

ASCOBANS Common Dolphin Group

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Common dolphin monitoring, research and conservation in Spain

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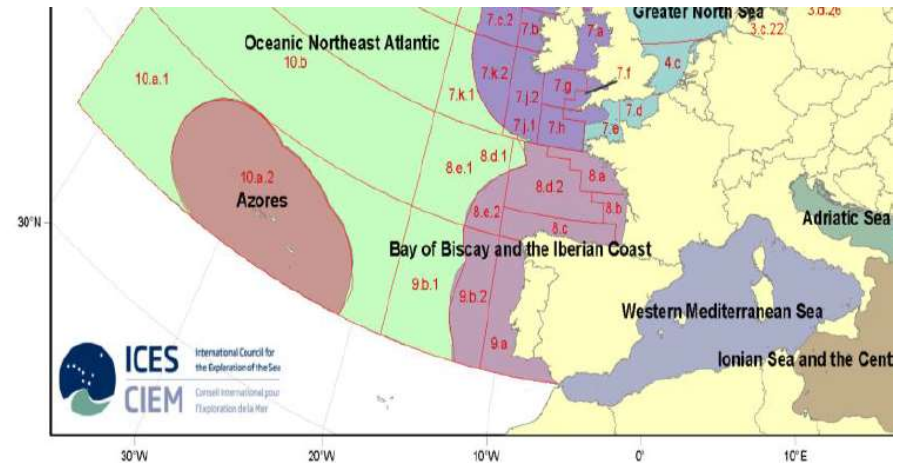


Overview

- Fishery bycatch and strandings monitoring
- Involvement in OMMEG, ICES WGMME/WGBYC/WKMOMA/WKEMBYC2
- New national bycatch mitigation, monitoring and research
- “Our” projects
 - Cetambicion (bycatch mitigation and monitoring)
 - MermaCifra (bycatch mitigation, monitoring + health status)
 - TRANSITION (pollutants and parasites)
 - NuTEC (eDNA)
 - Participation in SCANS
 - Survey of strandings networks (via ICES WGMME)
 - Interviews with fishers (ASCOBANS Project led by Fiona Read)
- “Our” PhD theses (ongoing)
 - Marie Petitguyot (threats, health, abundance); Andrea Fariñas (threats); Alberto Hernandez (diet, microplastics); Paula Gutierrez (sightings, hábitat use)

Bycatch monitoring (ICES WGBYC 2021))

- In the **Bay of Biscay and the Iberian Coast** ecoregion data were reported for 2019 and 2020 in areas 27.8.a, 27.8.b, **27.8.c**, 27.8.d.2 and **27.9**.
- In 2019, marine mammal bycatch was observed in areas 27.8.a, 27.8.b and **27.9.a**, with most specimens captured by midwater trawls in 27.8.a and 27.8.b (13 and 16 respectively)
- In 2020, the only reported marine mammal bycatch was of common dolphin:
 - bottom trawls in areas 27.8.a, **27.8.c** and 27.8.d (21, **1** and 4 respectively),
 - pelagic trawls in 27.8.a (4),
 - longlines in 27.8.b (1),
 - **nets in 27.8.b, 27.8.c and 27.9.a** (2, 1, 6 respectively)
 - **surrounding nets in 27.9.a (1)**



New bycatch projects in Spain

- MITICET (AZTI): REM, ADDs
- Monitoring gillnets (SGP-MAPA + IEO)
- Mediterranean pilot studies on bycatch (bottom trawls, longlines, set nets)
- MERMA CIFRA (IIM, IEO, SGP-MAPA)
- Training for strandings networks (IEO, CEMMA)

