



"Mitigating the Conflict in Greek Seas"

2005-2009



Giorgos Paximadis WWF Greece

2nd Transversal Working Group on By-catch

December 8, 2011

Antalya

Project participants



The problem

Monk seal – fisheries interaction: key-threat to the conservation of the critically endangered Mediterranean monk seal *Monachus monachus* (IUCN, 2003)

Impact to the monk seal (300 individuals)

Increases the overall mortality of the species due to:

deliberate killing: 54% of the adult seals found dead in Greece

entanglement in fishing gear: 48% of deaths recorded in sub-adult seals



The problem

Monk seal – fisheries interaction: key-threat to the conservation of the critically endangered Mediterranean monk seal *Monachus monachus* (IUCN, 2003)

Impact to fisheries (16.000 artisanal vessels)

Reduces coastal fishermen's income due to:

- loss of catch
- damaged gear
- time lost for repairs



The project's objective

To improve the conservation status of the largest population of the Mediterranean monk seal in the world

by

mitigating the negative consequences of the monk seal-fishery interaction

to both



the seals

(i.e. decrease the overall mortality rate of the species)

&

the fishery sector

(i.e. decrease the loss of income through specific measures)

Project's geographical approach

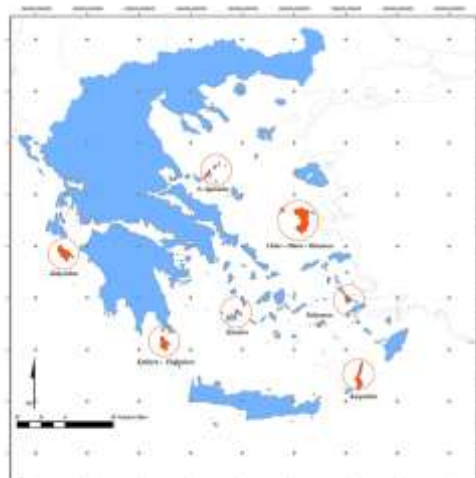
Fisheries data at the two most important monk seal breeding sites:

1. The National Marine Park of Alonissos N. Sporades &
2. The Kimolos-Polyaigos island complex

Questionnaires at 7 "hot spots"

1. Alonissos
2. Kalymnos
3. Elafonisos – Kythira
4. Chios -Psara
5. Kimolos–Polyaigos
6. Karpathos
7. Zakynthos

At the national level
Coastal and island Greece



Record seal-fishery interactions at "hot spot" areas in collaboration with local fishermen through questionnaires

Fishermen interviewed reported:

- Fish stocks are becoming depleted due to **overfishing** and **illegal fishing by both professional and recreational fishermen**
- **Active law enforcement** and constraint of illegal fishing activities **needed** to reverse this situation
- **Damage caused by marine mammals** is one of the most **important** impediment of the sector
- Majority (53%) suggests that there should be **monetary subsidies** for the damage caused by marine mammals
- Small minority (11%) in support of **deliberate killings** as a measure for the mitigation of the conflict



Measuring the actual intensity of the seal-fishery interaction at the two most important monk seal habitats Alonissos & Kimolos

In cooperation with the **Fisheries Research Institute:**

Sample fishing with trammel nets and gillnets* in collaboration with local fishermen using their boats and gear.

The parameters measured for 2 years:

- catch per unit effort (CPUE)
- seasonal variation in CPUE
- variation in CPUE by type of fishing gear
- damages from seals/other marine species, especially dolphins

**no longlines*

Yield data from local fishing boats during landings every month for a total of 24 consecutive months in each area.



Measuring the actual intensity of the seal-fishery interaction at the two most important monk seal habitats **Alonissos & Kimolos**

The **average frequency of marine mammal attacks** in both areas was recorded to be 21% of the fishing trips of the fishermen.

Considering the **average damage** caused in the nets during the attacks of marine mammals, damage was recorded to be **1,1% of the total length** of the net used in **every fishing trip**.

The magnitude of the **damage** was recorded to be **higher** during **dolphin** than monk seal attacks in both areas.

e.g. Alonissos:

19% seal attacks (50% small damage – 1 day of repairs)

2% dolphin attacks (60% large damage – 3 or more days of repair)



Stomach content analysis findings

- **Most important prey** for monk seals are the **octopi** (*Octopus vulgaris* and *Eledone spp.*), constituting **61%** of the total weight of stomach remains
- Monk seals prey on a great **variety of marine species** (more than 75 different taxa), some of which are commercially valuable, indicating direct competition with the coastal fisheries sector





Proposed measures for reducing seals-fisheries interactions

Category	Measure	Aim
Fisheries management measures	Cessation of all fishing activities during May	<ul style="list-style-type: none">• Improvement of state of fish stocks• Reduction of entanglement of juvenile seals
	Increase selectivity of fishing gear	<ul style="list-style-type: none">• Improvement of state of fish stocks
	Banning of octopus fishing May to July & increase minimum landing weight	<ul style="list-style-type: none">• Improvement of state of octopi stocks• Increase of prey availability for monk seals
Financial aid measures	Financial aid for marine mammal damage on nets	<ul style="list-style-type: none">• Decrease of marine mammal deliberate killings• Reduction of income loss of coastal fishermen
Technical and practical measures	Placement of protective & reinforced nets in aquacultures	<ul style="list-style-type: none">• Reduction of seal-aquaculture interactions
	No AHDs	No disturbance of monk seals



Proposed measures for reducing seals-fisheries interactions

Fisheries management measures

1.Cessation of all fishing activities in Greece during **May**, an important month for the reproduction of many fish species and a period when 30% of juvenile monk seals get drowned due to entanglement in fishing gear.

1.Increase of selectivity of static nets to a mesh size minimum of 20mm (40mm diagonal) and size 14 hooks for long-lines.

1.Banning of octopus fishing for recreational fishermen and professional fishermen using traps from **May to July**, as this is an important period for the reproduction of octopi, which make up 61% of the monk seal diet in Greece. **Increase** of the **minimum landing weight** for octopus from 500gr to 750gr.





Proposed measures for reducing seals-fisheries interactions

Financial aid measures

Back in 2009, the Action Plan - based on 2009 prices and the parameters and hypotheses below, proposed an indicative **financial aid per fisherman of 1.848 euros per year**

Maximum fishing days per year: 200 (X)

Maximum length of nets for one fisherman: 4.000 (Y)

Average encounters with marine mammals: 21%

Average damage per fishing day on the length of nets: 1.1%

Cost of trammel net per meter: K

Financial aid= X*Y*0,21*0,011*K



The Action Plan today

- Has been submitted to competent authorities since 2009, but not yet adopted.
- Financial aid measures part is essentially not valid anymore in this format, given the state of the Greek economy.
- The adoption of relevant management measures with maximum possible stakeholder agreement is still much needed.
- Given the state of the stocks and its impact on the problem, marine mammal and fisheries negative interactions will only get more intense in the future, unless action is taken.





Thank you