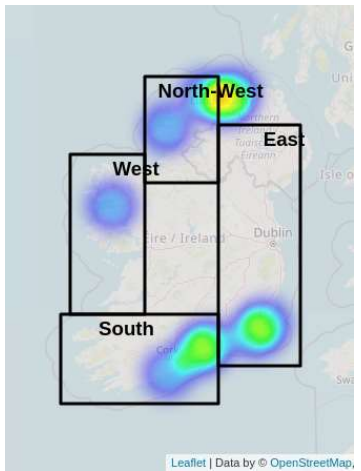
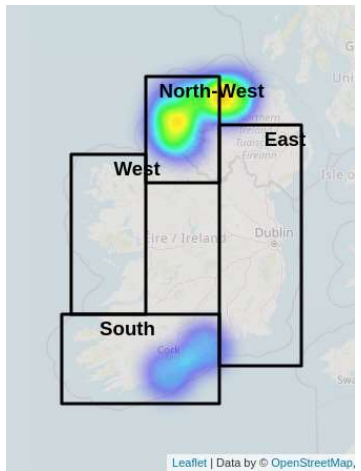


Diarrhetic Shellfish Toxins



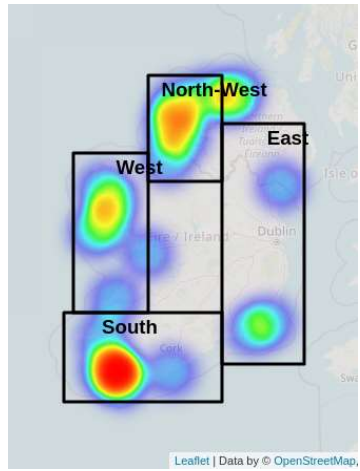
Toxic Sites	0
Analysed Sites	55

Azaspiracid Shellfish Toxins



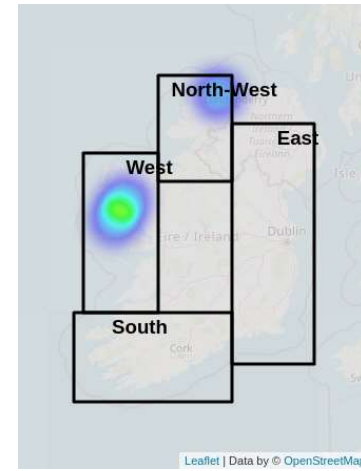
Toxic Sites	0
Analysed Sites	55

Amnesic Shellfish Toxins



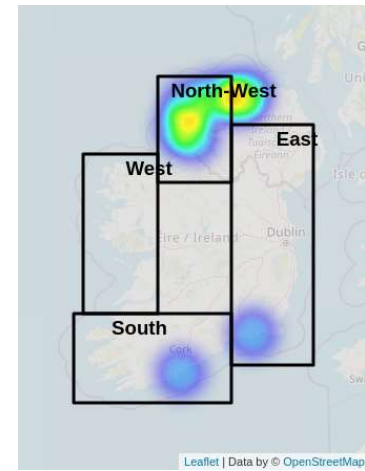
Toxic Sites	0
Analysed Sites	53

Paralytic Shellfish Toxins



Toxic Sites	0
Analysed Sites	5

Yessotoxins



Toxic Sites	0
Analysed Sites	46

AST: (Amnesic shellfish toxin) Low risk, generally stable, background levels. Low toxin levels in general and currently no immediate indications of sudden increases..

AZA: (Azaspiracid toxin) Low risk on all shorelines, but there is a constant low fluctuating phytoplankton presence, caution advised as we are in a historical risk period also. This species has caused sudden acute issues in the past, rarely presents any reliable trends.

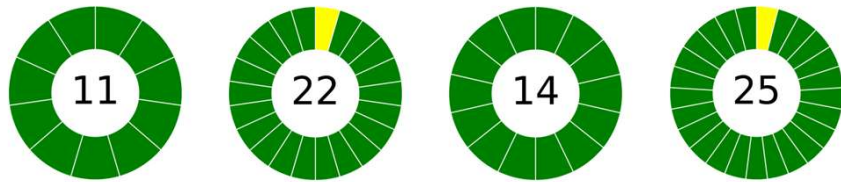
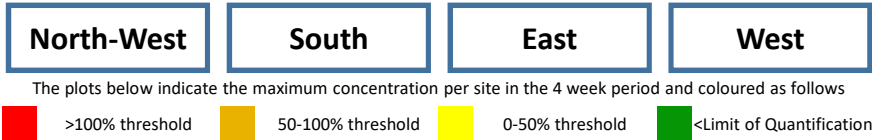
DST: (Dinophysis shellfish toxin) Low risk generally. Environmental conditions re: transportation, temperatures and light not currently indicating suitability for sudden increases.

PST: (Paralytic shellfish toxins) Low risk as environmental conditions not expected to be suitable for bloom establishment.

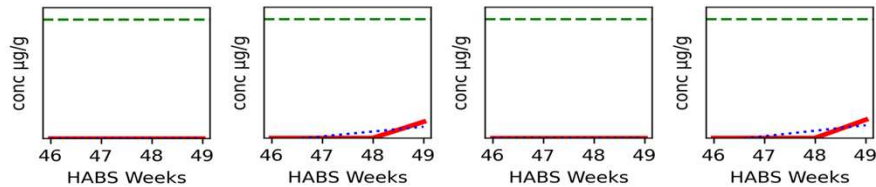
Diarhetic Shellfish Toxins & *Dinophysis* species

Regional 4-Week Trends 10/11/24 - 07/12/24

In this 4 week period there were 178 Samples tested for DST. These samples were collected at 72 Sites around the country. Resulting in 0 Site(s) with values above the regulatory limit of 0.16 µg/g



--- indicates the regulatory threshold. These plots show the max value per week for the previous 4 weeks.

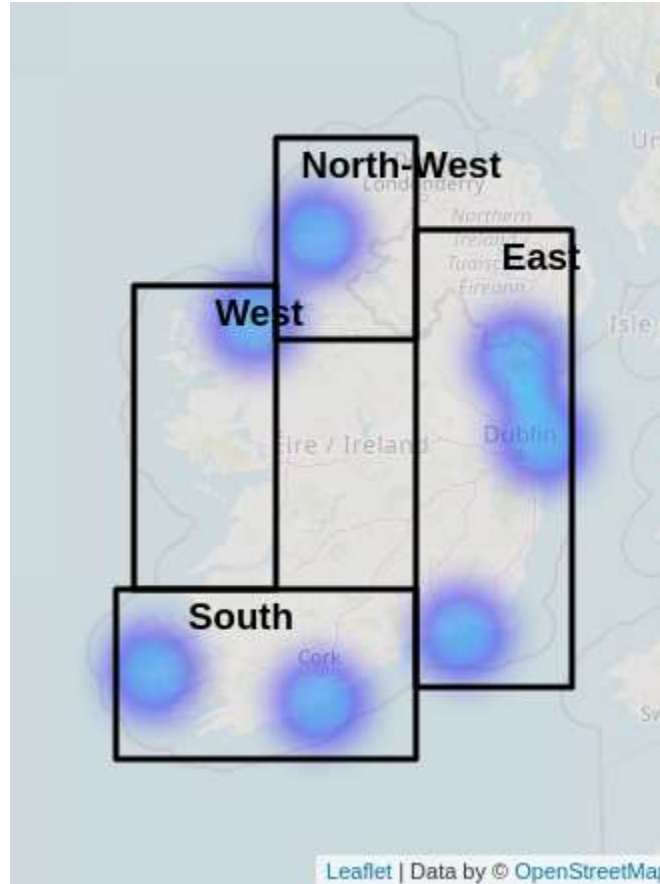


Risk: **Low** **Low** **Low** **Low**

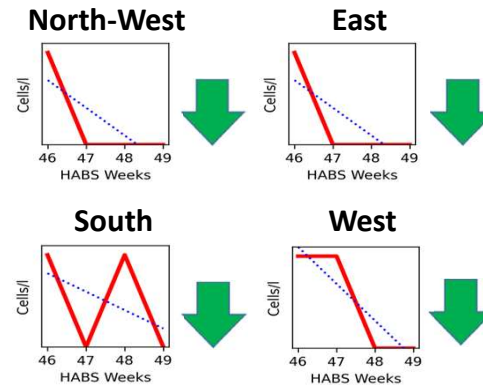
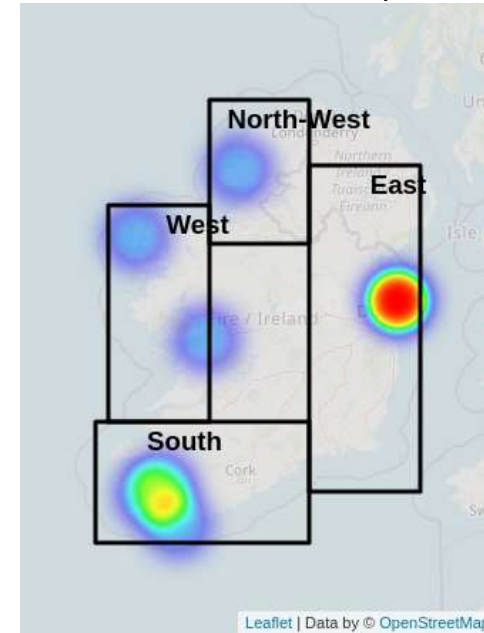
Trend:

Risk: Low levels of cells present and quantifiable levels of toxins detected in the Southwest. Unlikely to increase dramatically at this time.