<http://www.cemma.org/>



RESEARCH PROJECTS

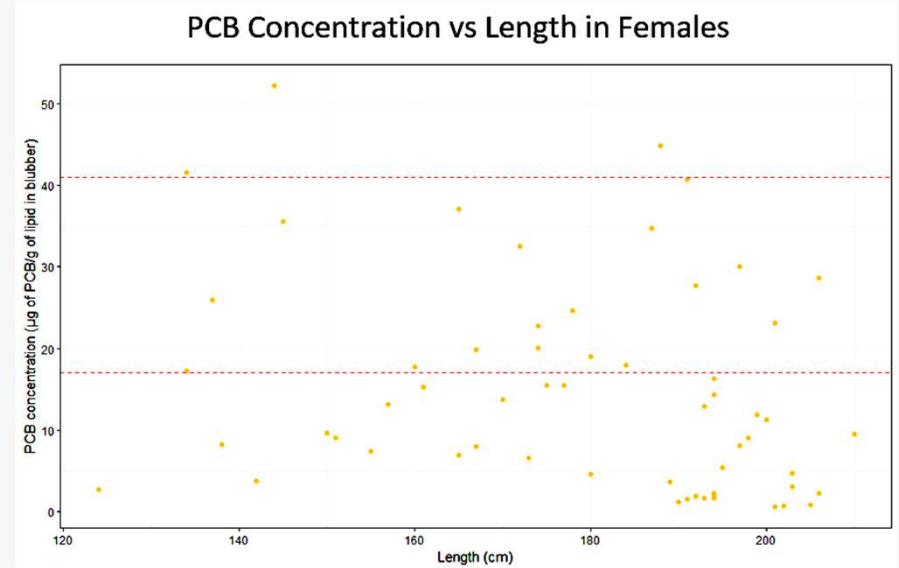
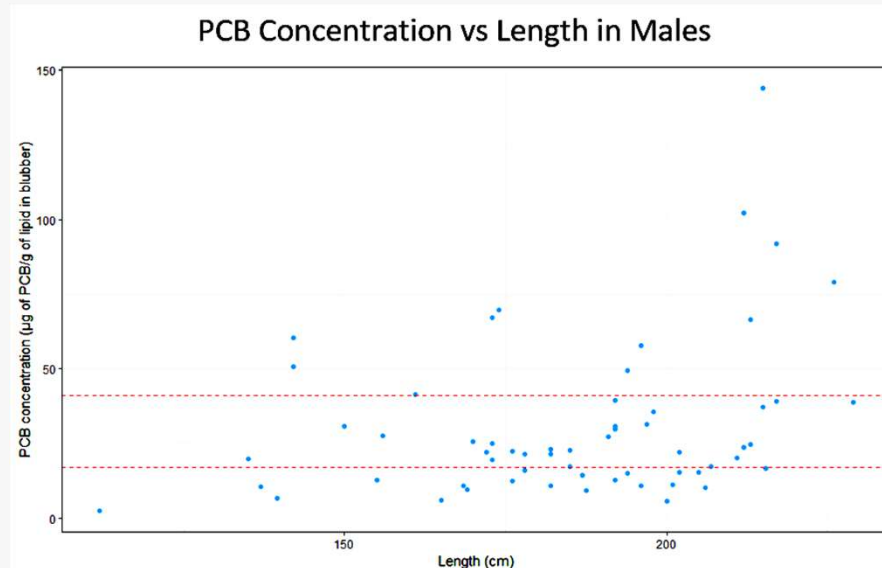
- "MARVITAL: for endangered species ". 2022-2025.
- "VOLUNVAR: volunteer plan to support the Galician stranding network". 2022.
- "DOTAVAR: protocol, coordination and tools for the Galician Stranding Network (GALP7-137)". 2021.
- - " Preparation of a scientific study on the interaction of the orca (*Orcinus orca*) population of the Strait of Gibraltar with boats, for the design of a proposal for prevention and management actions ". 2021.
- -"VIRADA: Bases for the reduction of the by-catch mortality in fishing gear of the harbour porpoise (*Phocoena phocoena*) and the bottlenose dolphin (*Tursiops truncatus*) in Natura 2000 areas of Galicia". 2019-2020..

Project TRANSITION

Plan Nacional, 2019-2022

Common dolphin data:

- Threat review
- POP measurements in cetaceans
- Model for PCBs: individuals → to population
- GADGET model with bycatch and PCBs
- Parasite transfer



