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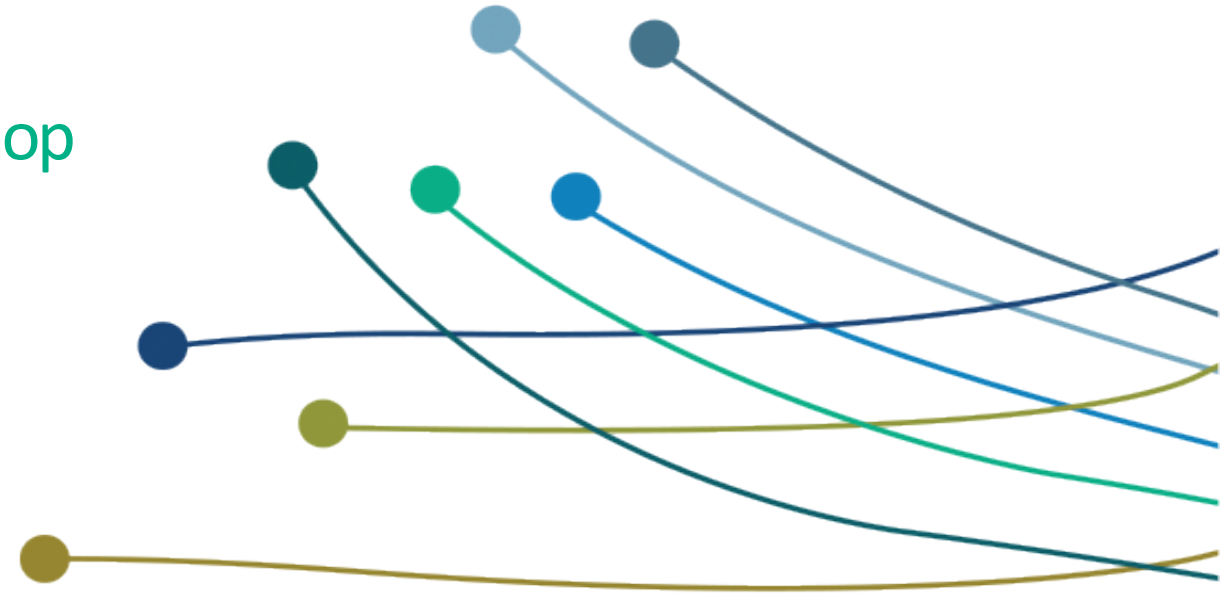
Marine Institute

Re-emergence of Norovirus – the impact on oyster production areas during winter 2022/23

BIM/IFA Aquaculture Oyster Industry Workshop
April 17th, 2023



Sinead Keaveney,
National Reference Laboratory, Shellfish Microbiology

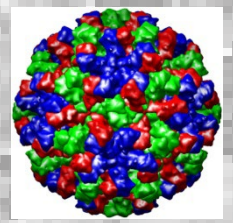
Presentation overview

- Norovirus contamination and oyster production areas
  - BIM norovirus risk management project
- Impact of COVID-19 public health measures
  - March 2020 until the lifting of restrictions on April 1st 2022
- Re-emergence of norovirus in winter 2022/23
  - October 2022 through to end of February 2023
  - Initial assessment of impact

Shellfish and norovirus contamination

person-to-person spread

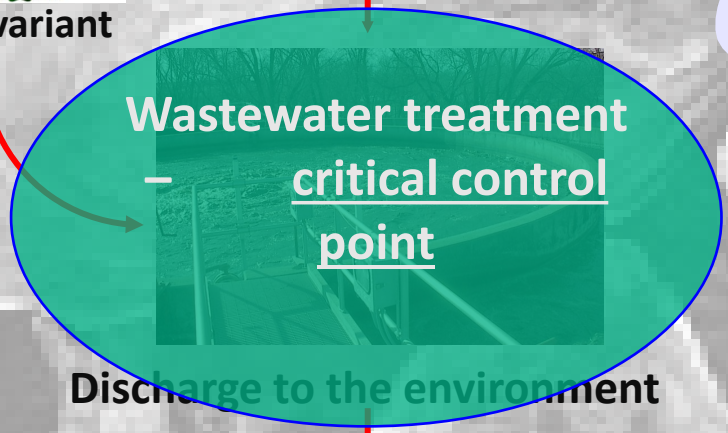
recombination



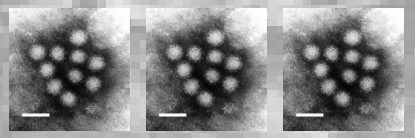
new variant

Virus shedding in feces:

