

# Discard survival of skates and rays



Sven Sebastian Uhlmann  
North-Western Waters Advisory Council, Dublin, February 6, 2019

Copyright: SharkTrust



## Outline

---

- a) Existing high survival exemptions in North-Western waters
- b) Provide an overview of ray discard survival studies in Europe
- c) List of factors contributing to an improved survival; with focus on relevant modification options

## Existing exemptions



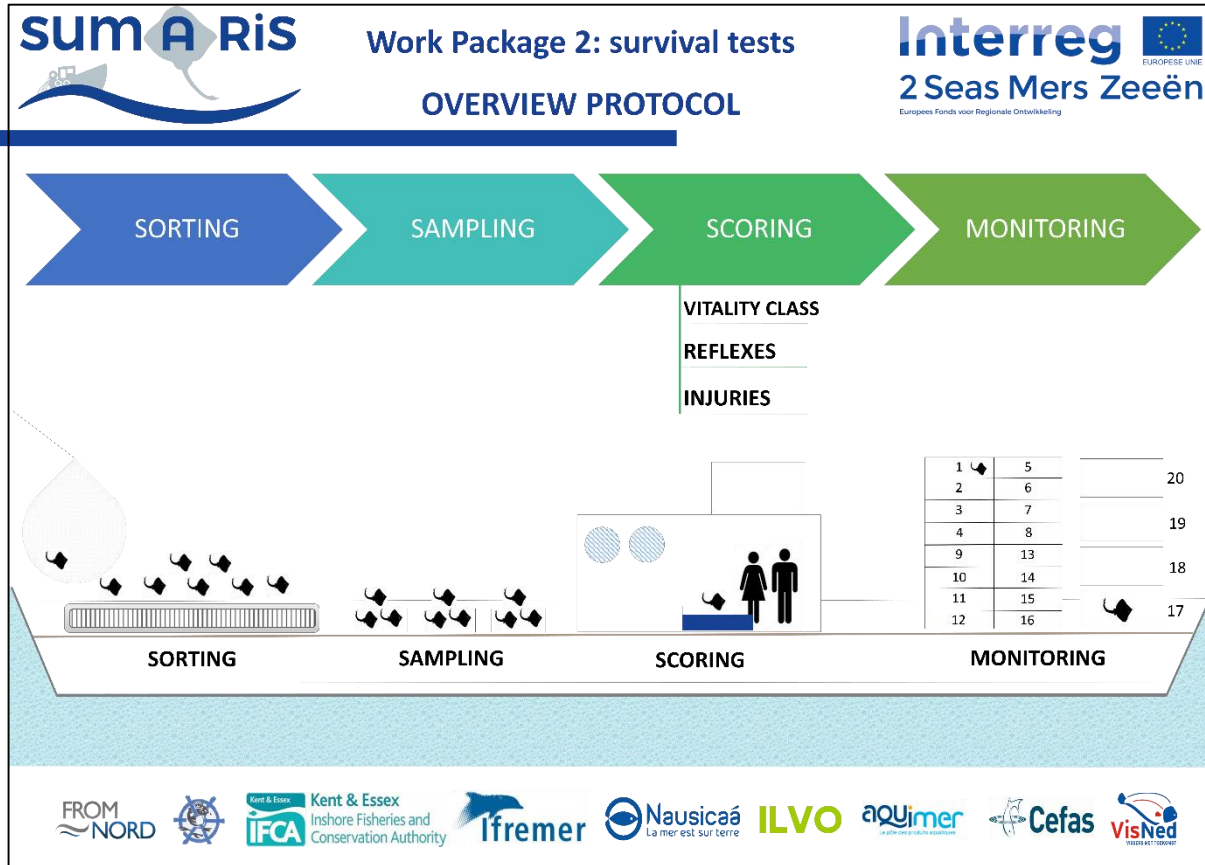
Volume 61

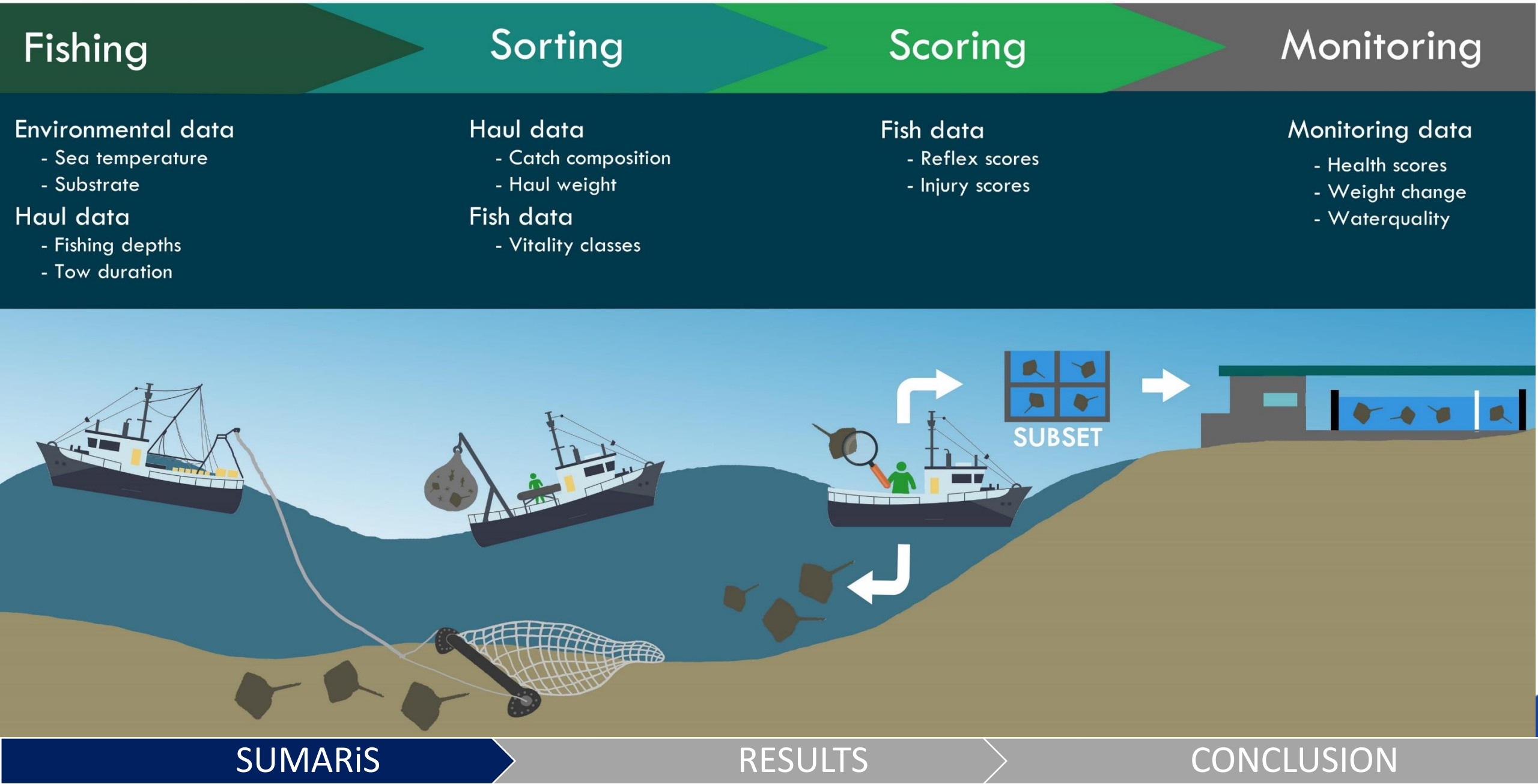
- (12) For skates and rays caught with any gear in ICES subareas 6 and 7, detailed scientific evidence on survival rates is not available for all fleet segment and combinations that benefit from the exemption. However, with a few exceptions, survival rates are considered to be generally robust, but further detail is required. In order to collect this data, fishing would need to continue and as such, the Commission considers that the exemption should be granted but Member States should have the obligation to submit relevant data allowing STECF to fully assess the justification and allowing the Commission to carry out a review. Member States having a direct management interest should submit as soon as possible before 31 May each year: (a) a roadmap developed in order to increase survivability and to fill in the data gaps identified by STECF, to be annually assessed by STECF, (b) annual reports on the progress and any modifications or adjustments made to the survivability programmes.
- (13) When considering the survival rates of skates and rays, cuckoo rays (*Leucoraja naevus*) were found to have a considerably lower survival rate than other species, with less robust scientific understanding. However to exclude this species altogether from the exemption would prevent fishing and continued, accurate data collection. Therefore the Commission considers this exemption should only be granted for 1 year and that new studies and improved survivability measures should be developed as a matter of urgency and provided to STECF for assessment as soon as possible before 31 May 2019.

