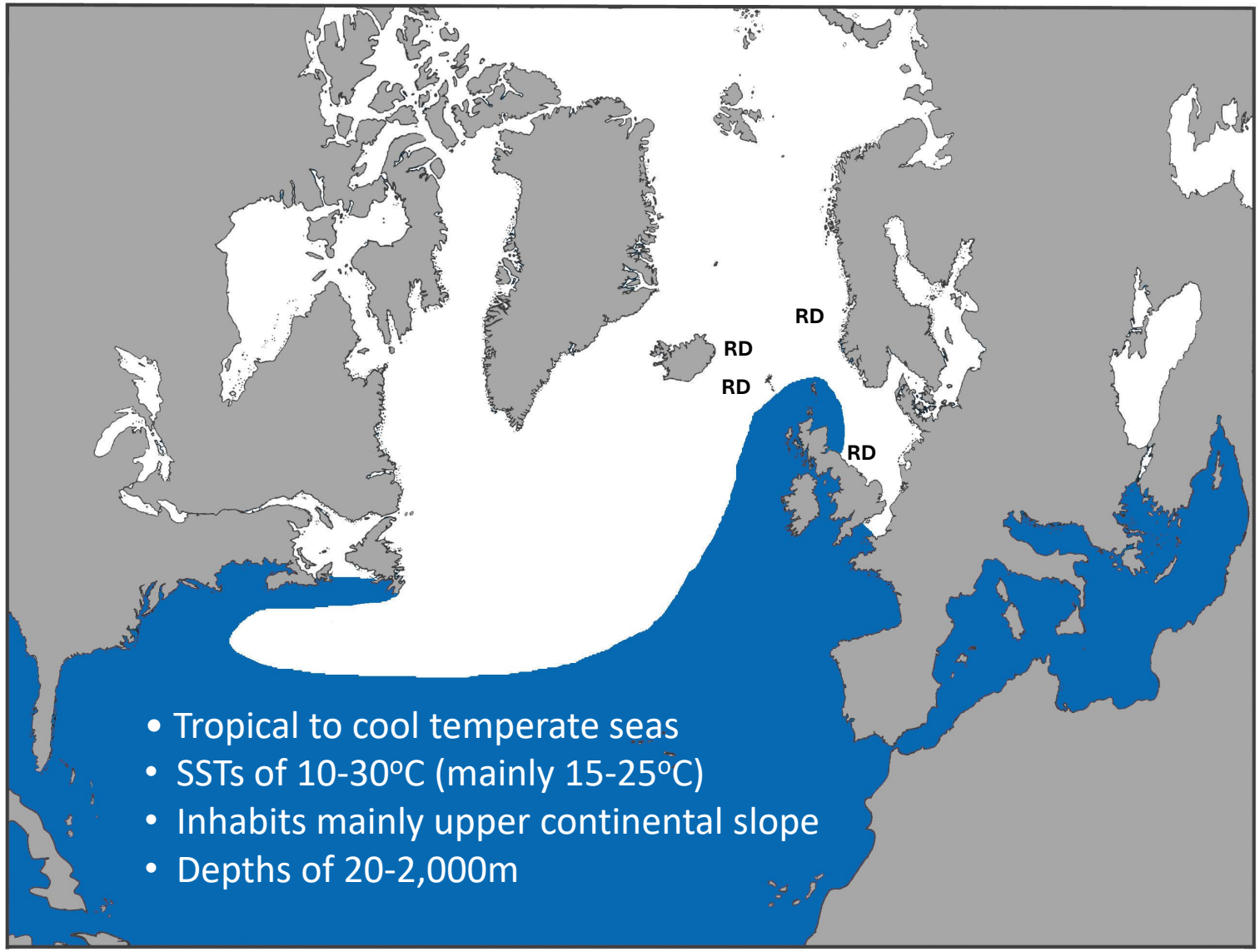
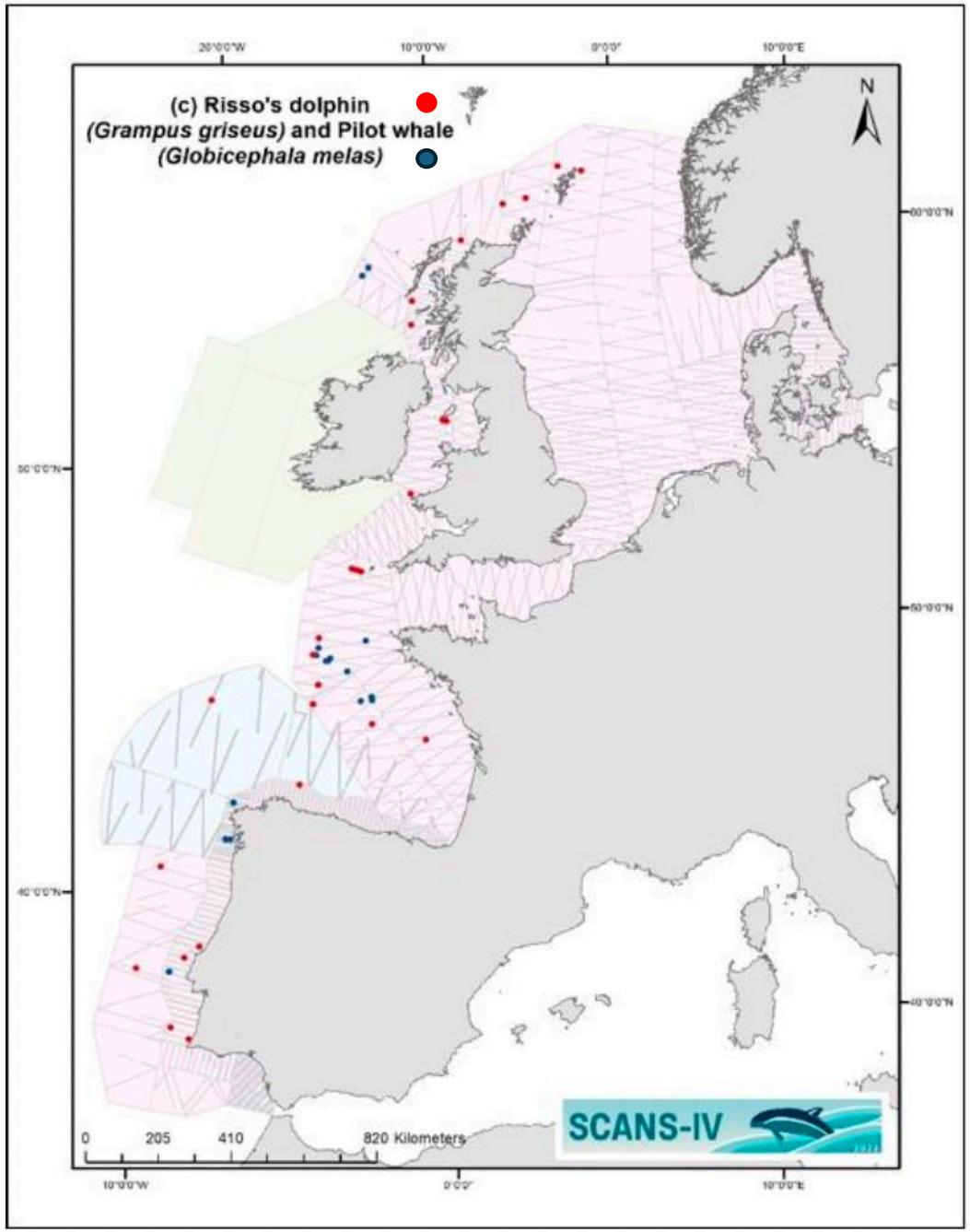
DISTRIBUTION, ABUNDANCE & ECOLOGY

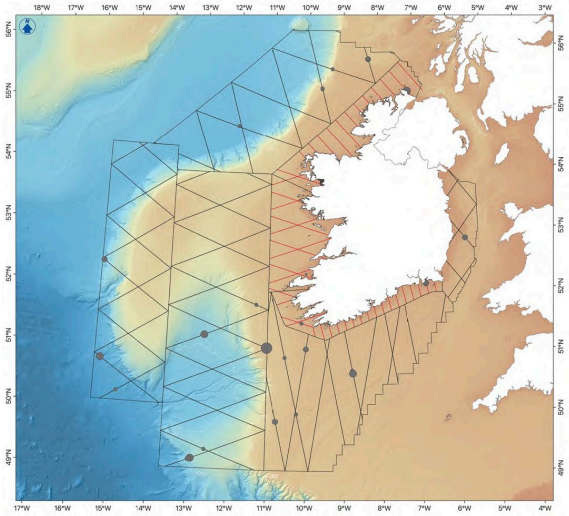
DISTRIBUTION OF RISSO'S DOLPHIN IN NORTH ATLANTIC & MEDITERRANEAN



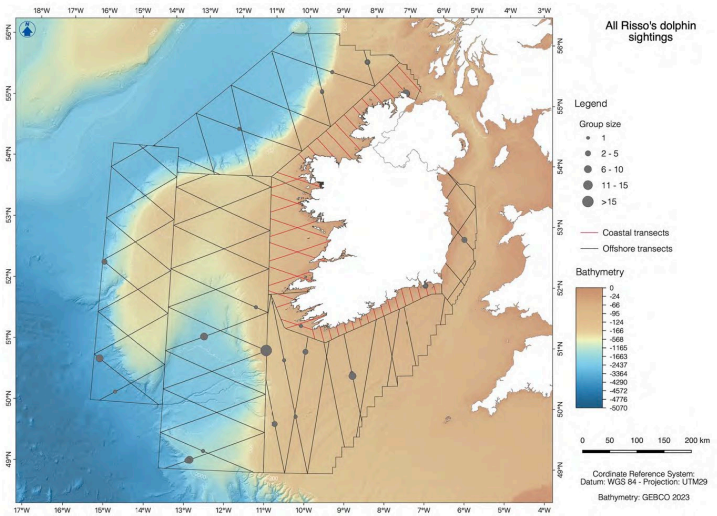
SCANS & ObSERVE SURVEYS: RISSO'S DOLPHIN SIGHTINGS



2015-17



2021-22

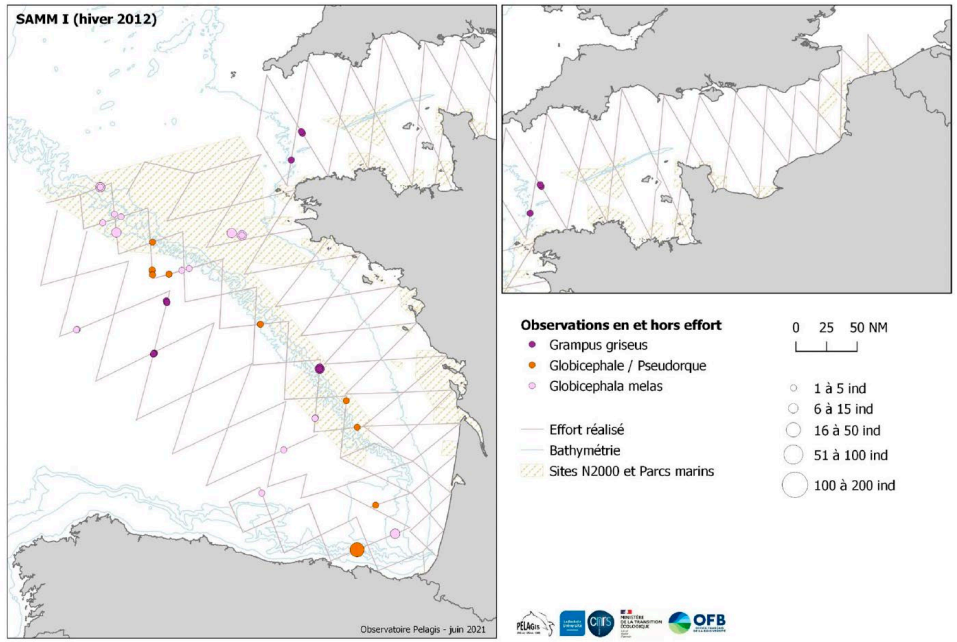


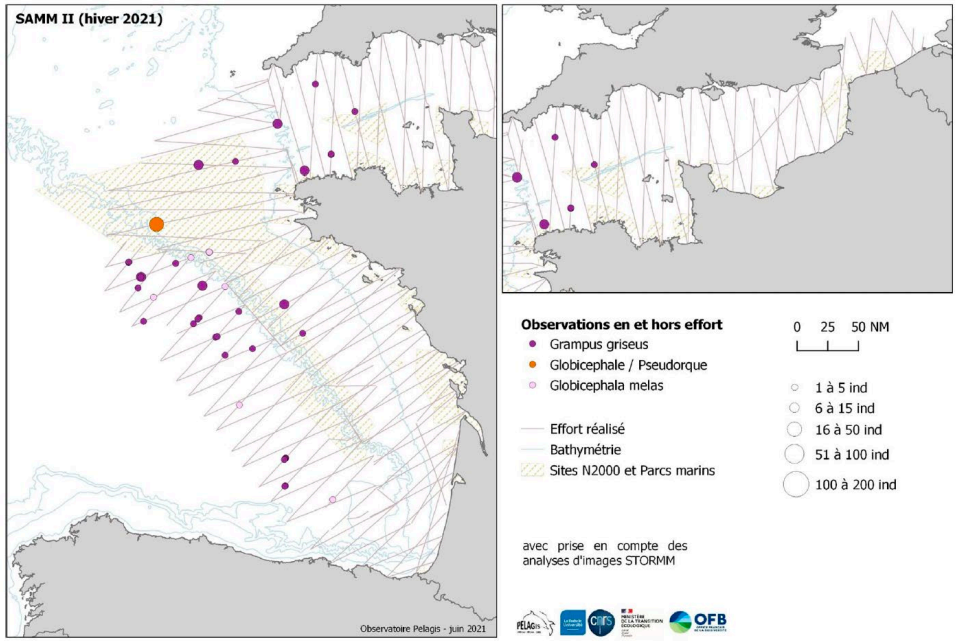
Abundance Estimates

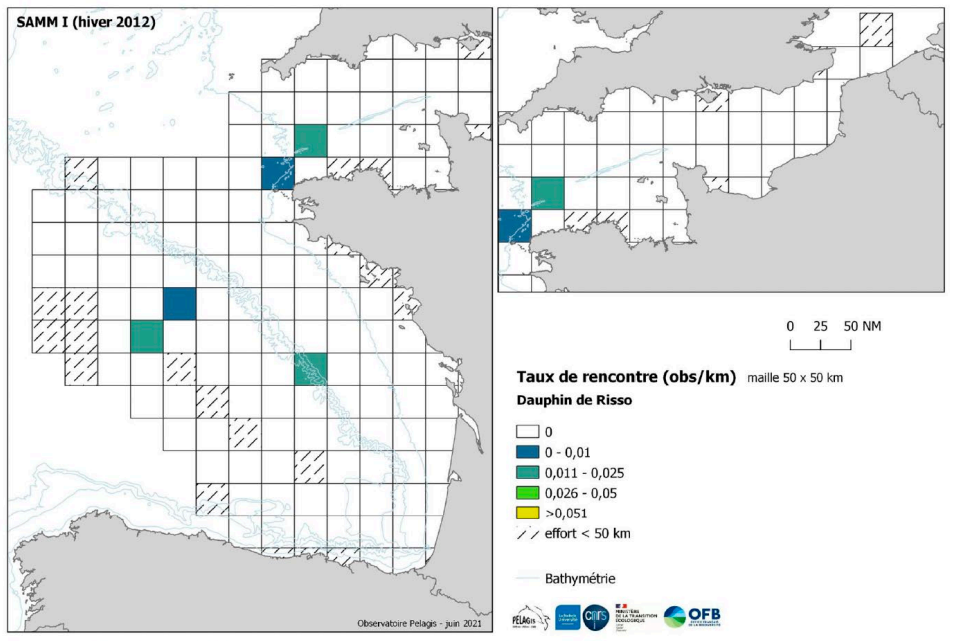
SCANS-III (Summer 2016)	13,584 (5,943-31,047)
SCANS-IV (Summer 2022)	13,854 (4,887-27,867)
ObSERVE-I (Summer 2016)	2,629 (1,212-5,707)
ObSERVE-II (Summer 2022)	3,315 (2,479-4,434)