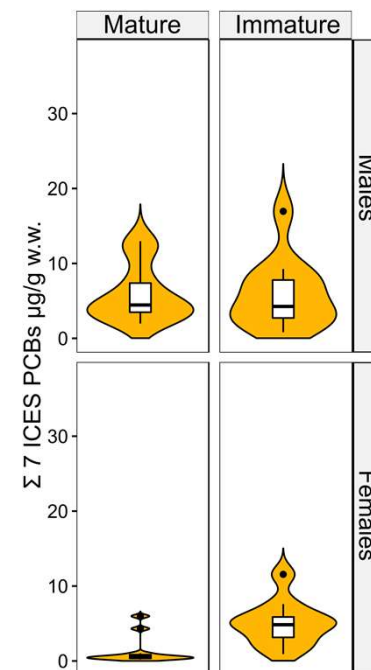
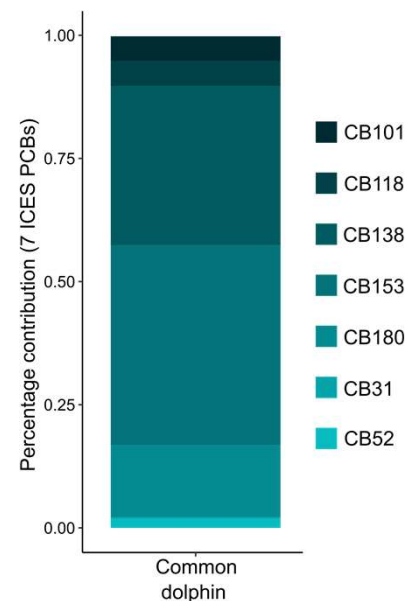
Red-dashed lines represent PCB thresholds from the literature:

- 17 µg of PCB/ g of lipid in blubber → negative effects on the health and reproduction of the individuals (Kannan et al. 2000, Jepson et al. 2005)
- 41 µg of PCB/ g of lipid in blubber → individuals not able to reproduce (Helle et al. 1976)

Organic pollutants PCBs

Project TRANSITION

- Results for 4 groups: M, F, Mat, Imm
- Complete information of the individuals available (stomach content, parasites, ...)
- Lower concentration than other toothed cetacean species
- PDBE analysis in progress
- Paper in prep.



42 Individuals



Stranded and bycaught animals



2009 - 2019



Galician coast (North-West of Spain)

Project TRANSITION: Nematode parasites in the digestive tract

Table 3. Prey data and modelled *Anisakis* transference to common dolphin in Iberian Atlantic waters.

CETACEAN	FISH	n.º dolphins	Prey P (%)	Prey TL (mm)	Max size considered	Mean prey (TOTAL)	Anisakis P (%)	PREDICTED mean ANISAKIS (Range)	SUM Anisakis
Common dolphin (1998-2018)	Blue whiting	346	45,89	165.63 ± 36.81 (35 – 429)	380,00	87 ± 350 (1-6210)	55.49 (192)	87 ± 302 (0 – 3436)	30152
	Hake	252	33,42	192.37 ± 71.52 (16 – 608)	600,00	10 ± 18 (1-219)	70.24 (177)	29 ± 67 (0 – 546)	7534
	Sardine	251	33,29	184.32 ± 10.90 (129 – 287)	235,00	11 ± 21 (1-252)	86.45 (217)	12 ± 21 (1 – 191)*	3104
	Mackerel	72	9,55	271.33 ± 70.44 (71 – 433)	415,00	3 ± 3 (1-19)	62.5 (45)	11 ± 20 (0 – 83)	820
	TOTAL	561 (754)	74,40				82.71 (464)	74 ± 244 (0 – 3473)	41484
Applying conversion factor		561 (754)					88.95 (499)	71 ± 170 (0 – 2278)	40093

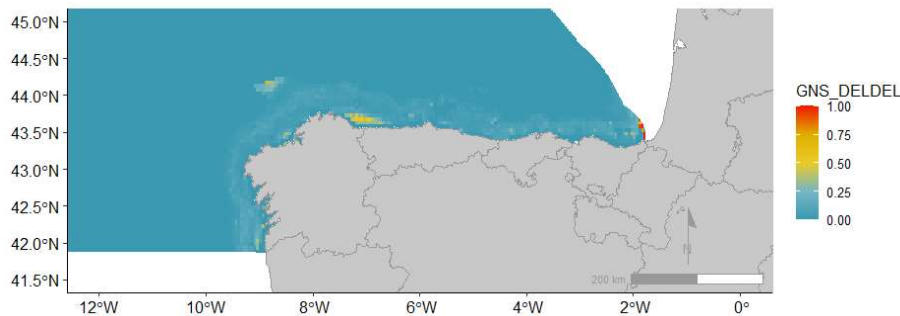
Table 4. Transfer of *Anisakis* to the Iberian population of common dolphin based on SCANS-III data. Data are represented with and without standardization to daily food intake of 5.83 kg/day by Kastele et al (2000).