<sup>(4)</sup> <https://stecf.jrc.ec.europa.eu/documents/43805/1099561/STECF+PLEN+15-02.pdf>

<sup>(5)</sup> <https://stecf.jrc.ec.europa.eu/documents/43805/1099561/STECF+PLEN+15-02.pdf>

<sup>(6)</sup> <https://stecf.jrc.ec.europa.eu/documents/43805/2147402/STECF+PLEN+18-02.pdf>





# Overview of discard survival studies in Europe

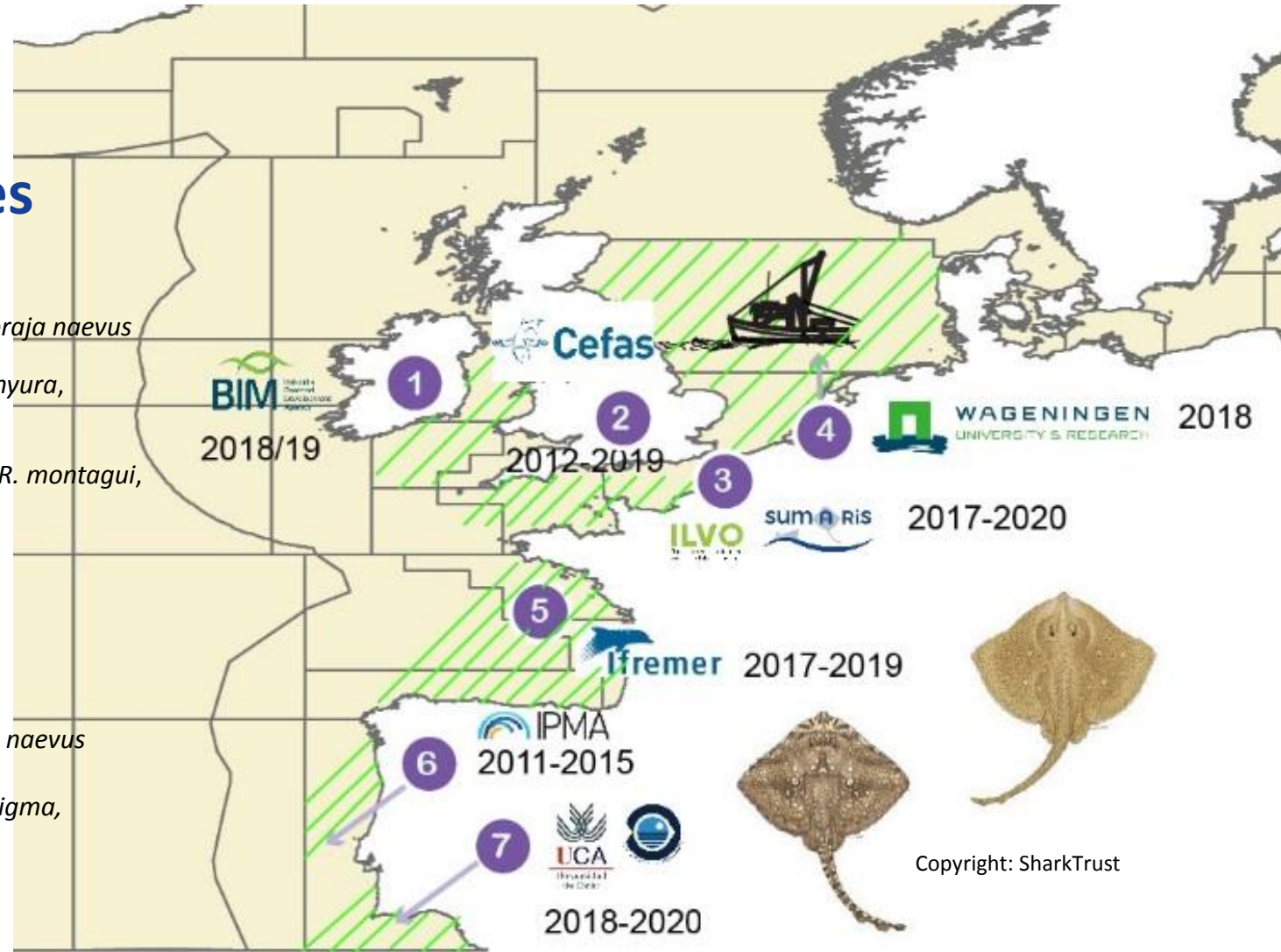
Table 5 Critical review framework developed by ICES WKMEDS for discard survival research