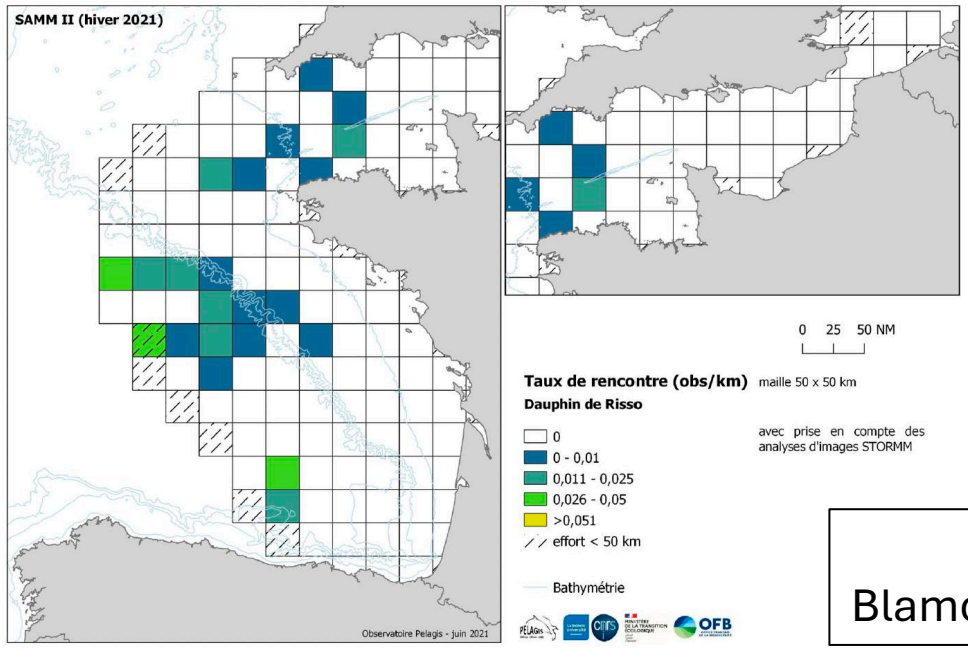
Sources: Hammond et al. (2021), Gilles et al. (2024), Rogan et al. (2018), Giralt Paradell et al. (2024)

RISSO'S DOLPHIN SIGHTINGS FROM FRENCH SAMM-I & SAMM-II SURVEYS



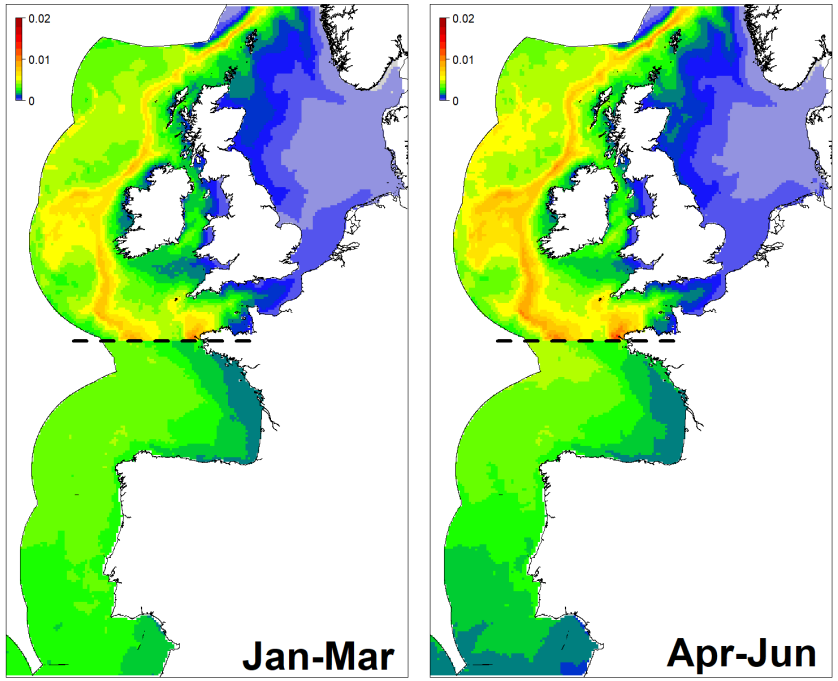


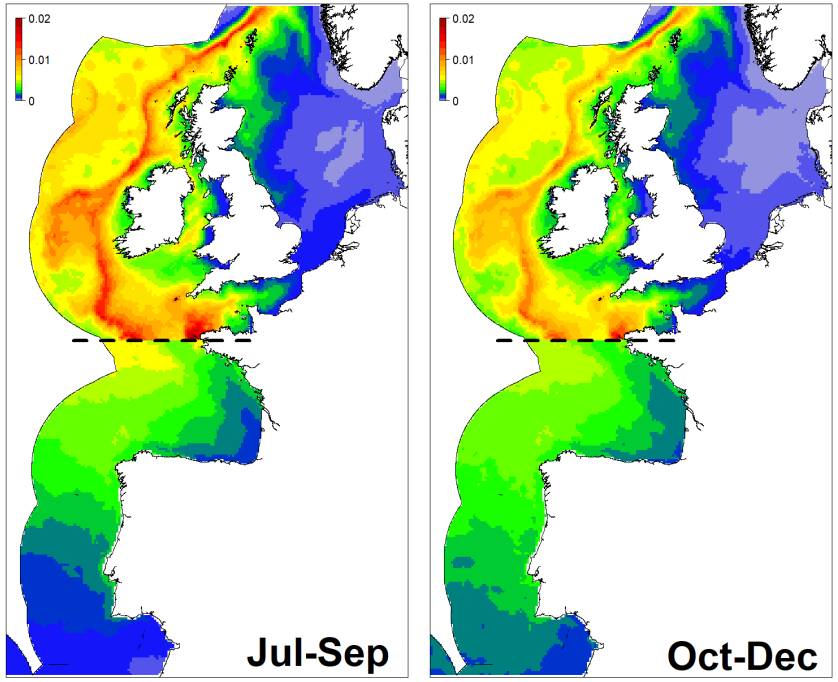




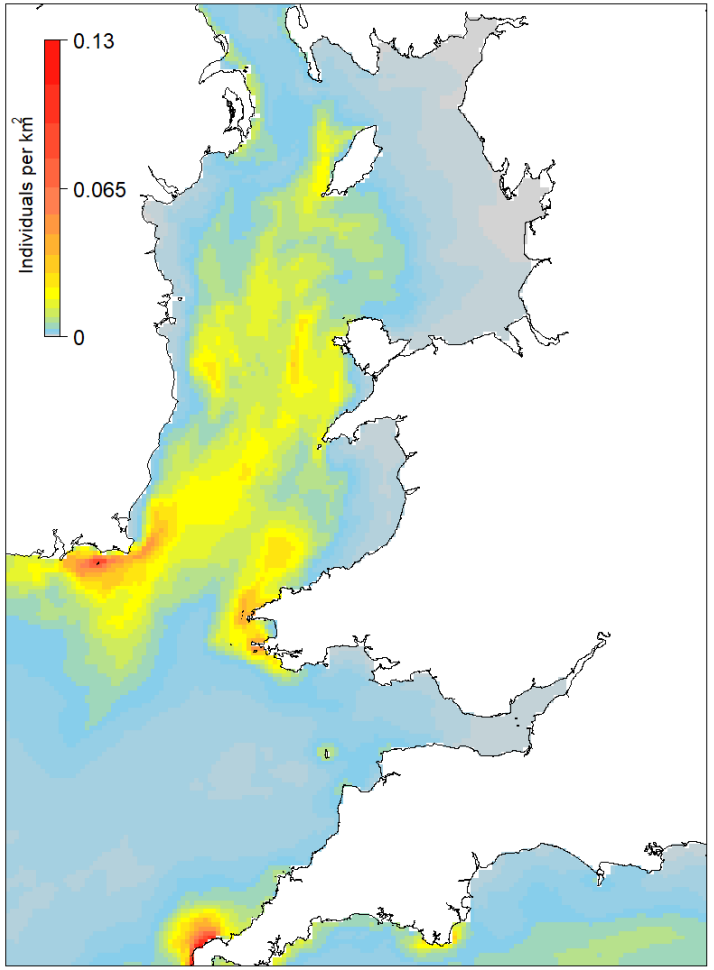
Source:
Blamchard et al. (2021)

