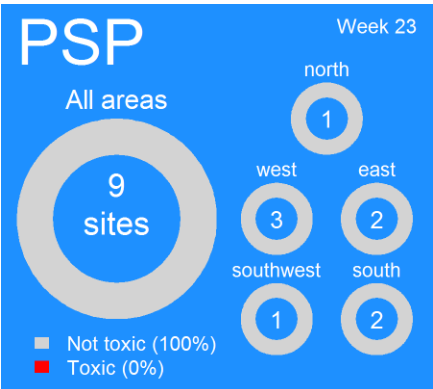
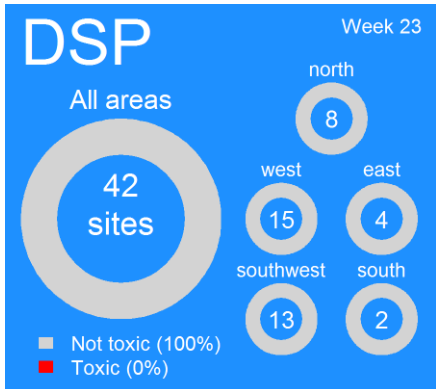
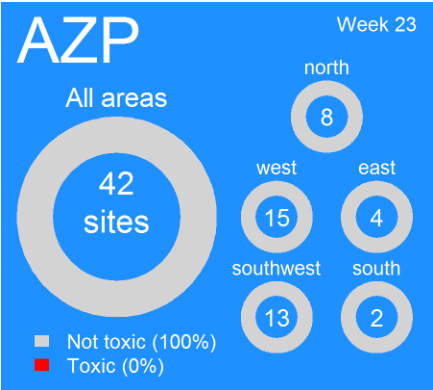
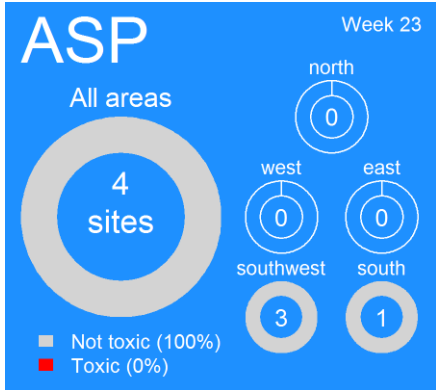


# Ireland: Current Conditions

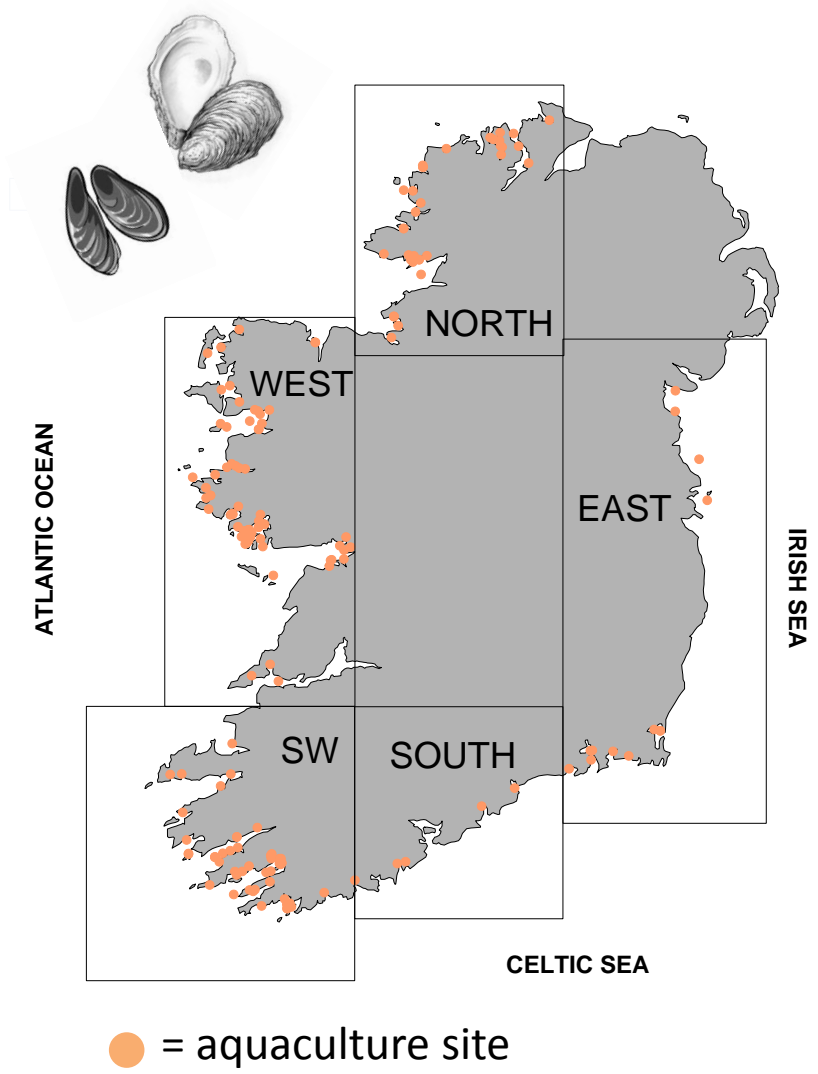
## Shellfish biotoxin report (last week)



