Skates and Rays Road Map Discard Survival Evidence

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Skates and Rays Road Map

1. Road Map – main elements
2. Existing discard survival evidence
3. Gap analysis

Background

- Proposed exemption came from MSc after discussions with stakeholders
- Joint Recommendations for high survivability exemptions submitted in May 2018
- Review, evaluations in June, July and August (STECF, Commission, regional groups)
- Exemption awarded on a temporary basis until 31 December 2021
- Exemption for cuckoo ray until 31 December 2019
- Conditional on delivery of a Roadmap submitted to Commission 31 October 2018

'STECF acknowledges that a significant amount of information has been presented to support this proposed exemption. However, STECF observes that the scope of this exemption is wide, covering many species and fisheries, and as such, not consistent with existing survivability exemptions. STECF recognizes that the effects of different variables on discard survival is not well understood and this introduces risks in extrapolating discard survival evidence between species, fisheries and seasons.'

The Roadmap(s)

Main components

- Fill data gaps in (prioritized) areas, métiers and species (lead HLGs)
- Define and implement best practices at fleet level (lead Advisory Councils)

Timeline:

1 May 2019: AC submit a programme of measures implementing best practices at fleet level to regional group

31 May 2019: RG submit new evidence on the discard survival rates of Cuckoo ray for extension of high survival exemption to Commission.

31 May of each year: RG submit to Commission an updated roadmap including:

a) measures to improve selectivity and survivability by Advisory Councils

b) updated state of play regarding data gaps and proposed filling of data gaps

End of year: annual report on the progress, plans for, and modifications made to the survivability programmes

Filling data gaps

- Complete gap analysis to identify where discard survival evidence is missing or requires strengthening
- Agree priority data needs within Regional Group and generate new robust evidence to enhance understanding of discard survival of skates and rays, including:

    1. Identify and understand factors influencing discard survival

    2. Produce new directly observed estimates of discard survival (incl. Cuckoo ray)

    3. Utilising all available data on discard estimates in the stock assessments to provide context to future exemptions

- Responsibility of the regional groups to commission and assign science and research to fill the data gaps identified as necessary to support extension to temporary exemption

Discard survival evidence (submitted)

Most robust estimates:
Thornback ray 57-69% ICES VIIf otter trawl fishery
Thornback ray 95% ICES IVc trammel net fishery
Thornback ray 81% ICES IV otter trawl (inferred)
Blonde ray 41-44% ICES subarea VIIe beam trawl fishery
Cuckoo ray 34-35% ICES VIIe beam trawl fishery

- Nine species of skates and rays 98% at-vessel (immediate) survival for combined otter trawl, static net and long-line; 72% assessed as excellent/good health condition

Review of existing evidence

Critical review done by ICES WGMEDS (see Catchpole et al., 2017)

- Identified 8 studies (peer-reviewed and grey literature), 1995-2014
- Conclusion: most earlier work likely overestimated survival, does not meet key quality criteria

Table 5 Critical review framework developed by ICES WKMEDS for discard survival research

	Critical review questions		Scoring by method		
			1	2	3
Key guidance questions (maximum score 50)	1	Are criteria given to define when death occurred?	10	10	10
	2	Was a control used that informed on experimental induced mortality?		10	10
	3	Was mortality observed to asymptote (captive observation only)?		10	10
	4	Did the sample represent the part of the catch being studied?	10	10	10
	5	Did the sample represent the relevant population in the wider fishery?	10	10	10

Methods

1 Vitality assessments:

- visual assessments
- at-vessel mortality and survival *potential*

2 Captive observation:

- monitor ‘discarded’ catches
- excludes predation, controls determine captivity effect