Rissos Dolphin

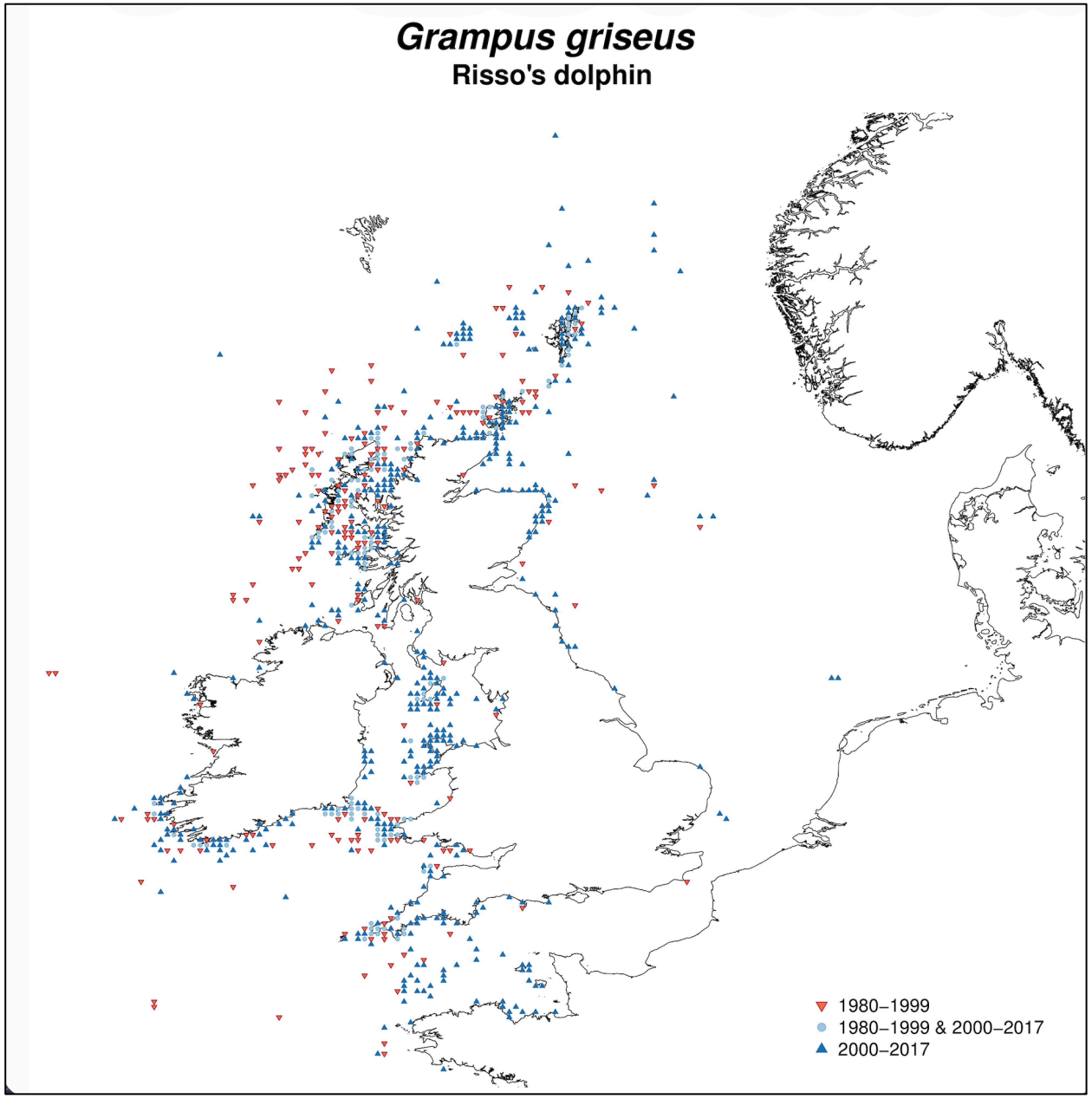




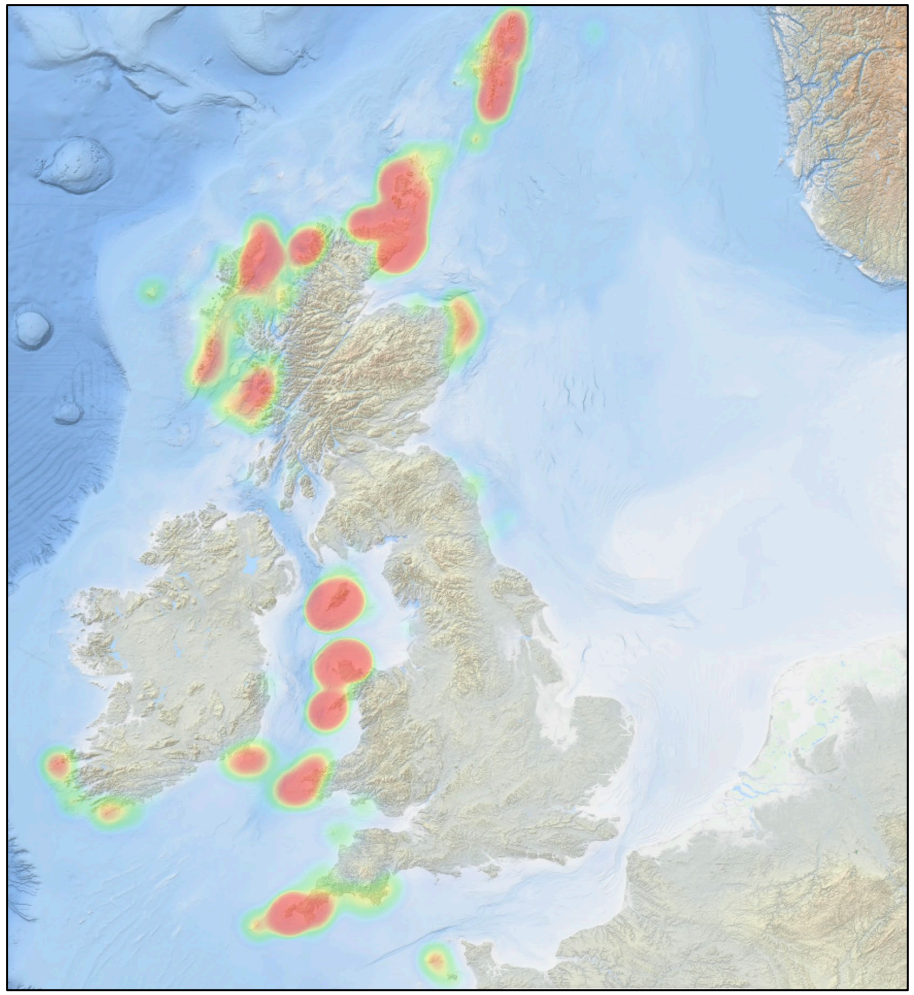
RISSO'S DOLPHIN DENSITY DISTRIBUTIONS



Sources: Evans et al., 2021, Evans & Waggitt, 2023



RISSO'S DOLPHIN SIGHTINGS AROUND THE BRITISH ISLES



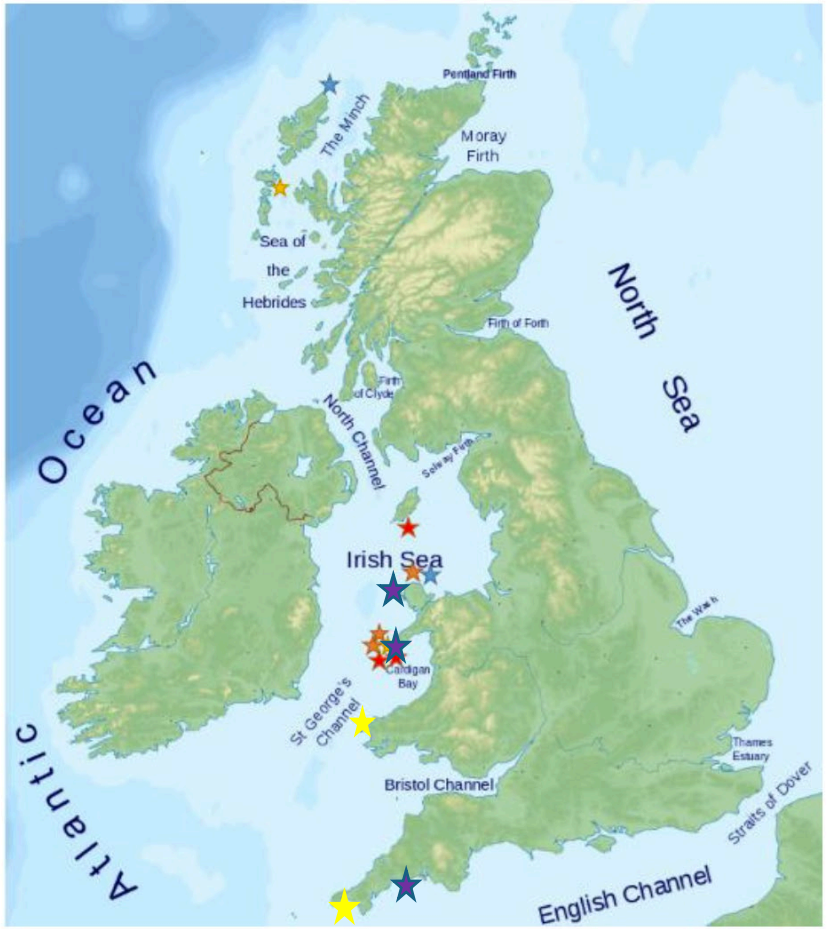
Source: Evans & Waggitt, 2020

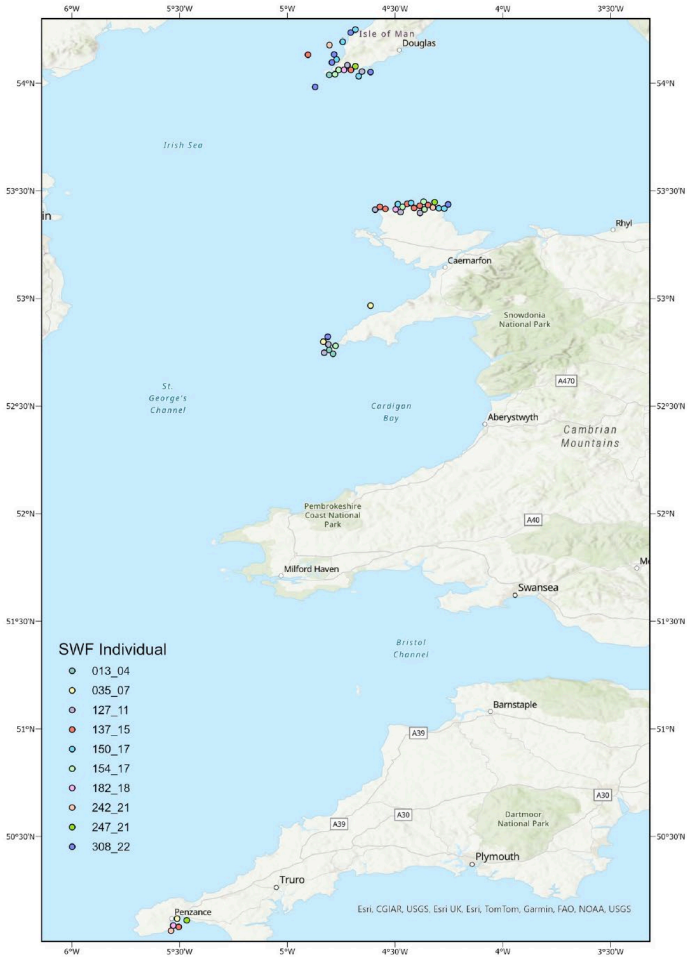
PHOTO-ID MATCHES IN WESTERN UK

a)

b)

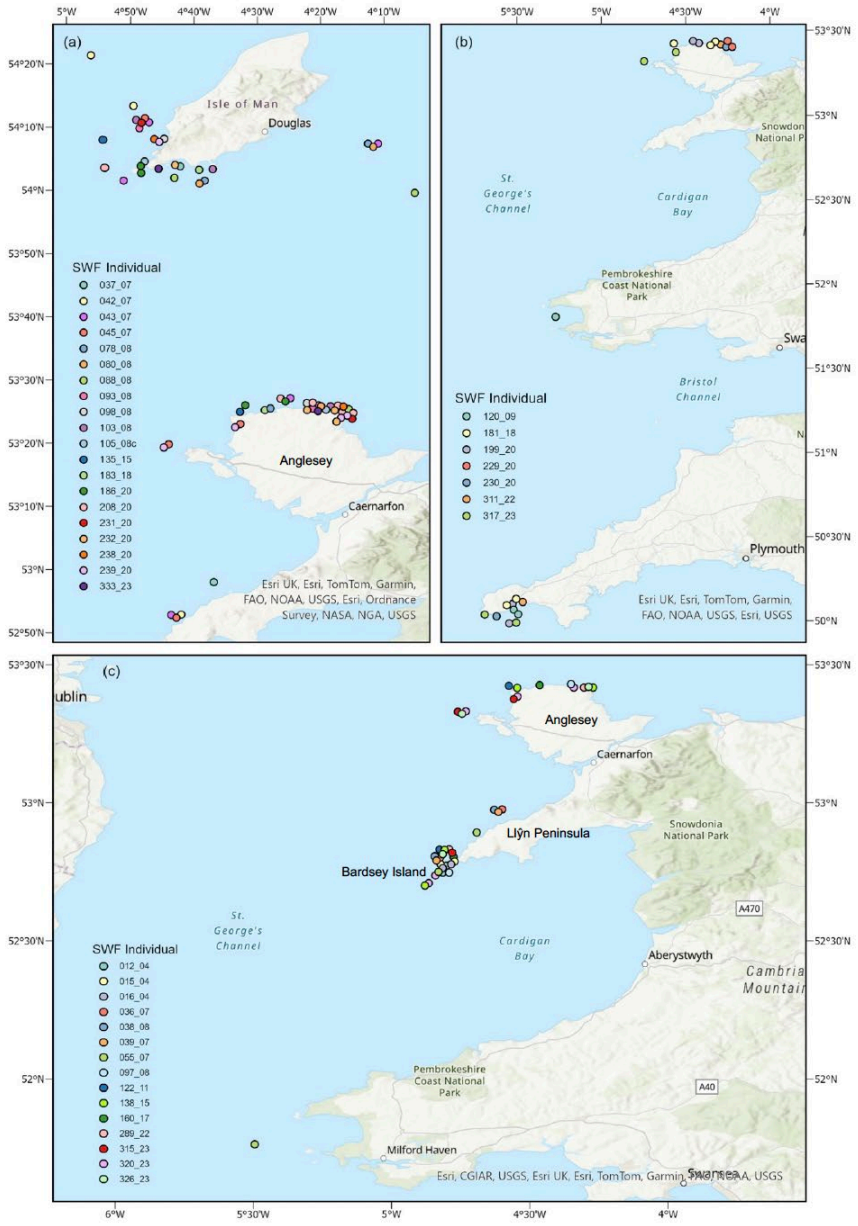
Risso's dolphin probable female (no. *21AN20*) photographed off north Anglesey in Oct 2015 (top), and re-sighted in April 2021 in Cornwall (bottom).
It was also sighted in the Isle of Man in 2005.





Sources: Mandlik, 2020; Smith, 2023, Langford, 2024

PHOTO-ID MATCHES IN WESTERN UK



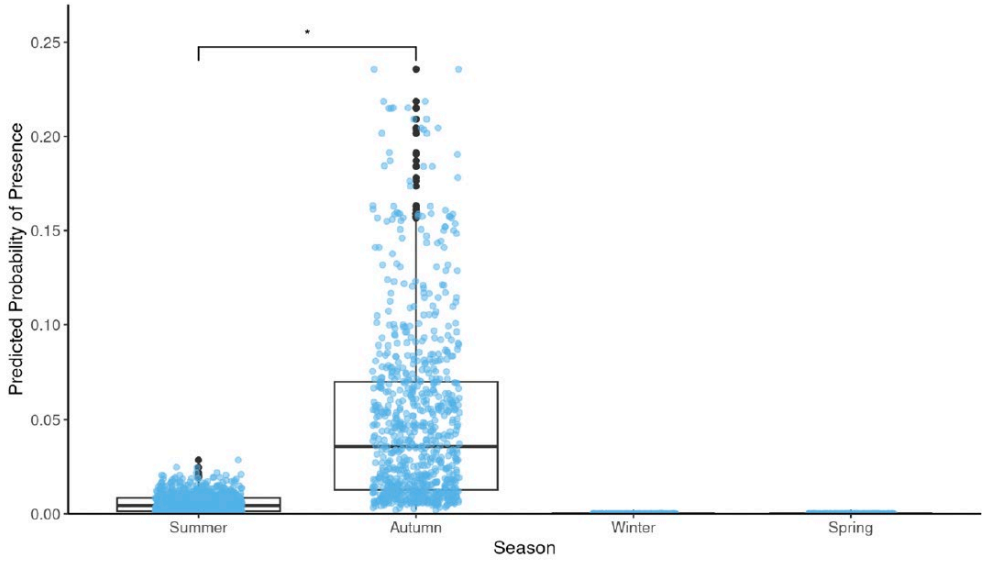
Movements of individuals :

a) Between Anglesey, the Llyn Peninsula & Isle of Man
b) Between Anglesey, the Llyn Peninsula & SW Cornwall
c) Between Anglesey, the Llyn Peninsula & Bardsey Island