	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

Catchpole et al., 2017

# Current ray discard survival studies

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



Copyright: SharkTrust

## Overview of discard survival studies

---

- Critical review done by ICES WGMEDS (see Catchpole et al., 2017)
  - Included 8 studies (peer-reviewed and grey literature), published 1995-2014
  - Conclusion: most of the earlier work done overestimated survival, does not meet key quality criteria



## Overview of discard survival studies

---

- *“No study was considered sufficiently robust to be utilised as an estimate of discard survival that is particular to the environmental and operational conditions encountered, because none of the studies monitored mortality to asymptote.” (Catchpole et al., 2017)*

## Overview of discard survival studies

---

- Re-analysis of existing data, modelled to asymptote (Catchpole et al., 2017)
- Some first estimates from tagged rays (Randall et al., 2018)
- Recent and ongoing efforts in The Netherlands, UK, Belgium, France, Spain, Portugal and Ireland

# Overview of discard survival studies

Thornback ray



Copyright: SharkTrust

Fishing gear	Location / ICES	min%	max%	MinDays	MaxDays	N
Otter trawl	Bristol Channel (VIIf)	57%	69%	3	3	47
Otter trawl	Bristol Channel (VIIf)	77%	79%	3	3	34
TR1/TR2	Bristol Channel (VIIf)	57%	69%	n/a	n/a	162
TR1/TR2	Bristol Channel (VIIf)	54%	87%	0	<3	162
Trammel nets	North Sea and English Channel (IVc, VIId)	0%	96%	3	317	60
Beam trawl	North Sea (IVc)	72%	77%	1	2.5	249
TR1	North Sea (IVc)	59%	87%	0	<3	162
TR2	North Sea (IVc)	61%	93%	n/a	n/a	n/a
Otter trawl	North Sea (IVc)	n/a	n/a	n/a	n/a	537
Beam trawl	North Sea (IVc)	0%	82%	14	180	95
Trammel nets	Balearic Islands	8%	16%	7	7	224

[Rihan et al. 2019, Chapter 3, online supplement](#)

# Overview of discard survival studies

Blonde ray



Fishing gear	Location / ICES	min%	max%	MinDays	MaxDays	N
BT2	Western English Channel (VIIe)	25%	74%	2	3	26
BT2	Western English Channel (VIIe)	41%	44%	2	3	26
Otter trawl	Bristol Channel (VIIIf)	n/a	92%	20	111	25
Otter trawl	Bristol Channel (VIIIf)	55%	67%	0	<2	11