10^4-10^{10} viral particules/g



Discharge to the environment



contaminated with multiple strains

Global trade

Shellfish (oysters)

Norovirus risk management in Ireland



- Despite risk no virus specific regulations in EU
- Responding to oyster related outbreaks and working with Oyster Industry to manage the risk of norovirus contamination
  - NoroRisk project (DAFM funded)
  - Norovirus monitoring to understand the risk of contamination/risk profiling
  - Evaluating risk management practices
    - Re-location of oysters to prevent/reduce norovirus contamination
    - Enhanced depuration to reduce norovirus concentrations in end-product
- Quality assurance for export markets
- **“Interim guidance on the Management of Norovirus in Oysters by Shellfish Producers”**

Food Safety AUTHORITY OF IRELAND

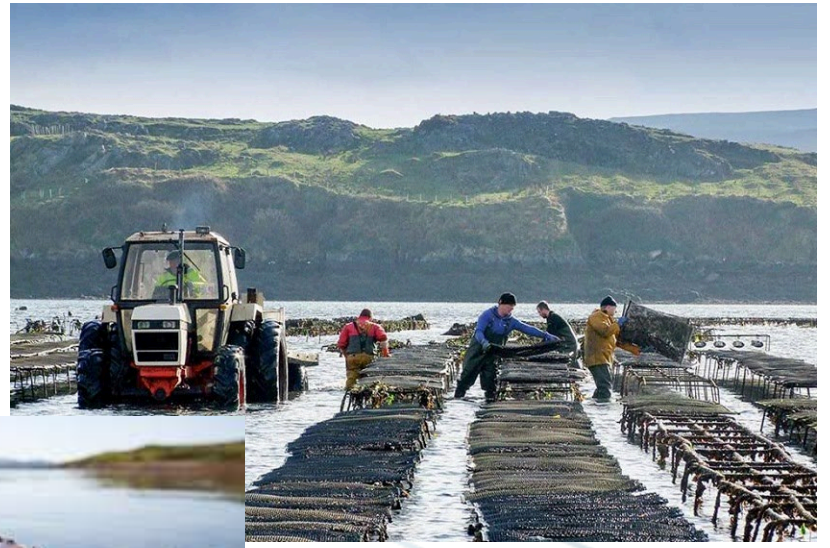
SEA-FISHERIES PROTECTION AUTHORITY

Foras na Mara Marine Institute

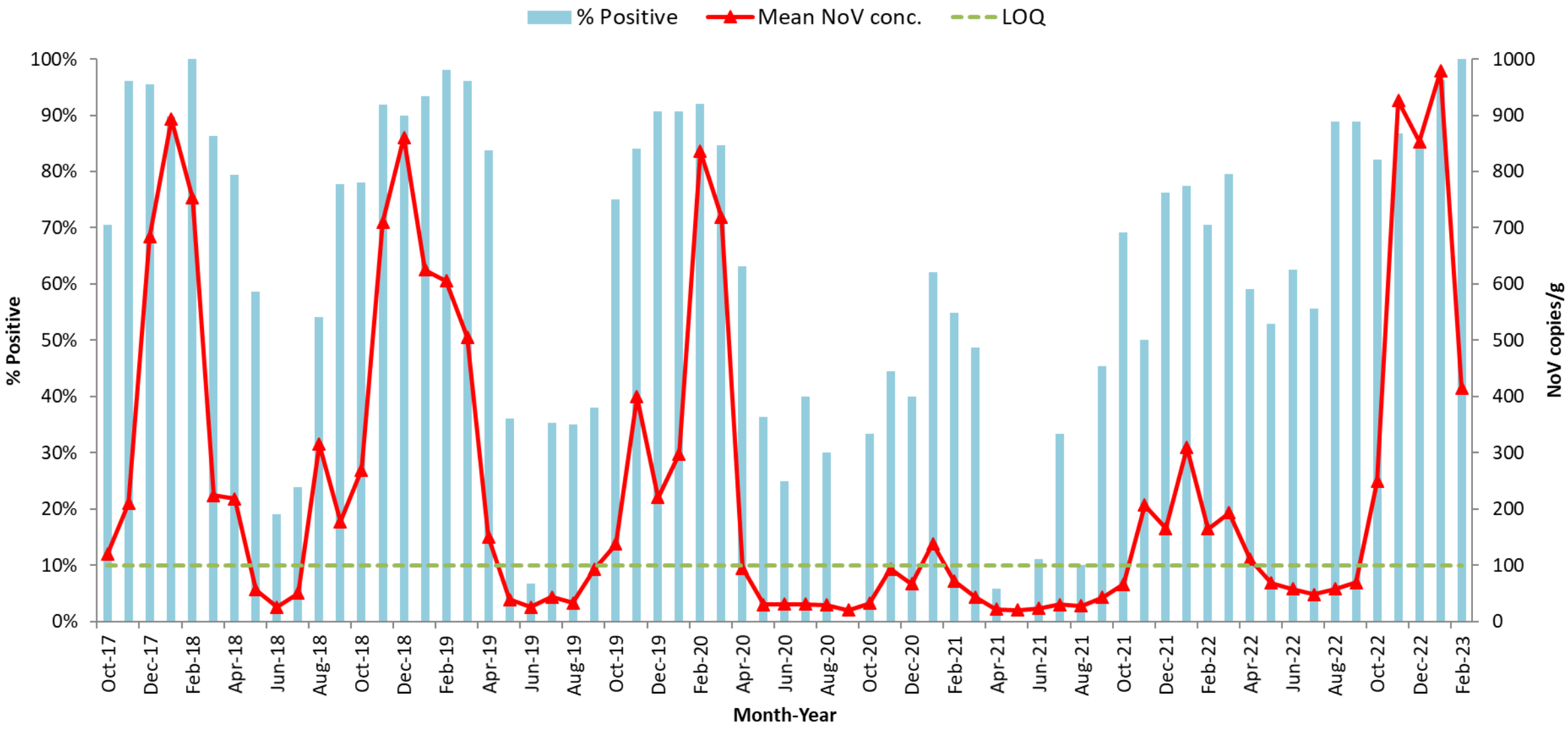
Norovirus risk management in Ireland – BIM funded study

Analyse the impact, management and prevalence of norovirus in a number of oyster areas around the coast of Ireland

