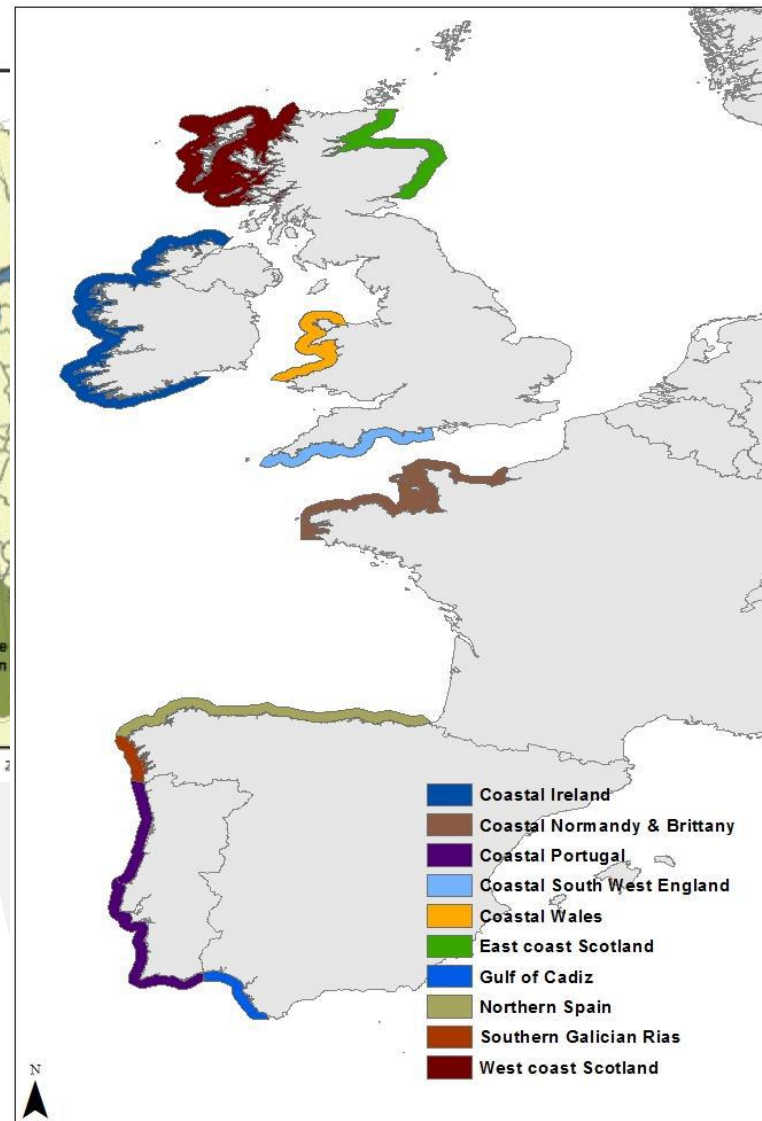
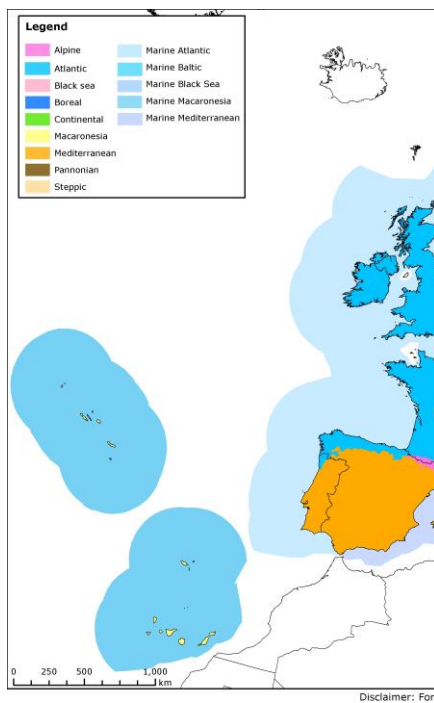


Coordinated Monitoring and Coherent Assessment of Population Status: Northern Europe


Kelly Macleod, Senior Marine Species Advisor, JNCC

(With thanks to Peter Evans!)

Assessment and reporting in 'European Seas'

