

# Viral Heart diseases in Faroese Aquaculture

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Head of Department and Senior Researcher

# Agenda

Production of Atlantic salmon

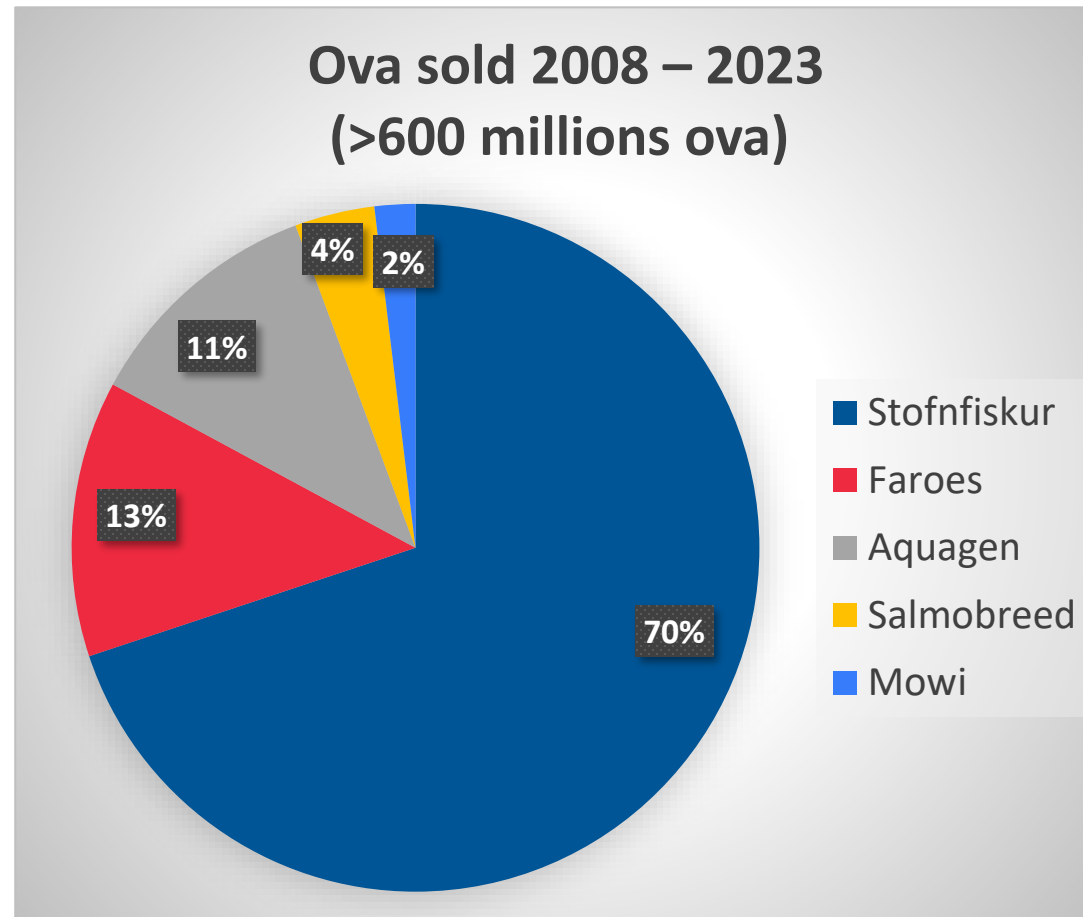
Mortality after sea-transfer

Viral Heart Diseases

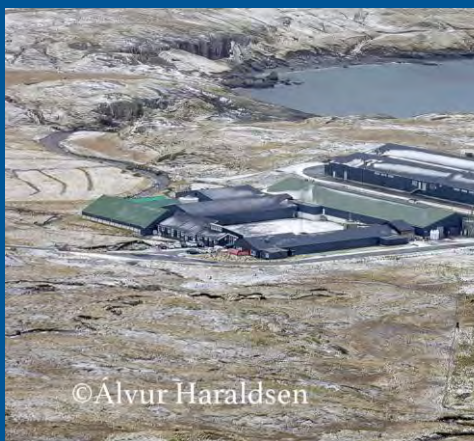
- Pancreas Disease (PD)
- Heart and Skeletal Muscle Inflammation (HSMI)
- Cardiomyopathy Syndrome (CMS)