Diarhetic Shellfish Toxins National 4-Week Heatmap



Phytoplankton *Dinophysis* spp. 4 Week Heatmap

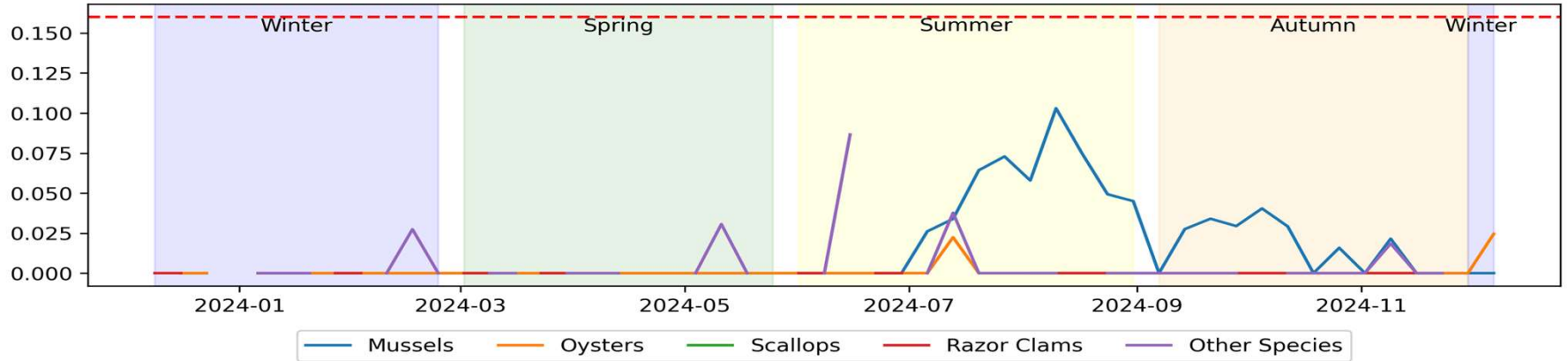


Diarhetic Shellfish Toxins & *Dinophysis* species

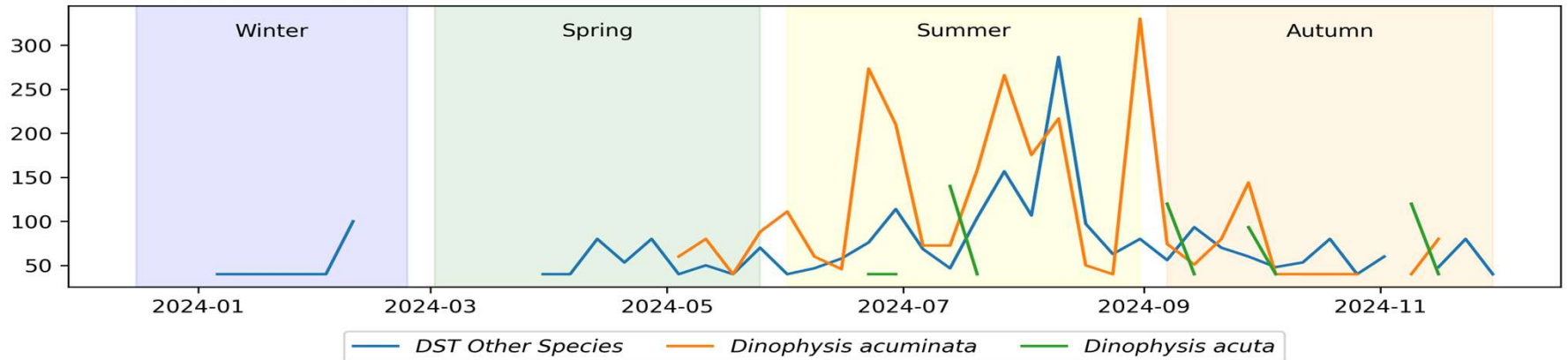
National Yearly Trend 08/12/23 - 07/12/24



Trend of Maximum Toxin concentrations in Shellfish Species (measured in $\mu\text{g/g}$)



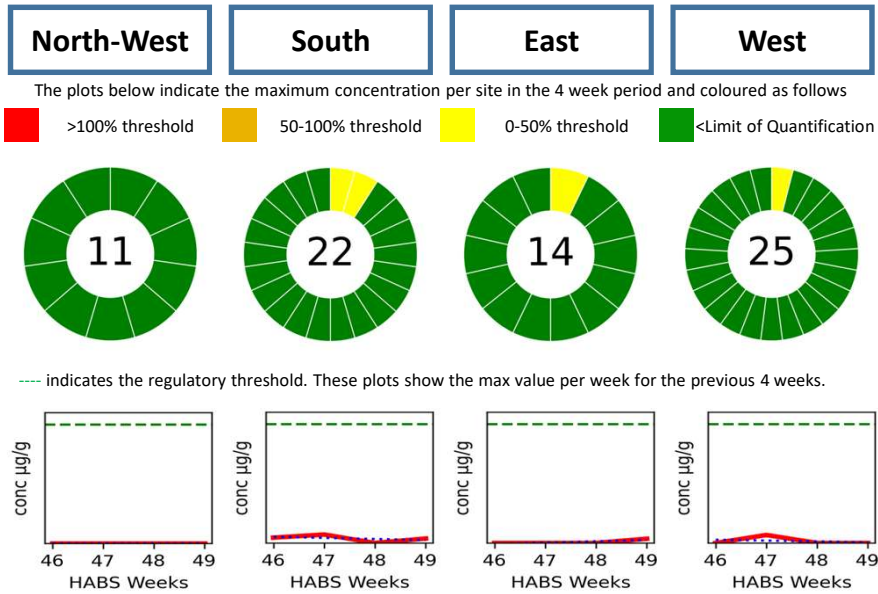
Trend of Average Counts of Toxin Causing PhytoPlankton Species Per Week (measured in Cells per Litre)



Aspiracid Shellfish Toxins & *Azadinium* species

Regional 4-Week Trends 10/11/24 - 07/12/24

In this 4 week period there were 178 Samples tested for AZT. These samples were collected at 72 Sites around the country. Resulting in 0 Site(s) with values above the regulatory limit of 0.16 µg/g



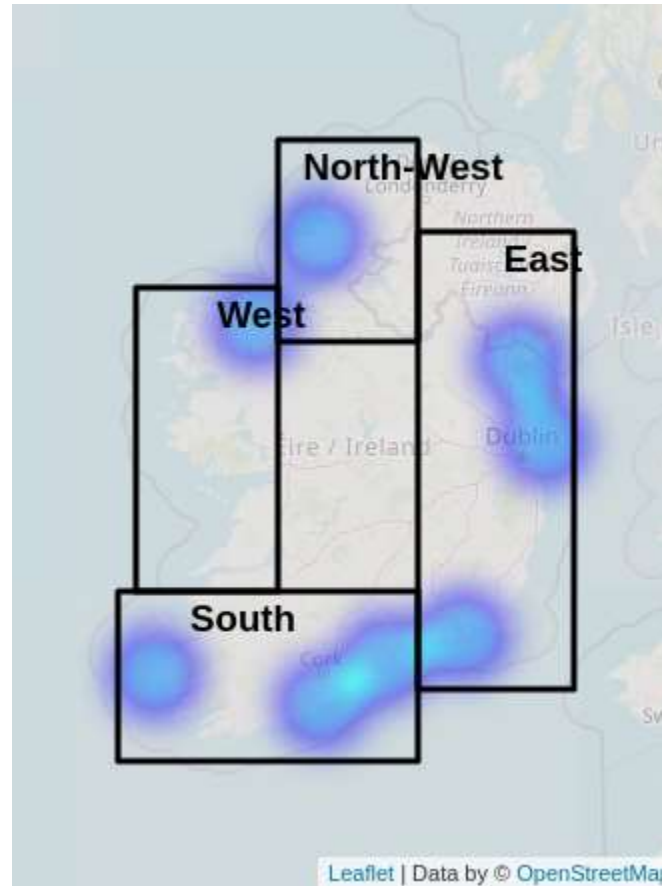
Risk: **Low** **Low** **Low** **Low**

Trend:

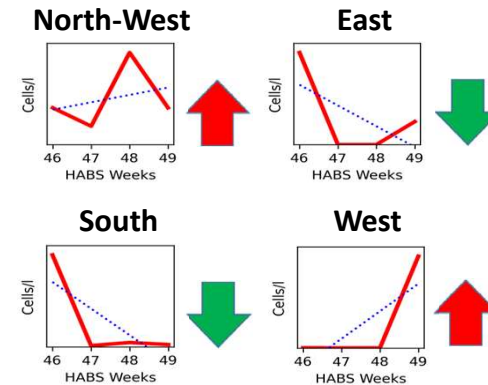
Risk:

Low levels of cells present and quantifiable levels of toxins detected in the Southwest. Unlikely to increase dramatically at this time.