3 Tagging:

- electronic tags on discards
- includes predation

Tagging

Tagging technology records pressure and temperature

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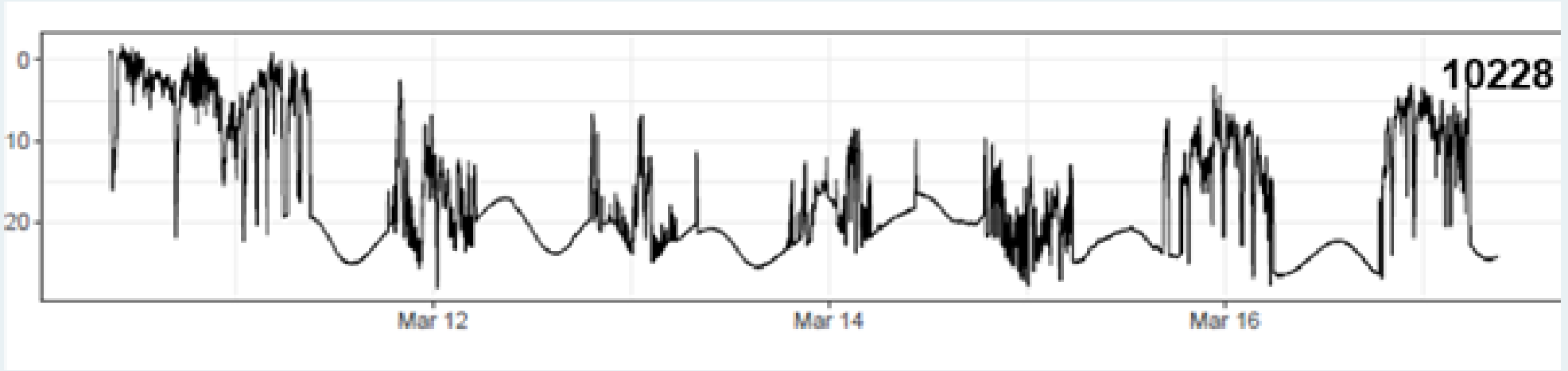


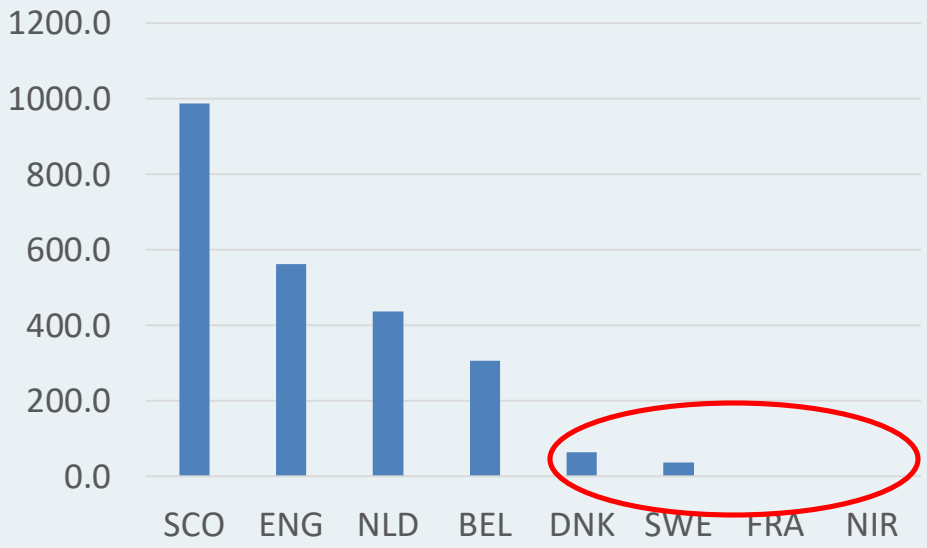
Species	Scientific name	Fishing gear	Location / ICES	min%	max%	N	Treatment	Reference
Blonde ray	Raja brachyura	BT2	Western English Channel (VIIe)	25%	74%	26	Tow duration	Ellis et al. 2012
Blonde ray	Raja brachyura	BT2	Western English Channel (VIIe)	41%	44%	26	Modelled results to assymptote from Ellis et al. 2012	Catchpole et al. 2017
Blonde ray	Raja brachyura	Otter trawl	Bristol Channel (VIIf)	n/a	92%	25	DST tags, across vitality classes A,B, and D	Catchpole et al. 2017
Blonde ray	Raja brachyura	Otter trawl	Bristol Channel (VIIf)	55%	67%	11	Survival was not monitored until asymptote	Enever et al. 2009
Cuckoo ray	Leucoraja naevus	Beam trawl	Western English Channel (VIIe)	34%	35%	26	Modelled results to assymptote from Ellis et al. 2012	Catchpole et al. 2017
Cuckoo ray	Leucoraja naevus	BT2	Western English Channel (VIIe)	25%	83%	26	Tow duration	Ellis et al. 2012
Cuckoo ray	Leucoraja naevus	TR1/TR2	Bristol Channel (VIIf)	n/a	33%	6	Survival was not monitored until asymptote	Enever et al. 2009
Cuckoo ray	Leucoraja naevus	BT2	Irish Sea (VIIa)	n/a	59%	32	Survival was not monitored until asymptote, no controls were used	Kaiser and Spencer 1995
Cuckoo ray	Leucoraja naevus	Trammel nets	Balearic Islands	60	71%	296	n/a	Breen and Morales Nin 2017