# Importation of ova



# Production capacity

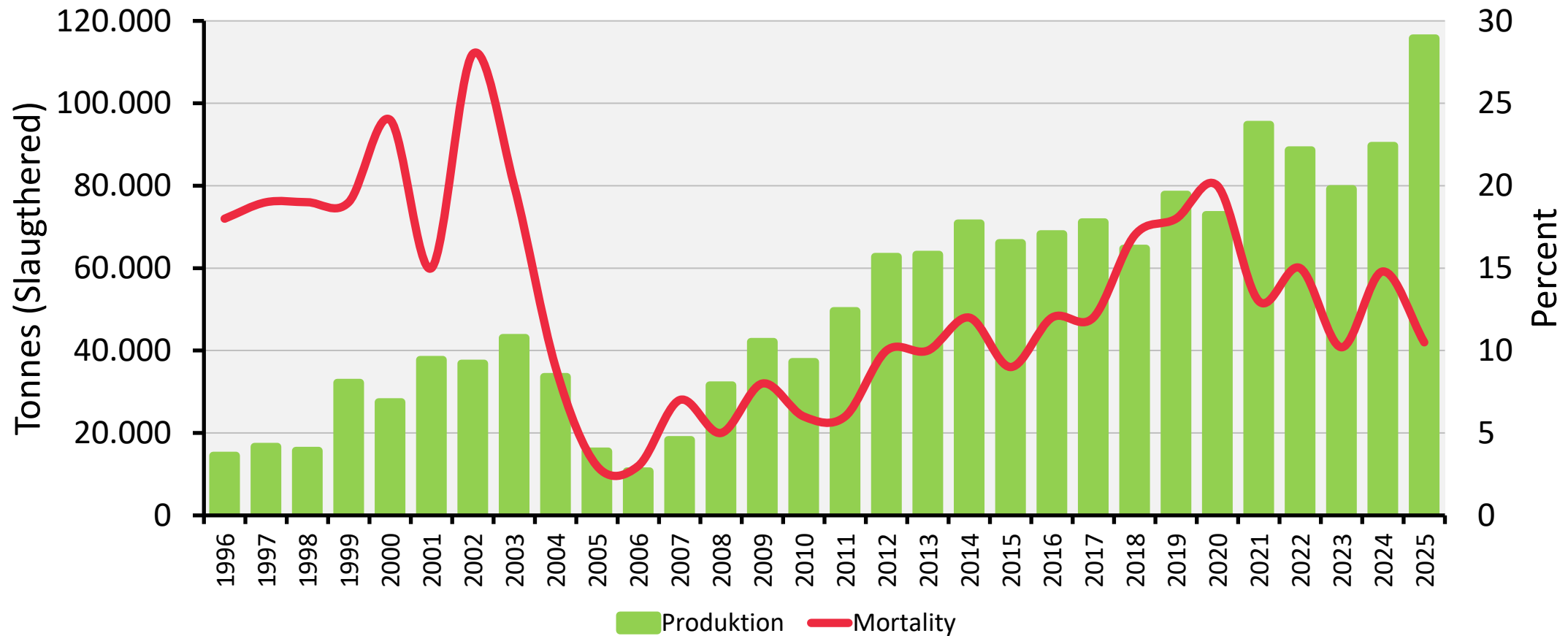


	Volume (m3)	Production (tons/year)	Production (number/500g)
1	1.260	170	0,03M
2	11.800	1.200	2,40M
3	12.720	1.200	2,40M
4	14.000	1.900	3,80M
5	17.000	2.200	4,40M
6	25.500	3.500	7,00M
7	29.000	4.000	8,00M
8	29.000	4.000	8,00M
<b>Total</b>	<b>117.330</b>	<b>18.017</b>	<b>36,03M</b>



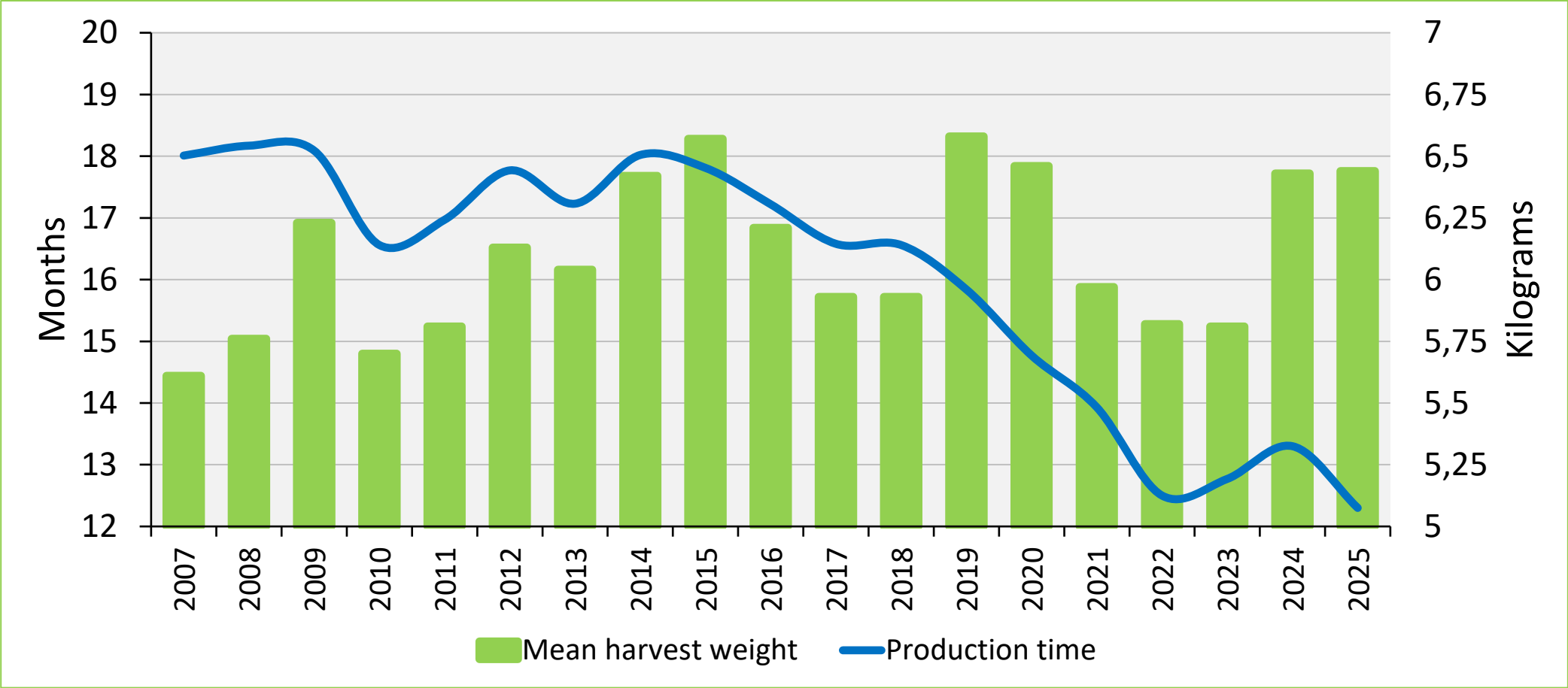
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# Annual Production of Atlantic salmon and Mortality