Azspiracid Shellfish Toxins National 4-Week Heatmap



Phytoplankton *Azadinium* spp. 4 Week Heatmap

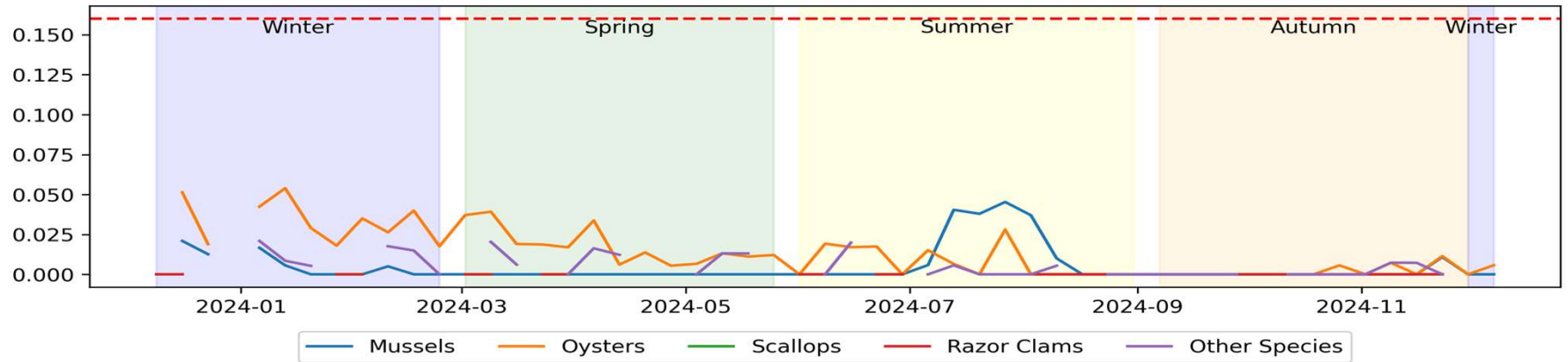


Azaspiracid Shellfish Toxins & Azadinium species

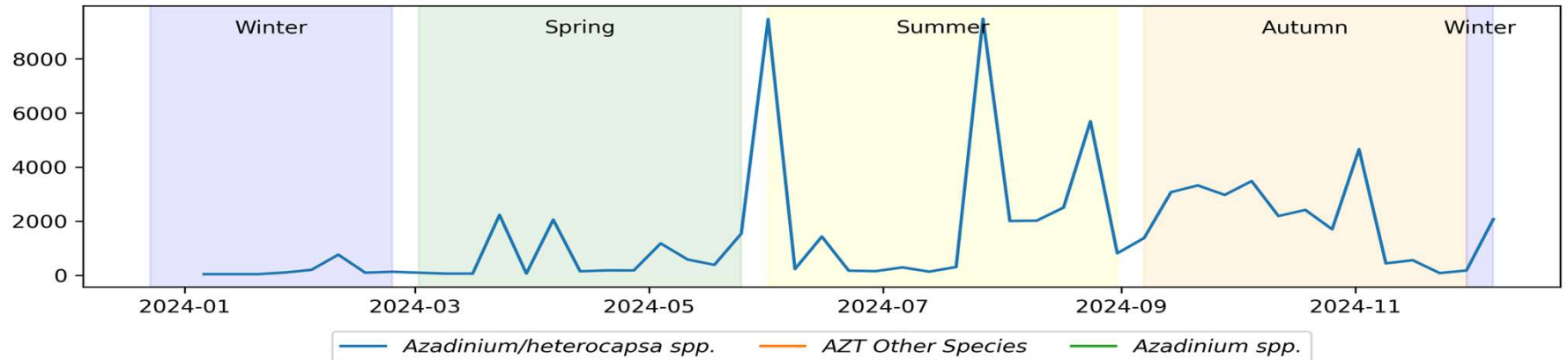
National Yearly Trend 08/12/23 - 07/12/24



Trend of Maximum Toxin concentrations in Shellfish Species (measured in $\mu\text{g/g}$)



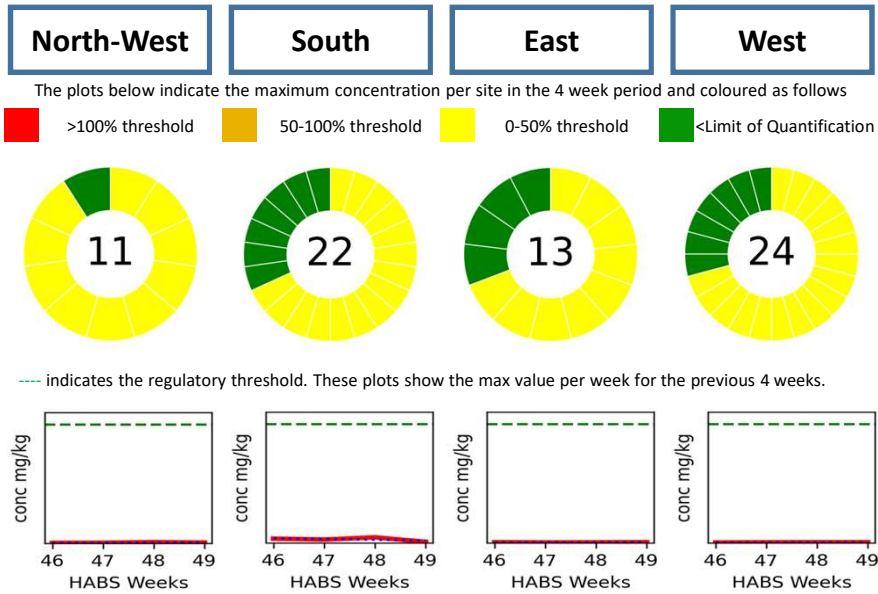
Trend of Average Counts of Toxin Causing Phytoplankton Species Per Week (measured in Cells per Litre)



Amnesic Shellfish Toxins & *Pseudo-nitzschia* species

Regional 4-Week Trends 10/11/24 - 07/12/24

In this 4 week period there were 176 Samples tested for AST. These samples were collected at 70 Sites around the country. Resulting in 0 Site(s) with values above the regulatory limit of 20.0 mg/kg