**EU Regulatory Limit:**  
ASP 20 µg/g; AZP 0.16 µg/g; DSP 0.16 µg/g; PSP 800 µg/kg

**Toxin groups**  
ASP = **A**mnestic **S**hellfish **P**oisoning; AZP = **AZ**aspiracid **P**oisoning;  
DSP = **D**iarrhetic **S**hellfish **P**oisoning; PSP = **P**aralytic **S**hellfish **P**oisoning

### National Monitoring Programme Designated Sampling Sites



# Ireland: Predictions

## Prediction for this week:

ASP event: Low risk with a slightly increased risk at some sites (see below)

AZP event: Low risk

DSP event: Low risk with a low-moderate risk in some areas (see below)

PSP event: Low risk with the risk increasing in Cork Harbour (see below)

## Why do we think this?

ASP: Very low domoic acid levels detected at 1 site in the southwest (max = 1.4 µg/g in long-line mussels).

“*P. seriata*” group was found in 30 sites nationwide (maximum ~ 56,000 cells/L in southwest). However, the presence of toxic species in this group has not yet been determined. The potentially toxic “*P. seriata*” population makes up a significant proportion of the phytoplankton flora in several southern and southwestern sites (e.g. It makes up 46 % of the phytoplankton community at a site in Kenmare Bay; 18 % of the phytoplankton population at a site in Bantry Bay and 10 % in Dunmanus Bay). Because the “*P. seriata*” group represents a larger part of the phytoplankton assemblage in some sites in this region, the risk of toxicity occurring still exists. In addition, the risk of an event occurring in the SW is slightly increased because an “upwelling” event is forecast in the next few days. “Upwelling” events are linked to *Pseudo-nitzschia* blooms.

AZP: Low levels of toxins (up to 0.04 µg/g in oysters) picked up at 18 sites nationally. *Azadinium*-like species recorded at 15 sites - cell levels range from present to ~ 59,000 cells/L in the north and a maximum of < 2,000 cells/L elsewhere. Historically, this week presents as a slight risk period for AZP in the southwest.

DSP: DSP toxins only detected in the north and southwest at low levels (e.g. up to 0.05 µg/g in long-line mussels). *Dinophysis* observed at relatively low levels in 9 sites nationwide (north, west and southwest). *Dinophysis acuta* present at low levels in the southwest (max = 120 cells/L). However, over the last couple of weeks, at some sites, *Dinophysis* cell levels have been rising steadily.

