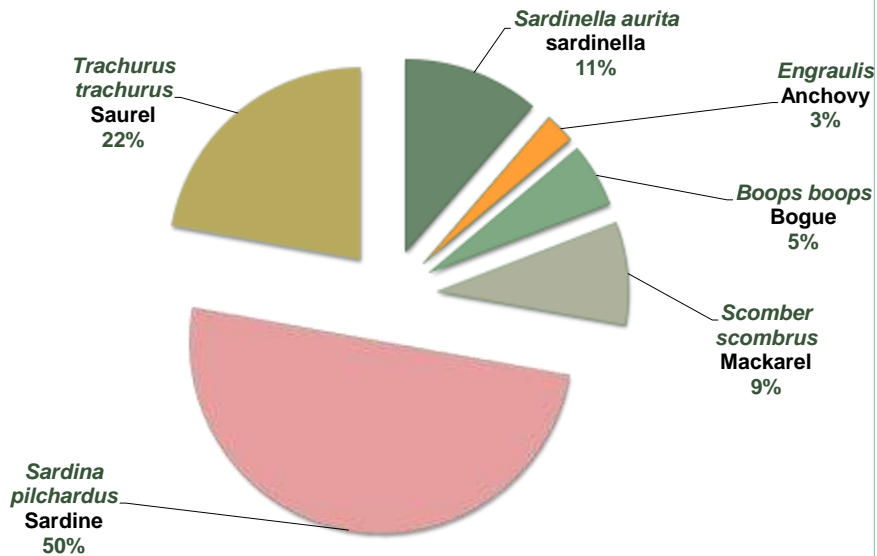
➡️ A strategic location between the eastern and western basin of the Mediterranean Sea.

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Small pelagic fishing activity contributes 11% of national production: 10 785 t/2009 (DGPA 2010)

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Sardine (*Sardina pilchardus*), an important prey species of the bottlenose dolphin (IRI>10%) (Liret, 2005)


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In each fishing set, the following variables were measured:

- ✦ The **observation effort** within each step of the fishing trip (steaming to or from the fishing areas, searching for fish schools and fishing),
- ✦ The **catch of target species** per purse seine,
- ✦ The **occurrence of new holes** larger than 20 cm in the net from each monitored boat,
- ✦ The **sighting of dolphins** in the vicinity of the nets,
- ✦ The **fish behaviour**,
- ✦ The **by-catch events** of cetaceans.

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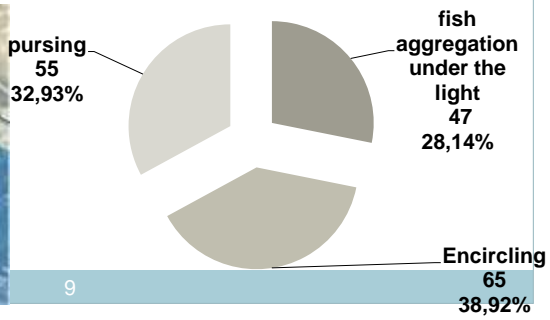
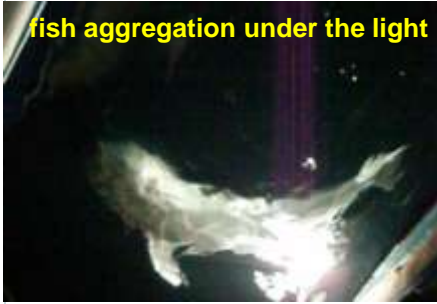


Observations were carried out from **August 2009 to July 2010**.

- ➡ **23 seiners** out of **64** were chosen, a sample rate equal to **36%**.
- ➡ **437** fishing trips were realized on these seiners.
- ➡ **167** of dolphins attacks were recorded: or **48.13%** of total fishing trips.
- ➡ Fishing activity takes place within the coastal waters of the continental shelf (**beyond the 30 m** depth contour).

