



PIETROLUONGO



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Dipartimento di
Biomedicina Comparata
e Alimentazione



CReDiMa
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Centro di Riferenza Nazionale per le
Indagini Diagnostiche sui Mammiferi marini spiaggiati



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THE APPLICATION OF A POST-MORTEM DIAGNOSTIC FRAMEWORK TO DETERMINE CETACEAN FISHERY-INTERACTION INDEX

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Introduction

The Life DELFI project (LIFE18 NAT/IT/000942) aims at reducing dolphins' interactions with fishing activities and to develop a conservation strategy for socio-economic and ecological management.

Within one of the action of the project, a review of literature (1-7) and cases on cetacean post-mortem findings associated with fishery-interaction helped to develop a framework to harmonize the evidence-based diagnostic investigation. The framework was tested in international context to assess fishery-interaction aiming to support conservation policy.



2020 - 2024

12 international training

1 Research Institute
2 Universities
3 Associations
4 MPA

Results

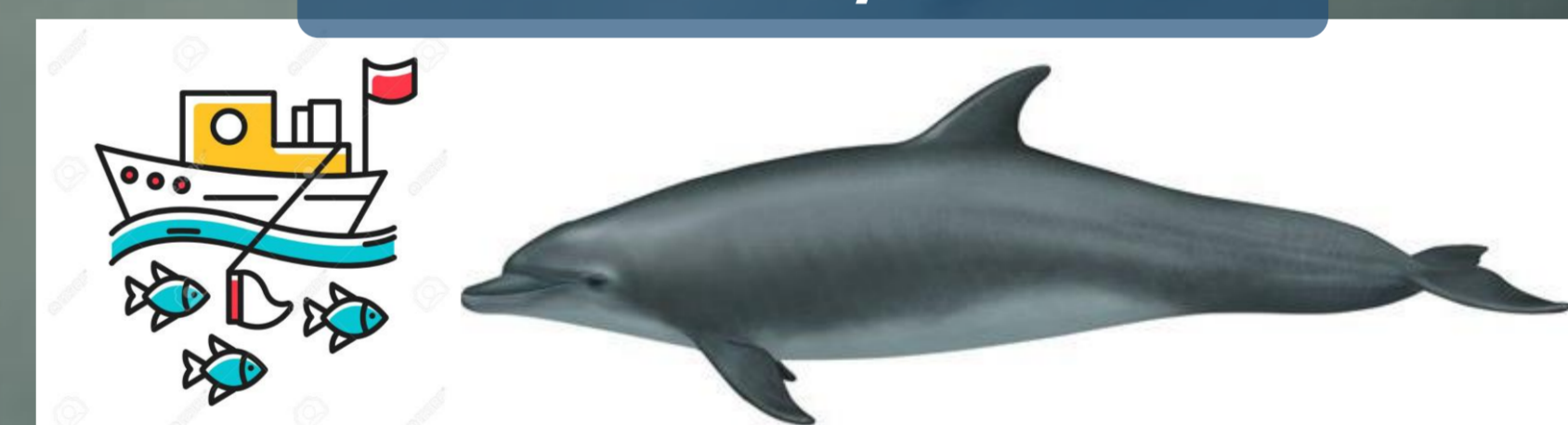


467 recorded strandings

194 suitable for necropsy