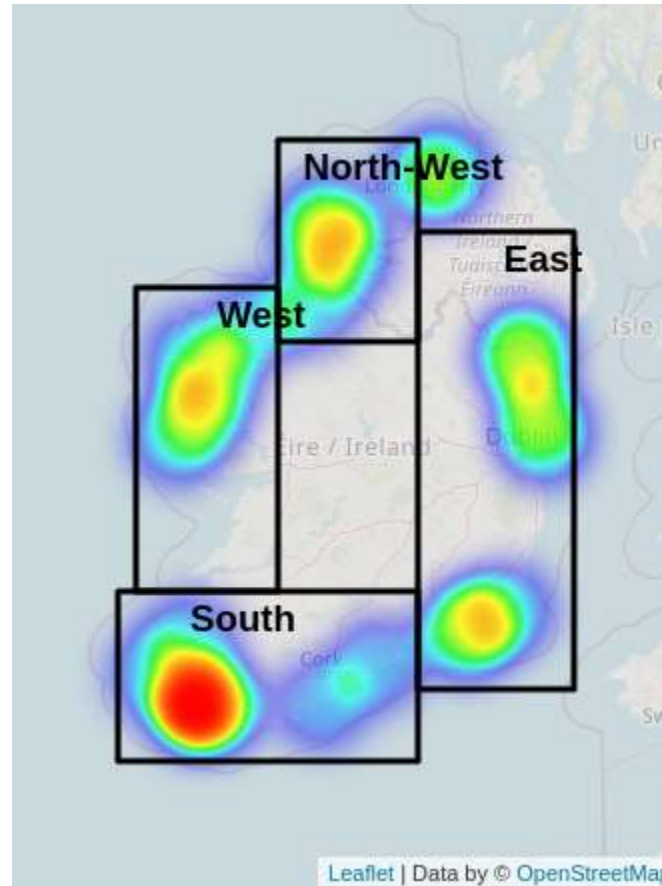


Risk: **Low** **Low** **Low** **Low**

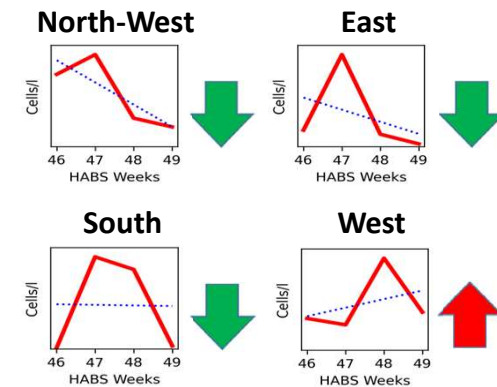
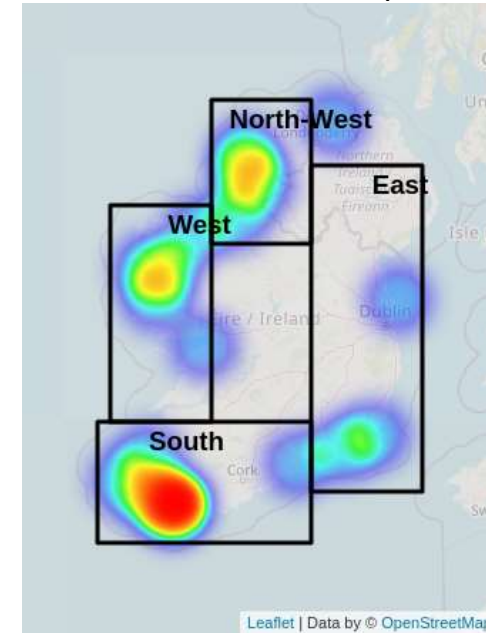
Trend:

Low risk:
Risk levels are low on all coasts.

Amnesic Shellfish Toxins National 4-Week Heatmap



Phytoplankton *Pseudo-nitzschia* spp. 4 Week Heatmap

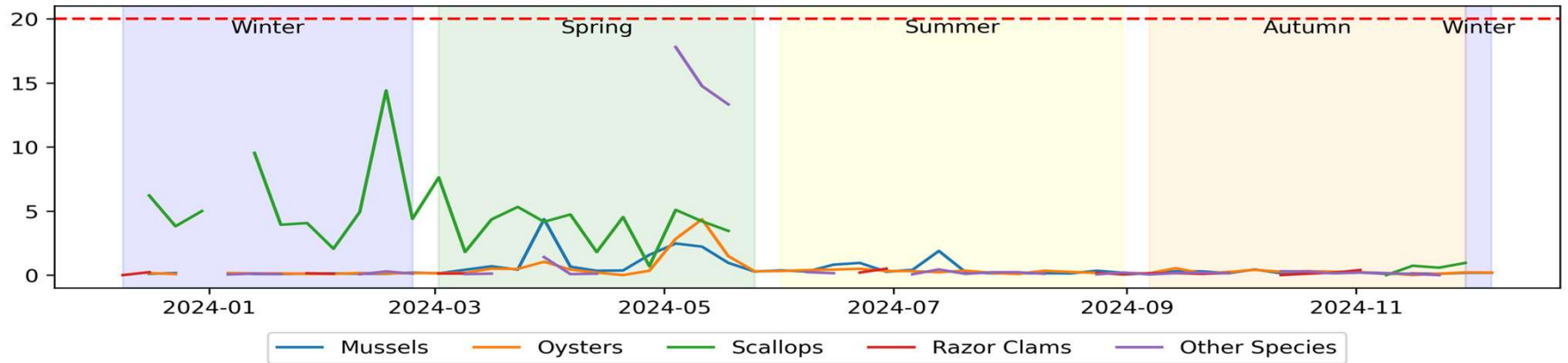


Amnesic Shellfish Toxins & *Pseudo-nitzschia* species

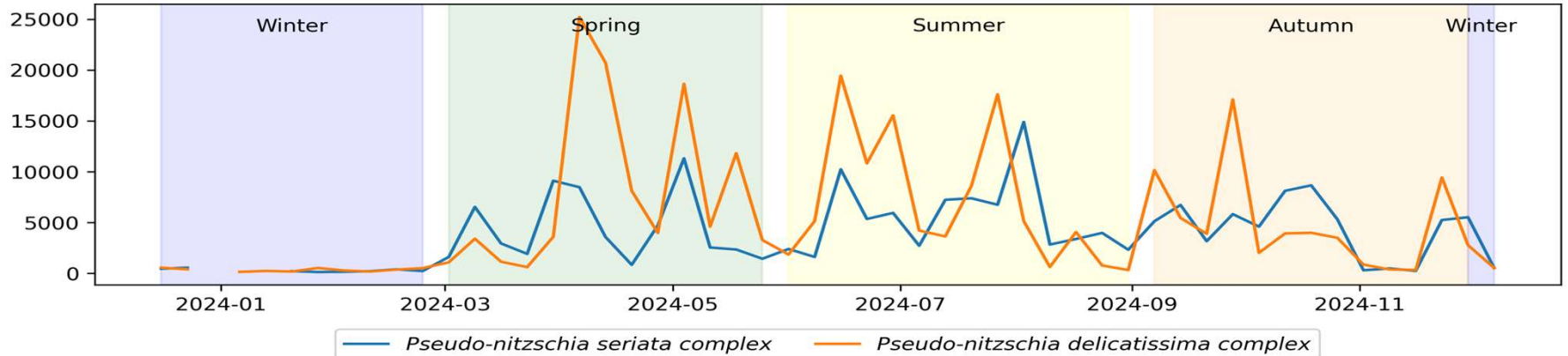
National Yearly Trend 08/12/23 - 07/12/24



Trend of Maximum Toxin concentrations in Shellfish Species (measured in mg/kg)



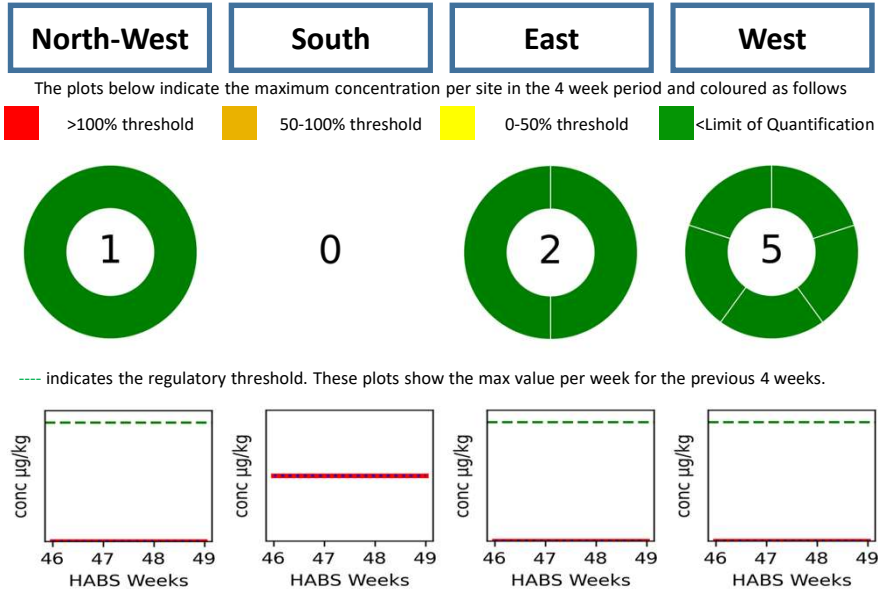
Trend of Average Counts of Toxin Causing PhytoPlankton Species Per Week (measured in Cells per Litre)



Paralytic Shellfish Toxins & *Alexandrium* species

Regional 4-Week Trends 10/11/24 - 07/12/24

In this 4 week period there were 9 Samples tested for PST. These samples were collected at 8 Sites around the country. Resulting in 0 Site(s) with values above the regulatory limit of 800.0 µg/kg