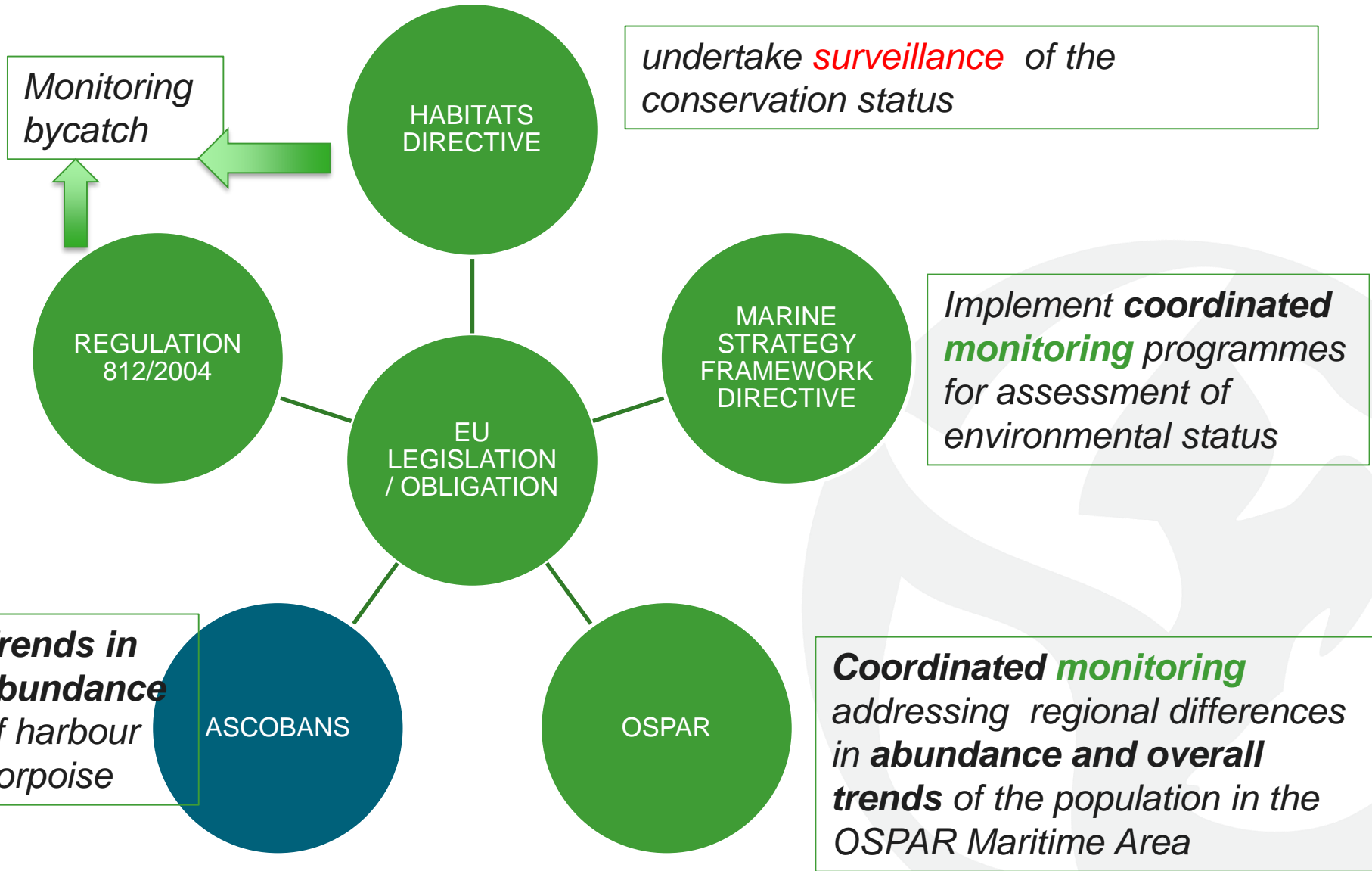


MONITORING

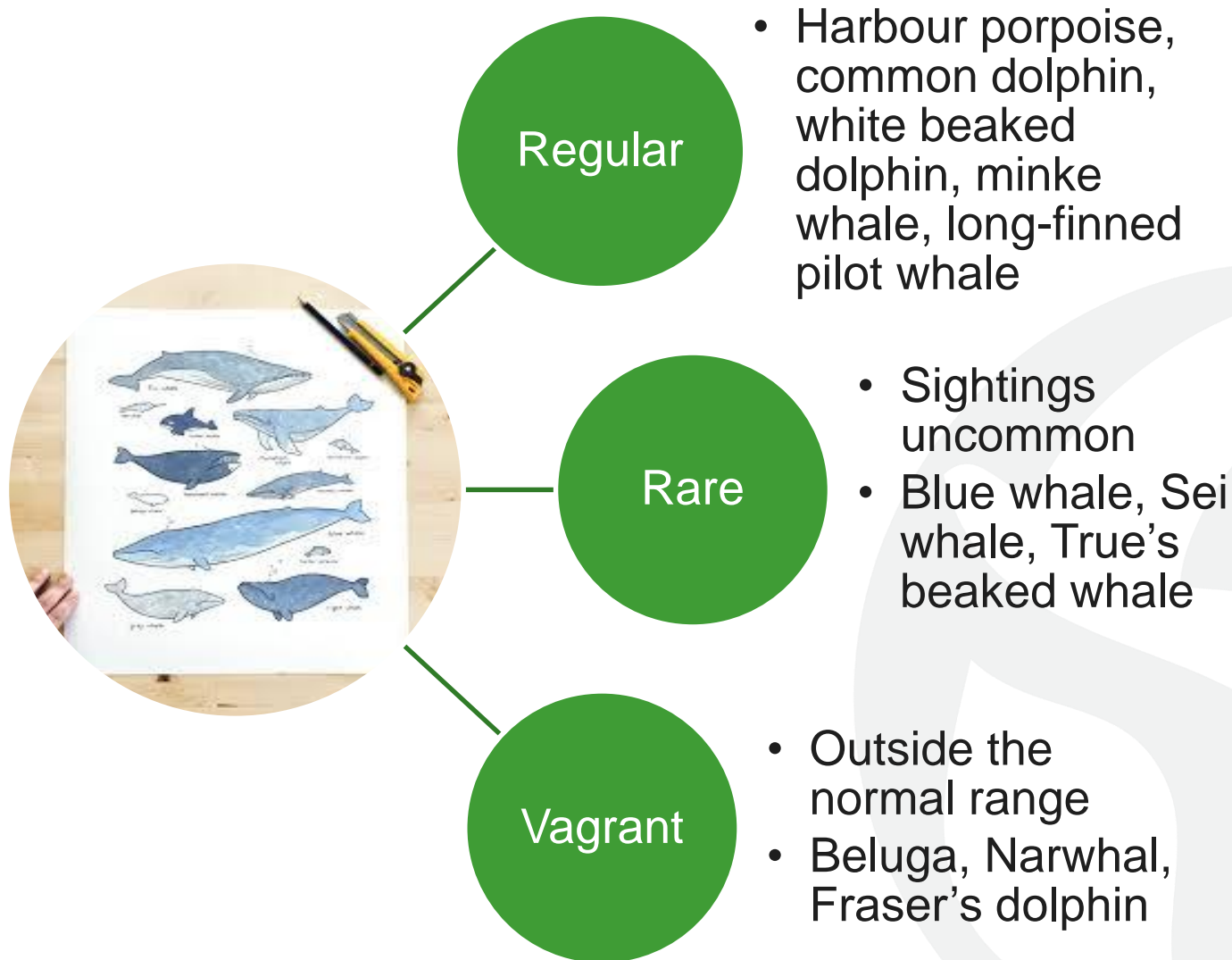
A photograph of a dolphin leaping from the water, with its body curved and its tail visible above the surface. The water is a deep blue with small ripples.

**‘ observe and check the progress or quality
of something (e.g. population abundance)
over a period of time to ensure
conservation objectives are being met’**

Requirements to monitor?