[Rihan et al. 2019, Chapter 3, online supplement](#)

Copyright: SharkTrust

## Overview of discard survival studies in Europe



Fishing gear	Location / ICES	min%	max%	MinDays	MaxDays	N
Beam trawl	Western English Channel (VIIe)	34%	35%	n/a	n/a	26
BT2	Western English Channel (VIIe)	25%	83%	2	3	26
TR1/TR2	Bristol Channel (VIIf)	n/a	33%	0	<2	6
BT2	Irish Sea (VIIa)	n/a	59%	0	6	32
Trammel net	Balearic Islands	60	71%	7	7	296

Copyright: SharkTrust

[Rihan et al. 2019, Chapter 3, online supplement](#)

## List of contributing factors

---

- Gear type and size was correlated to vitality/vigour for thornback rays (Ellis et al., 2018)
- Soak time in passive gears and size of rays was associated with immediate mortality (Ellis et al., 2018) and vitality (Bárbara Serra-Pereira and Ivone Figueiredo, 2018)
- SUMARiS preliminary results: air exposure, water and air temperature effects on immediate mortality

## Issues with contributing factors

- Currently, available and published mainly for immediate mortality
- Historic delayed mortality often not monitored until asymptote
- More evidence is needed from new monitoring studies
- Cefas is finishing an analysis on factors associated with ray vitality from 10 UK projects.


## Road map: comments

---

*Roadmap to enhance evidence of discard survival of skates and rays and increase selectivity and survival of skates and rays*

- Species-specific biological parameters of rays should be routinely collected and methods harmonized among member states within DCF programmes
- Self-reported logbook information needs to be validated with respect to improved species identification for more accurate landings and discards data





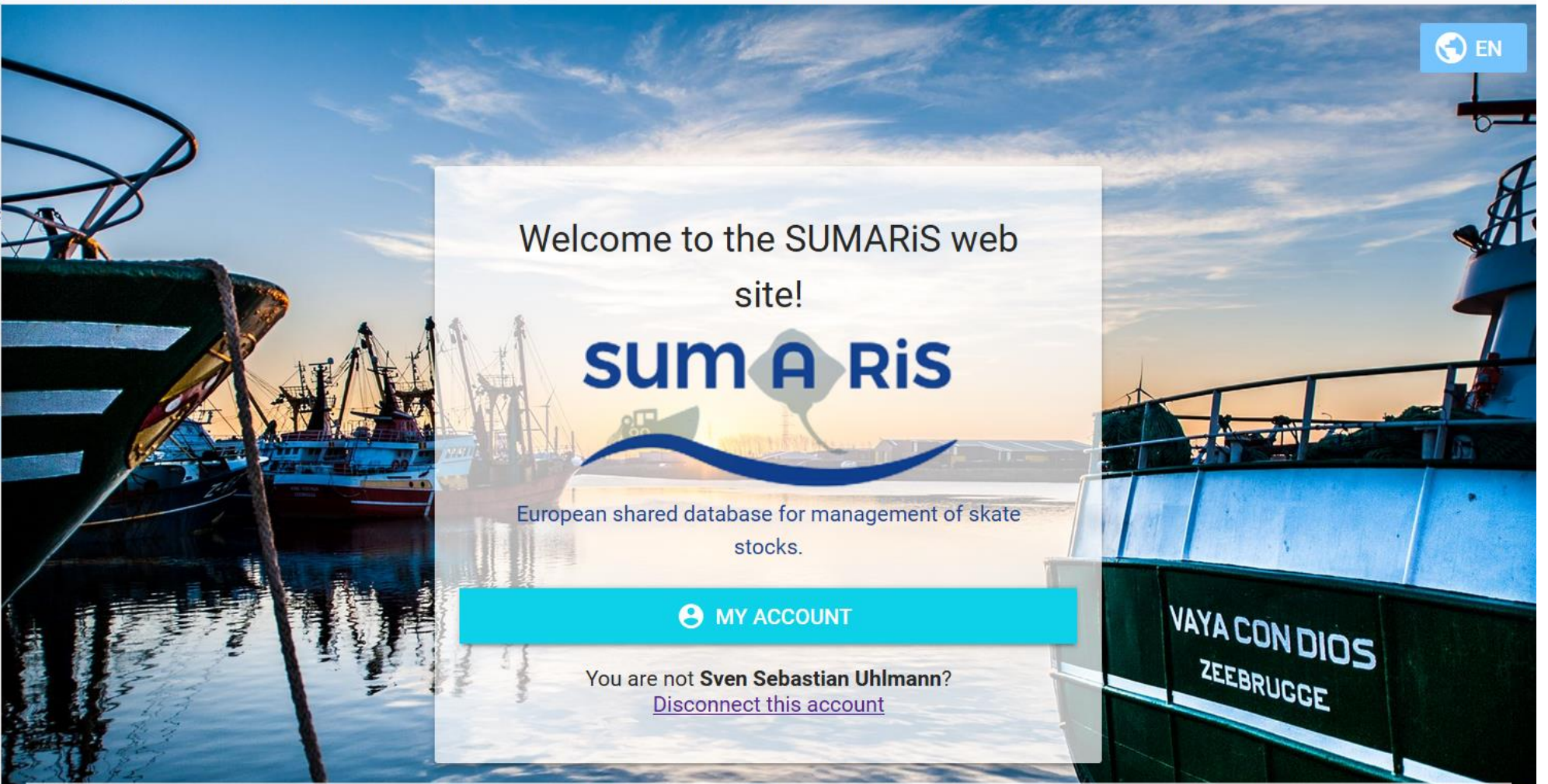
**Sven Sebastian Uhlmann**  
sebastian.uhlmann@ilvo.vlaanderen.be