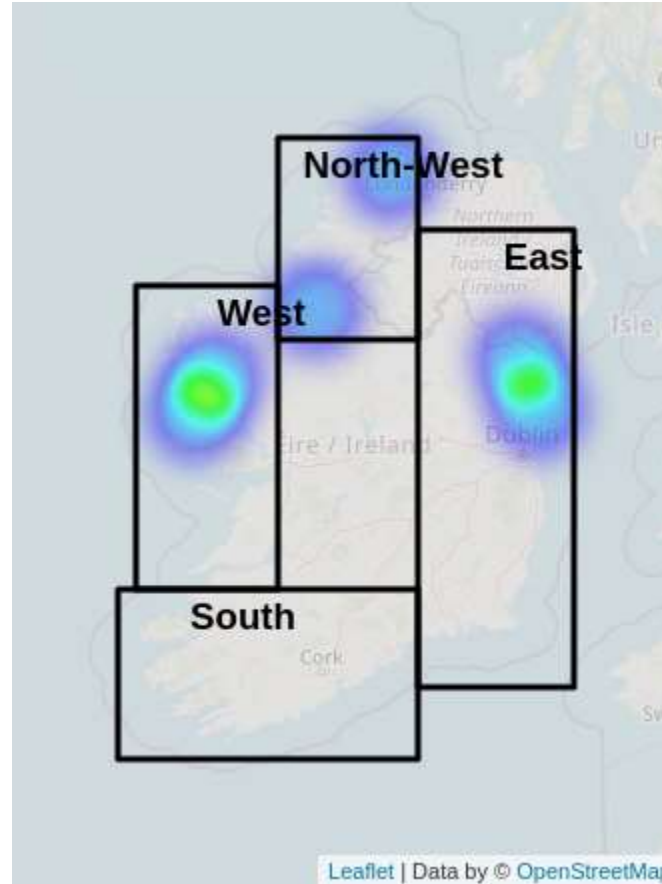


Risk: **Low** **Medium** **Low** **Low**

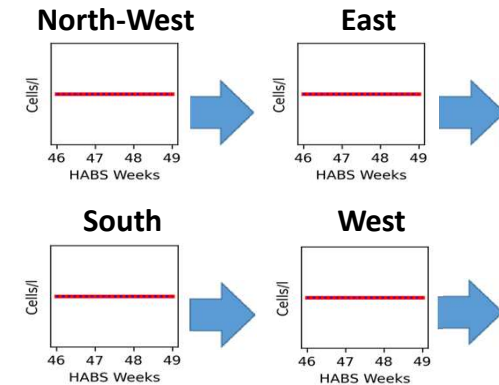
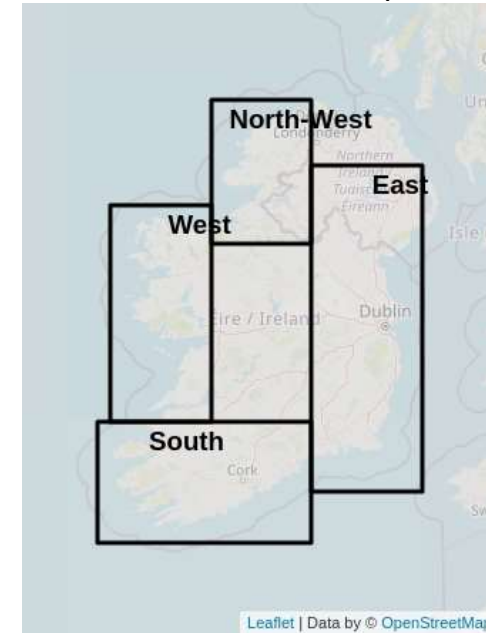
Trend:

Low Risk.
Risk levels low on all coasts.

Paralytic Shellfish Toxins National 4-Week Heatmap



Phytoplankton *Alexandrium* spp. 4 Week Heatmap

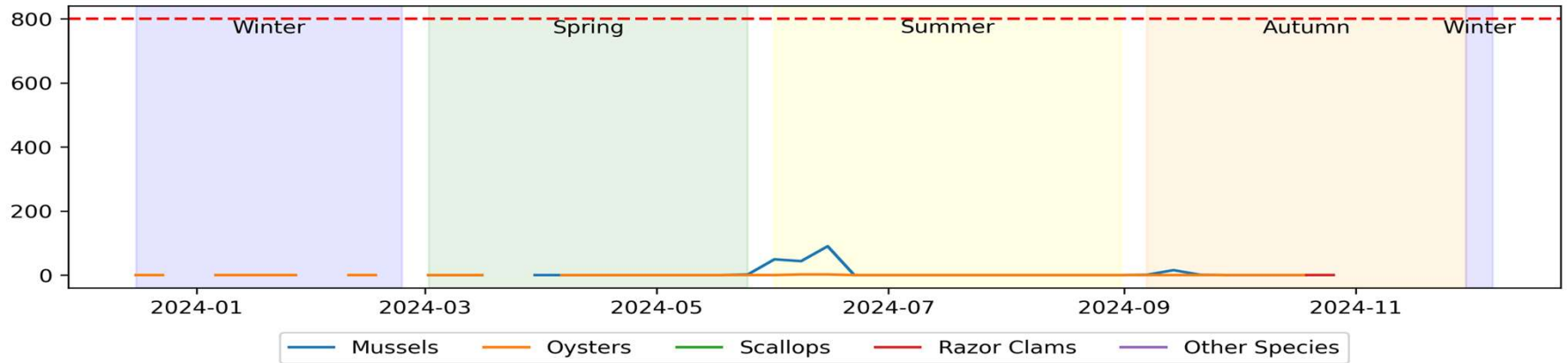


Paralytic Shellfish Toxins & *Alexandrium* species

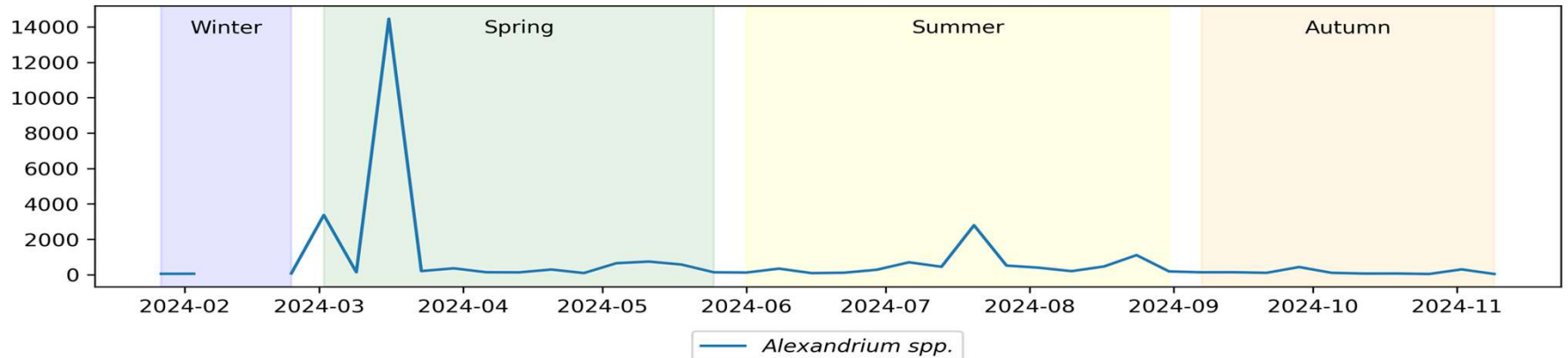
National Yearly Trend 08/12/23 - 07/12/24



Trend of Maximum Toxin concentrations in Shellfish Species (measured in $\mu\text{g}/\text{kg}$)

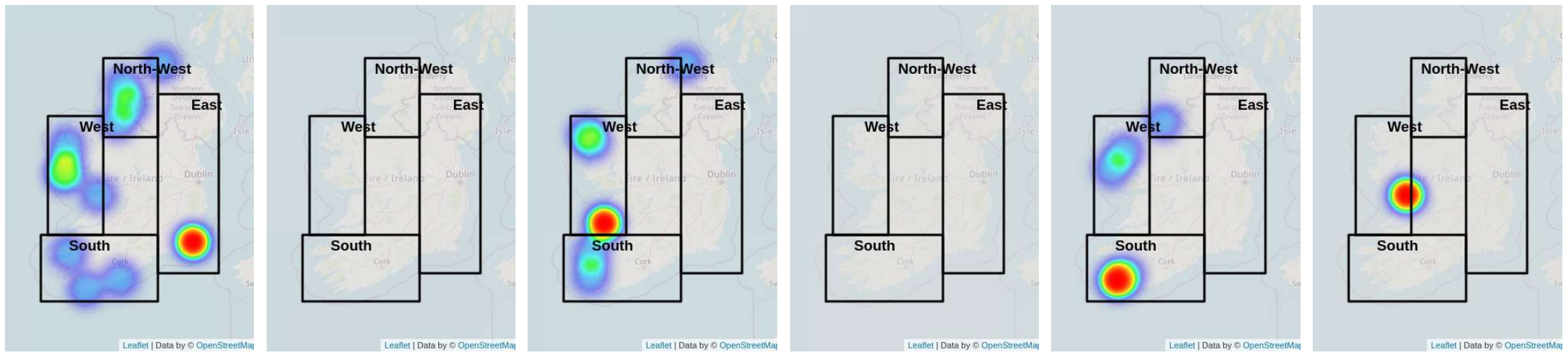


Trend of Average Counts of Toxin Causing Phytoplankton Species Per Week (measured in Cells per Litre)



Fish Harming Phytoplankton

National 4-Week Analysis: 10/11/24 to 07/12/24



Heterocapsa sp.