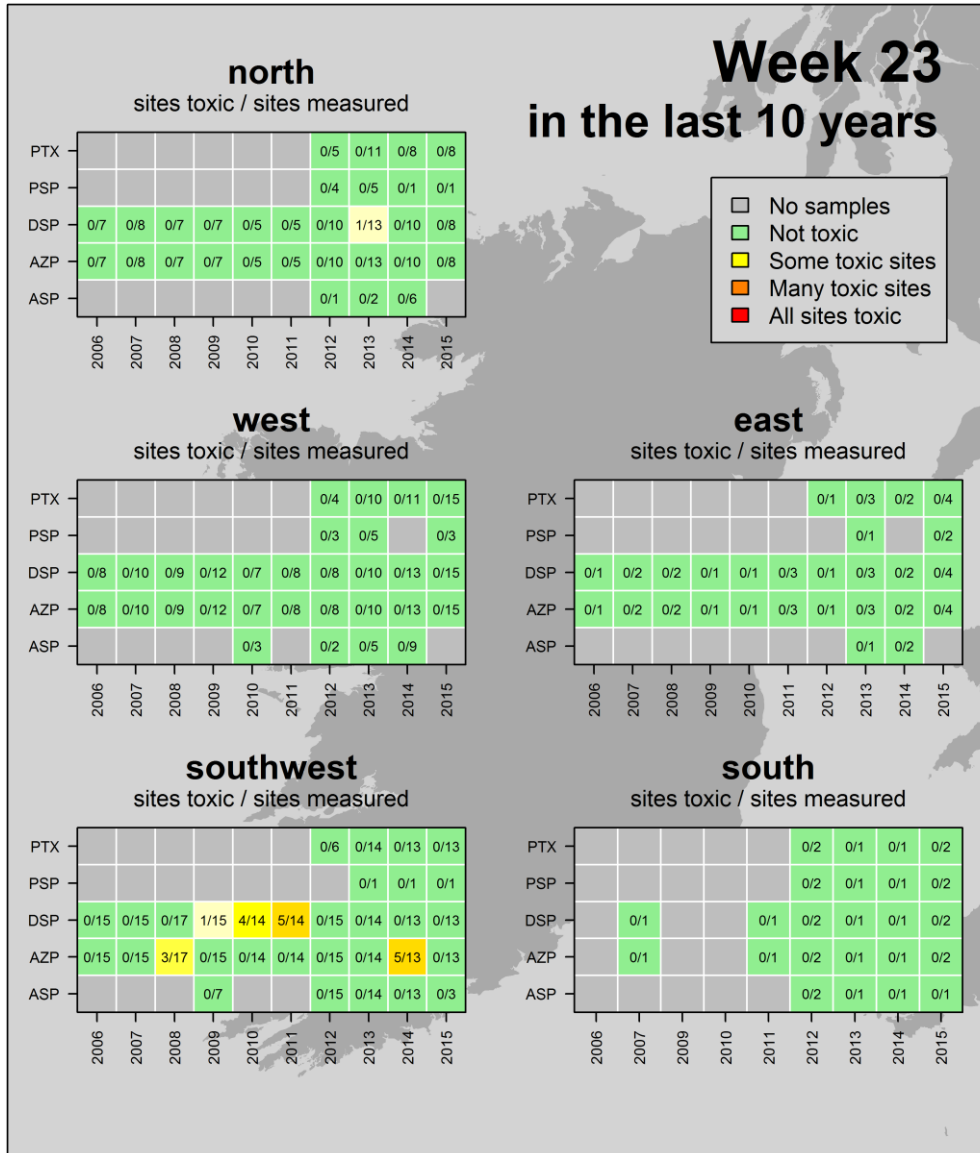
PSP: Low levels of toxins in the south (35 µg/Kg in North Channel mussels). *Alexandrium* species present at 9 sites out of 60 sites nationally; maximum cell levels in the north @ 680 cells/L.

\*Usually the *Alexandrium* bloom in Cork Harbour begins on the first spring tide in June (around the time of the summer solstice) as small tidal range is important in bloom initiation (lower tidal dilution rate). Optimum conditions for *Alexandrium* are a water temperature of 15 °C and an irradiance of > 100 µM/m<sup>2</sup>/sec. Historically, production areas in Cork Harbour are the only sites that have experienced closures due to Paralytic Shellfish Poisoning toxins (one of the most dangerous shellfish toxins); this is a high risk time of the year and so caution is advised.