Species	Scientific name	Fishing gear	Location / ICES	min%	max%	N	Treatment	Reference
Small-eyed ray	Raja microcellata	TR2	Bristol Channel (VIIf)	55%	67%	278	Mesh size	Enever et al. 2010
Small-eyed ray	Raja microcellata	TR2	Bristol Channel (VIIf)	n/a	51%	39	Survival was not monitored until asymptote	Enever et al. 2009
Small-eyed ray	Raja microcellata	BT2	Western English Channel (VIIe)	0%	100%	n/a	23% Excellent/Good, 72% Moderate/Poor, 5% dead	Ellis et al. 2012; Bird et al. 2018
Spotted ray	Raja montagui	BT2	Western English Channel (VIIe)	40%	67%	14	Tow duration	Ellis et al. 2012
Spotted ray	Raja montagui	TR1/TR2	n/a	n/a	n/a	457	13% Excellent/Good, 74% Moderate/Poor, 14% dead	Bird et al. 2018
Spotted ray	Raja montagui	GN1	n/a	n/a	n/a	47	66% Excellent/Good, 26% Moderate/Poor, 6% dead	Bird et al. 2018
Spotted ray	Raja montagui	Pulse Trawl	North Sea (IVc)	21	67	9	Gear deployment duration	Schram and Molenaar 2018b
Undulate ray	Raja undulata	Beam trawl	Western English Channel (VIIe)	n/a	80	14	49% Excellent/Good, 51% Moderate/Poor, 1% dead	Ellis et al. 2012; Bird et al. 2018; Randall et al. 2018