Alexandrium sp.

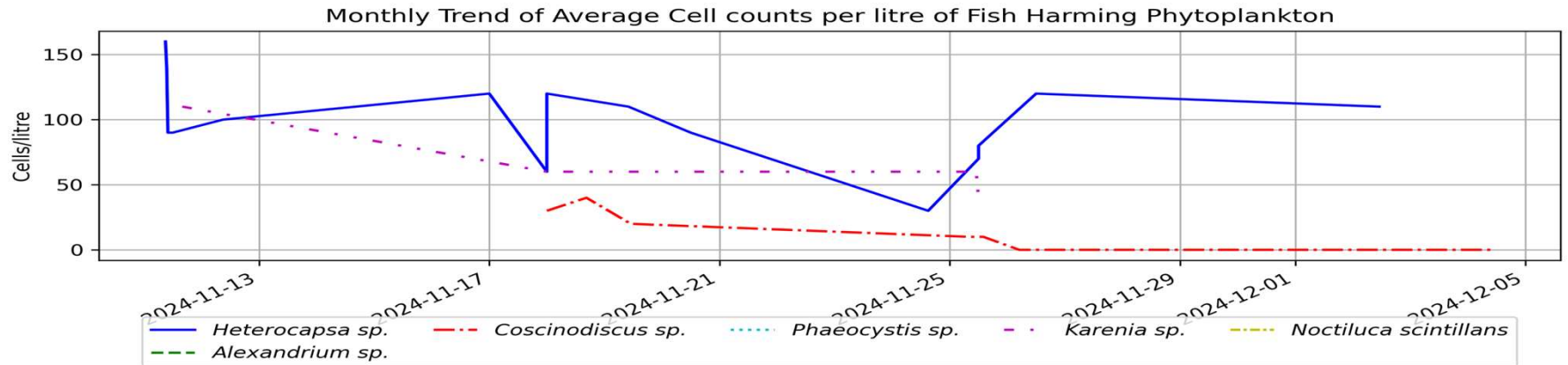
Coscinodiscus sp.

Phaeocystis sp.

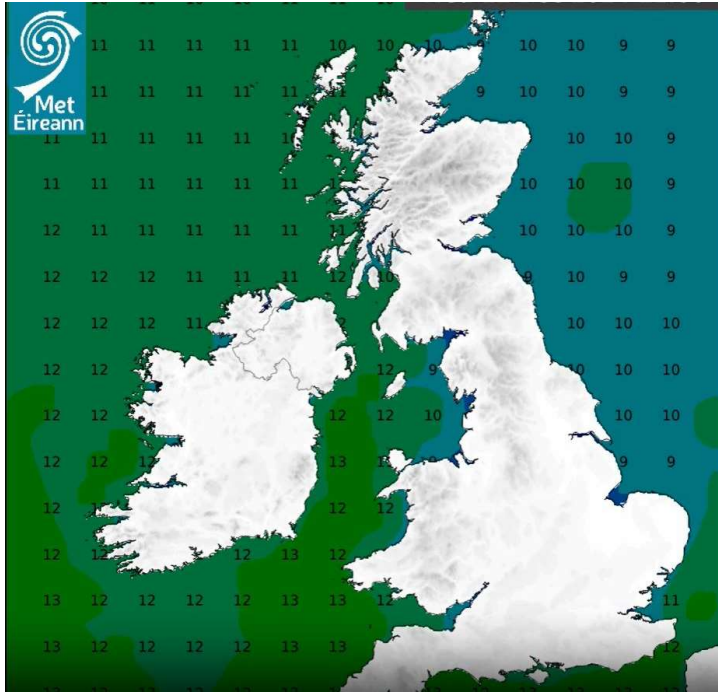
Karenia sp.

Noctiluca Scintillans

Generally phytoplankton cell levels continuing at low levels consistent into the winter cycle. Sea water temperatures are cooling, light levels decreasing and cloud cover fluctuates. Offshore transportation potential higher likelihood of occurrence as insitu risk levels of HABs growth decrease significantly. Any Phytoplankton species at sufficient numbers may cause temporary issues in water quality which could impact specific areas over the course of a tidal cycle or for a period of days while specific suitable conditions prevail. Please note some blooms can occur rapidly and acutely. If concerned about a problematic or toxic species level please check specific site information updates at www.marine.ie.



Sea Surface Temperature (°C)



Chlorophyll Concentrations (mg/m3)



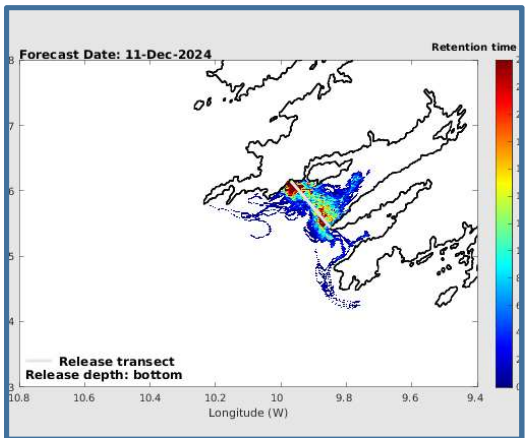
Sea water temperatures decreasing steadily. Decreasing light levels and increasing water turbulence in general. High mixed diatom and dinoflagellates dominance in most coastal areas. Please check specific area information for local activity. Localised temporary blooms becoming less likely.

Marine Institute Data Buoy – Temperature Data

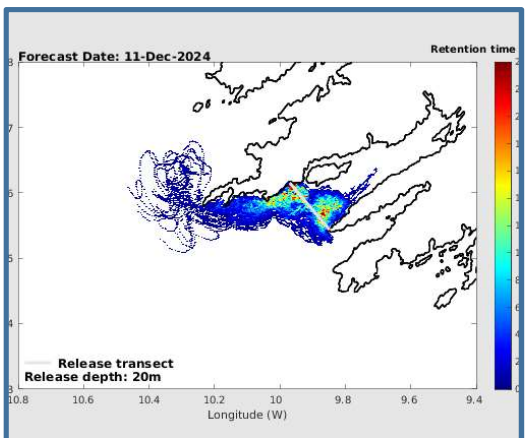


- NW Coast (M4) Average SST of 12.12 Celcius: Increase of 1.07 Celcius over the historic Weekly Average
- SW Coast (M3) Average SST of 12.57 Celcius: Increase of 1.04 Celcius over the historic Weekly Average
- SE Coast (M5) Average SST of 12.88 Celcius: Increase of 1.19 Celcius over the historic Weekly Average

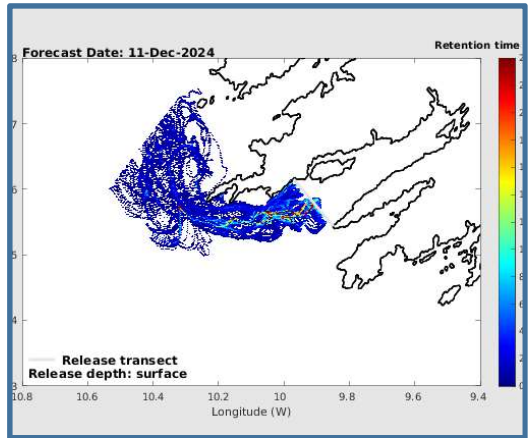
The maps show the **most likely transport pathways for the next 3 days of phytoplankton** found along the **presented transects** (black lines off Mizen Head and the Mouth of Bantry Bay) and **water depths** (bottom, 20 metres and surface). **Reddish colours represent areas where phytoplankton remain longest.** **Cooler colours represent areas where phytoplankton remain for shorter periods**