	DDE POPULATION	Hammond 2022	TOTAL ANISAKIS	YEARLY INDIVIDUAL TRANSFER	YEARLY POPULATION TRANSFER
PRE STANDARDIZATION TO 5.83 KG/DAY/COMMON DOLPHIN	Cádiz (AA)	18458	1365892	27010	498550580
	Portugal/RiasBaixas (AB)	63243	4679982		1708193430
	Cantabrico (AC)	71082	5260068		1919924820
	11	34570	2558180		933735700
	12	643	47582		17367430
	13	3110	230140		84001100
	TOTAL	191106	14141844		5161773060
	PREVALENCE ANI POPULATION		Can be understood as only getting infected 82.71% of days?		
	82.71	191106			4269302498
					4269,30
STANDARDIZED TO 5.83KG/DAY/COMMON DOLPHIN	Cádiz (AA)	18458	1310518	25915	478339070
	Portugal/RiasBaixas (AB)	63243	4490253		1638942345
	Cantabrico (AC)	71082	5046822		1842090030
	11	34570	2454470		895881550
	12	643	45653		16663345
	13	3110	220810		80595650
	TOTAL	191106	13568526		4952511990
	PREVALENCE ANI POPULATION		Can be understood as only getting infected 88.95% of days?		
	88.95	191106			4405259415
					4405,26

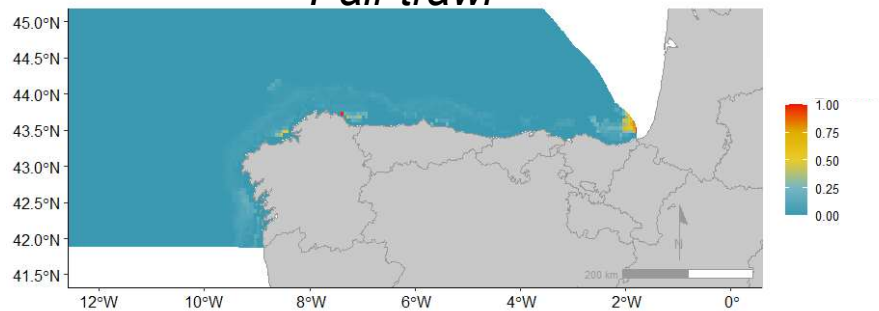


Coordinated Cetacean Assessment, Monitoring and Management
strategy in the Bay of Biscay and Iberian Coast sub-region


Gillnet




Pair trawl



Task 3.2. "Spatial Risk Analysis"