35 cetacean species in Northern Europe



Population distribution

Regular

- Widely or locally distributed:
 - LT abundance survey
 - Photo-ID *
 - Passive acoustics*

Rare

- Widely distributed:
 - LT relative abundance survey

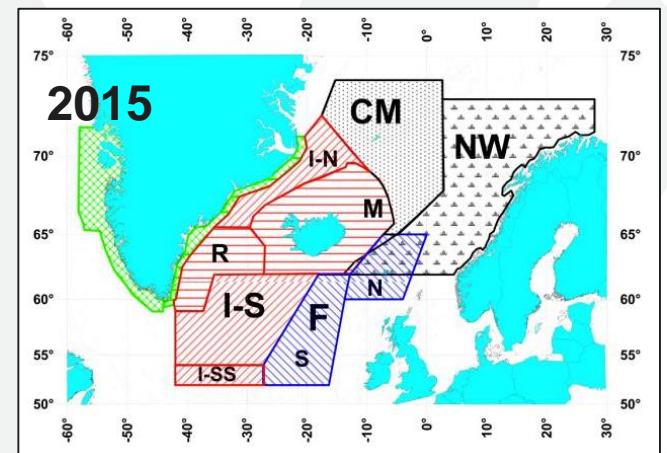
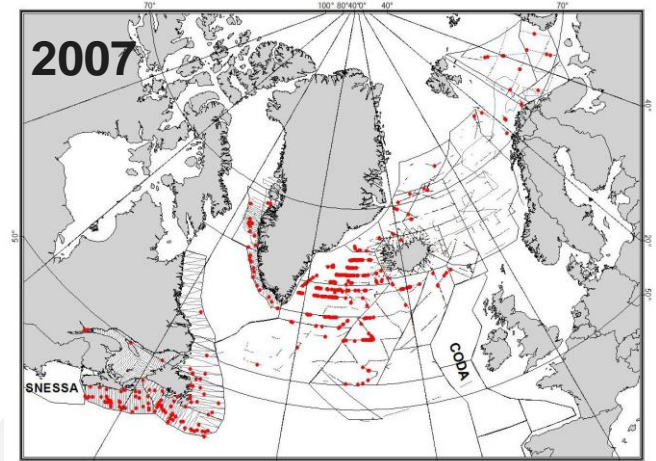
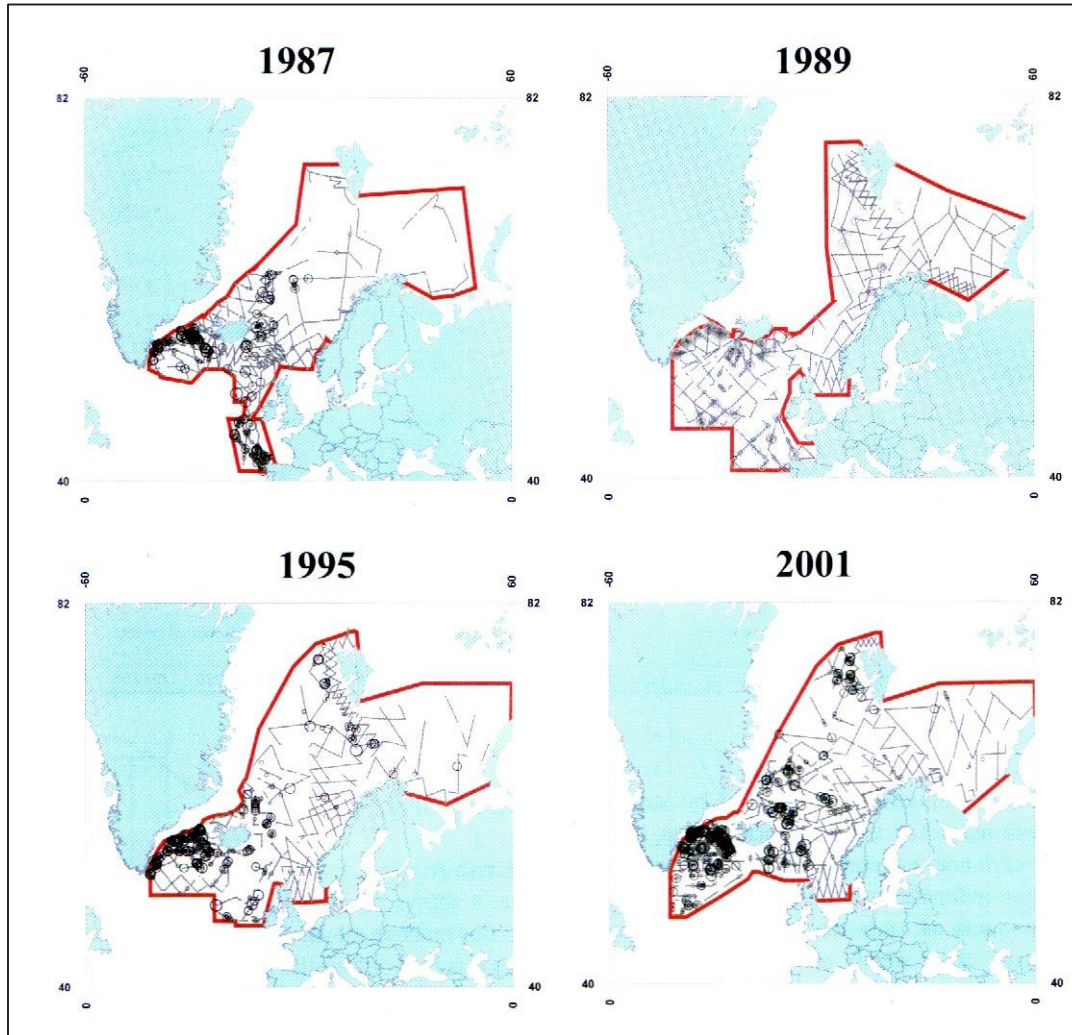
Vagrant