Species	Scientific name	Fishing gear	Location / ICES	min%	max%	N	Treatment	Reference
Thornback ray	Raja clavata	Otter trawl	Bristol Channel (VIIf)	57%	69%	47	Commercial hauls (2.7-4.3 h)	Catchpole et al. 2017
Thornback ray	Raja clavata	Otter trawl	Bristol Channel (VIIf)	77%	79%	34	Short hauls (0.75-2.0 h)	Catchpole et al. 2017
Thornback ray	Raja clavata	TR1/TR2	Bristol Channel (VIIf)	57%	69%	162	Enever et al. 2009 estimates modelled to assymptote	Catchpole et al. 2017
Thornback ray	Raja clavata	TR1/TR2	Bristol Channel (VIIf)	54%	87%	162	Not monitored to asymptote; survival rate overestimated; 78% Excellent/Good, 11% Moderate/Poor, 1% dead	Enever et al. 2009; Bird et al. 2018
Thornback ray	Raja clavata	Trammel nets	North Sea and English Channel (IVc, VIId)	0%	96%	60	DST tags, across vitality classes A,B, and D	Catchpole et al. 2017
Thornback ray	Raja clavata	Beam trawl	North Sea (IVc)	72%	77%	249	Research beam trawls, mixed ray species	Depestele et al., 2014
Thornback ray	Raja clavata	TR1	North Sea (IVc)	59%	87%	162	Survival was not monitored until asymptote	Enever et al., 2009
Thornback ray	Raja clavata	TR2	North Sea (IVc)	61%	93%	n/a	n/a	Bird et al. 2018
Thornback ray	Raja clavata	Otter trawl	North Sea (IVc)	n/a	n/a	537	Vitality data only and tagging	Randall et al. 2018
Thornback ray	Raja clavata	Beam trawl	North Sea (IVc)	0%	82%	95	Gear deployment duration	Schram and Molenaar 2018b

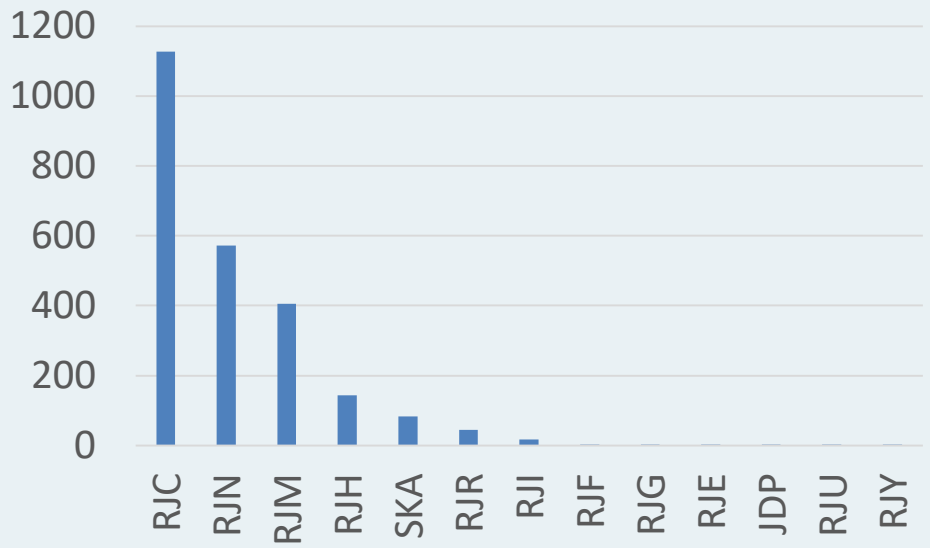
Skate and ray catches North Sea

- Evidence in context of skate and rays catches
- Data from STECF mean 2014-16 (submitted) – best publicly available data – quality issues