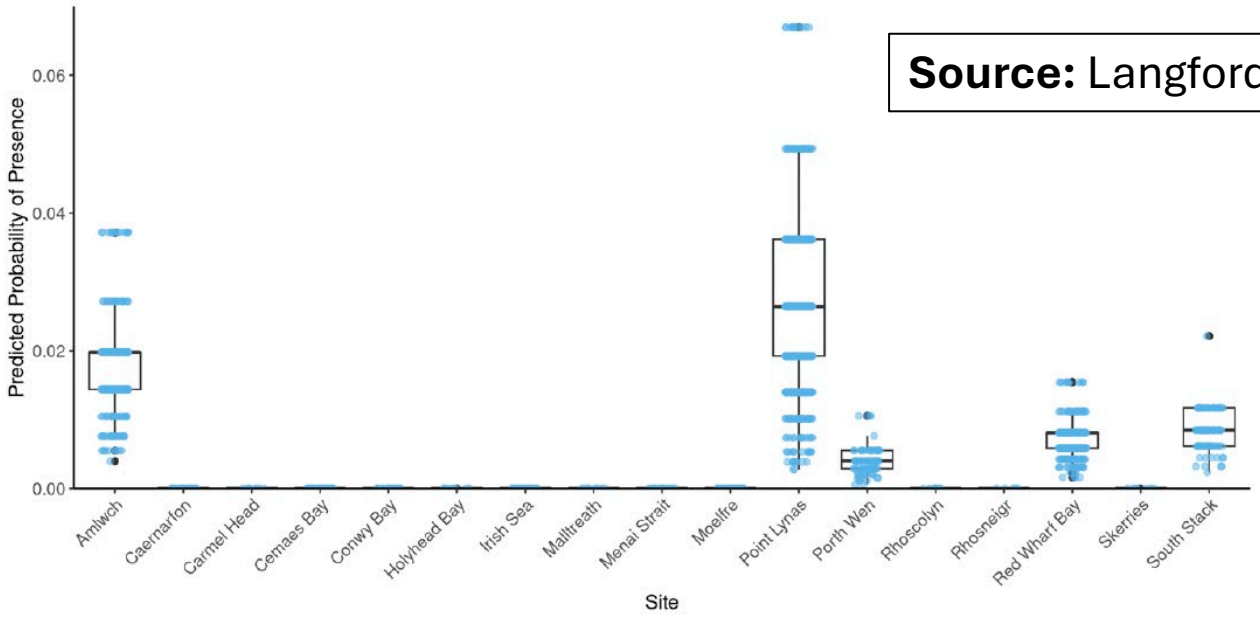
Source: Langford, 2024

RISSO'S DOLPHIN ECOLOGICAL RELATIONSHIPS – NORTH ANGLESEY

Probability of Presence by Season

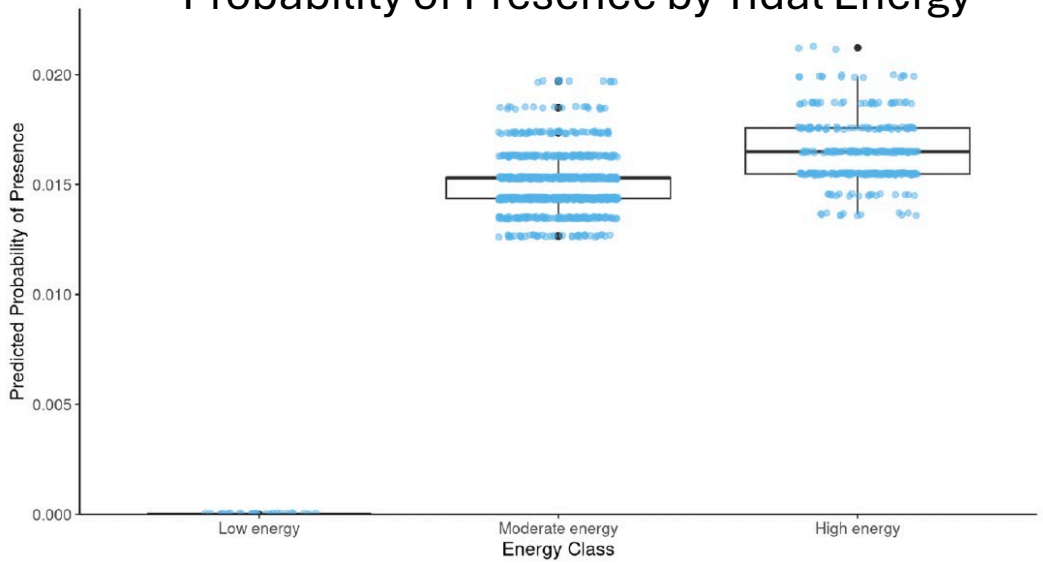


Probability of Presence by Site

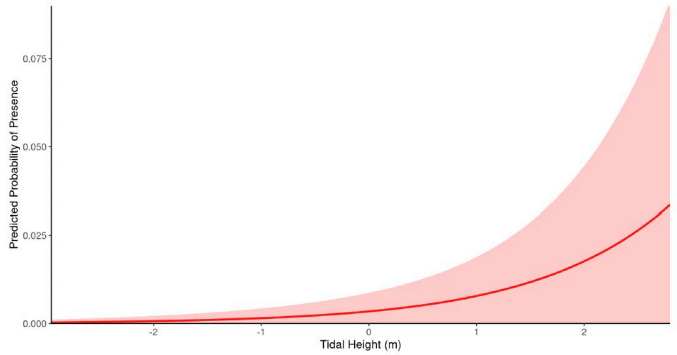


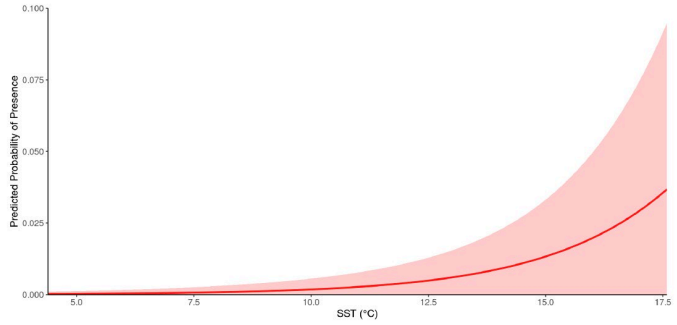
Source: Langford, 2024

Probability of Presence by Tidal Energy

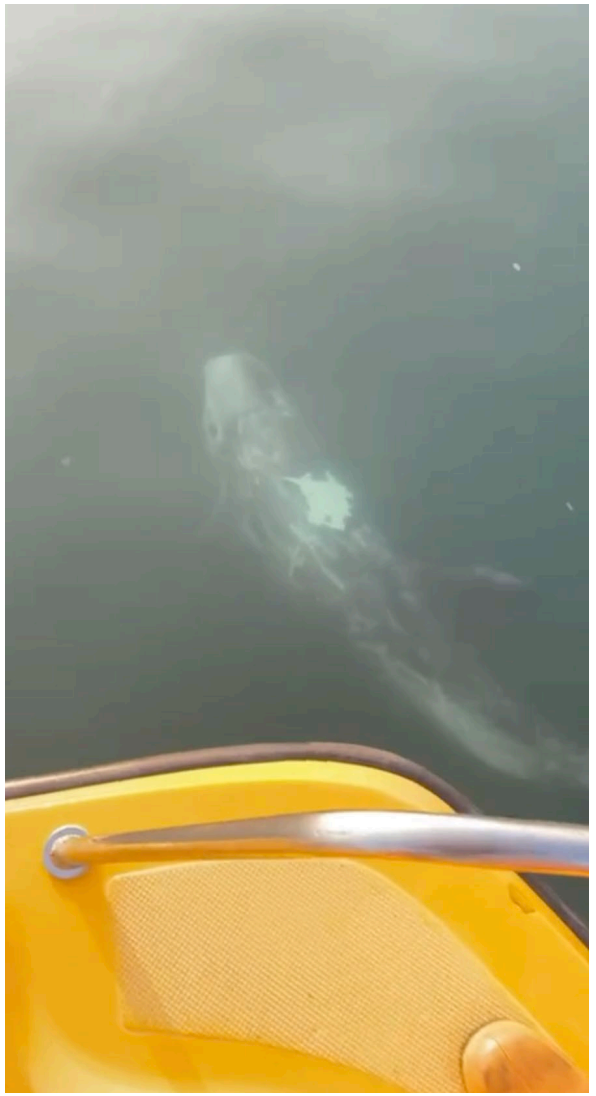


Relationship with a) Tidal Height b) Sea Surface Temperature

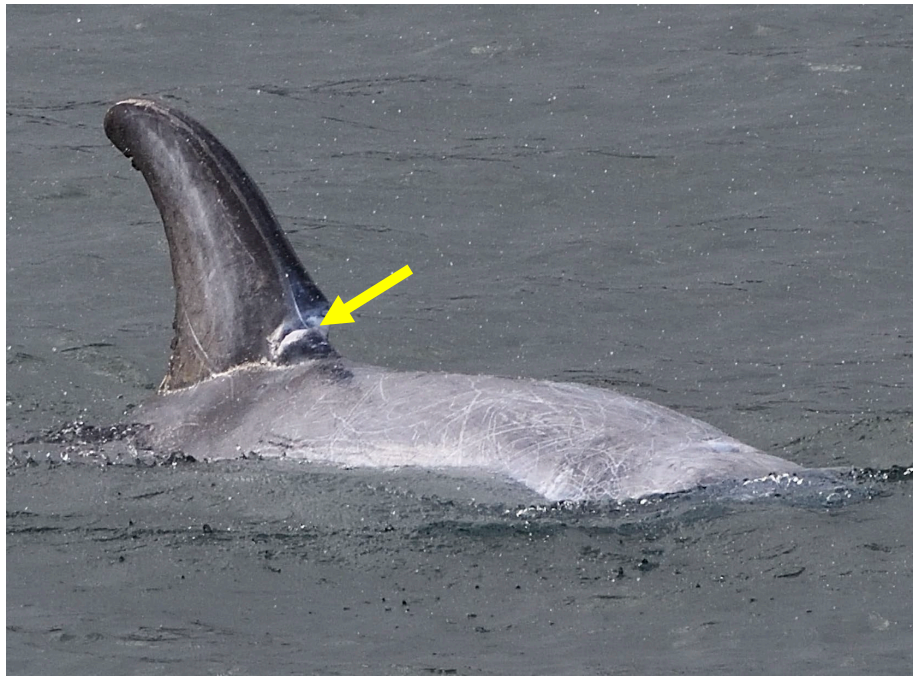


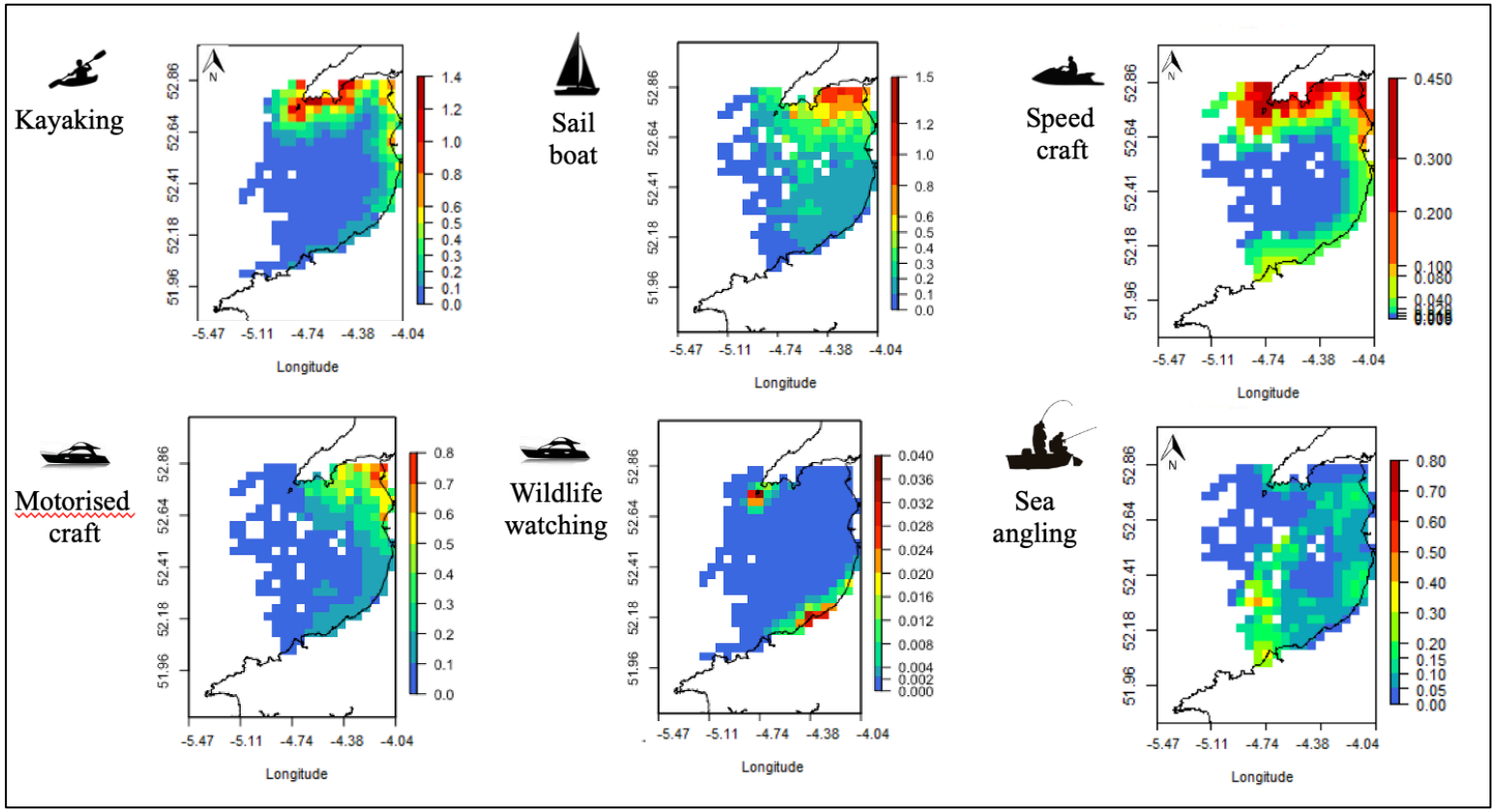


RISSO'S DOLPHIN INTERACTIONS WITH BOATS



RISSO'S DOLPHIN INTERACTIONS WITH BOATS





Risso's Dolphin Responses to Boats

Kayak	neutral to strongly negative
Sail boat	neutral
Speed craft	strongly negative
Motorized craft	neutral to negative
Wildlife watching	neutral to negative
Sea angling	neutral

Sources:

Vergara Peña, 2019; Sea Watch Foundation, unpubl. data

RISSO'S DOLPHIN BYCATCH

Demersal Trawls (OTB, TBB): Chavez-Rosales et al. (2017), ICES WGBYC (2013, 2017-19)

Static Gillnets (GNS, GTR): ACCOBAMS (2008), ICES WGBYC (2014)

Drift Nets (GND): ACCOBAMS (2008)

Set Long Lines (LLS, LL,X, LL): ACCOBAMS (2008), ICES WGBYC (2011, 2020)

Drifting Long Lines (LLD): ACCOBAMS (2008), Macías-López et al. (2012)

Aquat. Living Resour. 25, 321–331 (2012)

DOI: 10.1051/alr/2012038
www.alr-journal.org

Aquatic Living Resources

ICCAT CICTA CICAA

Marine mammal bycatch in Spanish Mediterranean large pelagic longline fisheries, with a focus on Risso's dolphin (*Grampus griseus*)

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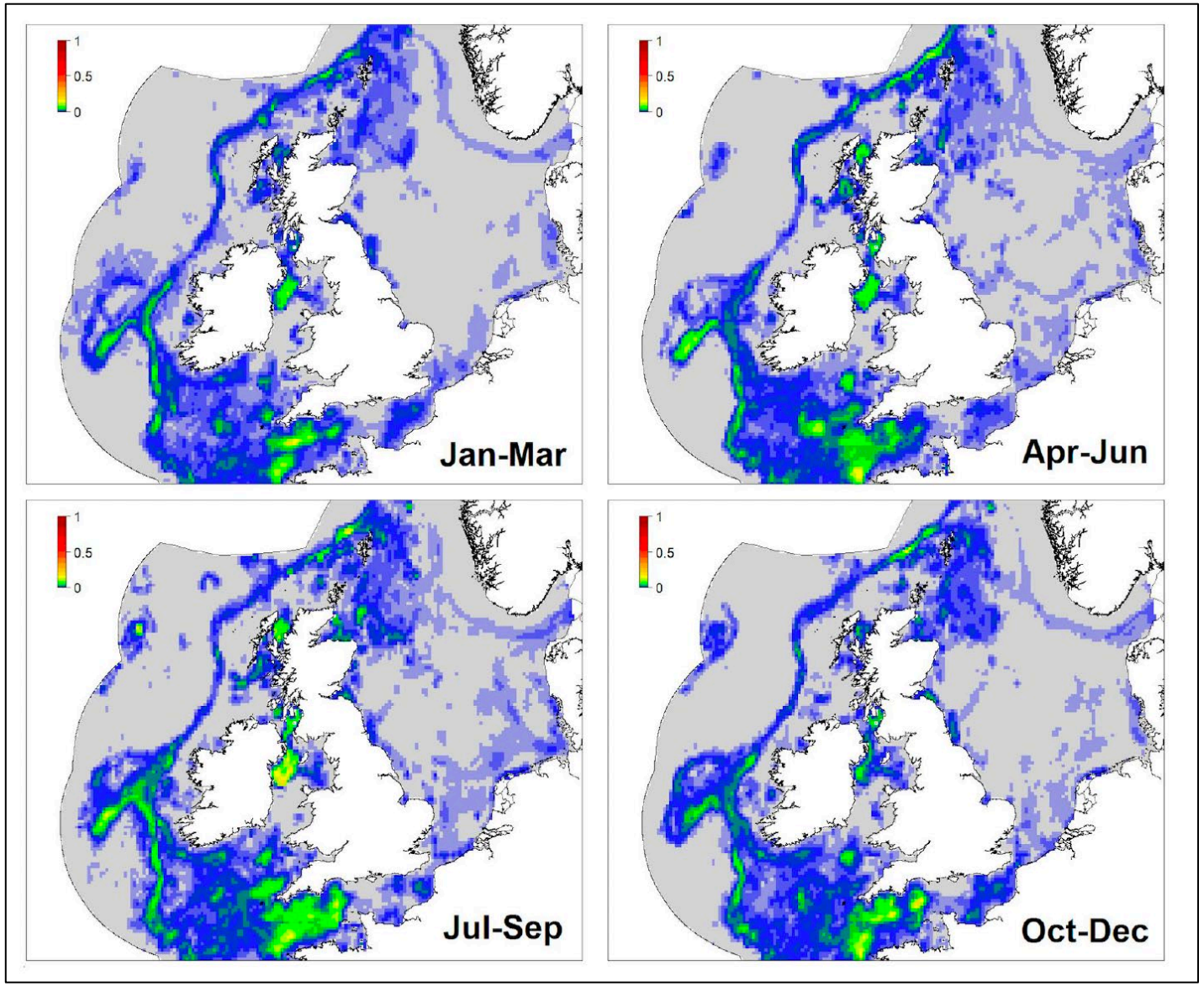
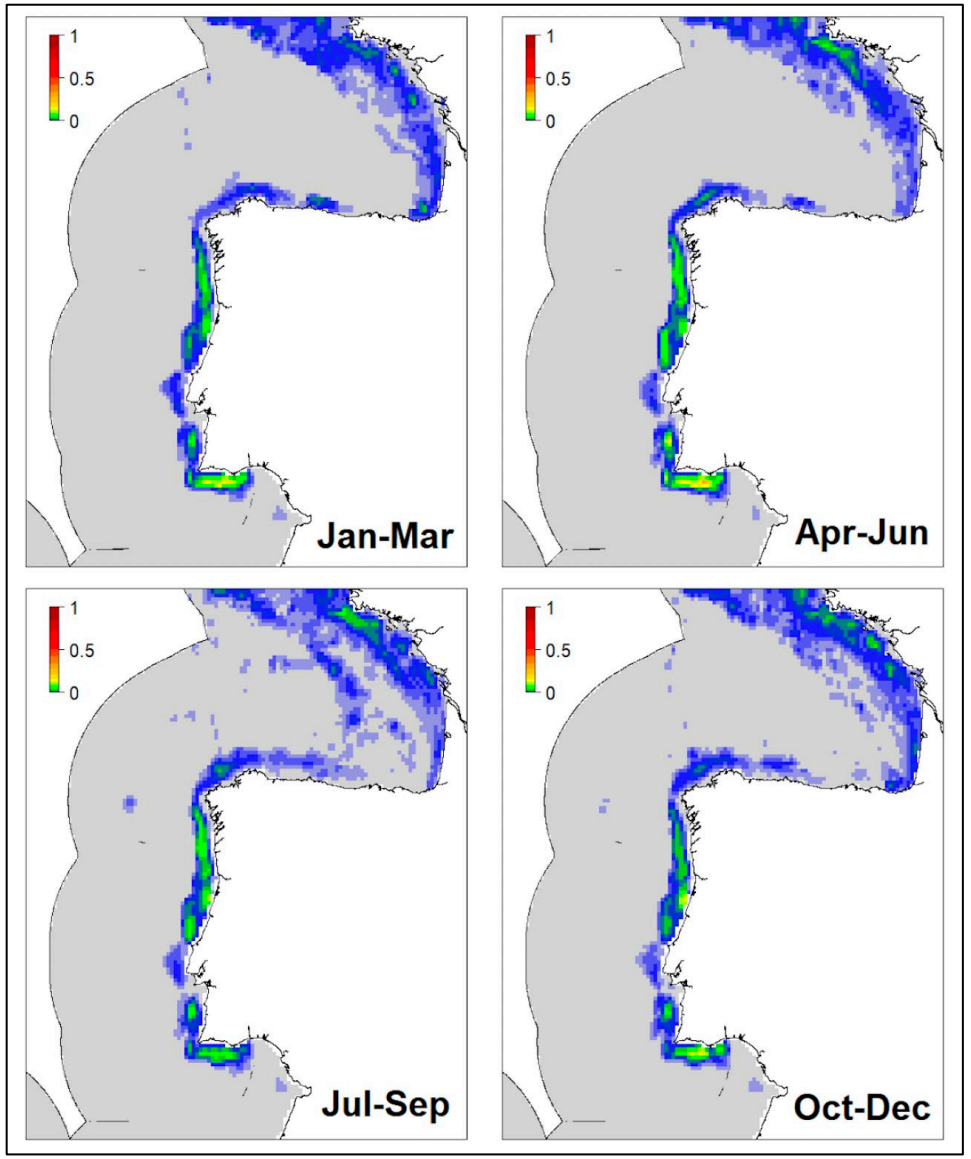
Centro Oceanográfico de Málaga, Instituto Español de Oceanografía, Puerto pesquero, s/n, 29640 Fuengirola, Spain