- Opportunistic records:
 - Strandings
 - sightings

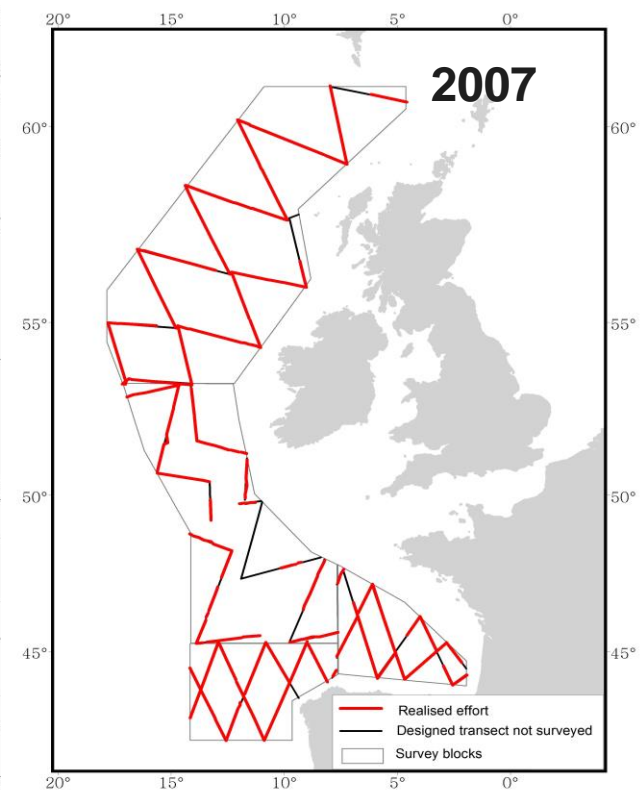
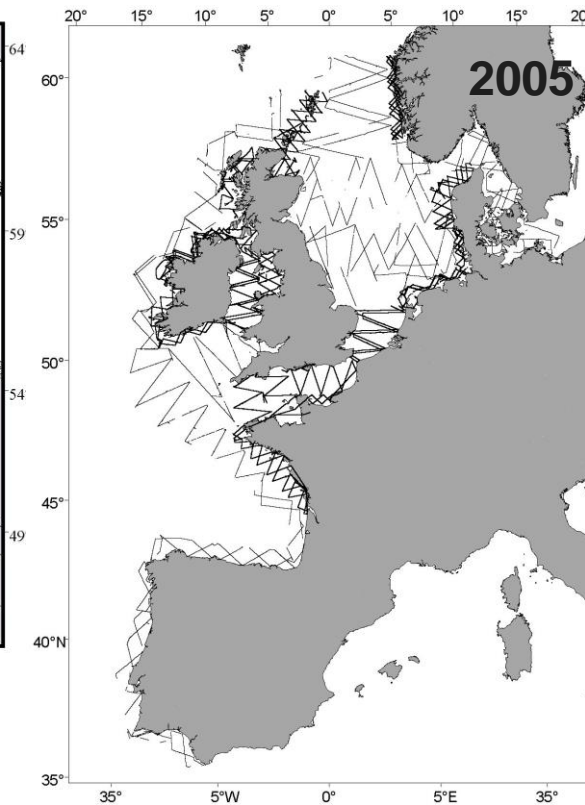
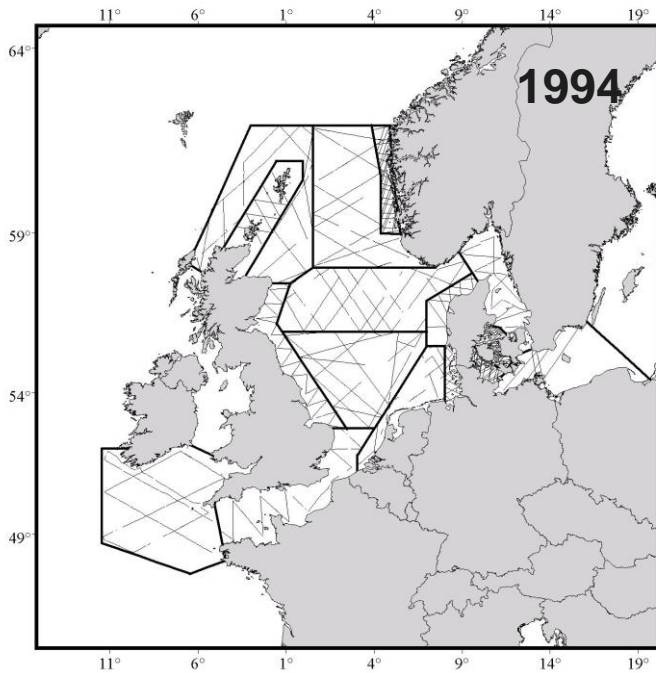


* Species dependent

NASS & T-NASS SURVEYS



SCANS & CODA



Hammond *et al.*, 2002, 2013; CODA, 2009

Power to detect trends

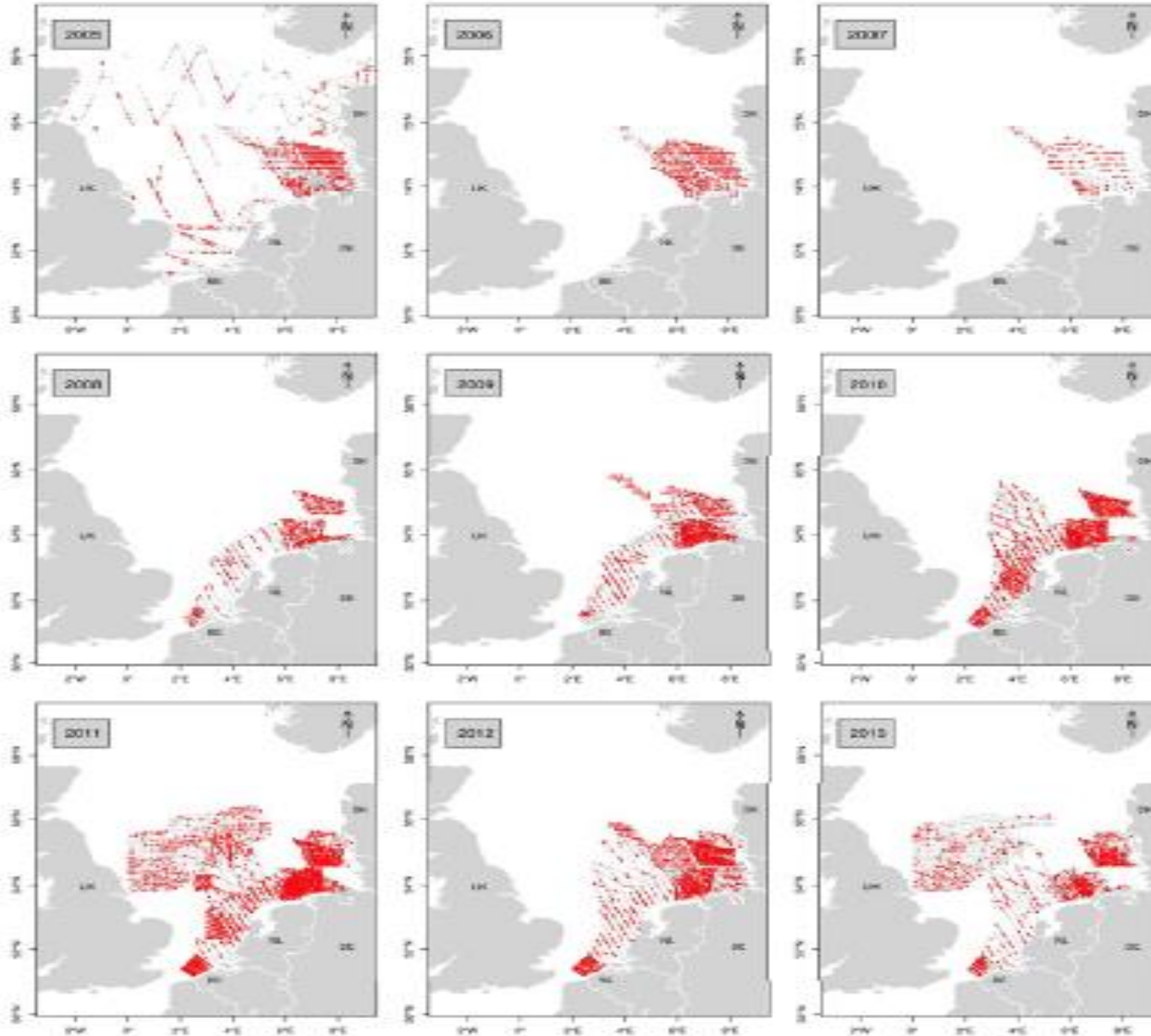
Frequency of survey increased to every 3rd year, then power to detect a 30% decline over 3 generations improves