ACCOUNT


LOG OUT

Home

Trips



Welcome to the SUMARiS web site!



European shared database for management of skate stocks.

MY ACCOUNT

You are not **Sven Sebastian Uhlmann**?  
[Disconnect this account](#)

## Coming up

### *Roadmap to enhance evidence of discard survival of skates and rays and increase selectivity and survival of skates and rays*

- WGSARK, Leeuwarden, The Netherlands
  - Up-take of discard survival estimates in stock assessments
- Promote SUMARiS data portal?
- Robust evidence : contributing factor and transferability across sea basins. Can fishing activities of unmonitored trips be described in a way which is relevant to discard survival?
- Mini-Symposium Fish Welfare, ILVO, Oostende, end of 2019

## References

---

Catchpole, T., Wright, S., Bendall, V., Hetherington, S., Randall, P., Ross, E., et al. (2017). Ray discard survival - enhancing evidence of the discard survival of ray species. Lowestoft, UK. 75 pp.

Ellis, J. R., Burt, G. J., Grilli, G., McCully Phillips, S. R., Catchpole, T. L., & Maxwell, D. L. (2018). At-vessel mortality of skates (Rajidae) taken in coastal fisheries and evidence of longer-term survival. *Journal of Fish Biology*, 92(6), 1702–1719. doi:10.1111/jfb.13597

Randall, P., Hicks, R., Hetherington, S., Bendall, V., Wright, S., & Catchpole, T. (2018). Survivability of discarded skates and rays in English inshore otter trawl fisheries. Lowestoft, UK. 31 pp.

Rihan D., Uhlmann S.S., Ulrich C., Breen M., Catchpole T. (2019) Requirements for Documentation, Data Collection and Scientific Evaluations. In: Uhlmann S.S., Ulrich C., Kennelly S.J. (eds) *The European Landing Obligation*. Springer, Cham

Serra-Pereira, B. & Figueiredo, I. (2018). Discard survival of elasmobranch species. Initial phase of IPMA's study in Portugal. WGMEDS, 29 Oct – 2 Nov, Mundaka, Spain