

Overview: Bycatch in the Baltic Sea



Sven Koschinski

Bycatch workshop Hel, 12 – 13 November 2025

How big is the bycatch?

➤ It depends on who you ask!

Morkūnas, J., S. Oppel, M. Bružas, Y. Rouxel, R. Morkūnė, and D. Mitchell. 2022. Seabird bycatch in a Baltic coastal gillnet fishery is orders of magnitude larger than official reports. *Avian Conservation and Ecology* 17(1):31. <https://doi.org/10.5751/ACE-02153-170131>

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Research Paper

Seabird bycatch in a Baltic coastal gillnet fishery is orders of magnitude larger than official reports

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Highlights:

- Officially reported: 6 birds
- Based on a scientific study (2015-2020) which observed bycatch in almost 20% of net-meter days it was estimated that 1500 – 3000 seabirds were bycaught
- Two-thirds of bycatch: long-tailed duck and velvet scoter
- Mainly adult animals (larger effect on population viability than juveniles)

Monitoring & Assessment

- Legal obligation to monitor and assess bycatch (MSFD, Habitats Directive)
- MSFD Criterion D1C1 under Descriptor 1 (Biodiversity) -> Good Environmental Status by 2020
- Last assessment (HOLAS3 3) published 2023 (for 2016-2021)
- Insufficient data despite these legal obligations



Number of drowned mammals and waterbirds in fishing gear



two populations



one population



two „populations“



two populations

From conservation and management objectives to measures

➤ There is a number of objectives...

*Human induced mortality, including hunting, fishing, and incidental bycatch, does **not threaten the viability** of marine life (BSAP)*

***Minimise and where possible eliminate** incidental catches of all marine mammal and bird species **such that they do not represent a threat to the conservation status** of these species (HELCOM/OSPAR bycatch Workshop 2019)*

*The mortality rate per species from incidental by-catch is **below levels which threaten the species, such that its long-term viability is ensured.** (MSFD D1C1)*

*to achieve and maintain a **favourable conservation status** for small cetaceans in the Agreement area (ASCOBANS, based on EU Habitats Directive)*

*to restore and/or maintain biological or management units to/at **80% or more of the carrying capacity** (ASCOBANS Res.3.3, Res. 8.5)*

*to restore and/or maintain biological or management stocks of small cetaceans **at the level they would reach when there is the lowest possible anthropogenic influence** (ASCOBANS (Res.3.3))*

***minimize** unwanted by-catch of fish, birds and marine mammals and **achieve the close to zero target** for by-catch rates of relevant species by 2024, especially the Baltic proper population of harbour porpoise by 2022 (BSAP S43)*

***implement operational conservation measures** for the Belt Sea population of harbour porpoise by 2024 **such as permanent and/or spatial-temporal closures for relevant fishing métiers in risk areas where technical mitigation measures are insufficient** to reach conservation goals (BSAP S45)*

Maintain, develop and extend regulatory or voluntary schemes to protect key seabird areas and seasons by establishing appropriate fisheries measures in line with conservation objectives (BSAP S49)

What are the thresholds?

Species	Population	Method	Threshold (ind./yr)	bycaught (ind./yr)	hunted (ind./yr)	Status
Harbour porpoise	Kattegat, Belt Sea and Western Baltic	mPBR	73	805		Sub GES
	Baltic Proper		0	7		Sub GES
Ringed seal	Southwestern Archipelago Sea, Gulf of Finland and Gulf of Riga		0	3		Sub GES
	Gulf of Bothnia	PBR	443 (incl. hunting)	reported minimum number 8	176 to 597 2019-2021: 538, 597, 568	Sub GES
Harbour seal	Kalmarsund		0	2 to 3		Sub GES
	South-western Baltic and Kattegat	PBR	417 (incl. hunting)	REM data not at species level, reported: 2	88 to 380	not assessed
Grey seal	Baltic Sea	PBR	1330 (incl. hunting)	>2,000	465 to 1,717, ø: 1,065	Sub GES

Potential Biological Removal (PBR)

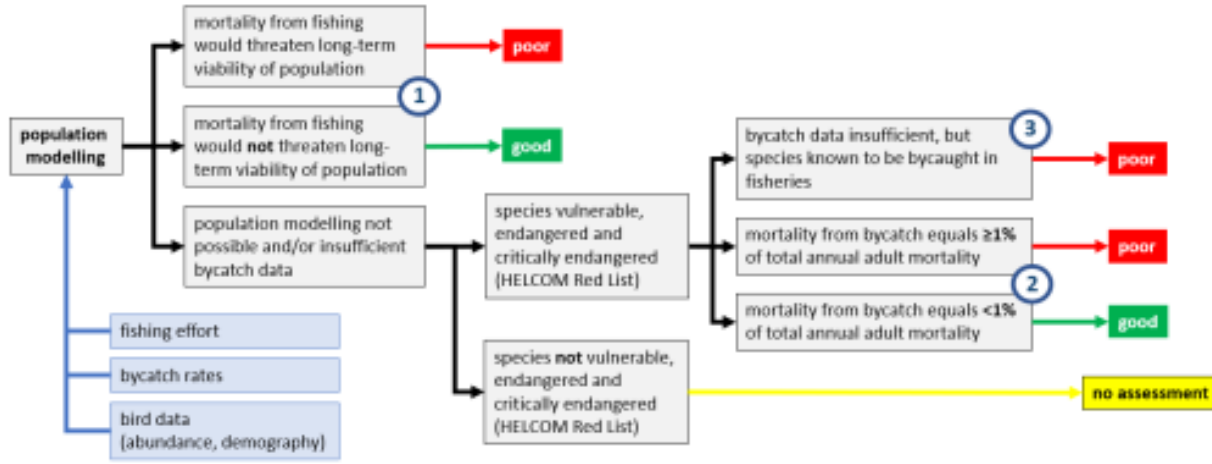
- from US Marine Mammal Protection Act):
- conservation objective 95 % probability of maximum net productivity (~50% of carrying capacity; 0.5 K)