Monitoring activity	Species	CV of measured estimate of abundance	Power (%) to detect trends in abundance	
			$\alpha = 0.05$	$\alpha = 0.2$
SOANS (ships and aircraft)	Harbour porpoise	0.14	20	57
	White-beaked dolphin	0.3	12	36
SCANS-II (ships and aircraft)	Minke whale	0.24	16	43
	Harbour porpoise	0.197	13	42
	Short-beaked common dolphin	0.234	16	44
	White-beaked dolphin	0.303	12	36
Common dolphin	Minke whale	0.347	10	32
	Bottlenose dolphin (likely offshore)	0.492	8	28
	Common dolphin	0.25	15	42
CODA (ships)	Minke whale	0.24	16	43
	Common dolphin	0.38	9	30
	Minke whale	0.99	6	22
	Pilot whale	0.34	14	38
	Sperm whale	0.34	14	38

Regional monitoring



JNCC
Nature Conservation Committee

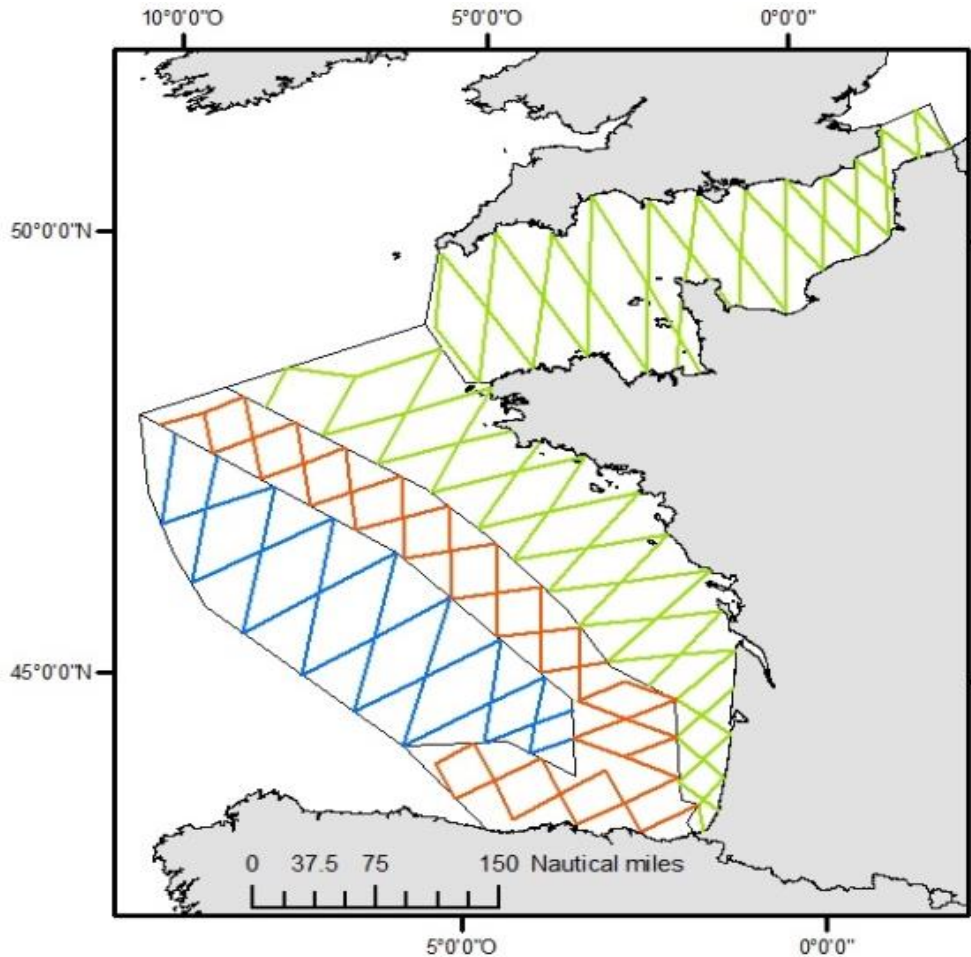


Gilles *et al.*, in press

**Subproject of
DEPONS**

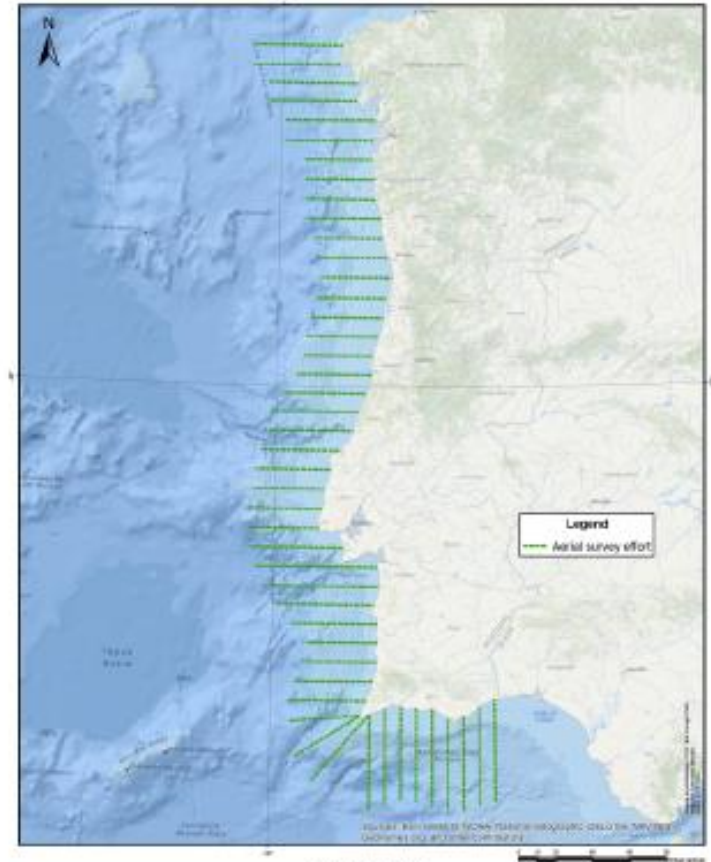
National monitoring

FRANCE



SAMM: 1 winter and 1 summer aerial surveys 2011-12

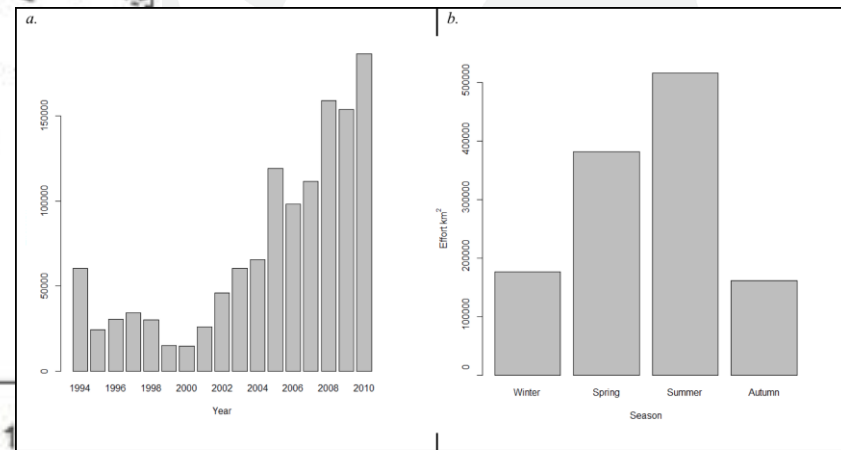
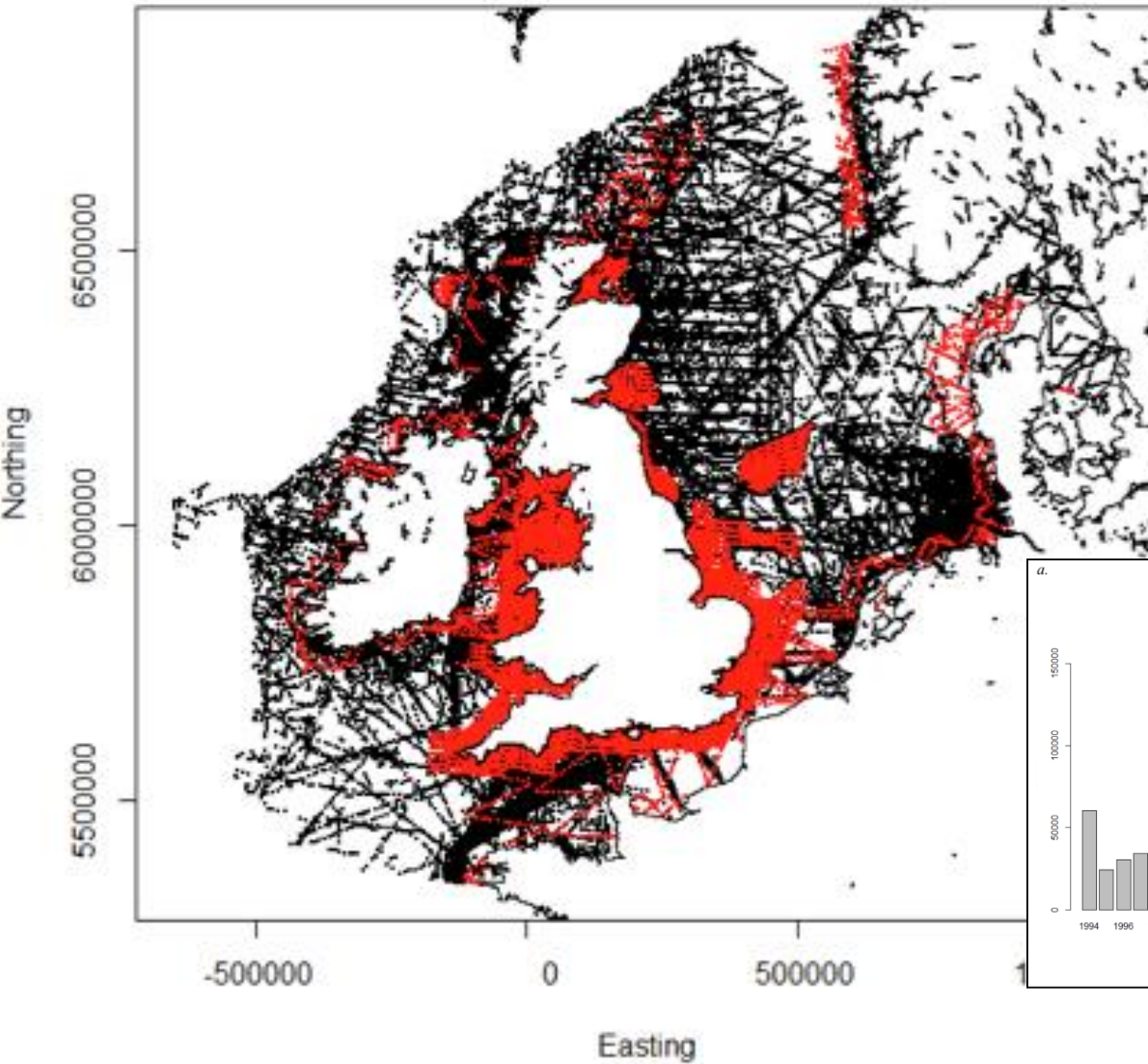
PORTUGAL