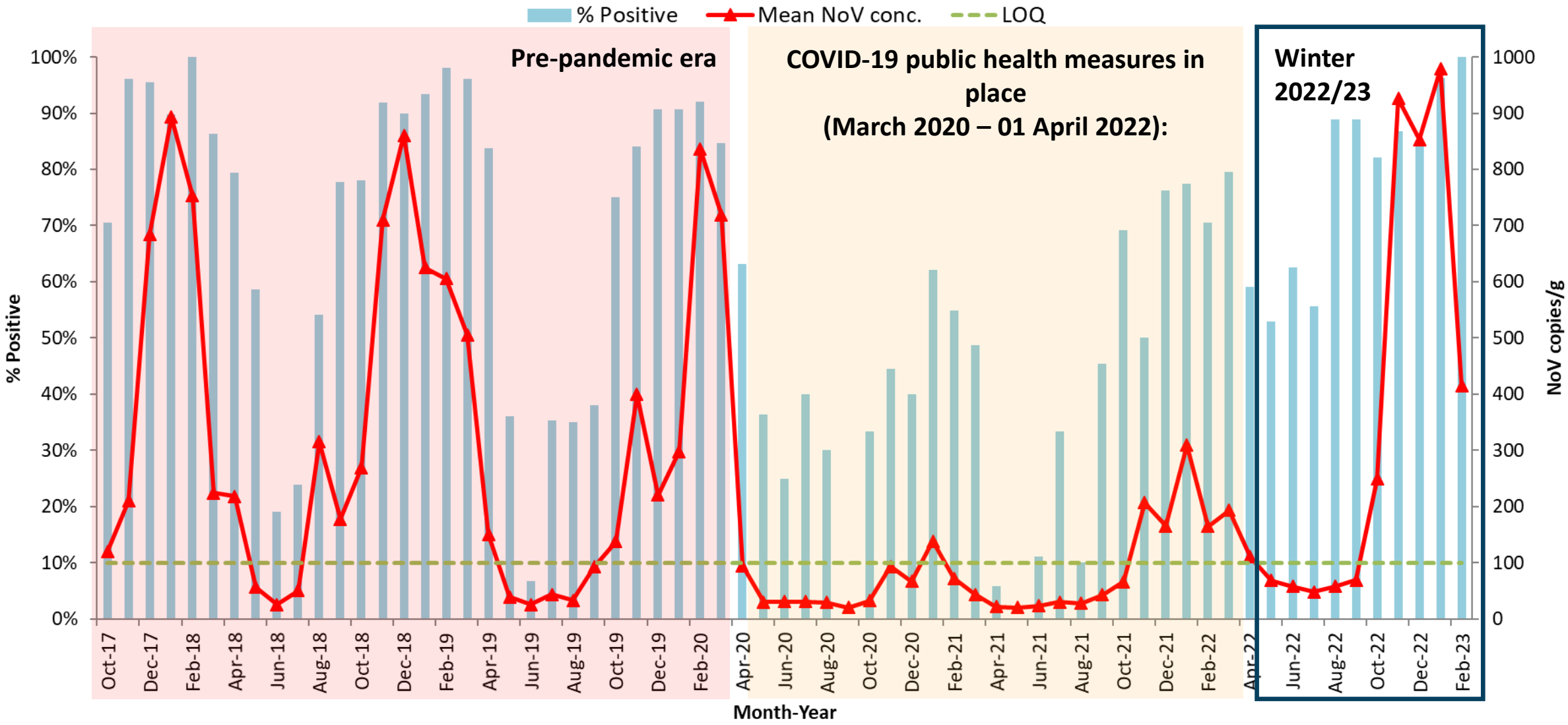
- Irish Oyster Packers Group (IOPG)
- Norovirus risk profile for Food Safety Management Plan
  - A, Seasonal A, and B class areas
  - Production area and end-product samples
- Norovirus testing
  - ISO 15216-1:2017 (RT-qPCR)
  - Weekly testing during the high risk period (Oct – Mar/Apr)