 *Spring distribution and abundance data
(from boat surveys)*

 *VMS data for gillnetters and trawlers
(GNS, OTB, PTB)*

 *2009 - 2019*

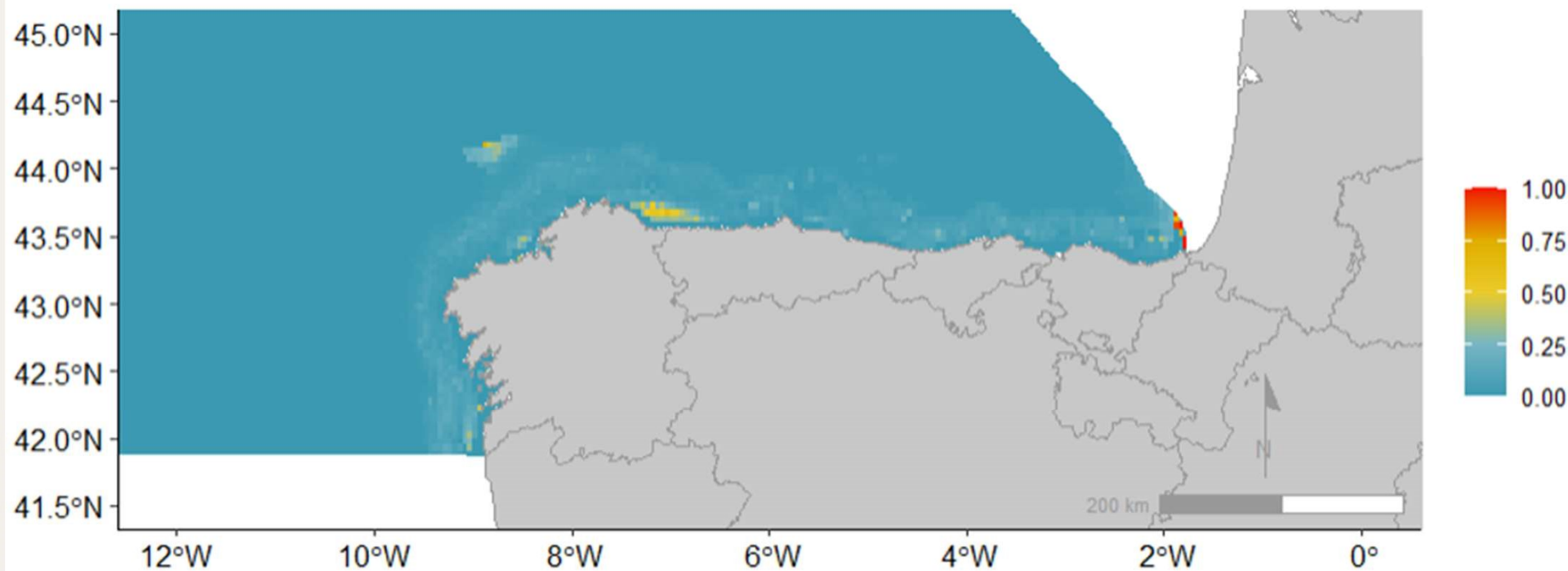
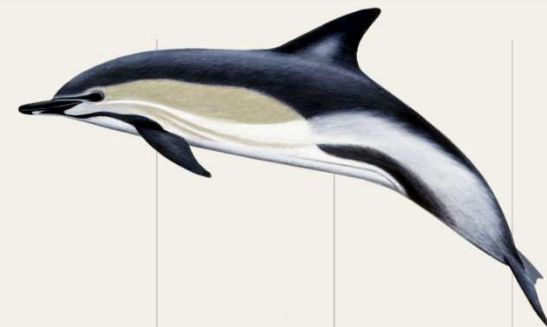
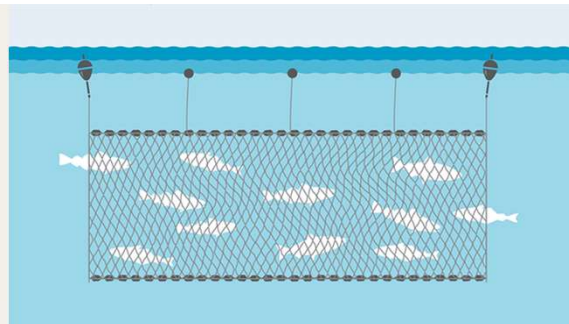
 *N and NW continental shelf*

Methodology:

- 1) Calculate mean values per grid cell
(3nmi)*
 - 2) Standardisation (0, 1)*
 - 3) Product of VMS and abundance for each
fishing gear*
 - 4) Mapping*
-