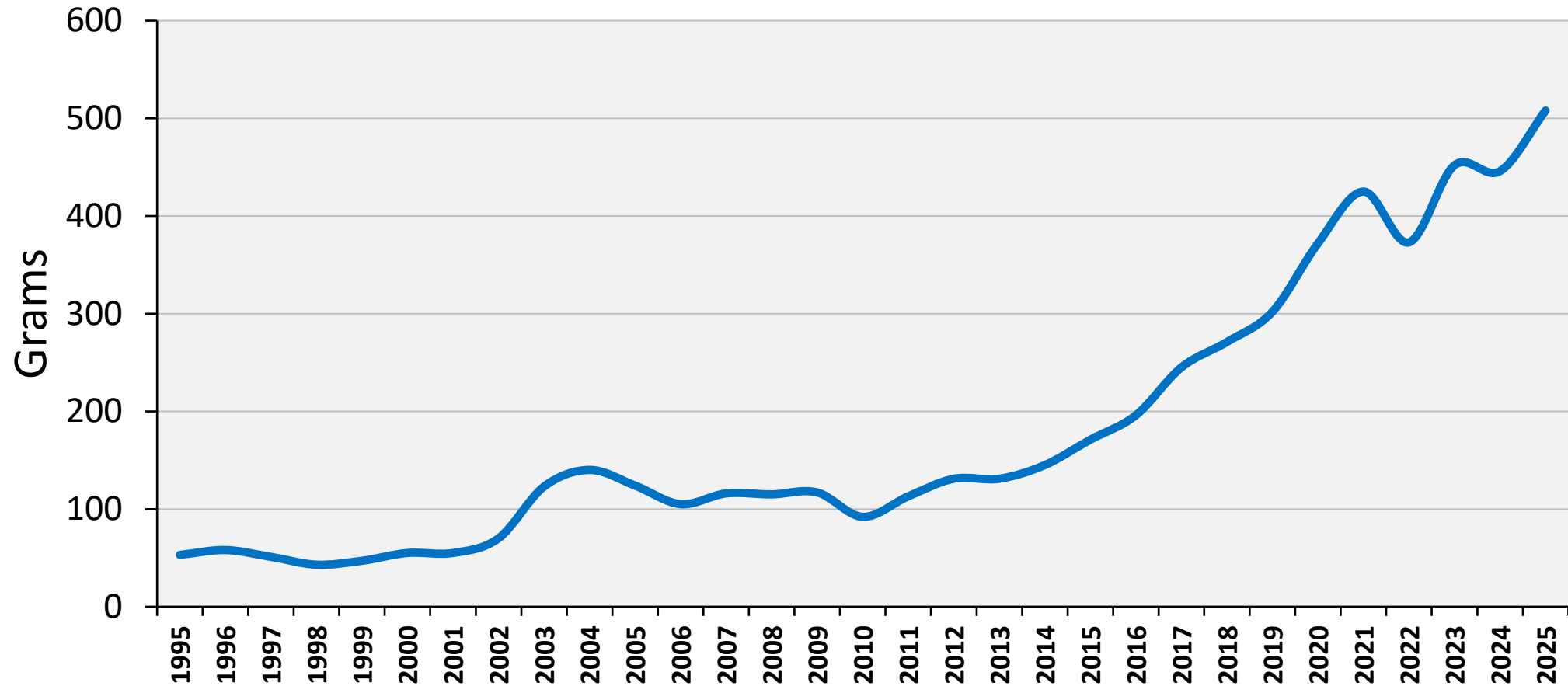
Rúni Dam: AVRÍK

# Marine Production Time and Harvest Weight



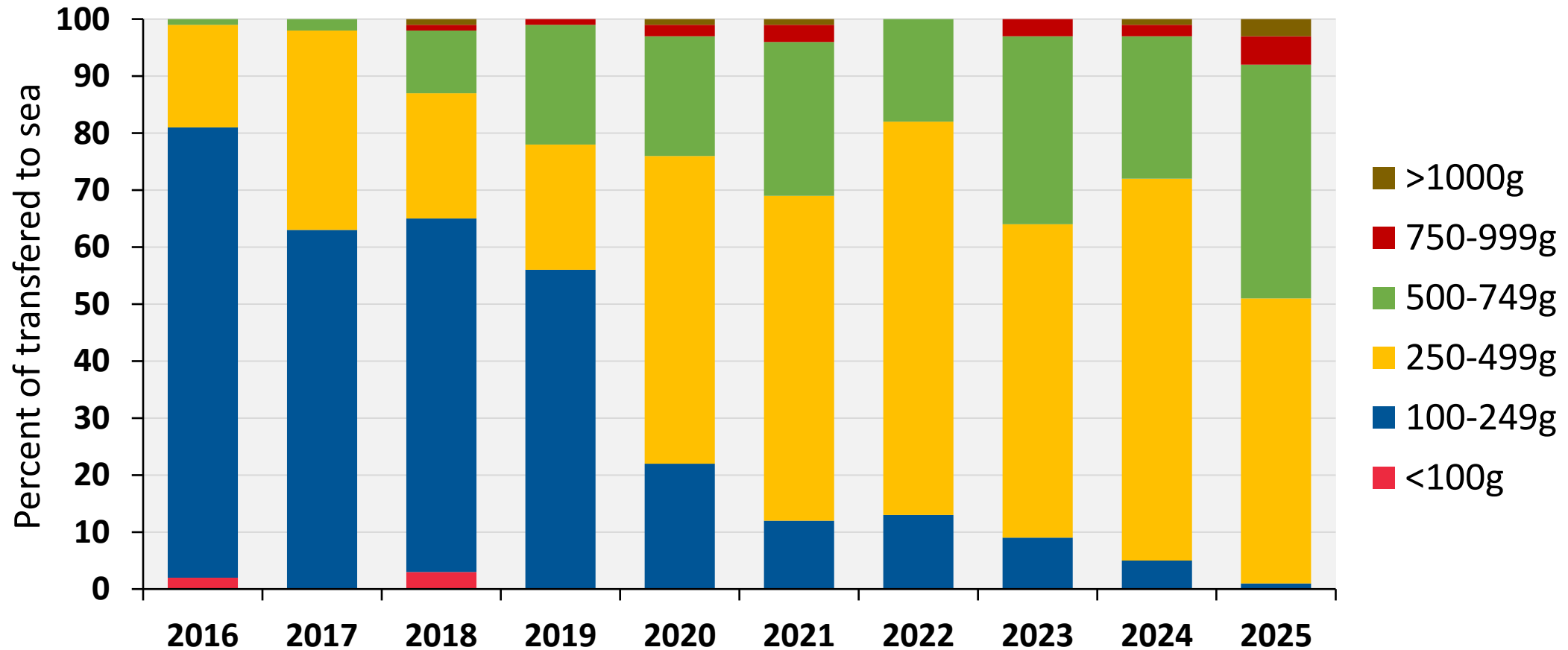
Rúni Dam: AVRÍK

# Smolt weight at sea transfer



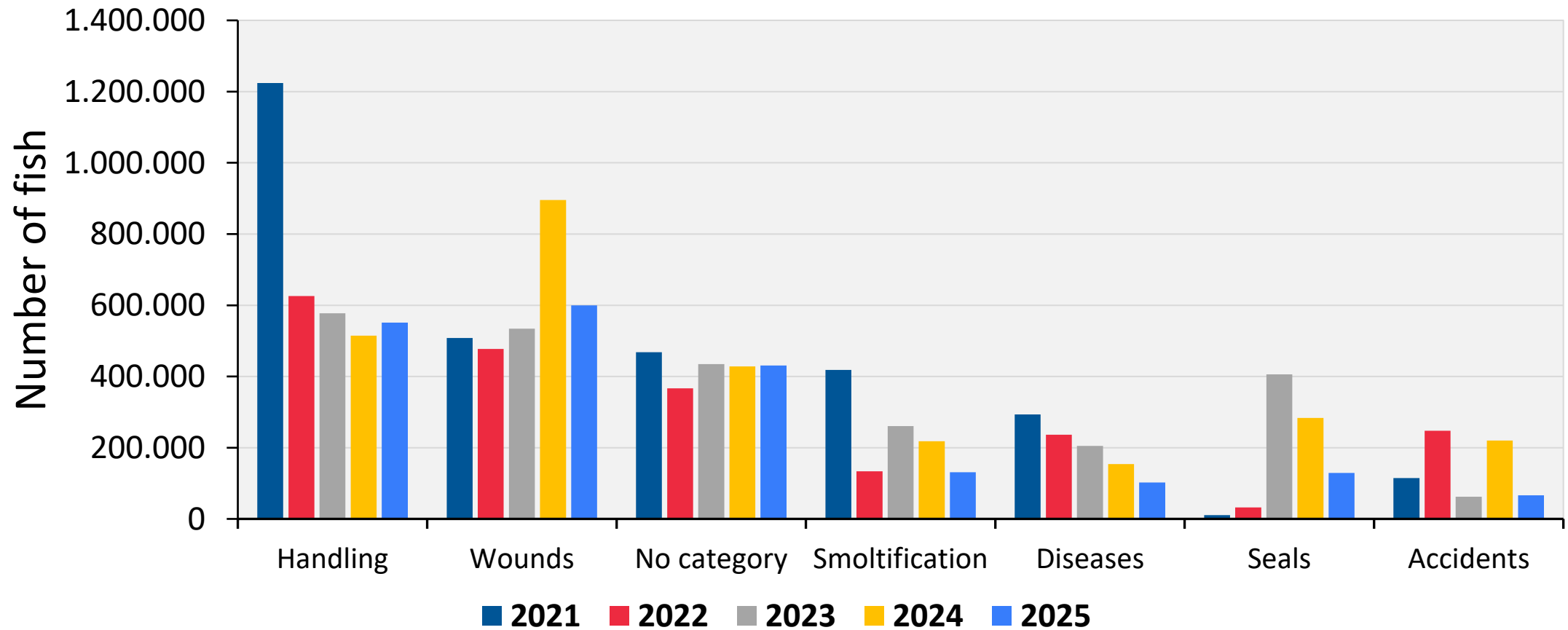
Rúni Dam: AVRÍK