Bottom water



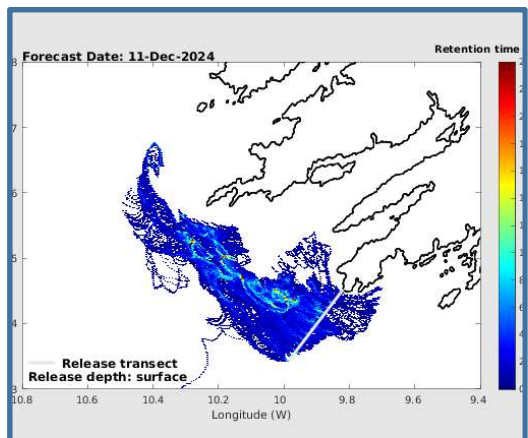
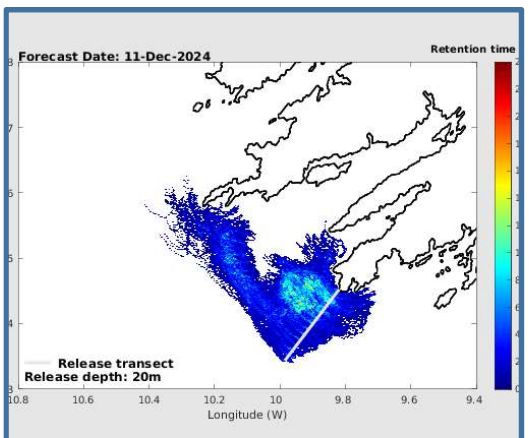
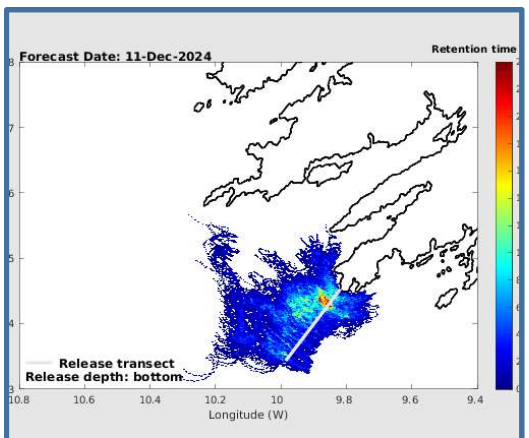
Water @ 20 metres



Surface water

Mouth of Bantry Bay:

- Upwelling indicated as transportation marginally most dominant.

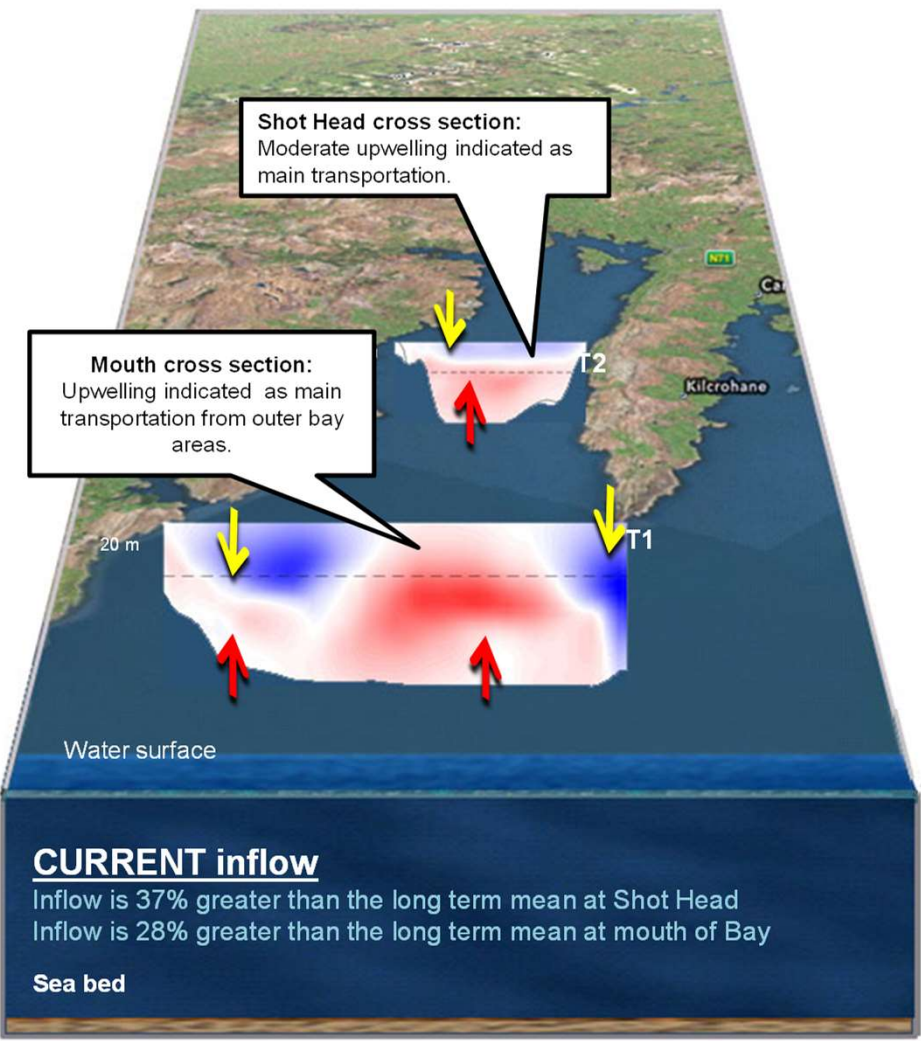
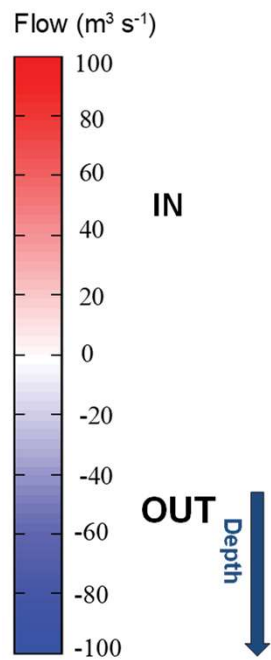


Mizen Head:

- Mixed directional movement in all depths with no clear dominance.

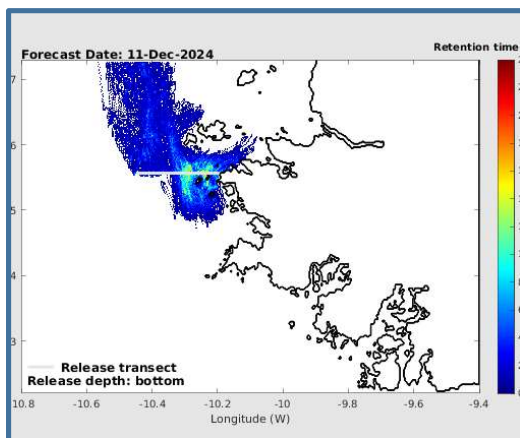


Forecast for next 3 days

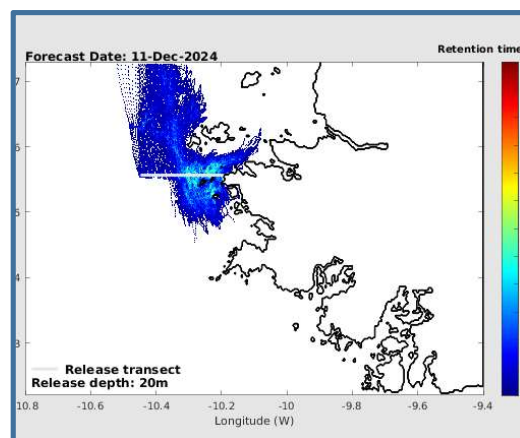


The maps show the **most likely transport pathways for the next 3 days of phytoplankton** found along the **presented transects** i.e. white lines off Aughrus Point and the Mouth of Killary Harbour, and **water depths** (bottom, 20 metres and surface).