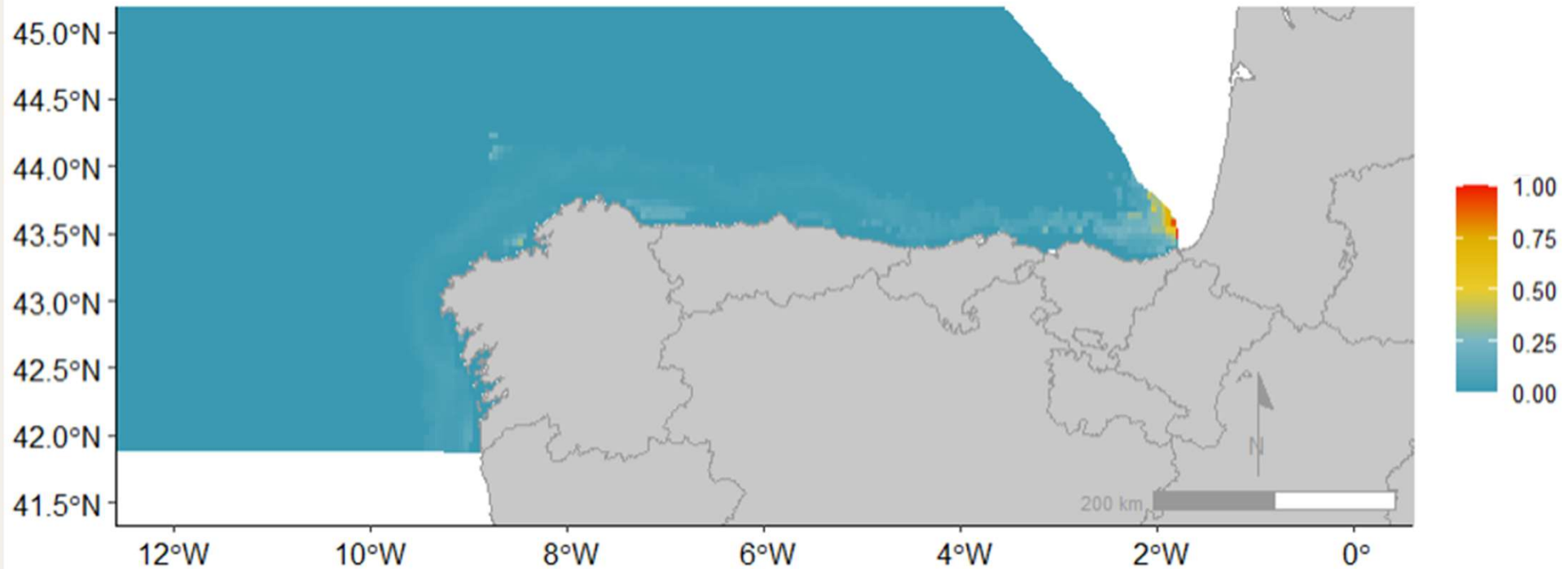
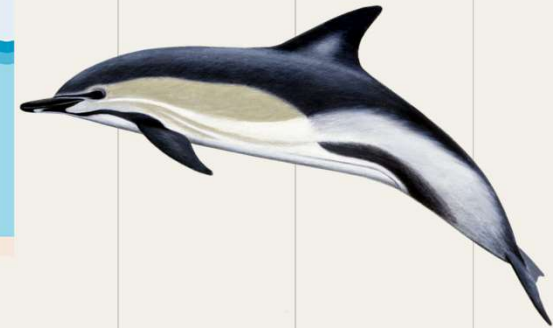
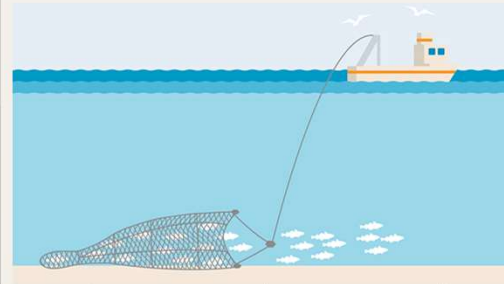
Bycatch Risk Assessment