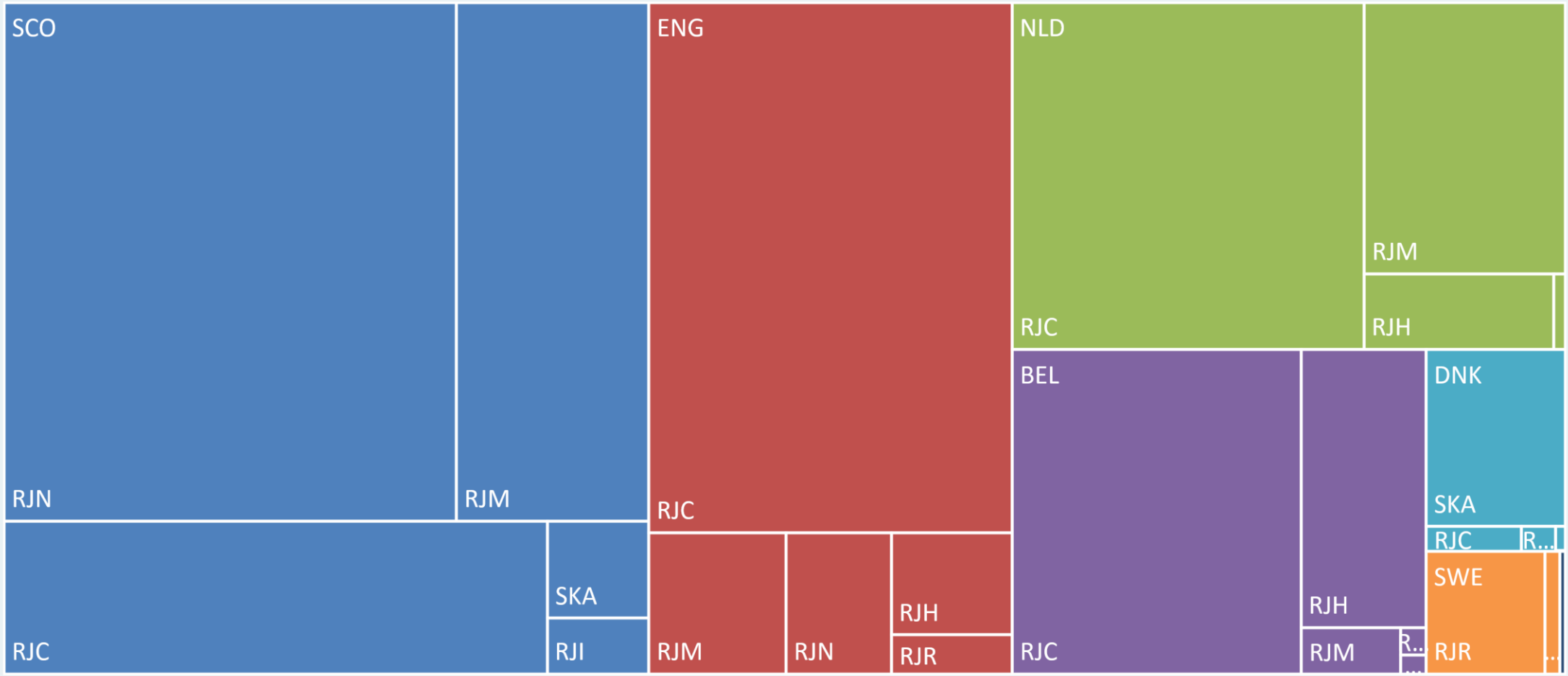
MS	Mean catch 2014-16
SCO	987.3
ENG	561.3
NLD	436.7
BEL	306.6
DNK	64.0
SWE	37.3
FRA	1.0
NIR	0.6
DEU	0.0

By species and MS – North Sea



Species		Mean Catch 2014-16
Thornback ray	RJC	1127.8
Cuckoo ray	RJN	571.9
Spotted ray	RJM	406.3
Blonde ray	RJH	142.5
Generic	SKA	82.1
Starry ray	RJR	43.8
Sandy ray	RJI	16.7
Shagreen ray	RJF	1.9
Arctic skate	RJG	1.0
Small eyed ray	RJE	0.3
Undulate ray	RJU	0.1
Round skate	RJY	0.0