Modified PBR:

- Conservation objective: 80% probability of 0.8 K

What are the thresholds?

3 assessment methods depending on data availability:



1. Population viability analysis (PVA)
– could not be applied
2. Bycatch $< 1\%$ of natural mortality
3. For threatened species (VU, EN, CR) with insufficient data: spatio-temporal overlap with fishery known to cause bycatch

Examples of species affected



Diving ducks, benthivorous feeders



Auks, Grebes, fish feeders



Photo: Anouk Fuhrmann



Divers, Mergansers, fish feeders

Method 2 thresholds (< 1% of natural mortality)

		Bornholm Group (Poland)		
Species	HELCOM Red List status	Average number by-caught birds (95% CI; S.E.)	Threshold value (Method 2)	Evaluation
Greater scaup	Vulnerable	204 (174 – 227; 14)	59	sub-GES
Long-tailed duck	Endangered	2,915 (2,525 – 3,423; 229)	869	sub-GES
Common scoter	Endangered	260 (225 – 328; 26)	68	sub-GES
Velvet scoter	Endangered	1,213 (1,038 – 3,423; 606)	313	sub-GES
		Gotland Group (Poland)		
Greater scaup	Vulnerable	216 (175 – 349); 44	15	sub-GES
Long-tailed duck	Endangered	2,027 (1,639 – 3,294); 422	131	sub-GES
Common scoter	Endangered	173 (139 – 288); 38	10	sub-GES
Velvet scoter	Endangered	3,504 (2,816 – 5,776); 755	194	sub-GES
Greater scaup	Vulnerable	216 (175 – 349); 44	15	sub-GES

Assessment Results

	Kattegat	Belt Group	Bornholm Group	Gotland Group
species (HELCOM Red List status)	Assessment Method / Country	Assessment Method / Country	Assessment Method / Country	Assessment Method / Country
Greater Scaup (VU)			2/PL	2/PL
			3/DE	3/LT
Common eider (EN)	3/DK	3/DK	3/DK	
			3/DE	
Velvet scoter (EN)		3/DK	2/PL	2/PL
			3/DE	3/LT
Common scoter (EN)		3/DK	2/PL	2/PL
			3/DE	3/LT
Long-tailed duck (EN)			2/PL	2/PL
			3/DE	3/LT
Red-breasted merganser (VU)			3/DE	3/LT
Red-necked grebe (EN)			3/DE	3/LT
Slavonian grebe (VU)			3/DE	
Black guillemot (VU)			3/DE	
Red-throated diver (CR)			3/DE	3/LT
Black-throated diver (CR)		3/DK	3/DE	3/LT
Integrated evaluation	sub-GES	sub-GES	sub-GES	sub-GES

Assessment Results

	Kattegat	Belt Group	Bornholm Group	Gotland Group
species (HELCOM Red List status)	Assessment Method / Country	Assessment Method / Country	Assessment Method / Country	Assessment Method / Country
Greater Scaup (VU)			2/PL 3/DE	2/PL 3/LT
Common eider (EN)	3/DK	3/DK	3/DK 3/DE	
Velvet scoter (EN)		3/DK	2/PL 3/DE	2/PL 3/LT
Common scoter (EN)		3/DK	2/PL 3/DE	2/PL 3/LT
Long-tailed duck (EN)			2/PL 3/DE	2/PL 3/LT
Red-breasted merganser (VU)			3/DE	3/LT
Red-necked grebe (EN)			3/DE	3/LT
Slavonian grebe (VU)			3/DE	
Black guillemot (VU)			3/DE	
Red-throated diver (CR)			3/DE	3/LT
Black-throated diver (CR)		3/DK	3/DE	3/LT
Integrated evaluation	sub-GES	sub-GES	sub-GES	sub-GES

Watch out for Dominik's presentation later today

Conclusions



- Better data needed for HELCOM bycatch indicator assessment in HOLAS 4.
- Population biology related indicator thresholds (PBR, mBPR, PVA) must take total anthropogenic mortality into account (although the D1C1 indicator is on bycatch only)
- Most important things to do for assessments: monitoring of bycatch, monitoring of effort (**Watch out for Kate's talk on HELCOM Roadmap and Gildas' talk on bycatch monitoring**)
- Most important thing to do besides assessment: implement mitigation measures!! (**Watch out for talks by Russell, Kate, Julius and Thomas**)
- And: Do not forget that seals and cormorants are legally protected and also require bycatch mitigation measures.

Questions?