MARPRO
Aerial survey effort

MARPRO Surveys, Autumn 2010-14

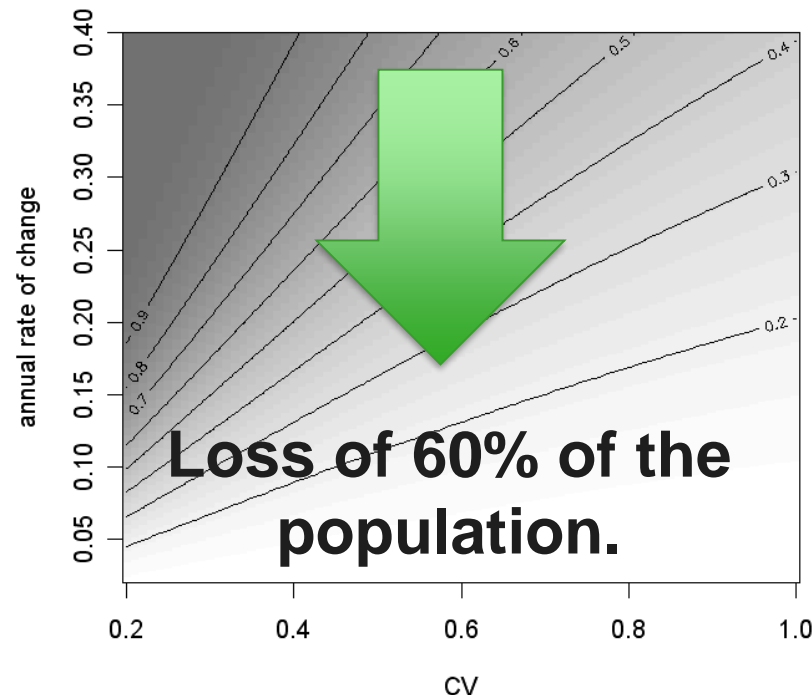
Joint Cetacean Protocol



Population trends

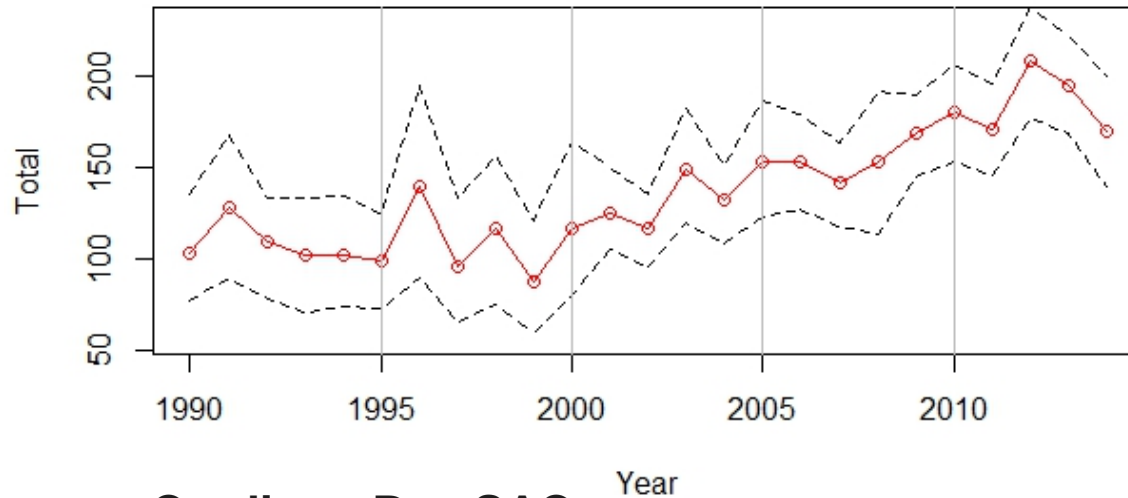
- Preliminary work: *‘.....targets such as having high power to detect a 1% annual decline in abundance or range over a 6 year reporting period are not remotely feasible (Thomas, 2009)’*

Annual survey, 6 years, CV = 0.2, 80% power (0.15 annual rate decline)