# Production of large-smolt is one of the main strategies to increase health at marine sites

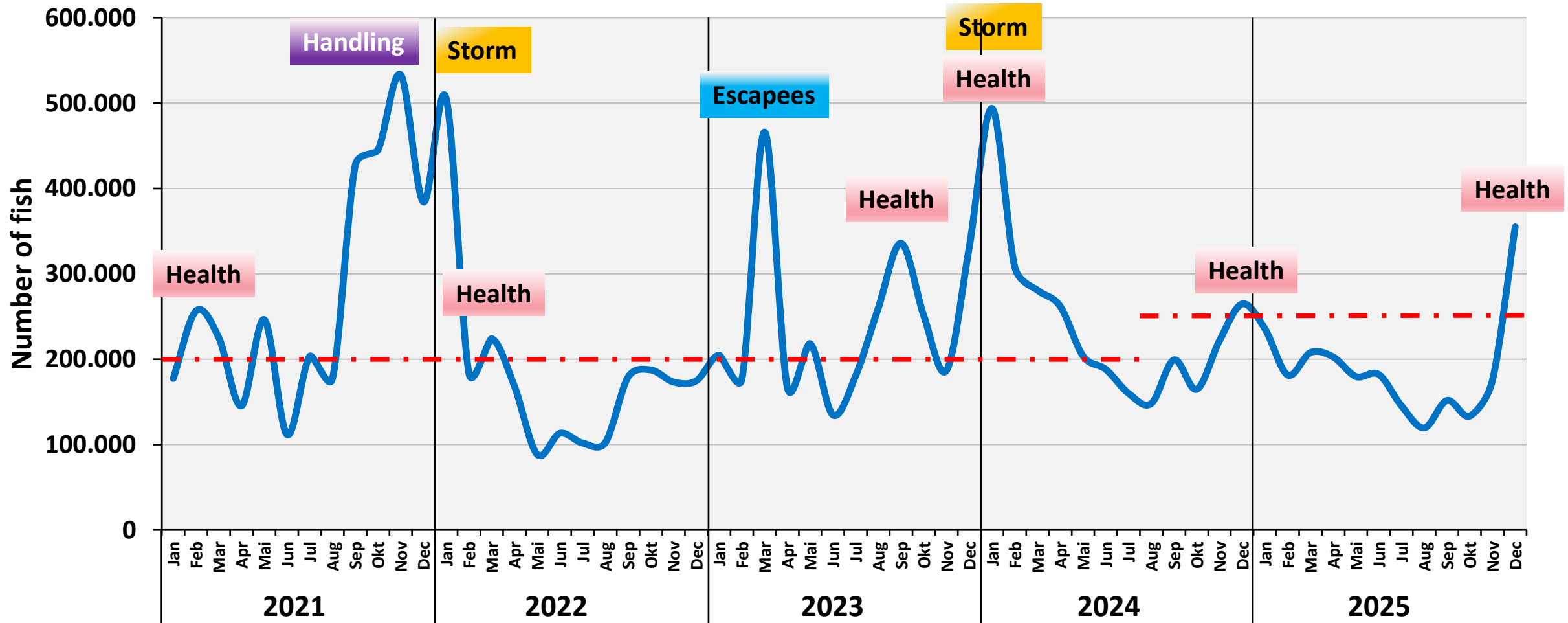


Rúni Dam: AVRÍK

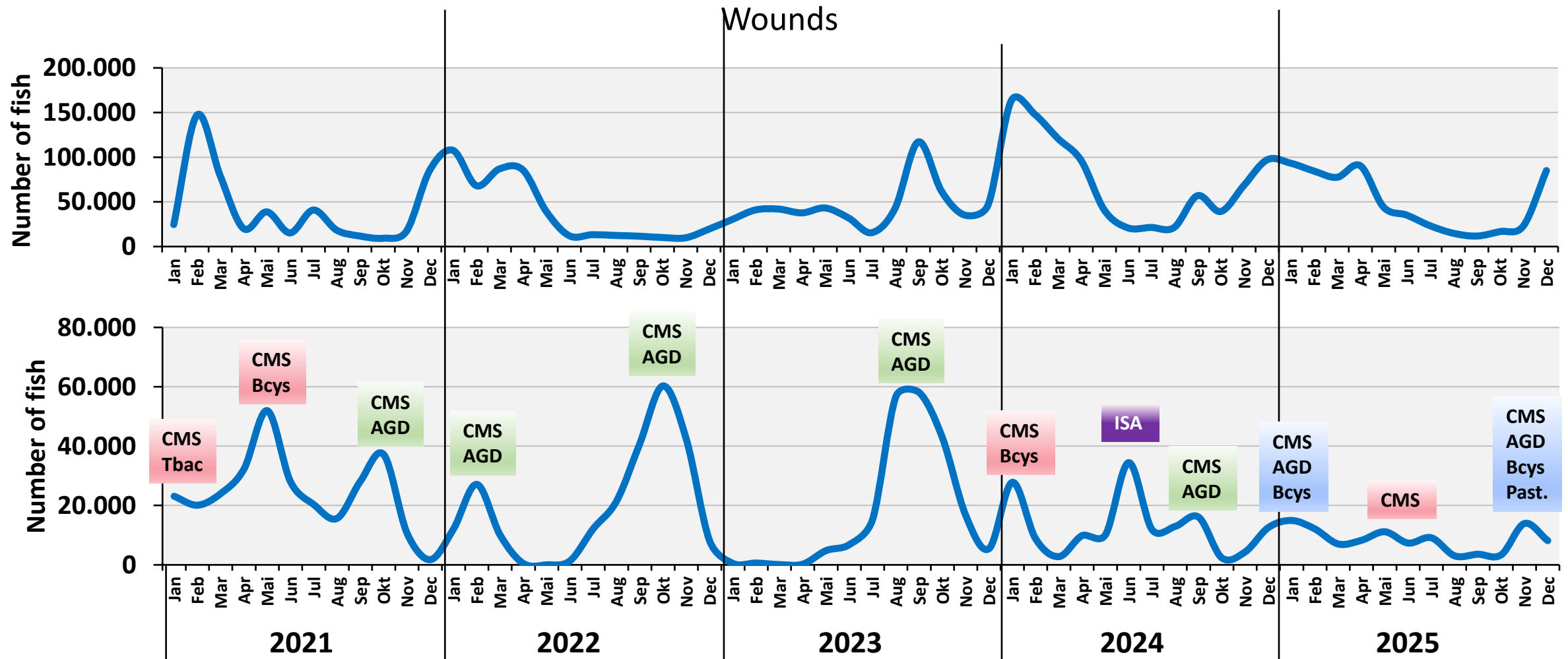
# Main causes of mortality the last five years



# Monthly mortality



# Monthly mortality of Wounds and Diseases



# Pancreas Disease

# SPDV/SAV has newer been detected in the Faroes

## Smolt farms

Year	Total number of samples	SAV (N)
2011 – 2015	576	0
2016 – 2020	889	0
2021 – 2025	1347	0
Total	2812	0

## Marine farms

Year	Total number of samples	SAV (N)
2011 – 2015	6648	0
2016 – 2020	9711	0
2021 – 2025	9124	0
Total	25483	0