Abstract – The western Mediterranean is an important fishing area in which the Spanish longline fleet operates. Longline fisheries affect several species of marine mammals, sea turtles, sharks and seabirds, all of which are especially sensitive to fishing mortality. Given international efforts to identify and reduce the bycatch of sensitive species, an onboard observer program was implemented by the Spanish Oceanographic Institute (IEO, *Instituto Español de Oceanografía*). The aim of the present study was to report data on marine mammal bycatch in the western Mediterranean. The additional aim was to improve knowledge about the possible effects of the Spanish longline fisheries on cetacean populations, particularly Risso's dolphin, and to suggest improvements to fisheries management. Data on marine mammal bycatch were collected during the period 2000–2009. Differences are reported for catch per unit effort (CPUE, defined as marine mammals per 1000 hooks) for each type of gear (n = 7), as well as their effect on specific marine mammal species. A total of 5 398 297 hooks were monitored, which yielded 56 marine mammals belonging to 4 different species. Our results indicate that Risso's dolphin is the species most affected by the longline fishery in the western Mediterranean (n = 33). We built a predictive model for Risso's dolphin bycatch using variables associated with the technical characteristics of the fishery, geographic location and seasonality. We performed a binary logistic regression of the presence/absence of Risso's dolphin bycatch to test whether the probability of incidentally catching one or more dolphins may be predicted by some of the explanatory variables selected. Our results indicate that Risso's dolphin was mainly caught using Japanese longline (LLJAP) or an experimental home-based longline (LLHBexp) over the continental shelf. Because LLHBexp is an experimental type of gear that was only used occasionally by the fleet, controlling the use of LLJAP over the continental shelf could strongly reduce the impact of these fisheries on populations of Risso's dolphin in the western Mediterranean.

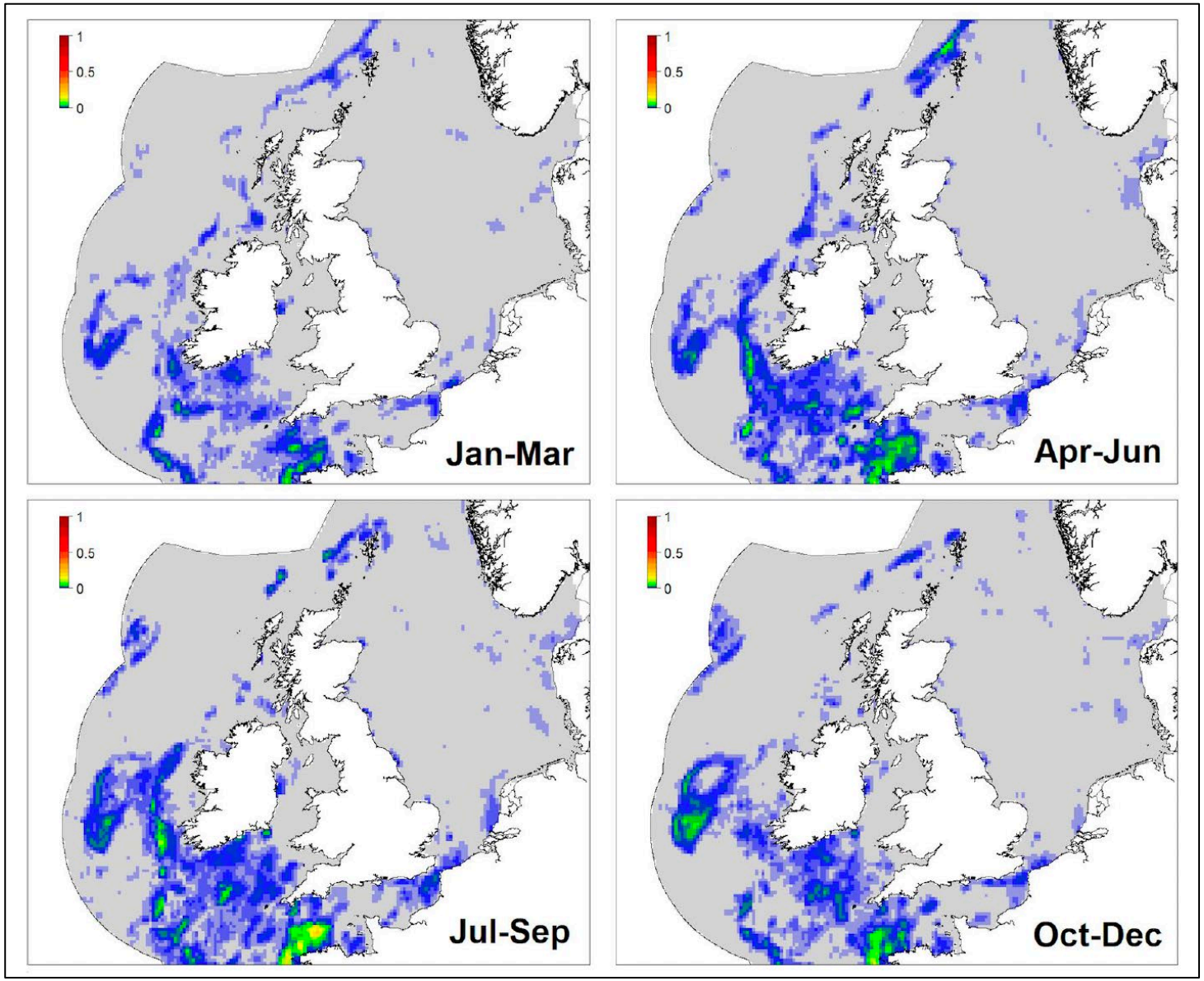
RISSO'S DOLPHIN BYCATCH – DEMERSAL TRAWLS

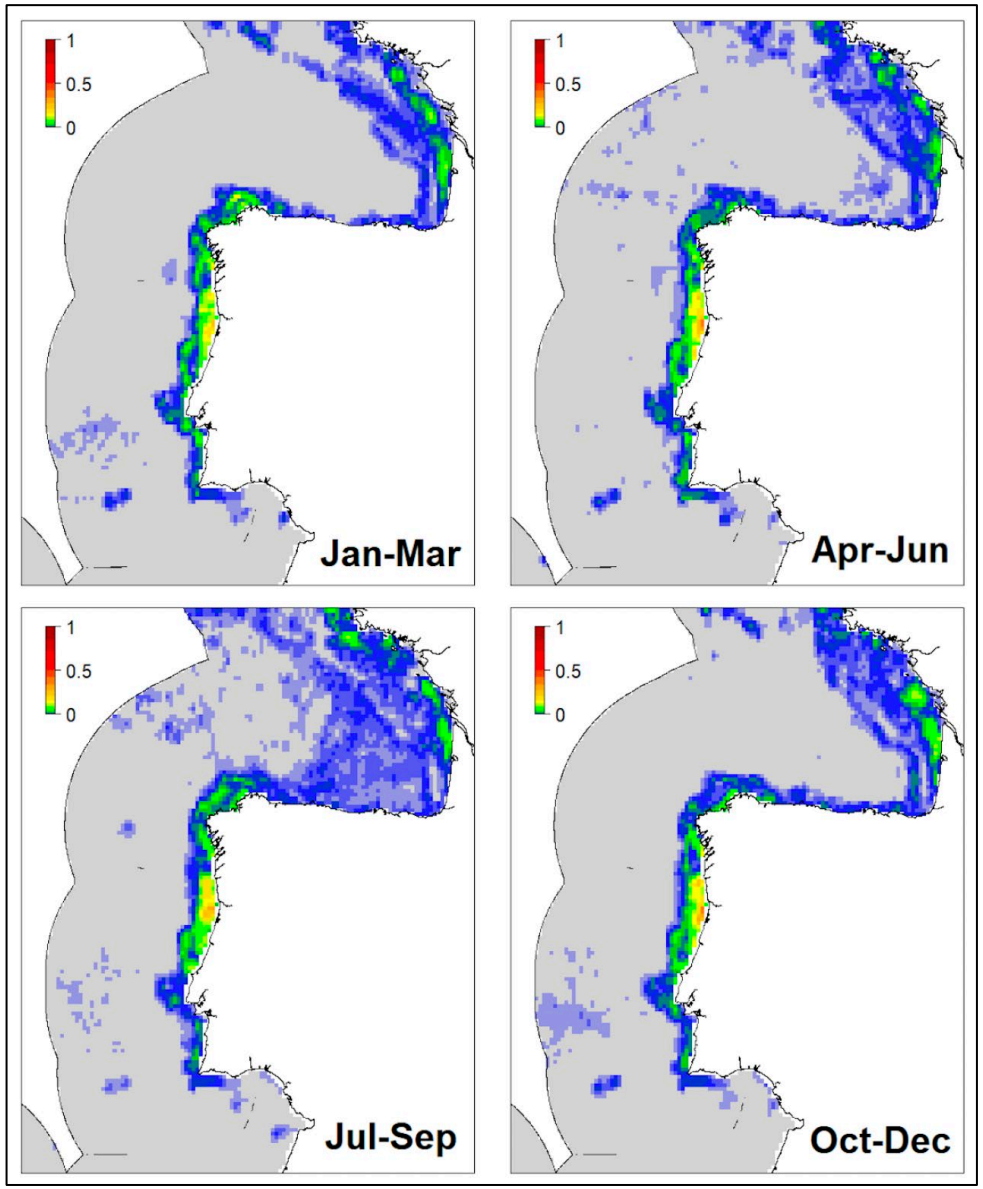




Source: Evans et al. (2021)