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Interactions with nets were distributed during the different fishing operation phases



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Differents size and position of holes



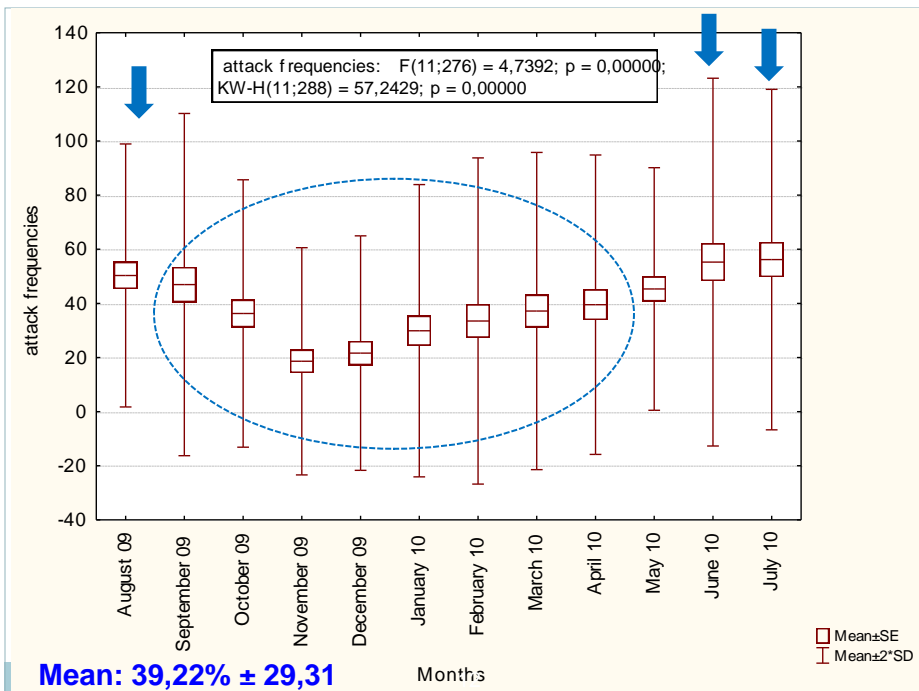