# Heart & Skeletal Muscle Inflammation

# Prevalence of PRV-1

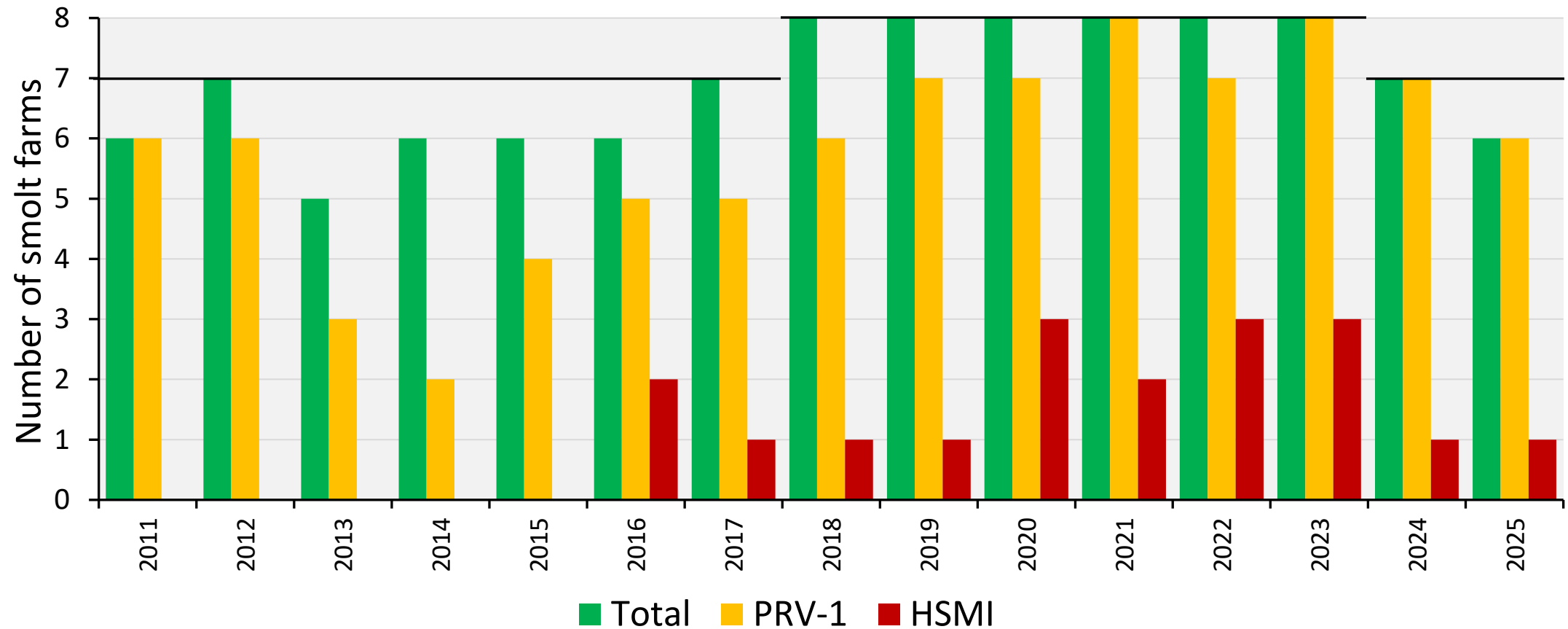
## Smolt farms

Year	Total number of samples	PRV-1 (N)	PRV-1 (%)
2011 – 2015	985	696	70,7
2016 – 2020	1809	680	37,6
2021 – 2025	2910	1833	63,0
Total	5704	3209	56,3

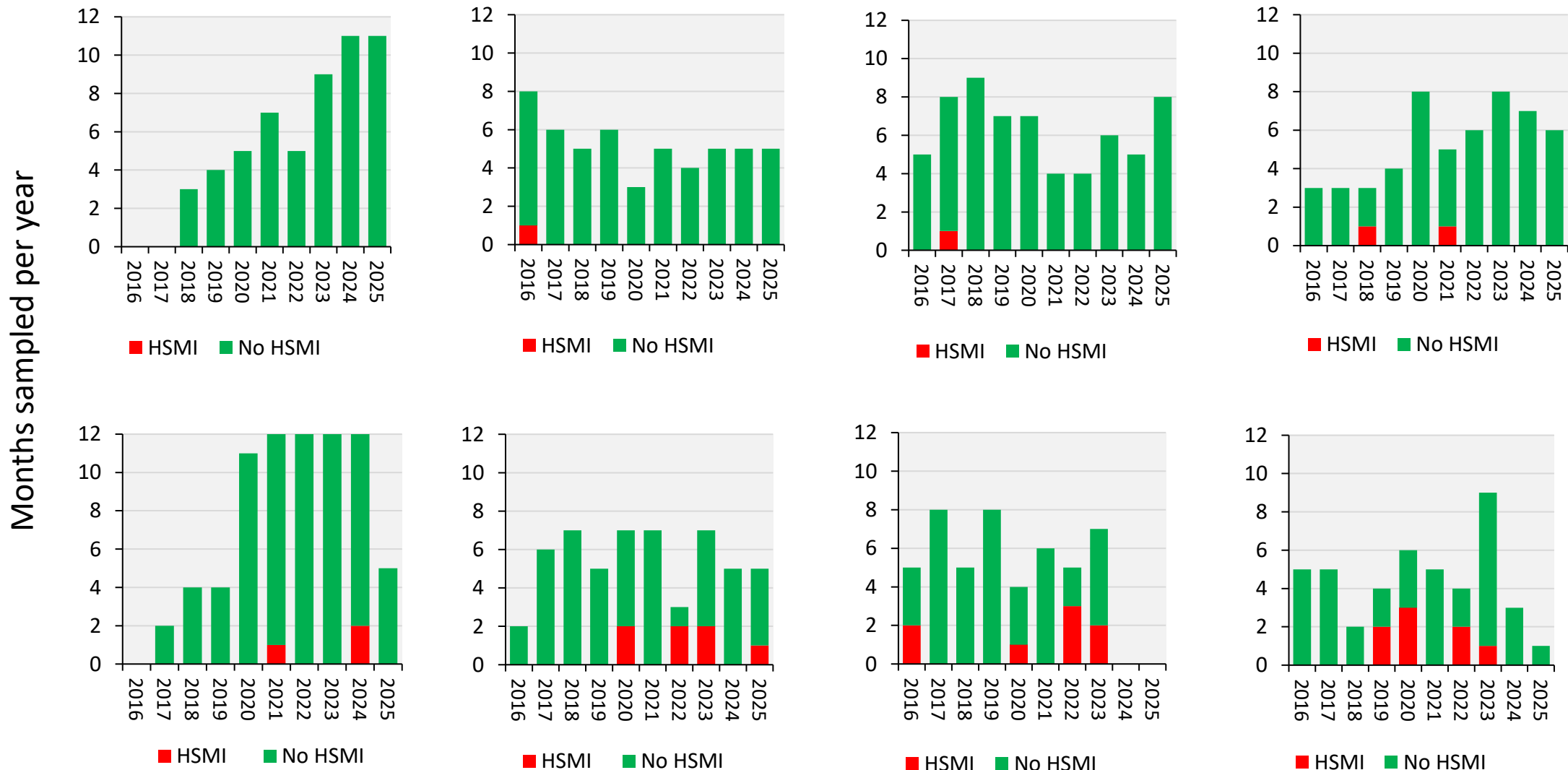
## Marine farms

Year	Total number of samples	PRV-1 (N)	PRV-1 (%)
2011 – 2015	1763	1238	70,2
2016 – 2020	1834	652	35,6
2021 – 2025	4294	2707	63,0
Total	7891	4597	58,3