  - ~3500 samples tested to date (since February 2018)
- Project continues to Autumn 2024



Norovirus prevalence in production areas – October 2017 to February 2023



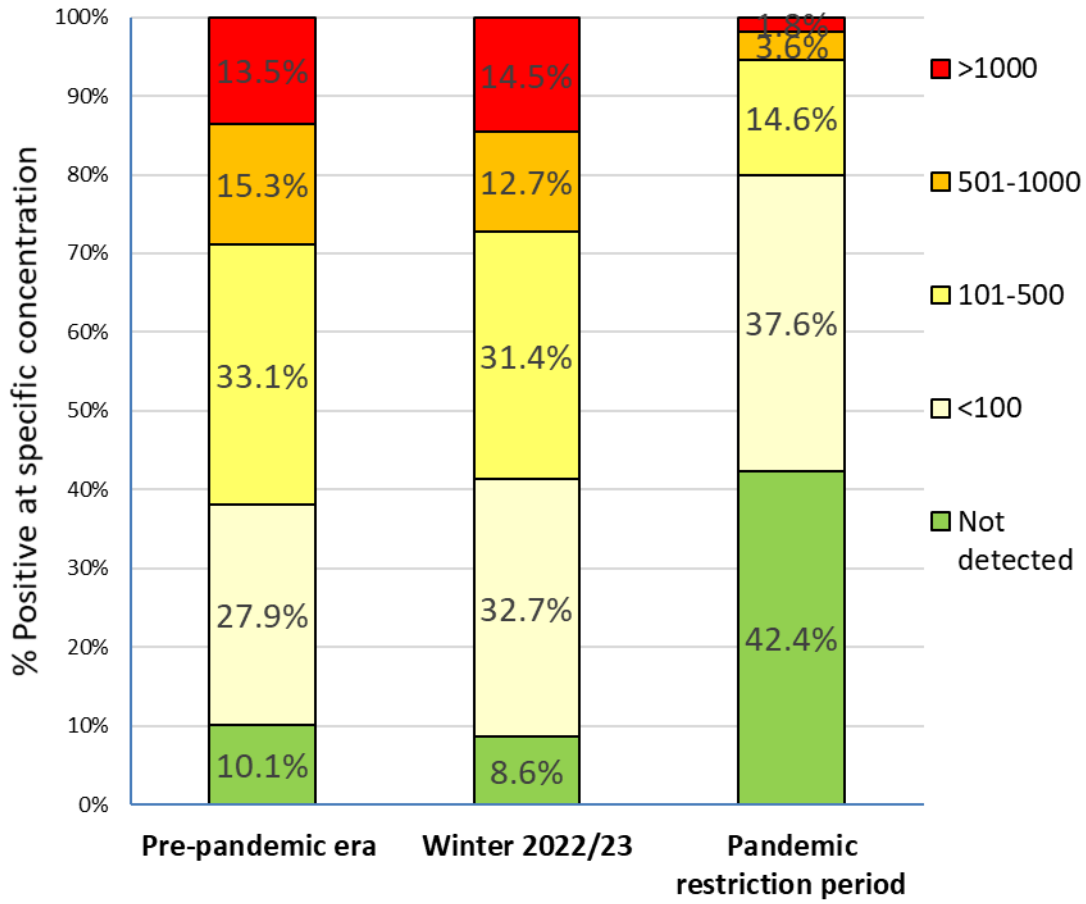
Norovirus prevalence in production areas – October 2017 to February 2023