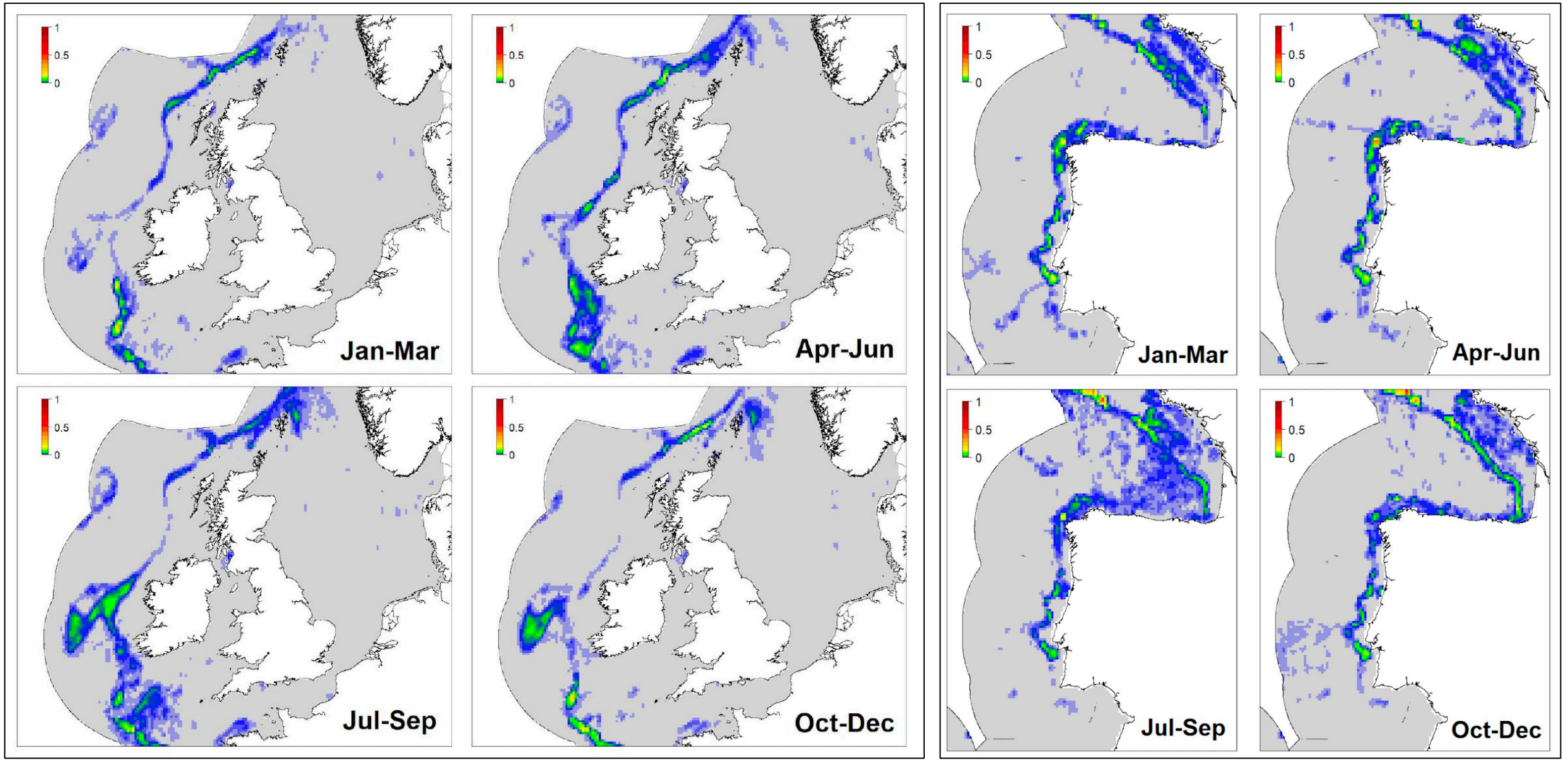
RISSO'S DOLPHIN BYCATCH – STATIC NETS





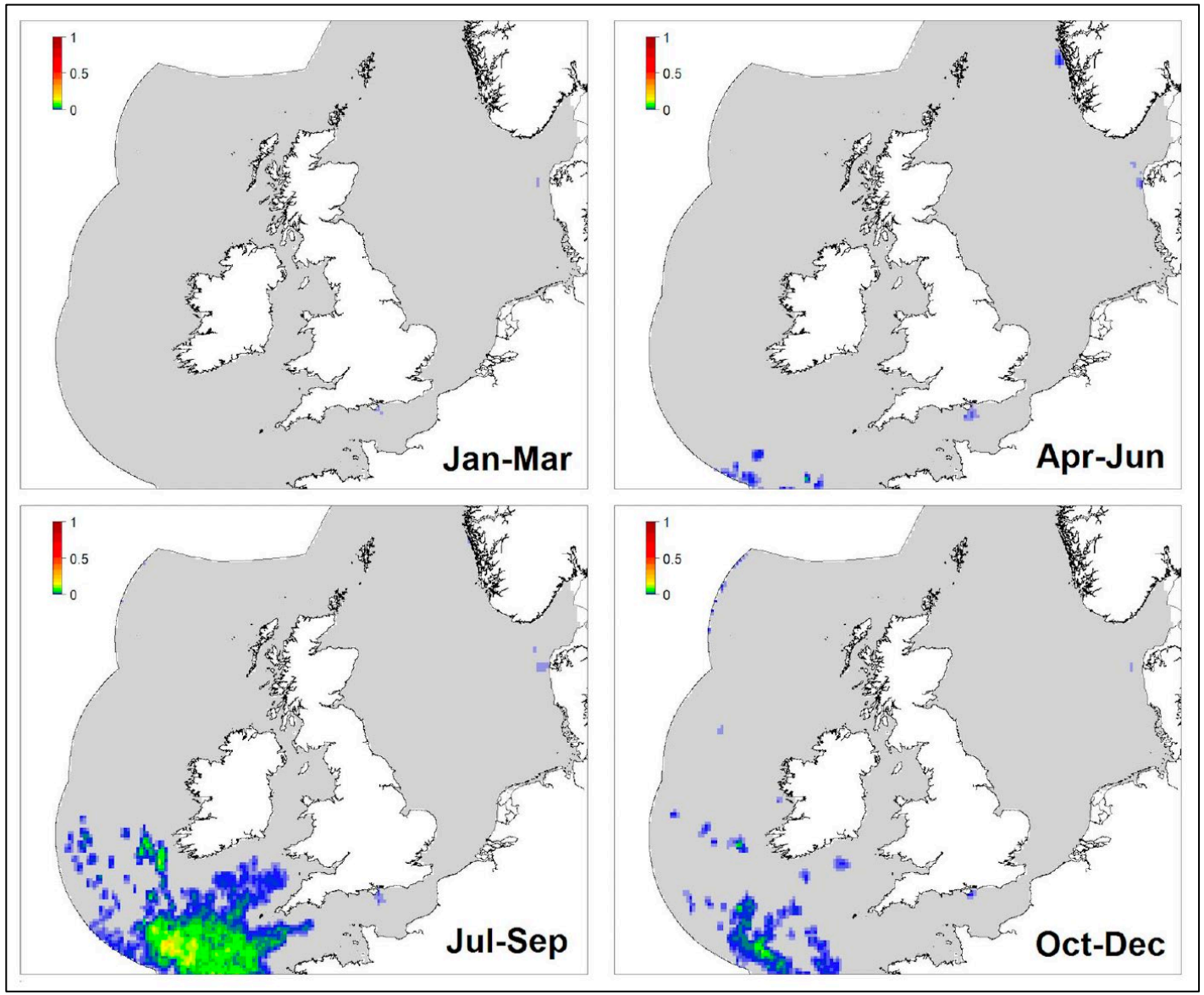
Source: Evans et al. (2021)

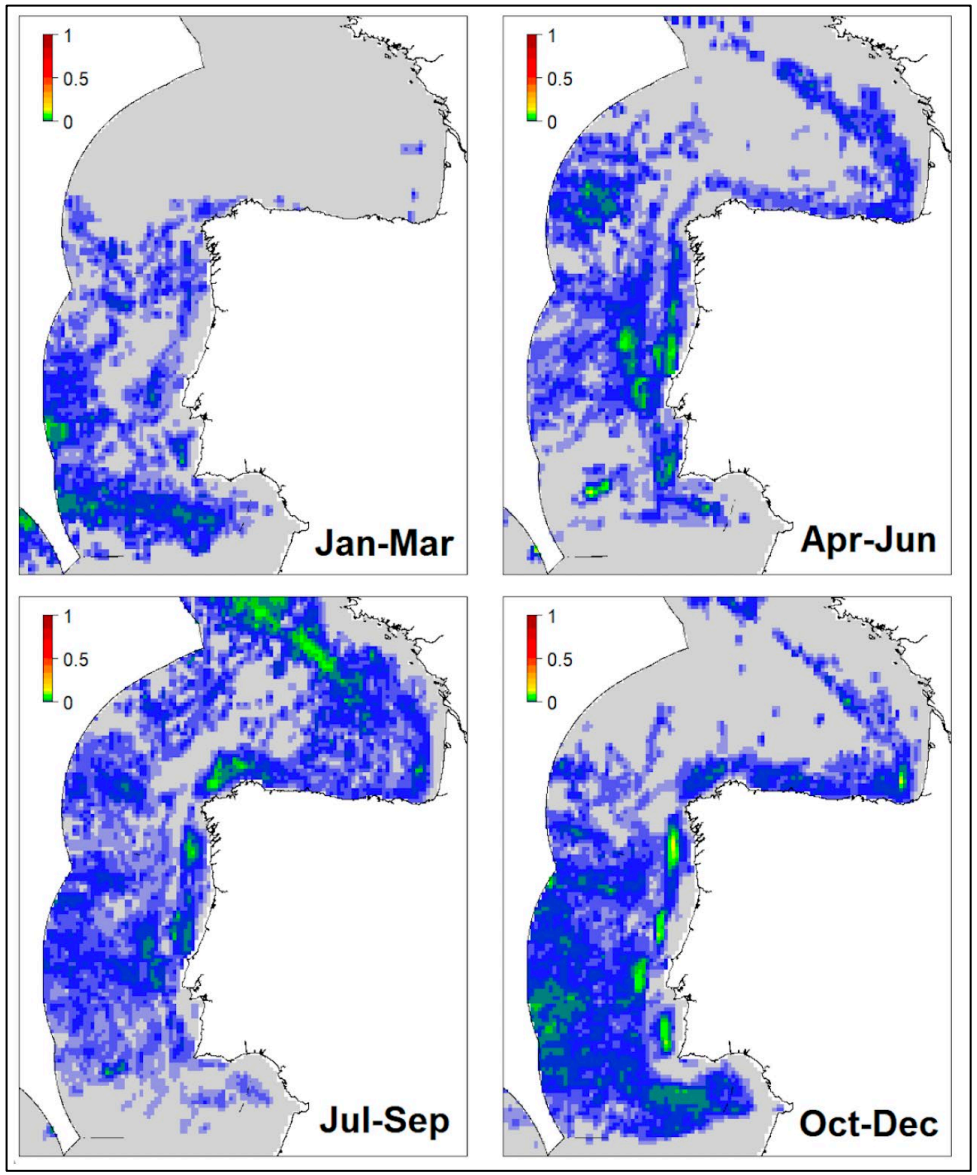
RISSO'S DOLPHIN BYCATCH – SET LONGLINES



Source: Evans et al. (2021)

RISSO'S DOLPHIN BYCATCH – DRIFTING LONGLINES





Source: Evans et al. (2021)

RISSO'S DOLPHIN PREY

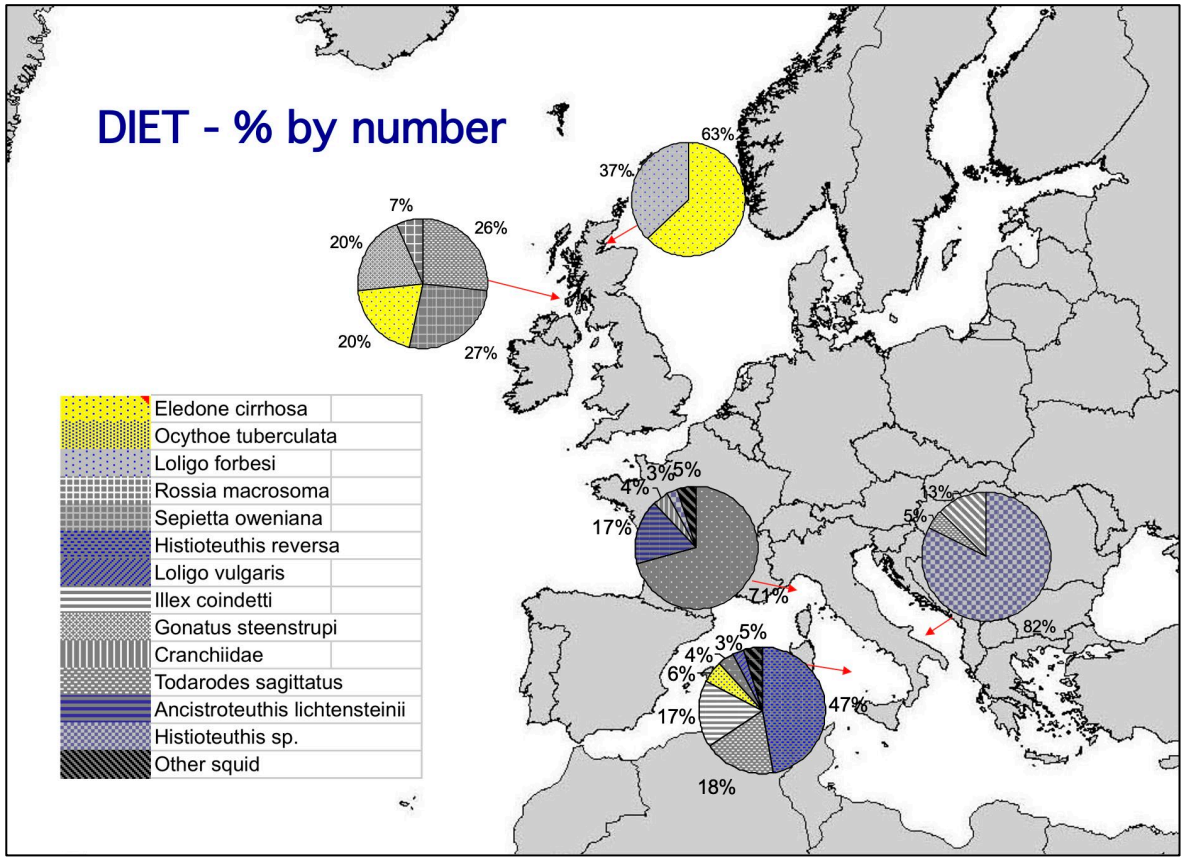
Mesopelagic Cephalopods

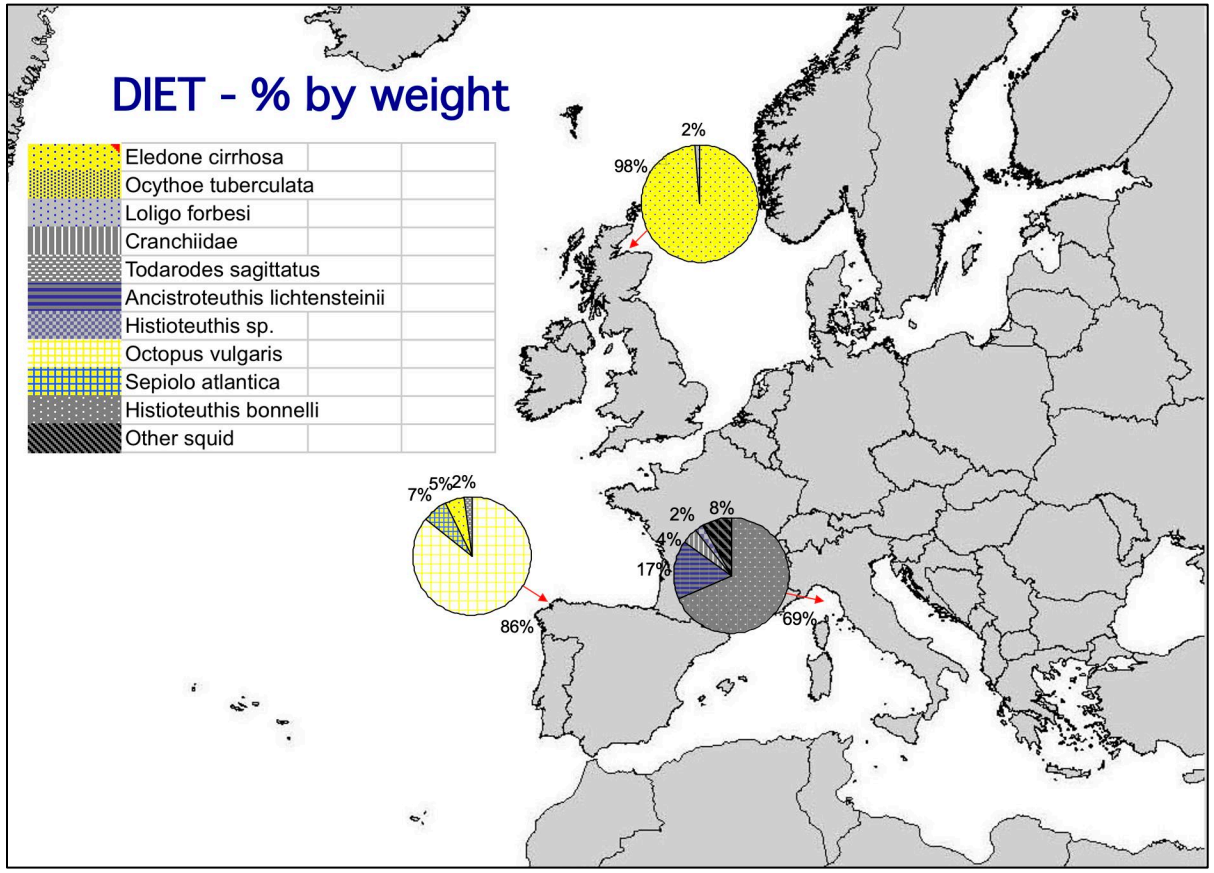
- Curled Octopus (*Eledone cirrhosa*)
- Musky Octopus (*Eledone moschata*)
- European Common Cuttlefish (*Sepia officinalis*)
- Veined Squid (*Loligo forbesii)*
- Common Squid *(Loligo vulgaris)*
- European Flying Squid (*Todarodes sagittatus)*
- Atlantic Gonate Squid *(Gonatus steenstrupei)*
- Reverse Jewel Squid *(Histioteuthis reversa)*
- Umbrella Squid *(Histioteuthis bonnelli)*
- Common Arm Squid *(Brachioteuthis riisei)*