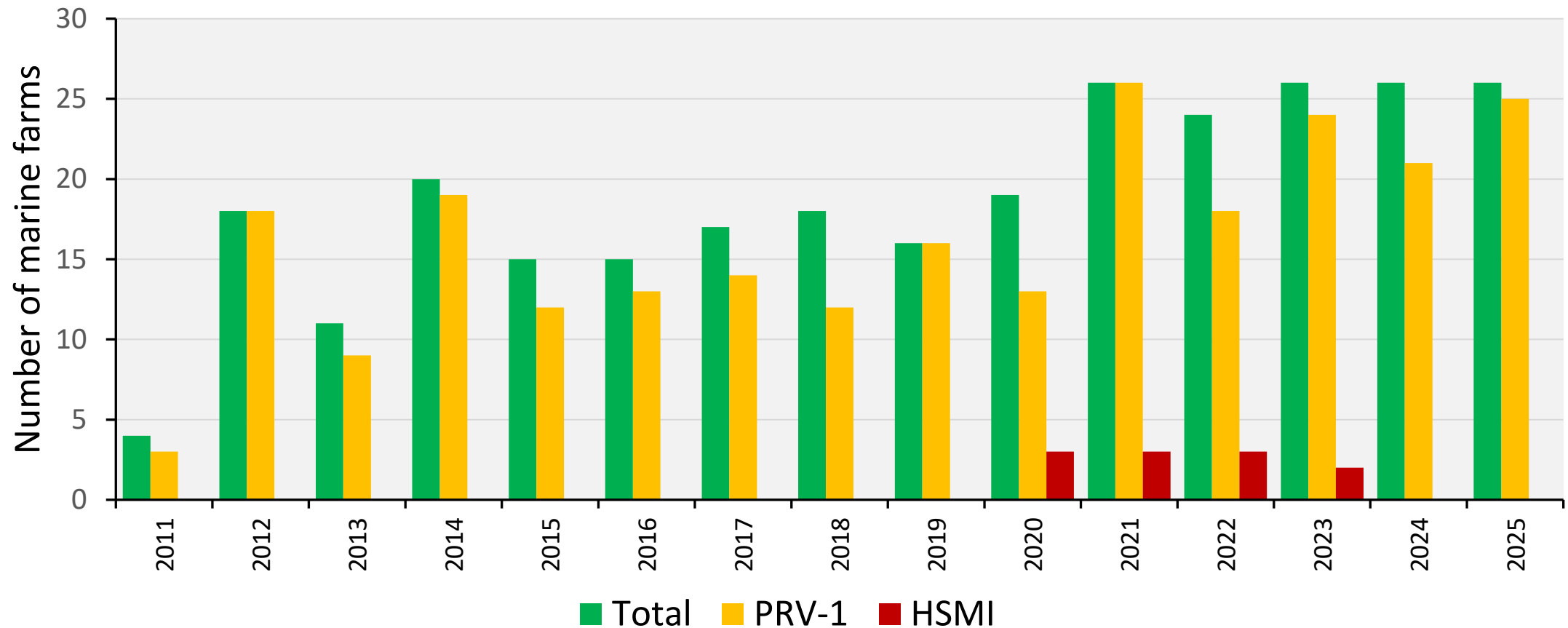
# Prevalence of HSMI in smolt farms



# Prevalence of HSMI in smolt farms



# Prevalence of HSMI in marine farms



# The Faroese PRV-1 variants causing HSMI cluster in the Low-virulent PRV-1 group

## HV-PRV-1

NORWAY/144-85/2022 HSMI-QTL  
NORWAY-2005/TT  
NORWAY-2015/SSK  
NORWAY-2015/MS  
NORWAY-2018/SF  
NORWAY-2018/NL

## LV-PRV-1

FO/940-03/2020 MARINE-B

FO/005-01/2023 SMOLT-D  
FO/003-01/2023 SMOLT-B  
FO/055-01/2022 MARINE-F  
FO/574-02/2021 MARINE-E  
FO/711-03/2019 SMOLT-G  
FO/171-05/2021 MARINE-D

CANADA-2017

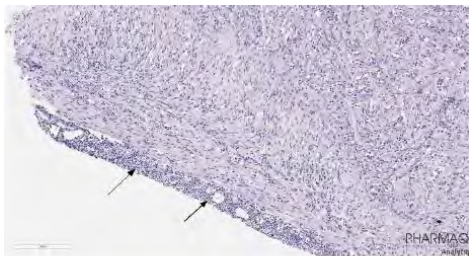
ISL/775-08/2011

NORWAY-1921  
NORWAY-1988

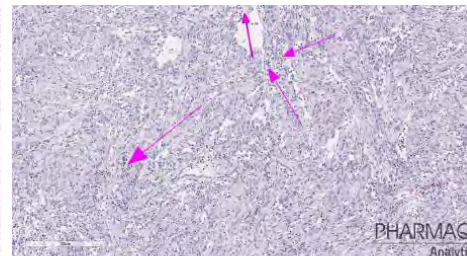
FO/470-02/2021 SMOLT-A  
FO/041-01/2016 MARINE-A  
FO/092-02/2021 SMOLT-C

FO/1978-01/2015 SMOLT-B  
NORWAY-1996  
DK-14-15958-4  
DK-2013-50-282-20  
DK-2013-50-288-63  
GREENLAND-2017a  
DK-2013-50-282-11  
GREENLAND-2016  
NORWAY-3817  
GREENLAND-2017b  
NORWAY-5433

- Increased mortality
- PRV-1 Ct-values < 20
- HSMI clinics and mortality
- HSMI histology



Sample 2. Heart. Inflammation in the compact layer of heart ventricle and epicarditis (arrows).



Sample 1. Severe inflammation in the spongy heart muscle in the ventricle.