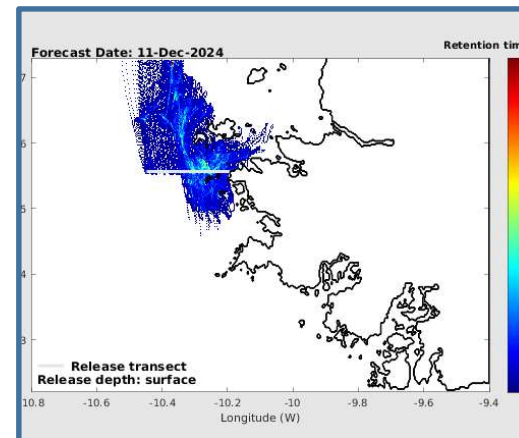
Reddish colours represent areas where phytoplankton remain longest. **Cooler colours represent areas where phytoplankton remain for shorter periods**



Bottom water



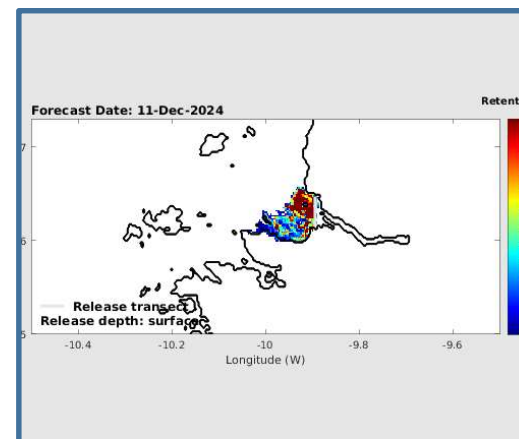
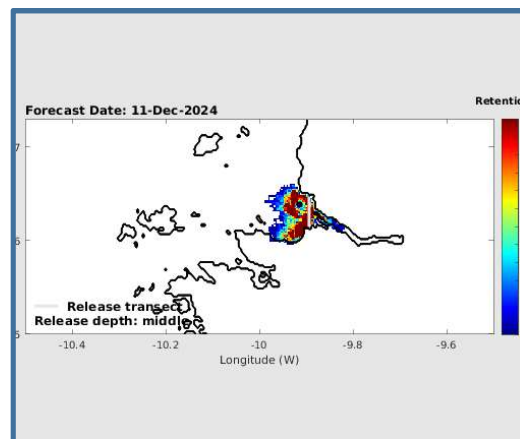
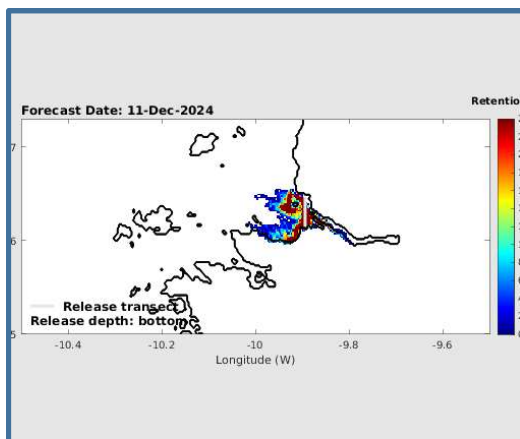
Water @ 20 metres



Surface water

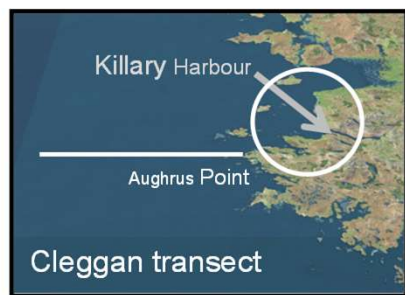
Cleggan

- Mostly Northerly dominance but in general mixed directional offshore transportation affecting all depths.

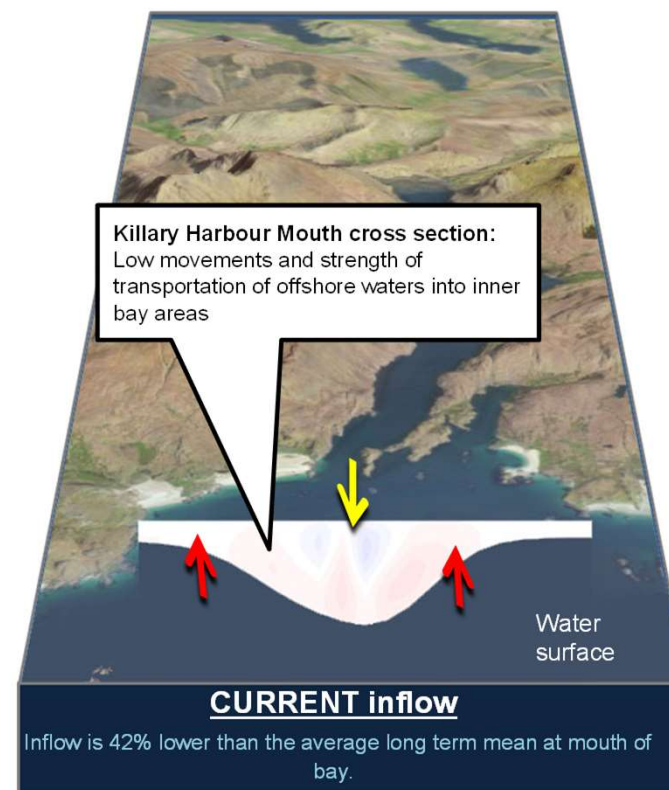
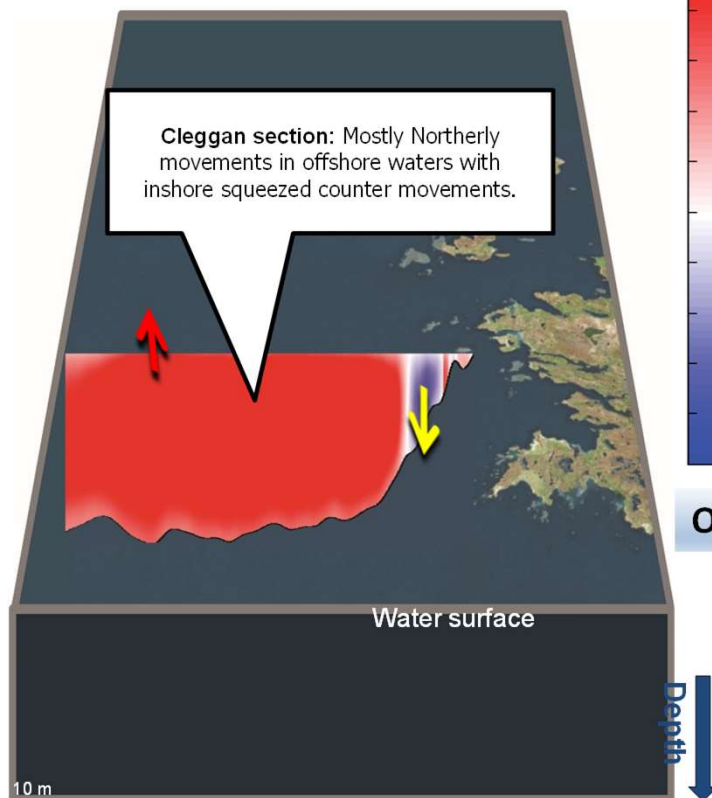


Killary

- Low levels of upwelling of offshore water movement predicted as main inshore transportation.



Forecast for next 3 days



This Harmful Algal Blooms (HAB) Bulletin aims to provide a short (3-5 day) predictive forecast on the likelihood of the onset of a HAB event occurring/continuing in a region. The data provided for the compilation of this report is derived from a number of sources comprising of in-situ, remote sensing and hydrodynamic modelling datasets. For the latest and historical biotoxin and phytoplankton results for aquaculture production areas please visit <https://webapps.marine.ie/habs>

In-situ Data

- Biotoxin and Phytoplankton data is provided by National Monitoring Programmes from the HABs database (Marine Institute)
- Heat map images – Leaflet.

Remote Sensing Data

- Sea Surface Temperature Data Product: SST_NWS_SST_L4_NRT_OBSERVATIONS_010_003 (ODYESSA L4 SST from Copernicus CMEMS MCS).
- Chlorophyll image data is provided by:EUR-L4-CHL-ATL-v01 (IFREMER/ DYNECO and CERSAT).
- Sea Surface Temperature observations: Irish weather buoy network (Marine Institute).

Hydrodynamic modelled data

- Particle Tracking Simulation data: The downscale models of areas of particular interest (Bantry Bay, Killary Harbour and Cleggan Bay) incorporate online particle tracking with virtual particles released at pre-defined transects at the start of each model. The operational model produces an estimate of the ocean state once a week and a daily 3-day forecast of the dominant regional physical processes that result in water exchange events between the bay and its adjacent shelf (Marine Institute).
- Hydrodynamic model data: Hydrodynamic nowcast/forecast models show the latest 3-day volumetric flux forecast for vertical transects at the mouth and mid-bay. The results are plotted graphically on a map of the area.

Definitions

- A toxic site is defined as a site that had at least 1 result in the time period indicated greater than the regulatory limit.
- Heat maps represent relative distribution and patterns, and should not be interpreted as indicative of the maximum or absolute concentrations of a toxin in a region.
- Risk levels are calculated based on internal logic applied to measurements captured over the period, along with any additional information available to the evaluator. These risk levels are to be regarded as advisory only.
- Trends are calculated based on average or maximum values per week over the period of time and the slope of the line connecting these points.

Disclaimers

The predictions and comments produced within this bulletin are based on our expert opinion on the datasets and sources as outlined above. The Marine Institute cannot accept any responsibility for business and risk management decisions on harvesting and husbandry based on this report.

Acknowledgements

Funding for the development of this bulletin version has been provided by Interreg Atlantic Area Project: PRIMROSE (Predicting the Impact of Regional Scale events on the Aquaculture Sector) EPA 182/2106