39 evidence of fishery interaction

71.79% *Tursiops truncatus*

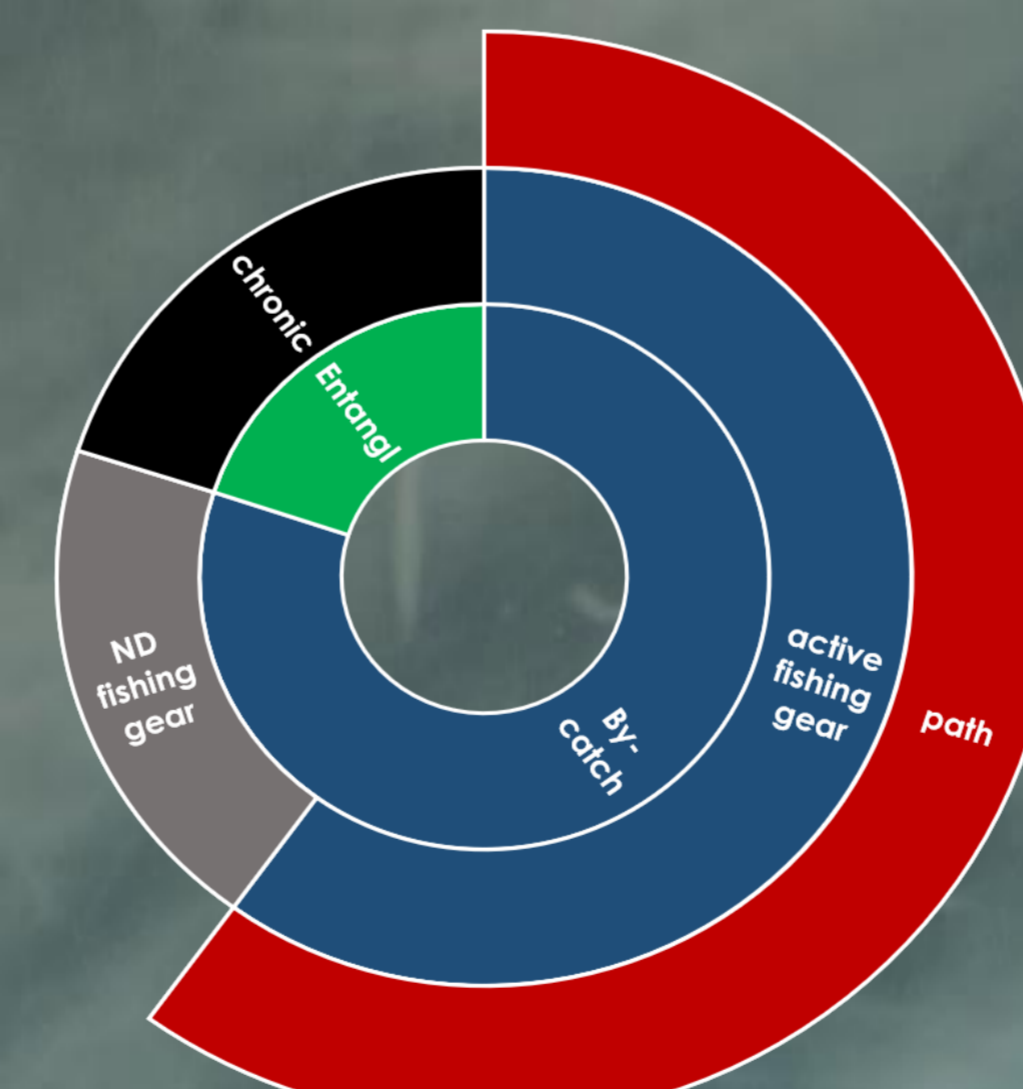


Materials & Methods

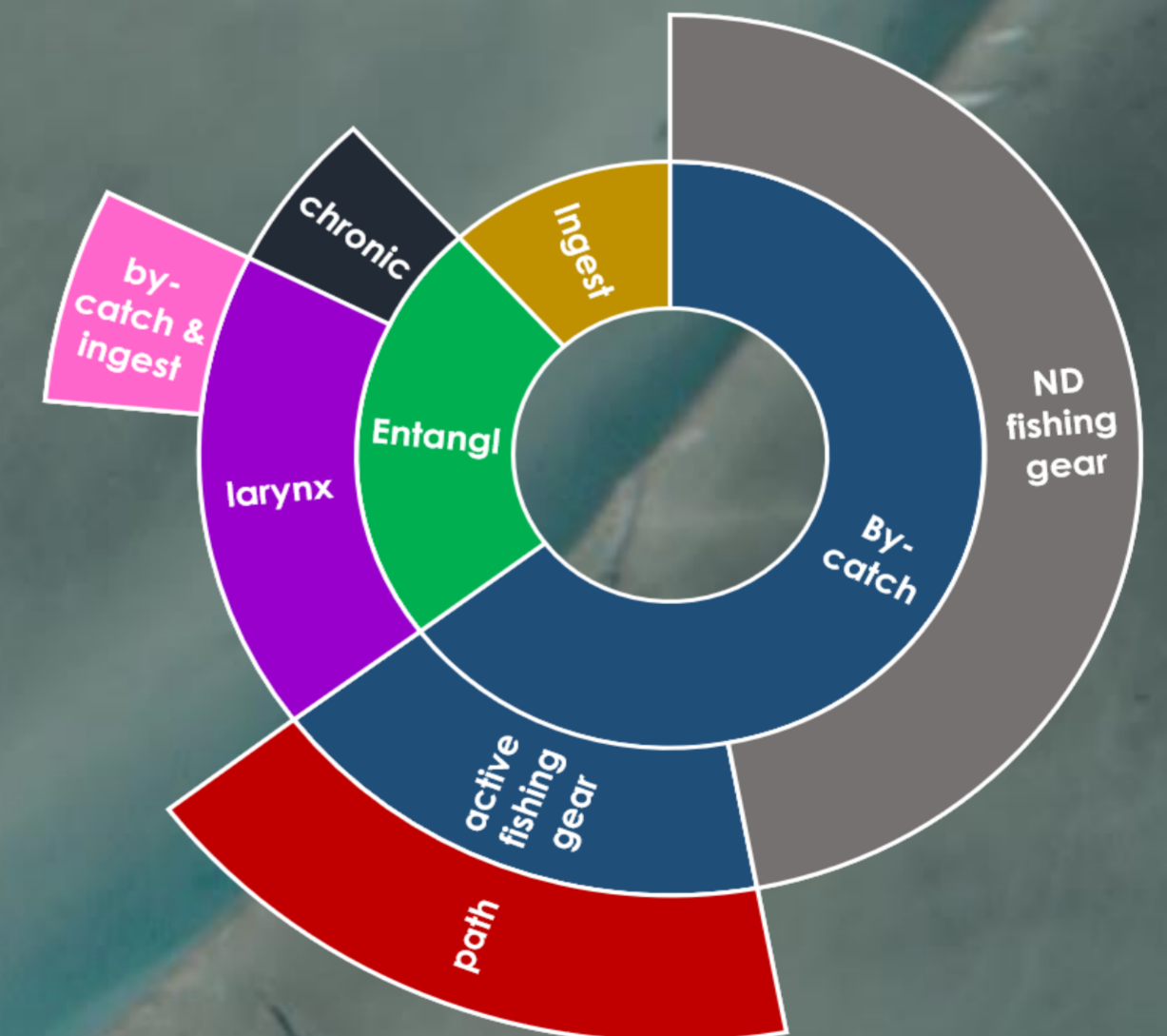
The framework was applied according to a multi-tier approach, considering the expertise, human resources and logistics. A total of 7 categories of fishery interactions were described in correlation with post-mortem findings in stranded cetaceans in Italy and Croatia during the period 2020-2021. Based on the fishery-interaction categories, the findings classified in C/P (certain/pathognomonic), consistent (C), and suggestive (S) were scored as confirmed, probable or suspected.