Sources:

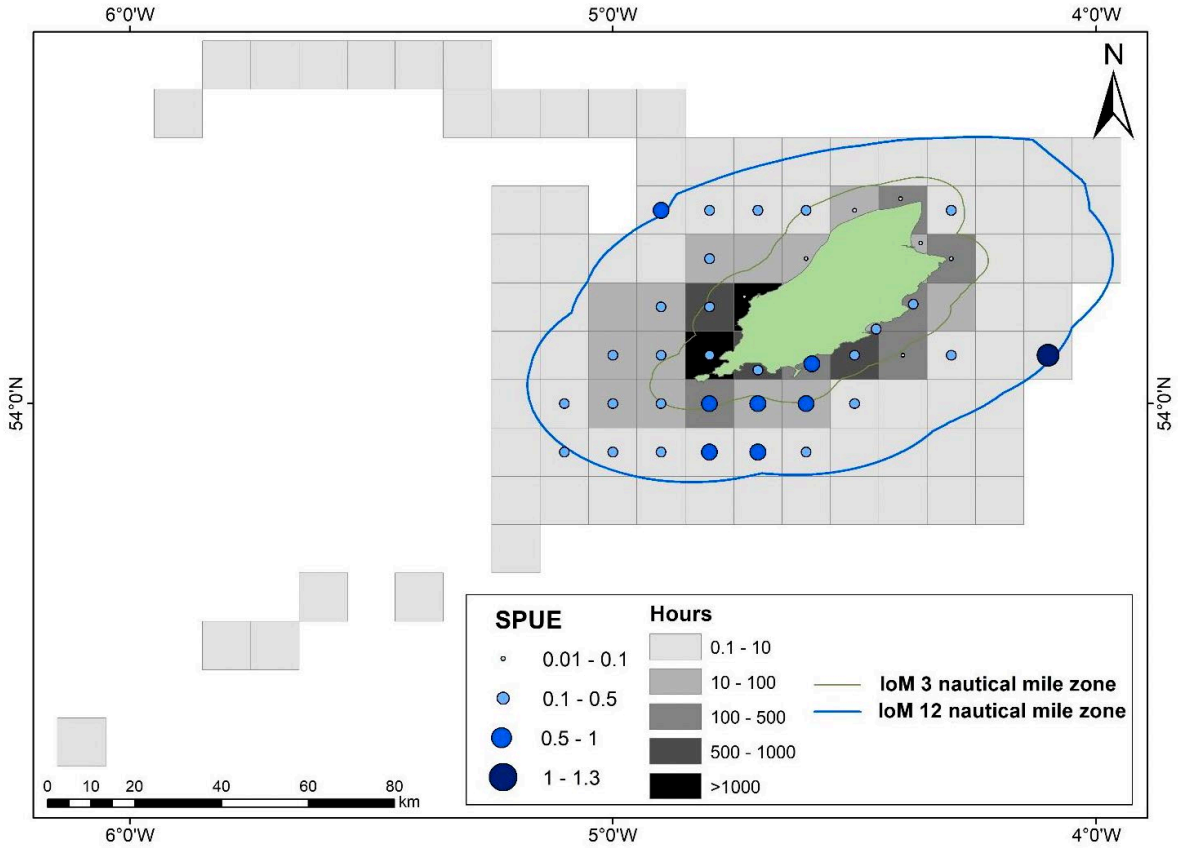
Clarke & Pascoe, 1985; Desportes, 1985; Clarke, 1986; Zonfrillo *et al*., 1988; Bello & Pulcini, 1989; Podesta & Meotti, 1991; Carlini *et al*., 1992; Wurtz *et al*., 1992; Kiszka et al., 2004; Blanco et al., 2006; Oztürk et al., 2007; Bloch *et al.,* 2012; Luna *et al., 2021*

RISSO'S DOLPHIN STOMACH CONTENTS BY GEOGRAPHICAL LOCATION

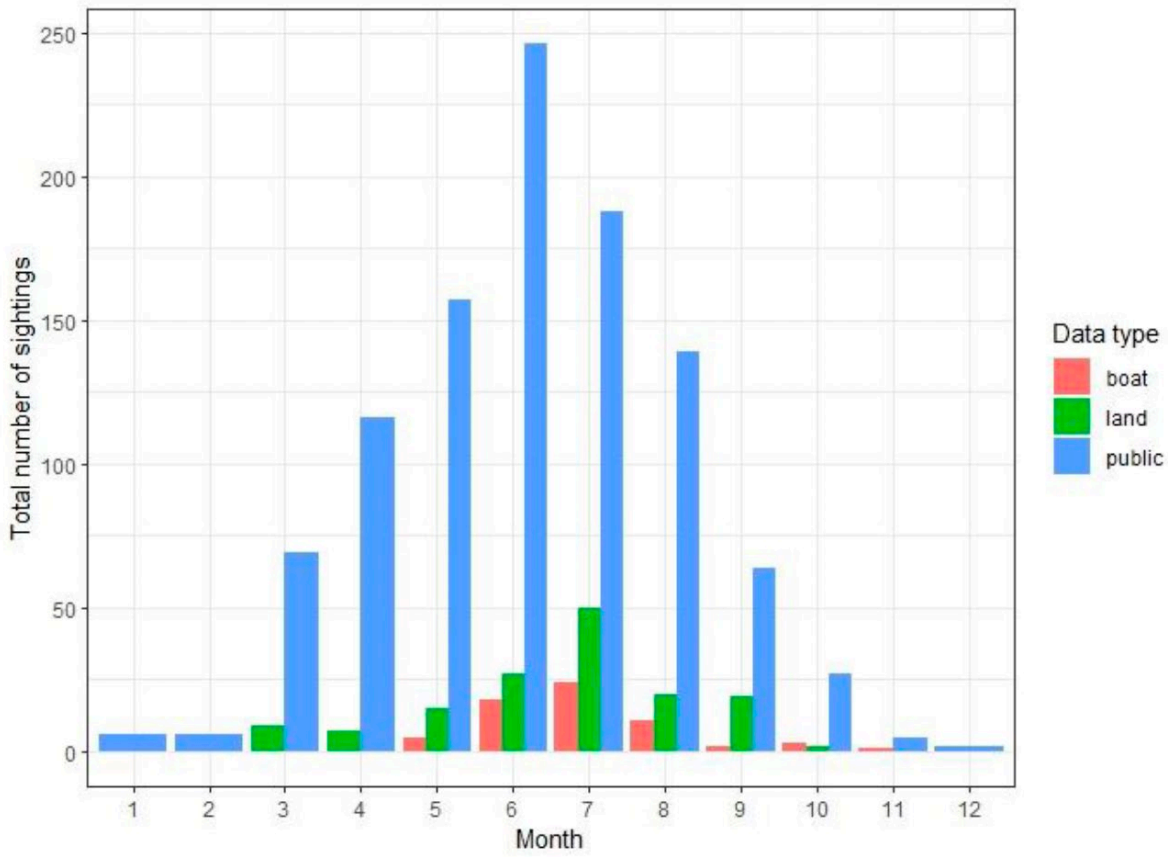




Risso's Dolphin Sightings per unit effort



Risso's Dolphin Sightings by month



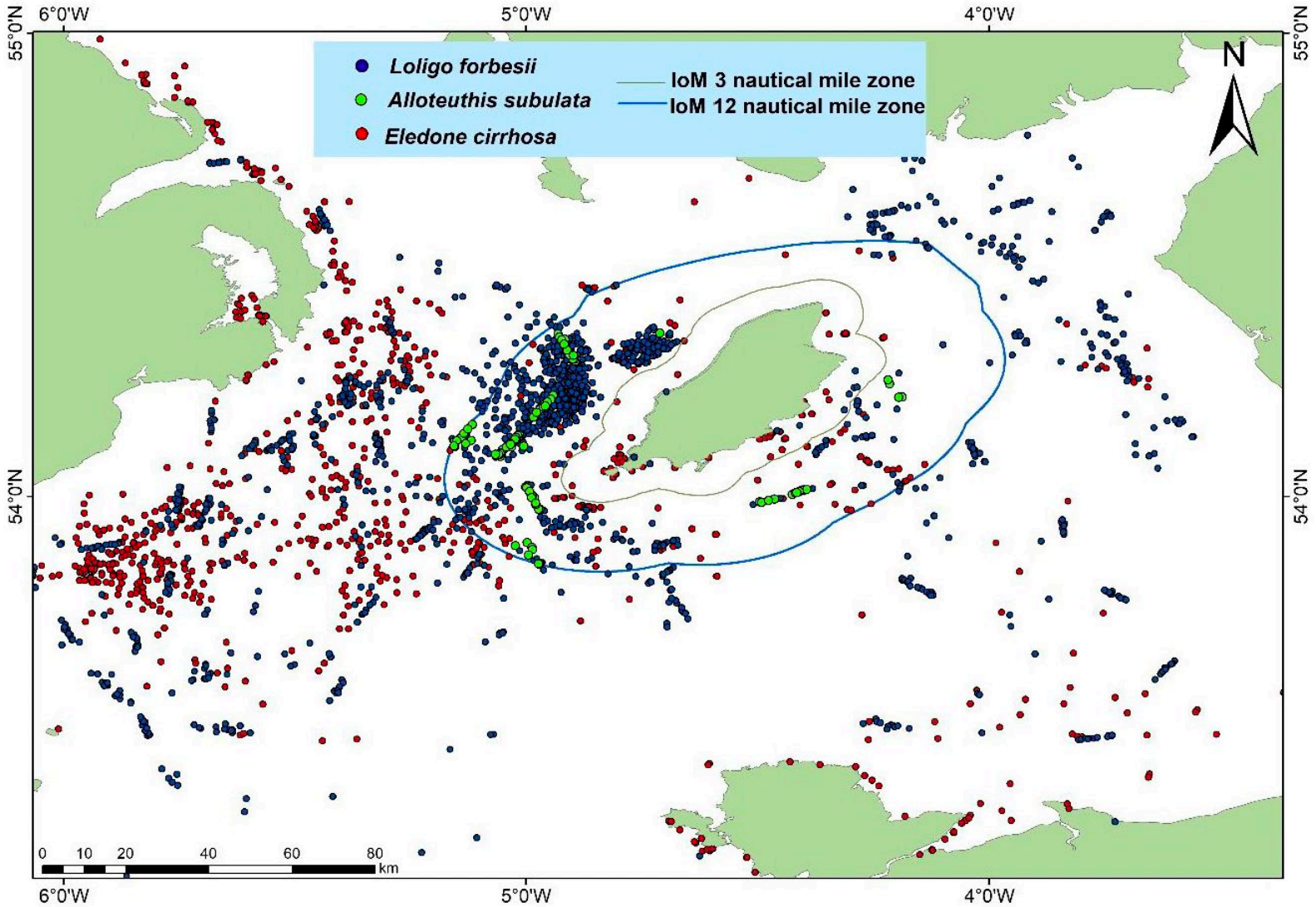
Source: Rosser (2023)

DISTRIBUTION OF THREE CEPHALOPOD SPECIES AROUND THE ISLE OF MAN

Loligo forbesii
Veined squid

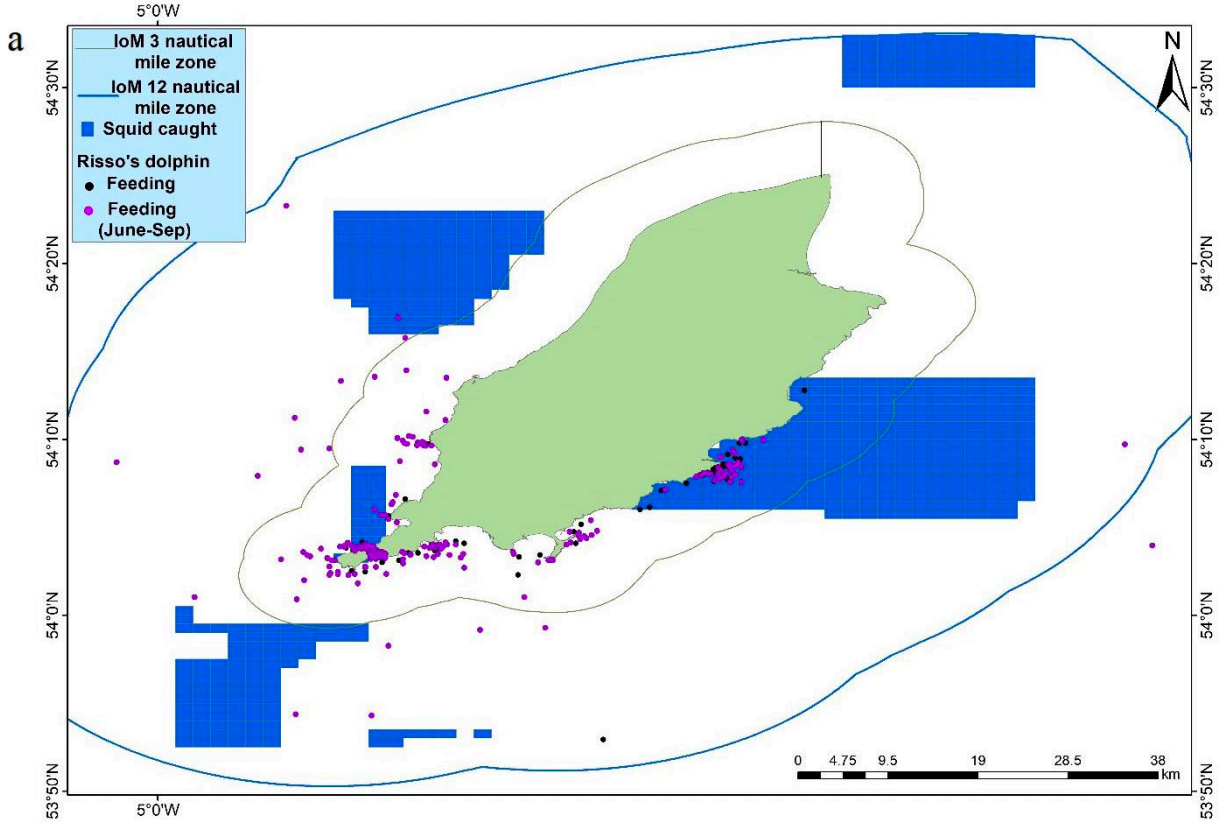
Alloteuthis subulata
European common squid