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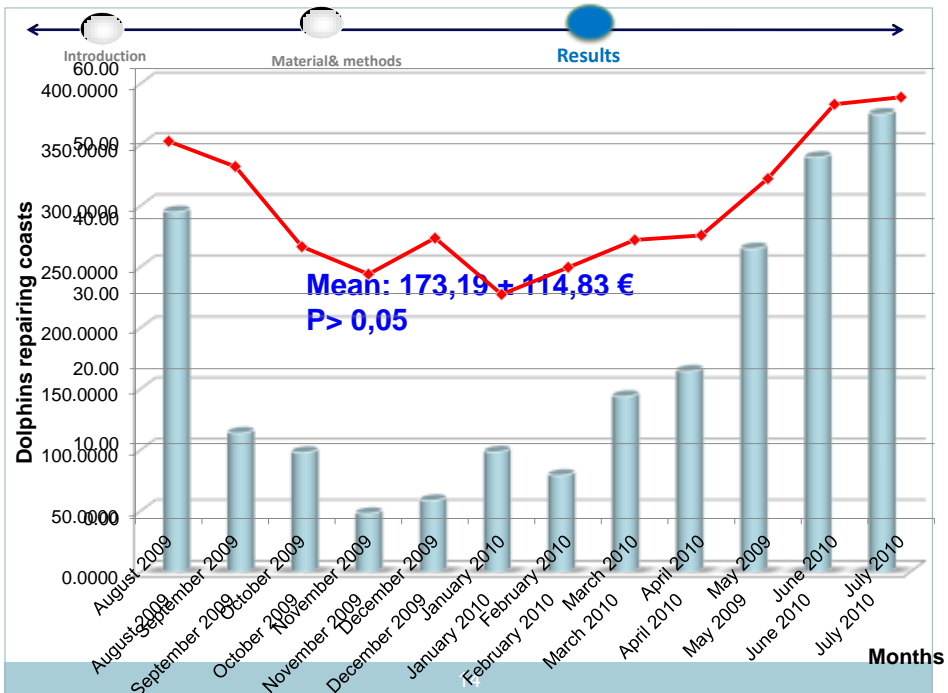
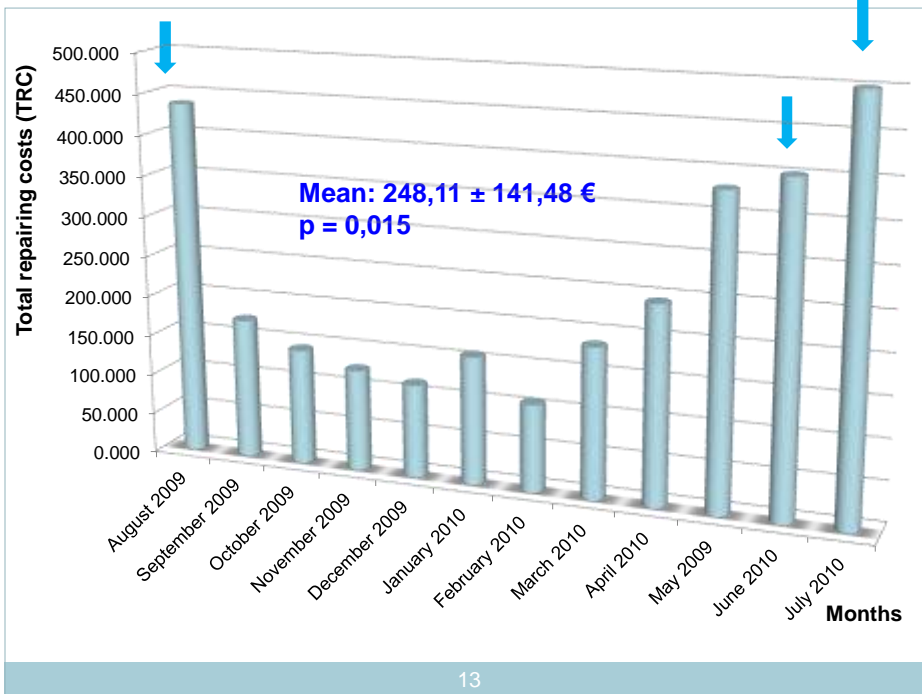
	position on the purse seine			Total
	lower	medium	upper	
Small holes (20-40 cm)	50,00	42,00	20,00	112,00
Medium holes (40-60 cm)	31,00	38,00	17,00	86,00
Large holes (>60 cm)	39,00	15,00	9,00	63,00
Total	120,00	95,00	46,00	261,00