Gillnet (GNS) bycatch Risk for Common Dolphin



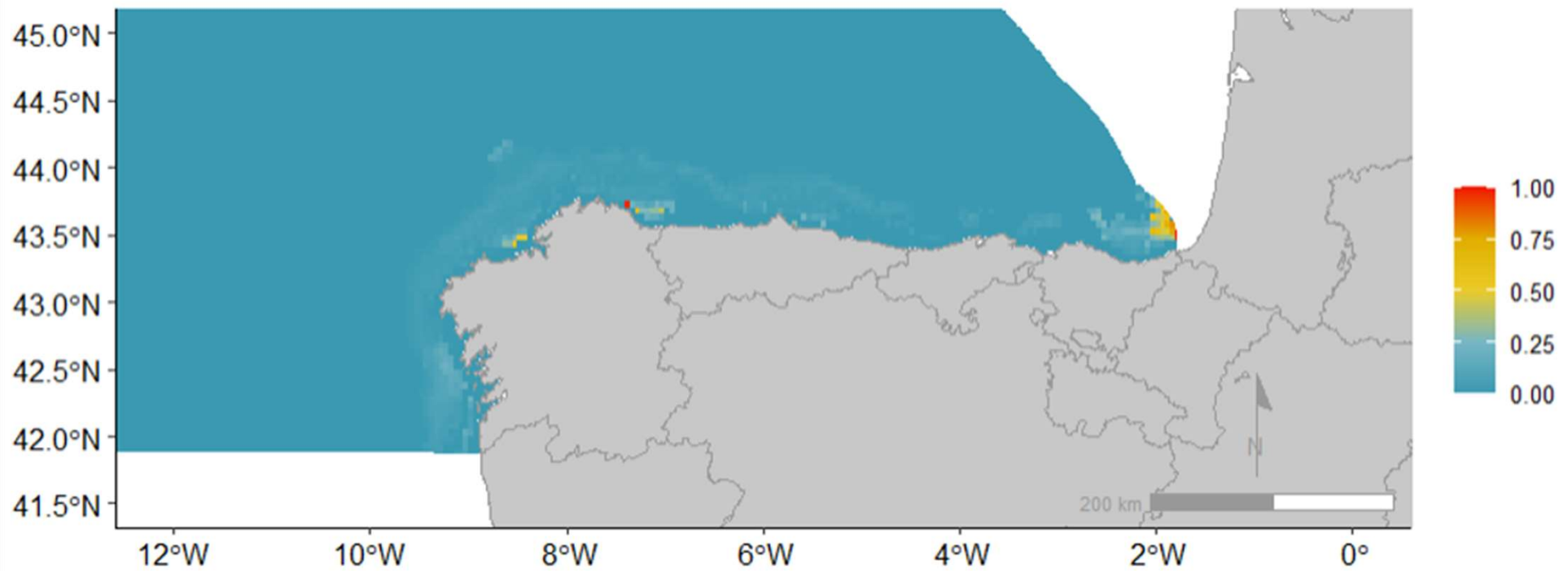
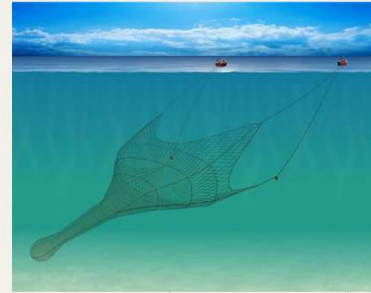
Bycatch Risk Assessment

Otter Bottom Trawler (OTB) bycatch risk, common dolphin



Bycatch Risk Assessment

Bottom Pair Trawler (PTB) bycatch risk, common dolphin





Coordinated Cetacean Assessment, Monitoring and Management
strategy in the Bay of Biscay and Iberian Coast sub-region

Other tasks and results

Results from strandings 2021

*Proportion of examined stranded animals with
evidence of fishery interaction = 54% (28/52)*

- *Task 3.2. Qualitative and quantitative risk assessment of the whole Bay of Biscay and Iberian Coast sub-region (France, Spain and Portugal), including artisanal fleet (not only VMS data)*
- *Task 4.2. “Pilot project: Trawling (cetacean excluder devices (CEDs) and pingers)” Poster available*

CETACEAN EXCLUDER DEVICES TO MITIGATE THE DOLPHIN BYCATCH IN PAIR TRAWL FISHERIES

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BYCATCH OF MARINE MAMMALS IN FISHERIES

Fishing bycatch mortality is one of the greatest threats to cetaceans worldwide. Approximately 500,000 marine mammals are accidentally caught each year by different fisheries around the world. Over the last decade, a concerning increase in the number of strandings with bycatch evidences has been recorded in the Bay of Biscay and the Iberian Coast MSFD subregion (AB). In 2020, the European Commission stated a request on emergency measures to prevent bycatch in the Northeast Atlantic. ICES issued an advice proposing of several measures. Bycatch and stranding rates per fishery have been used to identify areas, seasons and gears with greatest risk of cetacean bycatch. The CetAM-BICION project <https://www.cetam-bicionproject.eu> brings together France, Spain and Portugal, in a joint program, trying to estimate and reduce cetacean bycatch in the AB, in collaboration with the fishing industry. The objectives are aligned with the Habitats Directive and the Common Fisheries Policy.

CETACEAN EXCLUDER DEVICES TO REDUCE BYCATCH

The objective is to carry out experimental trials to test different technical measures to reduce cetaceans bycatch in the study area, in close collaboration with the fishing industry. Bycatch and stranding rates per fishery have been used to identify the areas and gears with greatest risk of producing bycatch of cetaceans. Previous studies have identified that the pair trawl fishery is one of the activities with the most bycatch interactions in the waters of northwestern Spain.