Norovirus contamination winter 2022/23 comparison with pre-pandemic and pandemic restriction period – Production areas

	Pre-pandemic era	Winter 2022/23*	Pandemic restriction period
% Positive	89.9%	91.4%	57.7%
Concentrations (copies/g)			
Mean	527	719	122
Min	ND	ND	ND
Max	13048	20105	2028

*Winter 2022/23: October 1st, 2022 until February 28th, 2023



- Initial assessment indicates no significant difference in norovirus contamination in production areas between pre-pandemic era and Winter 2022/23

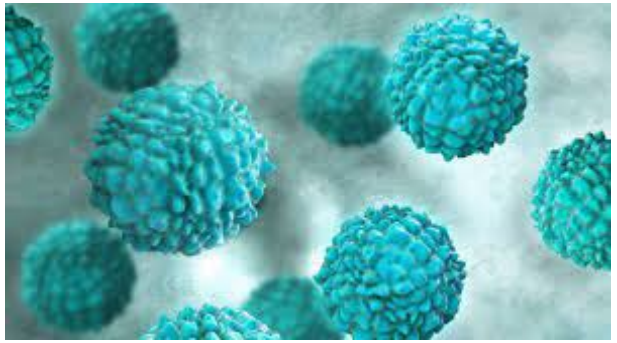
Norovirus in oyster production areas V End-product oysters

	October – March 2017/18		October – March 2018/19	
	Production area	**End-product**	**Production area**	**End-product**
No. of Samples	196	181	317	149
% Positive	**91.3 %**	**83.4 %**	**91.5 %**	**87.2 %**
Mean	**526**	**153**	**591**	**225**
Min	Undet.	Undet.	Undet.	Undet.
Max	13048	1310	4744	2509
P values	P<0.005		P<0.005	

- Management procedures can be applied to reduce the level of norovirus, reducing norovirus exposure to the consumer

Summary & conclusions

- Norovirus contamination in shellfish production areas is of particular concern for public health
  - Proactive approach to managing the risk in Ireland
- Increase in norovirus contamination in shellfish production areas during winter 2022/23
  - Initial assessment indicates levels are not significant higher than pre-pandemic
- Ongoing surveillance of norovirus remains an important tool for risk management
  - Reducing consumer exposure to norovirus
  - One RASFF alert winter 2022/23 from Ireland (33 in total)
- Prevention of human faecal contamination in oyster production areas critical control point
  - High risk areas



Acknowledgements

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Shellfish Microbiology Team, Marine Institute
Agnieszka Rupnik
Leon Devilly
James Fahy
Alex McGreer

BIM
Ireland's Seafood Development Agency

Irish Oyster Packers Group

Thank you for your attention