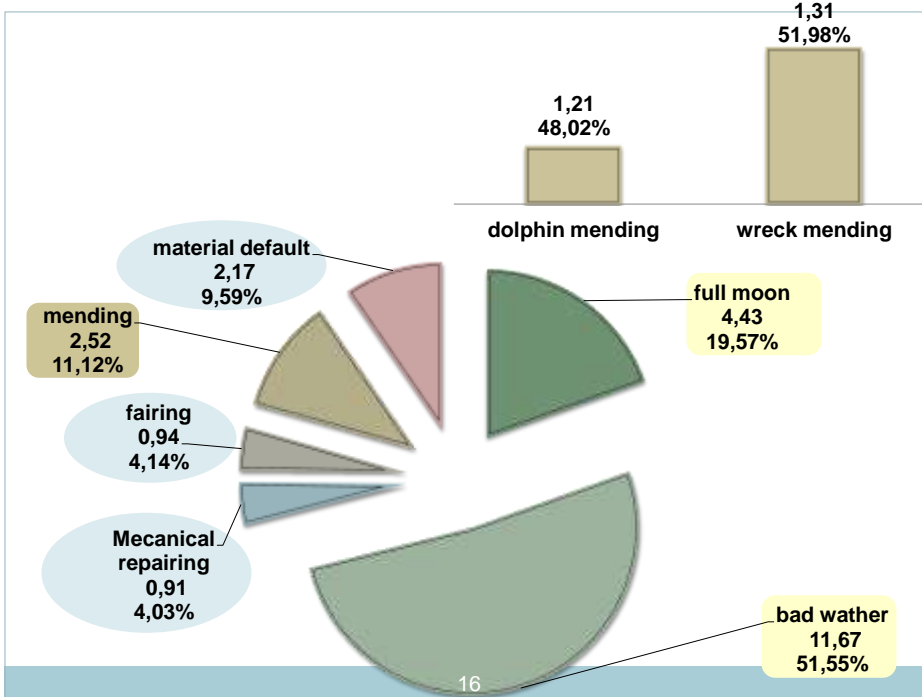
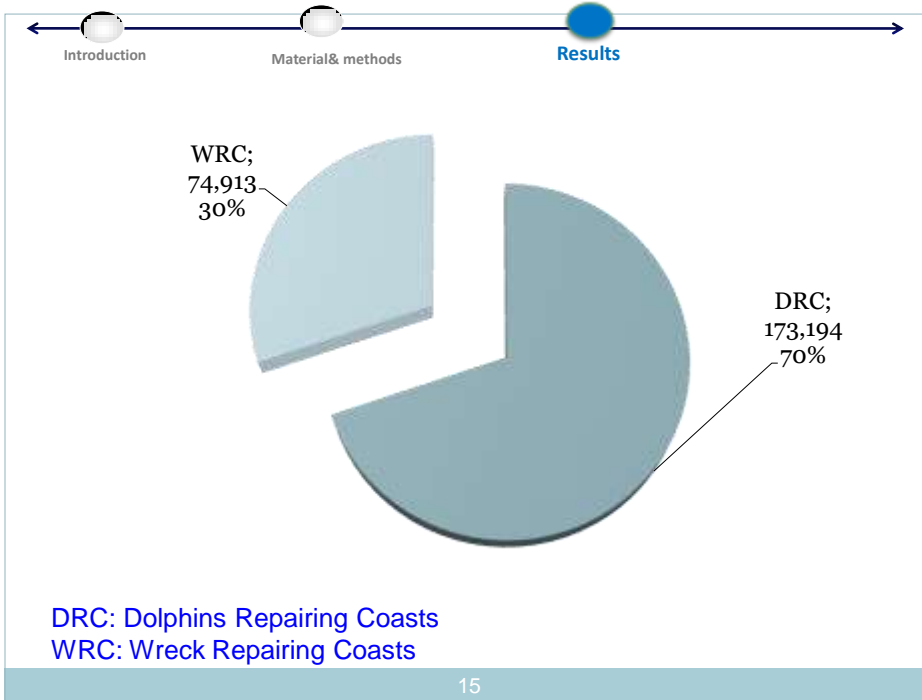
➡ A mean of 261 holes were counted in the monitored segments of the nets.