By-catch in active fishing gear	By-catch in passive fishing gear	Larynx entanglement	Chronic entanglement	Ingestion	Intentional injury
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CATEGORIES	FINDINGS	BA	UI	P	EE	KE	I	H	DC
DIRECT EVIDENCES OF FISHERY INTERACTION	fishing interaction in the animal history (specific for each category)	C/P	C/P	C/P	C/P	C/P	C/P	C/P	1,5
	presence of fishing gears (active vs passive)	C/P	C/P	C/P	C/P	C/P	C/P	C/P	1,4
	net mark/linear signs (acute)	C/P	C/P	C/P	C/P	C/P	C/P	C/P	1,3
	net mark/linear signs (chronic, i.e. constriction lesions)	C/P	C/P	C/P	C/P	C/P	C/P	C/P	1,3
	presence of fishing gear around larynx	C/P	C/P	C/P	C/P	C/P	C/P	C/P	1,4
OTHER FISHERY INTERACTION ASSOCIATED LESIONS	penetrating wounds	C	C	C	C	C	C	C	1,3
	amputation with acute inflammatory reaction	C	C	C	C	C	C	C	1,3
	amputation with chronic inflammatory reaction	S	S	S	S	S	S	S	1,3
	gunshot/bullet and penetrating wounds	C/P	C/P	C/P	C/P	C/P	C/P	C/P	1,3
	contusions	C	C	C	C	C	C	C	1,4
NUTRITIONAL FINDINGS	fractures	C	C	C	C	C	C	C	1,4
	capture myopathy (to be confirmed with histology and HPC)	C/P	C/P	C/P	C/P	C/P	C/P	C/P	1,3
	separation of the rectus abdominis muscles	C	C	C	C	C	C	C	1,2
	disseminated gas bubbles	C	C	C	C	C	C	C	1
	linca alba emersion	C	C	C	C	C	C	C	1
ASPECIFIC FINDINGS	presence of recently ingested oesophageic/gastric content	C	C	C	C	C	C	C	1,4
	absence of recently ingested gastric content	C	C	S	C	C	C	C	1,4
	good NCC	C	C	C	C	C	C	C	1,3
	poor NCC	C	C	S	C	C	C	C	1,3
	bulging eyes/syndrome	C	C	C	C	C	C	C	1,2
OTHER PATHOLOGIES	microscopic muscular haemorrhages (histology)	S	S	S	S	S	S	S	1,3
	pulmonary and vascular changes (epicardial petechiae, edema, froth/ blood-tinged watery fluid in the airways, plural petechiae or pulmonary haemorrhage, alteration of the reticulum fiber structure of lung, congestion, bullae in the lung parenchyma, incomplete collapse of the lungs, chyle in the thoracic thoracicus, emphysema, pneumothorax)	S	S	S	S	S	S	S	1,3
	multiorgan congestion	S	S	S	S	S	S	S	1,3
absence of other ongoing diseases	C	C	C	C	C	C	C	1,3	



Fishery interaction categories recorded within the dead strandings cases

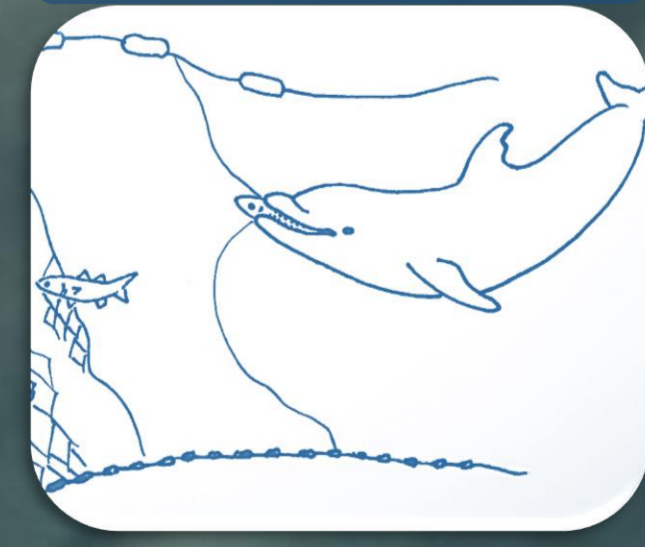


Anthropic cause of death recorded per each fishing interaction category

Tyrrhenian Sea



Adriatic Sea



Discussion

Considering both years, the 20% of the cases analyzed showed fishery interaction evidence and the 65% were related to by-catch. These preliminary index represents a baseline for the assessment of these anthropic threats in the next years and the monitoring of the results of the conservation strategies developed within the Life DELFI project.



20% evidence of fishery interaction

65% by-catch

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