0.01

# Cardiomyopathy syndrome

# Prevalence of PMCV

## Smolt farms

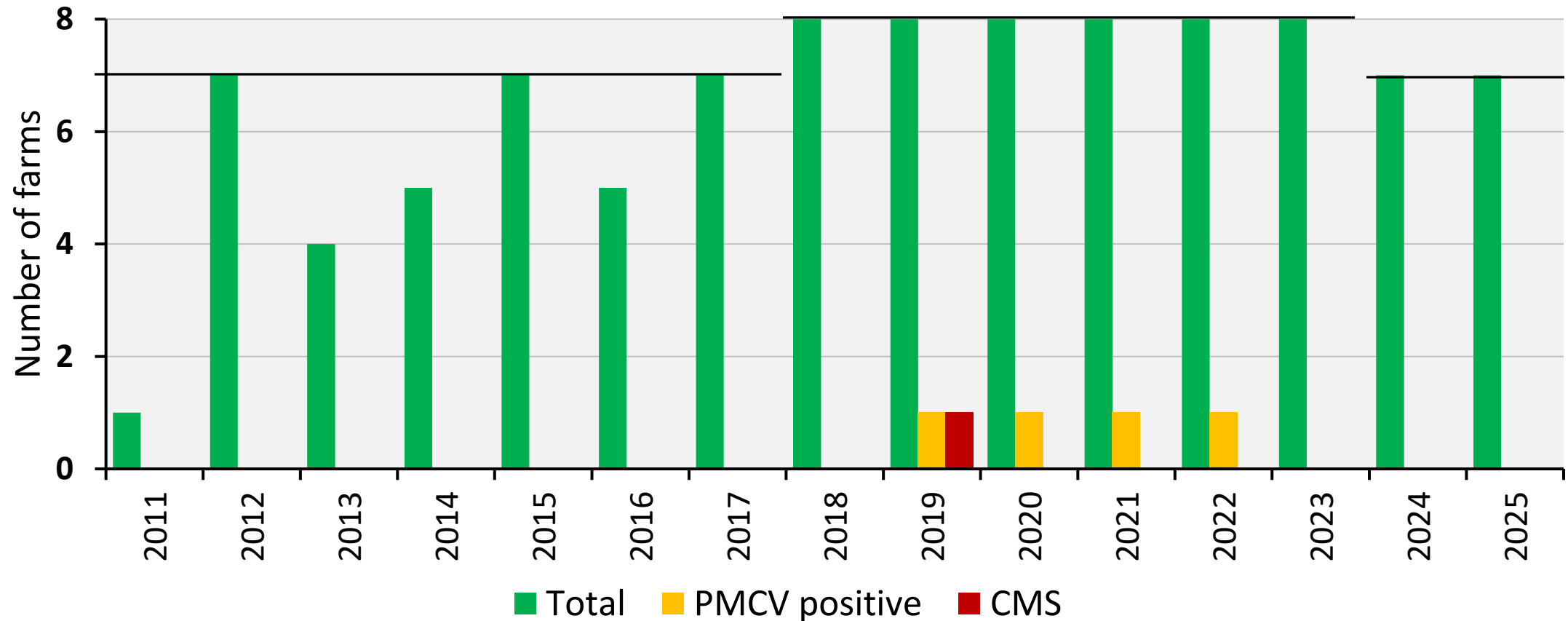
Year	Total number of samples	PMCV (N)	PMCV (%)
2011 – 2015	727	3	0,41
2016 – 2020	2837	48	1,7
2021 – 2025	5573	3	0,05
Total	8524	47	0,05

## Marine farms

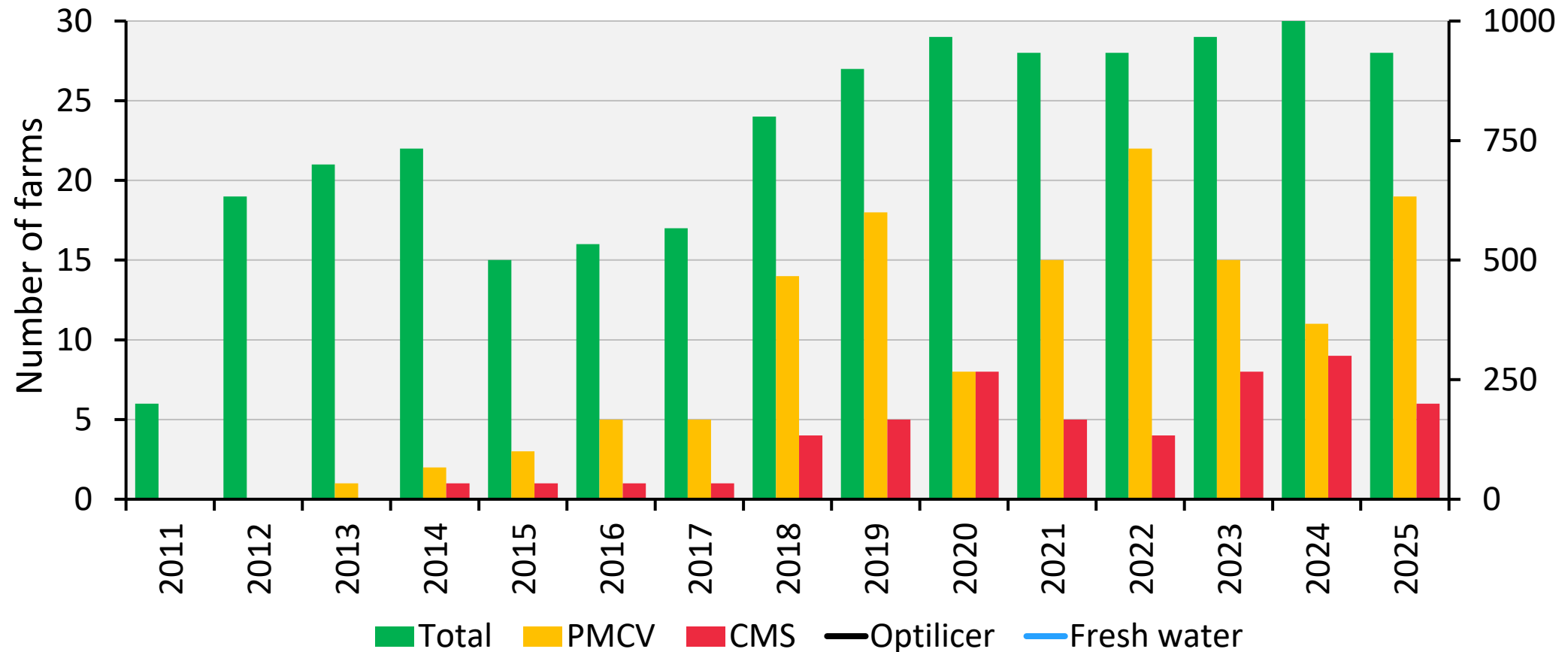
Year	Total number of samples	PMCV (N)	PMCV (%)
2011 – 2015	2552	153	6,0
2016 – 2020	7216	2054	28,5
2021 – 2025	11473	2544	22,2
Total	21241	4751	22,4

# Prevalence of CMS in smolt farms:

*No detections the last six years*



# Prevalence of CMS in marine farms: *Increase in 2024 and decrease in 2025*



# Summary

- SPDV/SAV or PD has never been detected
- High prevalence of PRV-1 but fewer cases of HSMI
  - All cases are with the apparently LV-PRV-1 variant
- Increased prevalence of PMCV
  - > 90% increase in non-medical delousing both optilicer and freshwater
  - i.e. increased well boat traffic between farming sites spreading PMCV?
- Fewer cases of CMS
  - Less stressful handling of the fish during delousing?



# Thank you

Mynd: Peter S. Østergaard