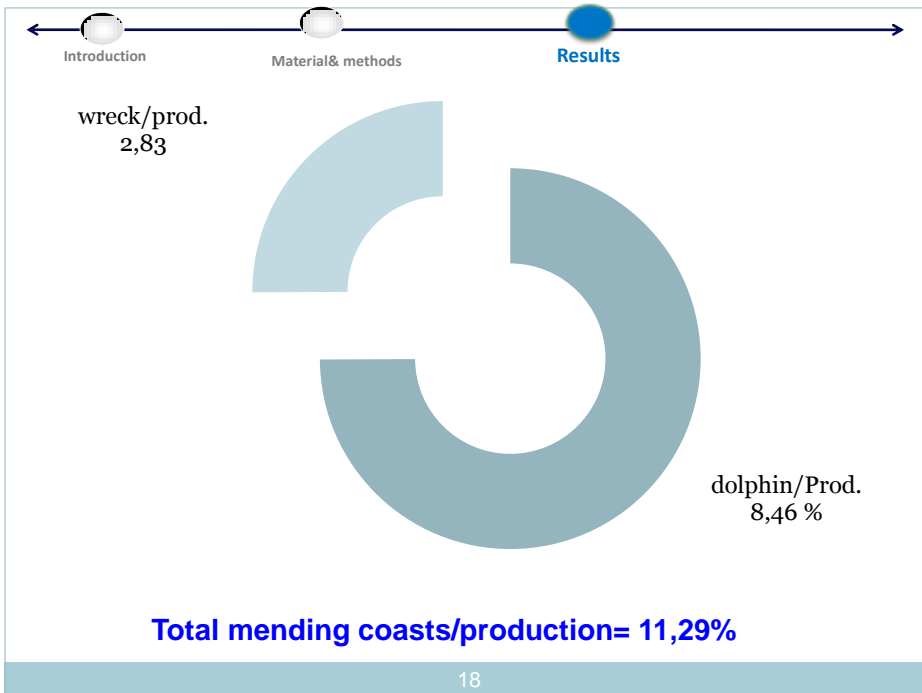
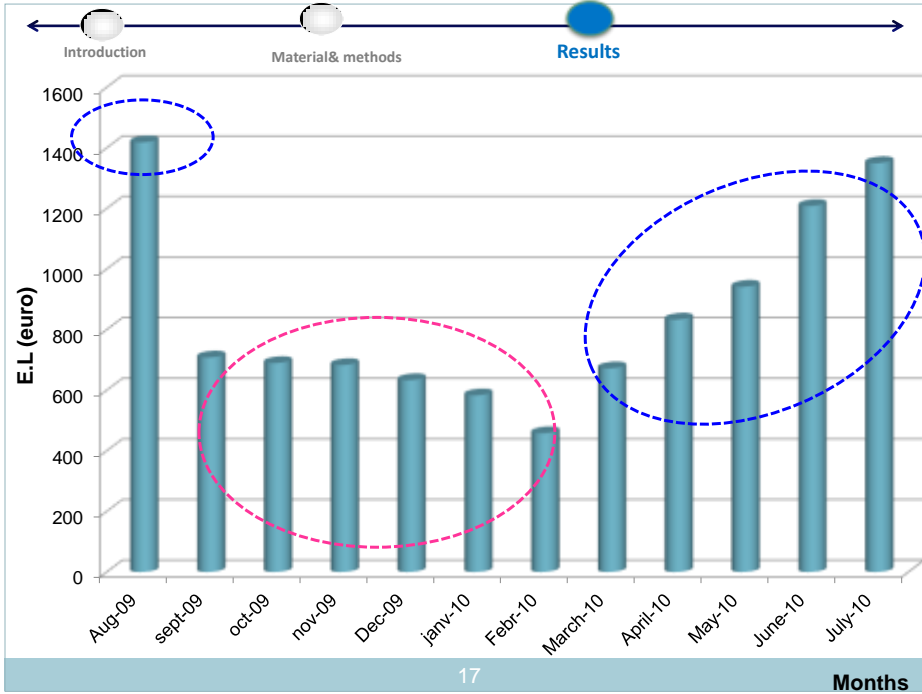
➡ 45,98% of the holes were detected on the lower part of the net.

➡ 75,86 % of them were smaller than 60 cm, independently of the location.









☀ In summary, it seems likely that the greatest potential for conflict exists :

* surface purse seine operating in areas of high dolphin density,

➡ Fishing area

* both fishermen and dolphins target the same prey

➡ Prohibiting fishing for a period of years
≈ Biological recovery for Small pelagic

☀ The reasons for mending damage dolphins are estimated at 70% compared to all other causes (wreck).

➡ Line Fineness

☀ Recipe decrease because of the additional cost of repairing damage.

➡ Pescatourism and dolphin watching

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Thank you for your attention



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