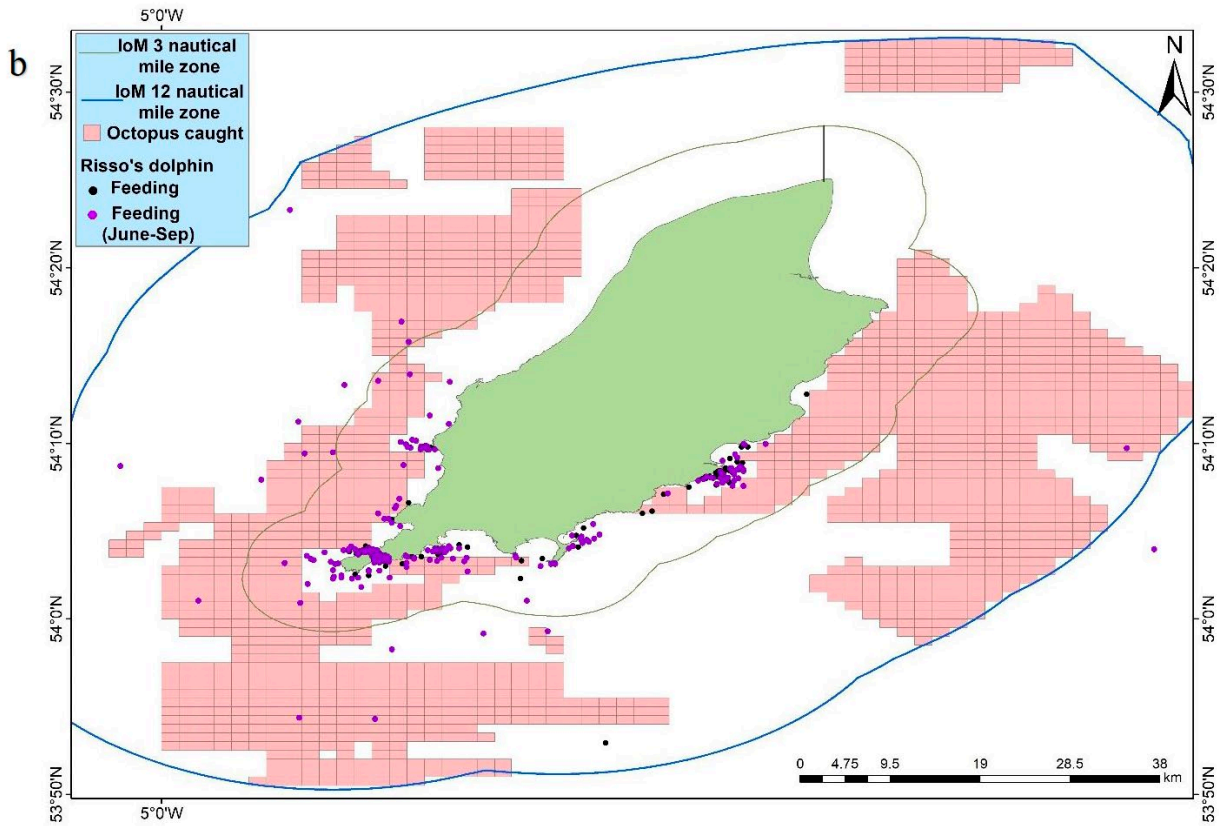
Eledone cirrhosa
Curled octopus



Source: Rosser (2023)

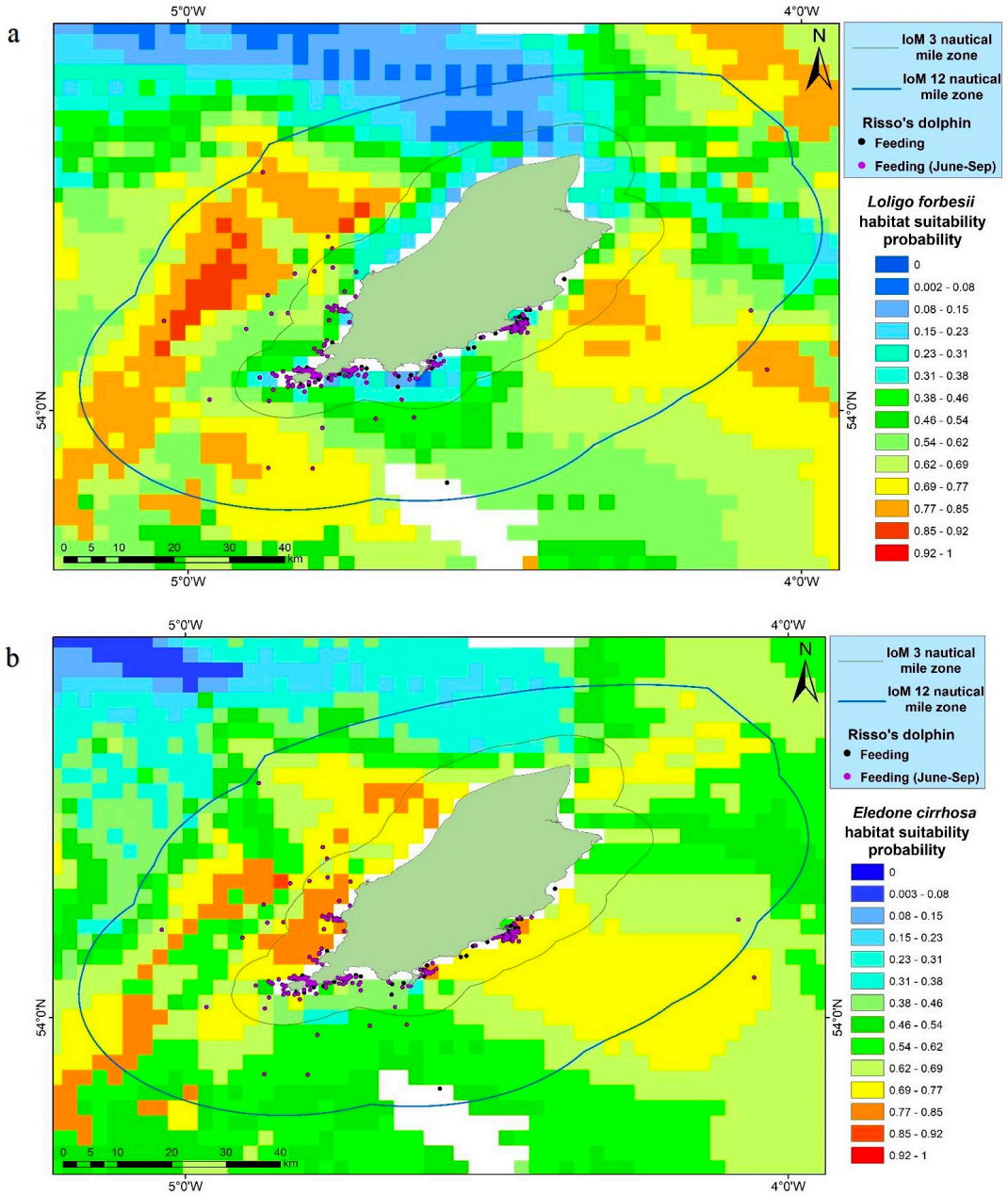
RESULTS OF FISHER QUESTIONNAIRE SURVEY OF LOCATIONS WHERE A) SQUID AND B) OCTOPUS ARE CAUGHT AROUND THE ISLE OF MAN





Source: Rosser (2023)

Habitat Suitability Maps for *Loligo forbesii* & *Eledone cirrhosa*



- Areas in red & orange show locations with the highest habitat suitability for the cephalopod species, from MAXENT analysis
- Circles depict sightings of Risso's dolphin feeding (blue) and during June to September (pink)
- Closest relationship was with *Eledone cirrhosa*
- Stomach contents of three Risso's dolphins contained only *Eledone cirrhosa*

Source: Rosser (2023)

Conservation Plan Action Points

Harbour Porpoise North Sea Plan

RES-01	Identify priority bycatch issues and relevant stakeholders	ESSENTIAL
RES-02	Improve estimates of bycatch rates to support development of conservation strategy	ESSENTIAL
MIT-01	Implement and assess pinger and other mitigation measures to reduce bycatch	ESSENTIAL
MON-01	Implement wide-scale surveillance programme to monitor distribution & abundance trends	HIGH
RES-03	Improve understanding of seasonal & annual variation in distribution & abundance	HIGH
MON-02	Monitor health and nutritional status, diet, life history parameters, and causes of mortality	HIGH
RES-04	Further understanding of population structure	MEDIUM
MIT-02	Improve understanding of and develop mitigation for the risks of anthropogenic sound	MEDIUM
MON-03	Ensure screening & assessment of occurrence & effects of hazardous substances	MEDIUM
MON-04	Monitor for potential increases in anthropogenic activities that lead to death, injury or adverse health effects	LOW
MON-05	Monitor habitat quality, including protected sites, to ensure management is effective and that the ecological functions are maintained	LOW

Common Dolphin Plan

RES-01	Identify priority bycatch issues	ESSENTIAL
RES-02	Improve bycatch rate estimates	ESSENTIAL
MIT-01	Implement & assess gear modifications and mitigation measures to reduce bycatch	ESSENTIAL
MON-01	Implement wide-scale surveillance to monitor trends in distribution & abundance	HIGH
RES-03	Improve understanding of seasonal & annual variation in distribution & abundance	HIGH
MON-02	Monitor health & nutritional status, diet, life history parameters and causes of mortality	HIGH
RES-04.	Further understanding of population structure	MEDIUM
MIT-02.	Improve understanding of and develop mitigation for the risks of anthropogenic sound	MEDIUM
MON-03	Ensure screening & assessment of occurrence & effects of hazardous substances	MEDIUM
MON-04	Monitor for potential increases in anthropogenic activities that lead to death, injury or adverse health effects	LOW

Harbour Porpoise Western Baltic Plan

1. Implementation of CP: coordinator & Steering Committee
2. Involve fishers in implementation of the plan and mitigation of bycatch
3. Cooperate and inform other relevant bodies about the conservation plan
4. Protect porpoises in their key habitats by minimizing bycatch
5. Implement pinger use in fisheries causing bycatch
6. Replace high-risk gillnet fisheries with alternative fishing gear
7. Estimate total annual bycatch
8. Estimate trends in abundance
9. Monitoring population health status, contaminant load and causes of mortality
10. Ensure non-detrimental use of pingers by examining habitat exclusion
11. Monitor and manage important prey species
12. Restore or maintain habitat quality – underwater noise

PROGRESS ON IMPLEMENTATION OF NORTH SEA CONSERVATION PLAN - 2025

0 = No Progress

1 = Small Progress

2 = Steady Progress

3 = Fully Implemented

	Actions from the North Sea Conservation Plan for HP		SE	DK	DE	NL	BE	FR	UK
1	Implementation of the CP: co-ordinator and Steering Committee		Coordinator currently in place						
2	Implementation of existing regulations on bycatch of cetaceans - e.g. EC 2019/1241 & Habitats Directive (HD)	Vessels requiring pingers	na	17	na	na	na	9	18
		No. of vessels using pingers	na	17	na	na	na	9	18
		Enforcement policy	na	3	0	na	na	3	3
		Protected Species observer programme	2	2	0	1	1	2	2
		Regulating fisheries in N2K sites	1	1	1	1	1	1	1
3	Establishment of BYC observation programmes on vessel smaller than 12m long, professional and recreational fisheries	Professional	2	1	0	1	na	1	1
		Recreational	0	1	na	0	na	0	na
4	Regular evaluation of relevant fisheries, extent of HP BYC:	Overall assessment	1	1	0	1	na	1	1
	Gillnet fisheries =>15m vessels, dedicated, % DaS observed		na	1*	0	na	na	?	?
	Gillnet fisheries <15m vessels, dedicated, % DaS observed		5-10	?	0	1	na	?	?
	Cetacean scheme appended to DCF / DCR schemes		yes	yes	yes	yes	no	yes	yes
	DCF observations in NS, % DAS observed		yes	yes	no	10-15	na	?	?
5	Bycatch Mitigation Measures	Deployment of working ADDs	1	2	1	1	na	1?	2
		Development of alternative ADDs	1	1	1	0	na	1	1
		Modification of Fishing Gear	1	1	1	0	0	1	1
		Fisheries effort reduction/closures	2	0***	2	1	1	1	2
		Removal of Ghost Netting	1***	1**	1*	1**	1**	0	1*
6	Review of management procedure approach for determining maximum allowable byctch limits		Progress ICES WGBYC, OSPAR (MSFD), ASCOBANS						
			2	2	2	2	2	2	2
7	Monitoring trends in distribution and abundance of HP in NS	Large scale	SCANS IV undertaken in 2022						
		Reg/survey	0	2	3	2	3	2	1
		Reg/modelling	0	2*	3	2	3	2	1
8	Review of the stock structure of HP in NS		1	1	1	1	1	1	1
9	Collection of incidental porpoise data through stranding networks	Life History	3	2	3	2	2	2	3
		Contaminants	2	2	3	3	2	2	3
10	Investigation of the health, nutritional status and diet of HP in NS	Cause of death	3	2	3	3	3	3	3
		Health/Nutritional Status	3	2	3	3	3	3	3
		Diet	3	2	3	3	3	2	1
11	Investigation of the effects of anthropogenic sounds on HP	Monitoring continuous noise	2	3	2	2	2	2	2
		Monitoring impulsive noise	2	2	2	2	2	1	2
		Mitigation of continuous noise	2	0	1	0	0	0	1
		Mitigation of impulsive noise	2	3	3	3	2	1	2
12	Collection and archiving of data on anthropogenic activities and development of a GIS		1	1	1	1	1	1	1

			Norwegian Sea	Faroes	Icelandic waters	Oceanic Northeast Atlantic	Macaronesia	Bay of Biscay & Iberian Peninsula	Celtic Seas	Greater North Sea
POLLUTION & OTHER CHEMICAL CHANGES	Contaminants		L	L	L	L	L	L	M	M
	Nutrient enrichment		L	L	L	L	L	L	L	L
	Microplastics		Risk of contamination leading to ill health or death possible, but no evidence to date							
PHYSICAL LOSS	Habitat loss		L	L	L	L	L	L	L	L
PHYSICAL DAMAGE	Habitat degradation		L	L	L	L	L	L	L	L
	Litter (including plastics and discarded fishing gear)		L	L	L	L	M	L	L	L
OTHER PHYSICAL PRESSURES	Underwater noise	Military Sonar	L	L	L	L	L	L	L	L
		Seismic surveys	L	L	L	L	L	L	M	L
		Pile-driving	L	L	L	L	L	L	L	L
		Explosions	L	L	L	L	L	L	L	L
		Shipping	L	L	L	L	L	L	L	L
	Barrier to species movement (offshore windfarm, wave or tidal device arrays)		L	L	L	L	L	L	L	L
	Death or injury by collision	with ships	L	L	L	L	L	L	L	L
		with tidal devices)	Risk of collision leading to ill health or death possible, but no evidence to date							
BIOLOGICAL PRESSURES	Introduction of microbial pathogens		L	L	L	L	L	L	L	L
	Removal of target and non-target species (prey depletion)		L	L	L	L	L	L	L	L
	Removal of non-target species (marine mammal bycatch)		L	L	L	L	L	L	M	L
	Disturbance (e.g. wildlife watching)		L	L	L	L	M	L	M	L
	Deliberate killing + hunting		L	M	L	L	L	L	L	L

Risso's Dolphin Threats Matrix

Threat levels are classified as high, medium or low, using the following criteria:

High (red) = evidence or strong likelihood of negative population effects, mediated through effects on individual mortality, health and/or reproduction.

Medium (amber) = evidence or strong likelihood of impact at individual level on survival, health and/or reproduction.

Low (green) = possible negative impact but evidence is weak and/or occurrences are infrequent.

Source: ICES (2025)