Coastal bottlenose dolphins

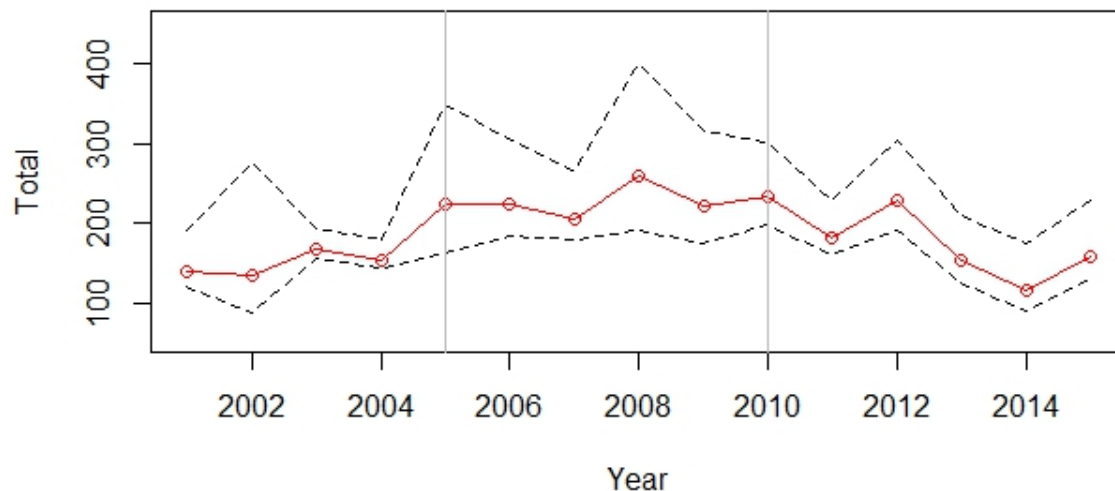
East Coast of Scotland



- Bottlenose dolphin populations monitored by photo-ID and mark-recapture

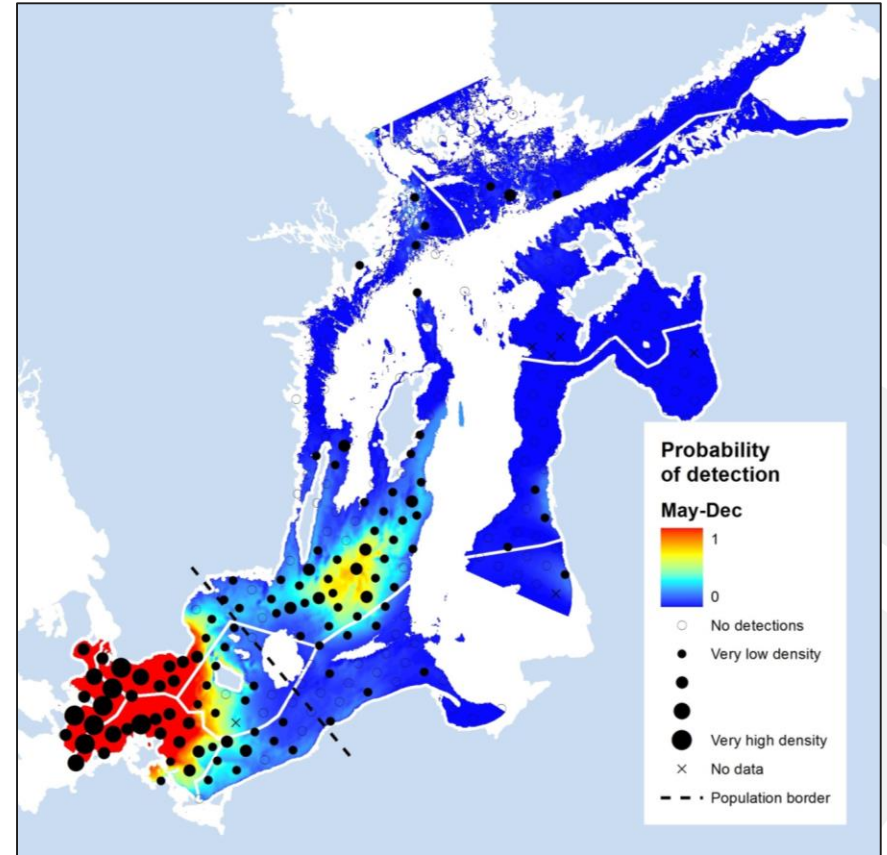
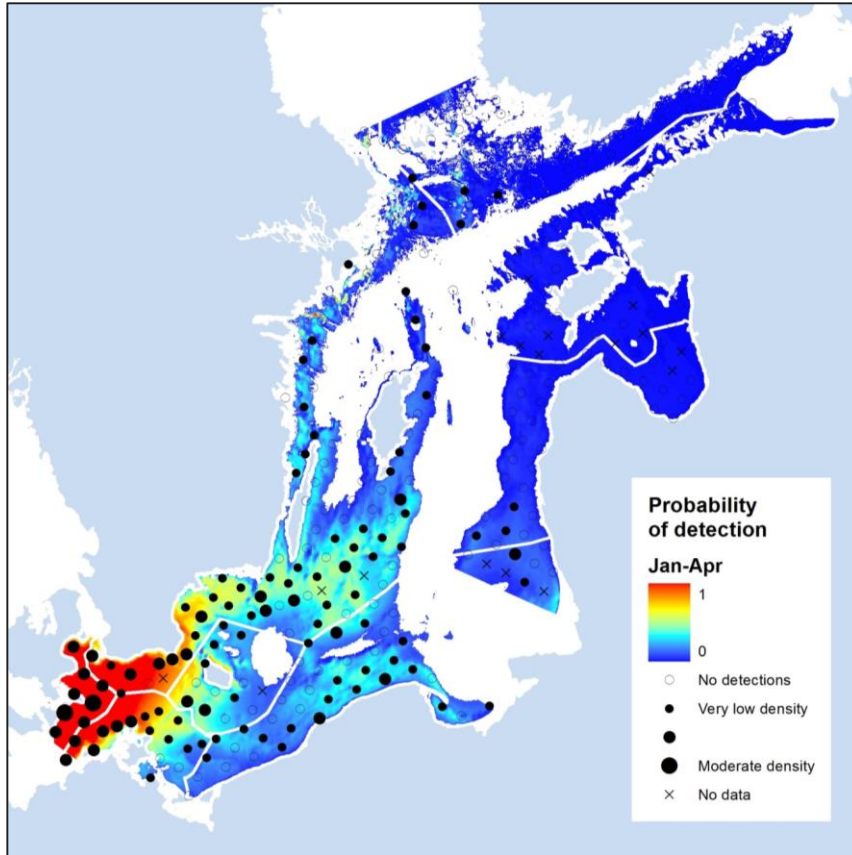
- Population estimates derived from at least 5 years of monitoring:

Cardigan Bay SAC



- Sado Estuary (Portugal)
- Moray Firth (Scotland)
- Cardigan Bay (Wales)
- Ile de Sein (France)
- Shannon Estuary (Ireland)
- Gulf of St Malo (France)

Passive acoustic methods



SAMBAH project, 2011-2013

Coherent assessment and coordinated monitoring?

- Requirements to monitor for MSFD should not exceed Habitats Directive
- OSPAR coordination (ICG-COBAM & Biodiversity Committee) BUT
- No clear mechanism to implement coordinated monitoring
- Assessments relying on ICES working groups
- Reporting 6 yearly BUT
- Very different templates MSFD v Habitats Directive
- Inappropriate temporal and spatial scales (monitoring and reporting)
- Gaps? Operational monitoring (changes take too long to detect; seasonality; effort into monitoring pressures)