CETACEAN EXCLUDER DEVICES (CEDs)

Cetacean Excluder Devices (CEDs) are modifications of trawling gear that allow passage of fishery target species to the end of the codend, but blocks passage of marine mammals due to its size, so that the animal can escape through an exit hole (Fig. 3). Two prototypes of cetacean excluder devices (CEDs) were designed *ad hoc* for the fishery (Fig. 1 and 2).

Figure 1. Rigid CED

Figure 2. Semi-flexible CED

Figure 3. Scheme of a CED placed inside the fishing gear

EXPERIMENTAL TRIALS

The CED was placed inside the fishing gear, between the extension and the codend, in such a way that it does not imply any obstruction or barrier to the normal operation of the fishing gear and allows the flow of water inside and the capture of the target species. Three experimental trials (Table 1) were carried out on board two fishing vessels targeting blue whiting and mackerel with pair bottom trawl gears at northwest Spanish waters (area ICES 8c).

COD_Survey	Start date	Ending date	Hauls with DEC	Hauls without DEC	Total hauls
CETAM-BICION0222	22/03/2022	24/03/2022	3	1	4
CETAM-BICION0321	28/03/2022	30/04/2022	7	7	14
CETAM-BICION0523	16/05/2022	20/05/2022	4	1	5

HANDLING OF TECHNICAL DEVICES

A rigid CED (Fig. 4) make handling difficult, making the maneuver dangerous, so this type of rigid design is ruled out.
 A semi-flexible CED (Fig. 5) is more suitable for the tacking maneuver.

CATCHES TARGET SPECIES

The species caught were blue whiting (*Micromesistius poussou*), mackerel (*Scomber scombrus*) and European hake (*Merluccius merluccius*). The catch profile of hauls using the CED matches with the usual profile catch in the fishery. No significant differences have been detected in the composition of retained or discarded species.
 In relation to the fish size, in the samplings carried out on board, the size profile by target species does not present differences with the sizes usually captured. This indicates that there is no loss of fish per size (Fig. 6).
 However, preliminary results indicate an escape of target fish, of size and commercial interest, due to the departure of the CED. This loss of fish was different for each fishing.

Strandings network questionnaire (ICES WGMME)

- Temporal trends in Dd strandings:
 - increased especially in summer months in Galicia
 - increased in winter in Ireland
 - increased with strong seasonal patterns in France
- % Dd in strandings
 - 50% in Galicia, France, Algarve and Ireland
 - From 20% to 35% in Ceuta, Melilla, Andalucía, Asturias, Azores, England
- Gear implicated in Dd bycatch
 - Trawls in France and south England

Paper due to be finished before next WGMME

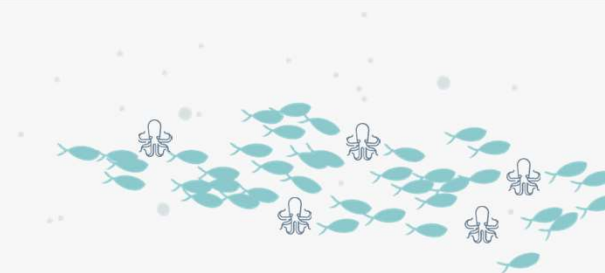
Interviews with fishers (ASCOBANS Project, Fiona Read)

- 60 interviews in Rias Bajas (Galicia)
- 2 Dd bycaught in the last 3 years by 2 different trawlers
- Fishers say that with pingers these interactions have substantially decreased.
- One Dd bycaught in gillnet in 2021.



Diet composition

74% fish - 26% cephalopods



36 fish taxa and 18 cephalopod taxa identified

Table. Importance of each prey taxon in the diet. Results are shown as: frequency of occurrence (%F), numerical percentage (%N), percentage of reconstructed prey weight (%W, in g), and percentage of importance (%IRI).

Main prey species	%F	%N	%W	%IRI
<i>Micromesistius poutassou</i>	55	30	73	60
Family Gobiidae	41	21	1	12
<i>Trachurus trachurus</i>	36	3	3	5
<i>Merluccius merluccius</i>	35	3	8	5
<i>Sardina pilchardus</i>	46	6	5	4



751 stomach contents analysed



Stranded and bycaught animals



1990 - 2018



Galician coast (North-West of Spain)

(Data from a doctoral thesis recently deposited)