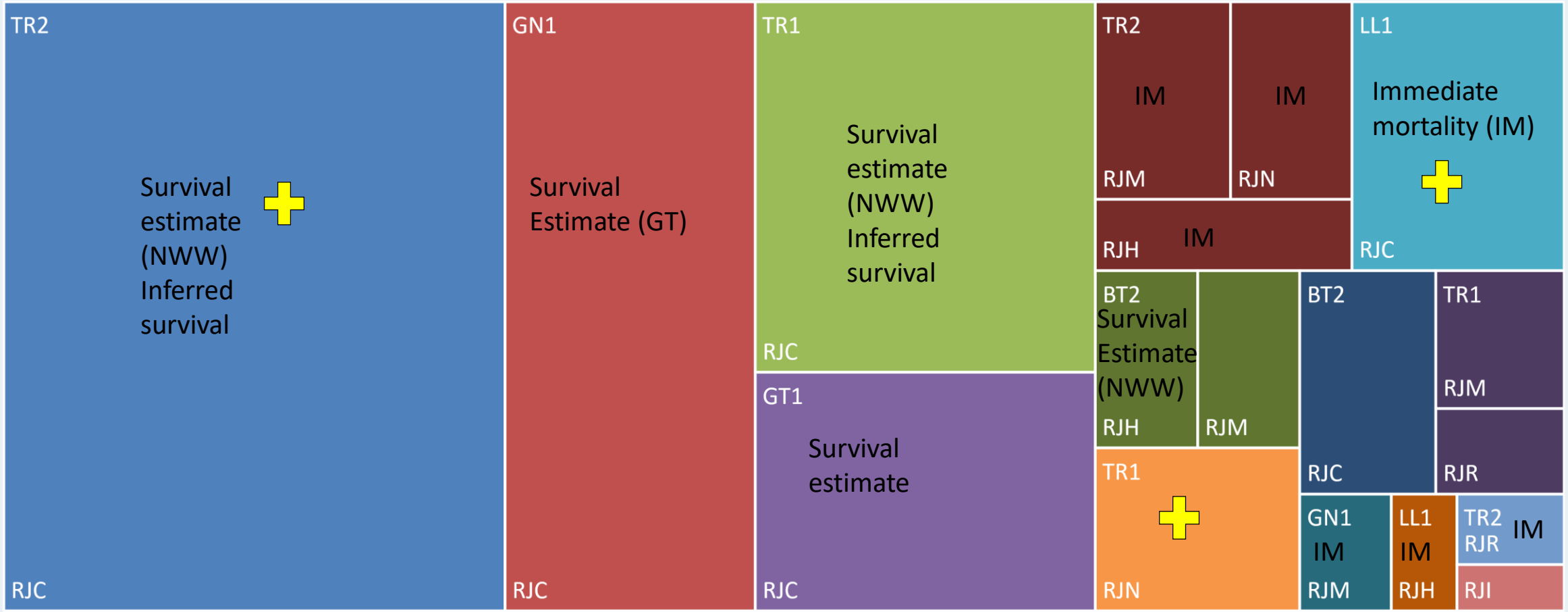
By MS and species



NS By gear and species - England

98% of reported catches

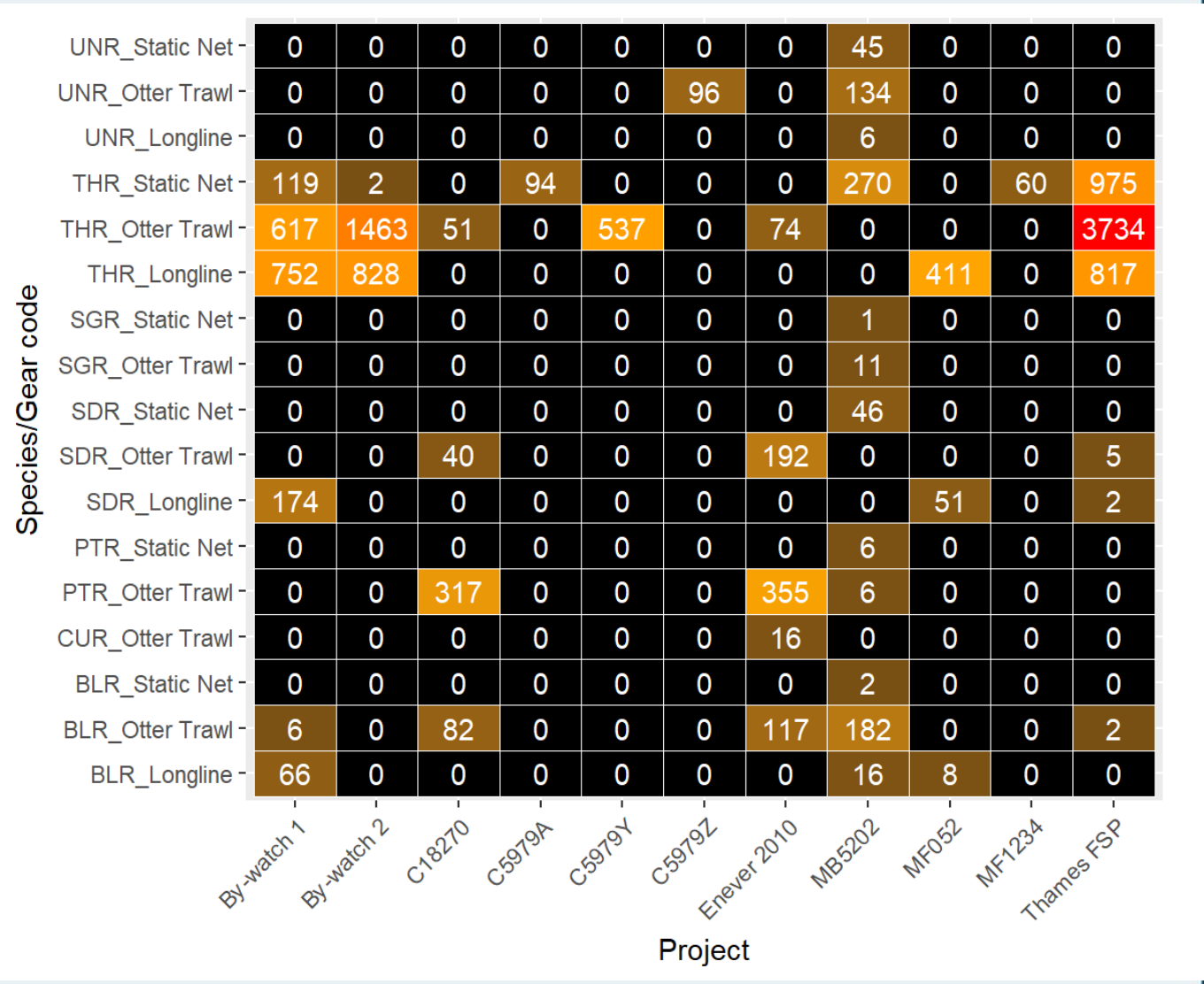
18 combinations excluding area



Evidence gaps

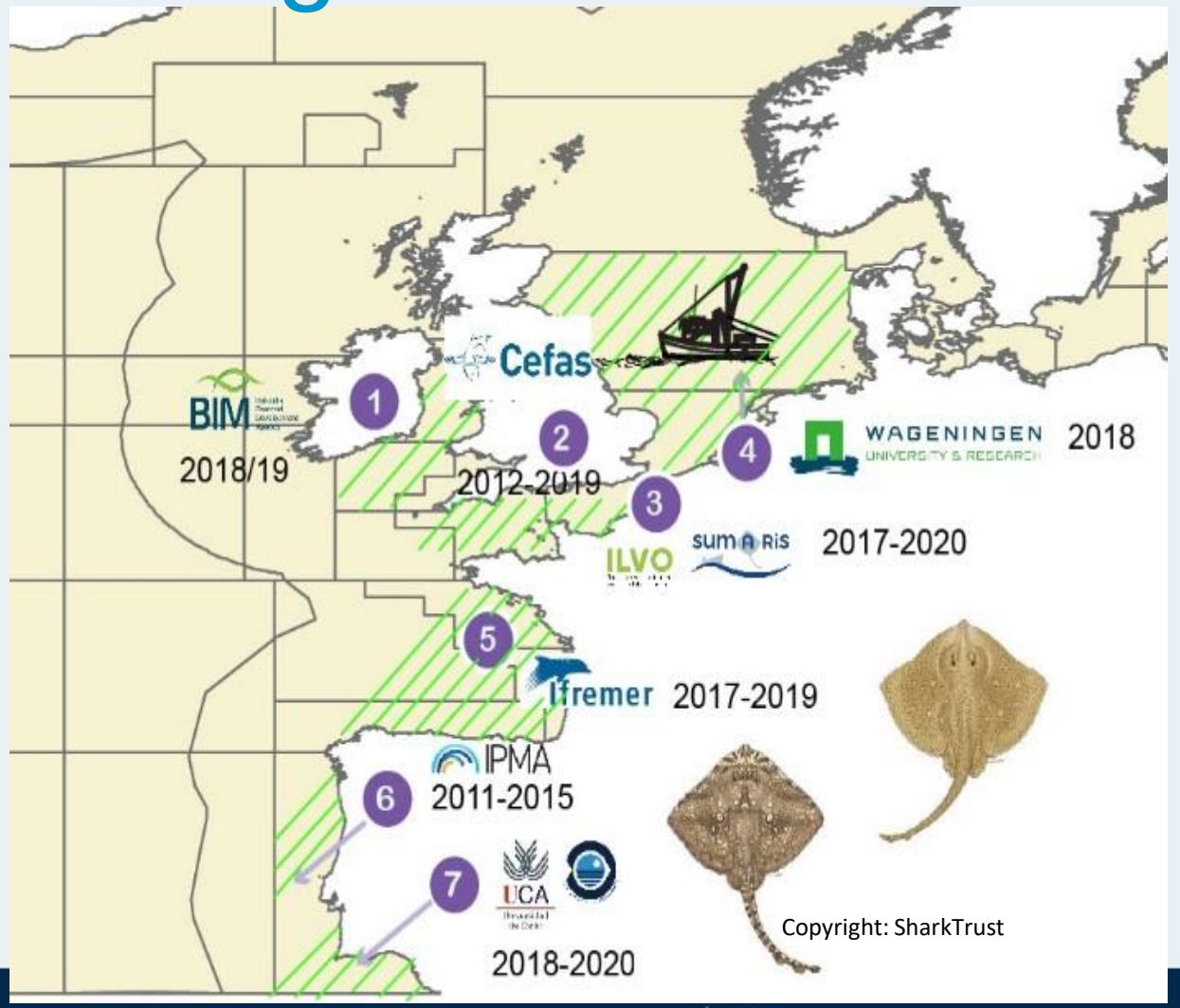
Considerations to identify evidence gaps:

- Data quality – improved process with ICES data – repeat/iterative process
- Identify specific fisheries (vessels)
- National/local knowledge
- Catches vs discards
- Catch volumes vs choke risk (small incidental catches have potential to close fisheries)
- Number of combinations of species-gear-area
- Extrapolation – what factors effect discard survival?
- International cooperation and mapping



Recent, current and upcoming studies

- BIM, Ireland: OTB gear; *Raja clavata*, *R. montagui*, *R. brachyura*, *Leucoraja naevus*
- Cefas, UK: OTB; *Leucoraja naevus, R. Undulata;* GTR *Raja clavata*
- SUMARiS, France, Belgium, UK: TBB, OTB, GNS, GTR gears; *R. clavata*, *R. montagui*, *R. brachyura*, *R. Undulata*
- WMR, NL: TBB (pulse); *R. clavata*, *R. montagui*
- Ifremer, France: OTB; *R. undulata, and Leucoraja naevus*
- IPMA, Portugal: OTB; *R. clavata* , *R. montagui, R. brachyura, Leucoraja naevus*
- University of Cadiz, IEO, Spain: OTB research trawl; *R. clavata*, *R. polystigma, R. radula and Leucoraja naevus*



Thank you

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