\* PREDICTING ALEXANDRIUM BLOOMS IN CORK HARBOUR, Aoife Ní Rathaille and Robin Raine (NUI, Galway)

<http://oar.marine.ie/bitstream/10793/262/1/No%2027%20Marine%20Environment%20and%20Health%20Series.pdf>

## A look back at how last weeks biotoxin results compares to other years



**Likely times for Shellfish Toxicity:** does not include winter carry over of biotoxins

ASP events: mid-March to early May

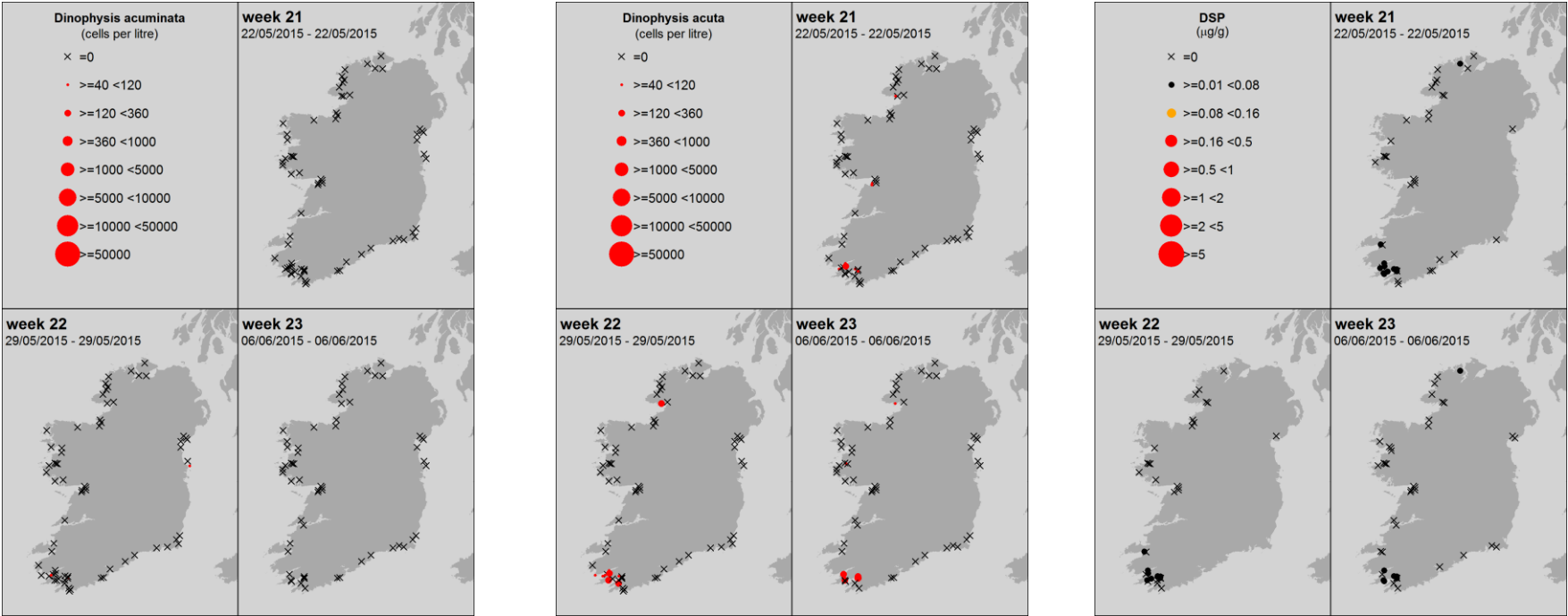
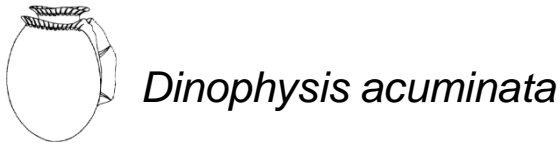
AZP events: April to December

DSP events: May to December

PSP events: June to mid-July and end September; only in Cork Harbour



Ireland: Last 3 weeks of available National Monitoring Programme data



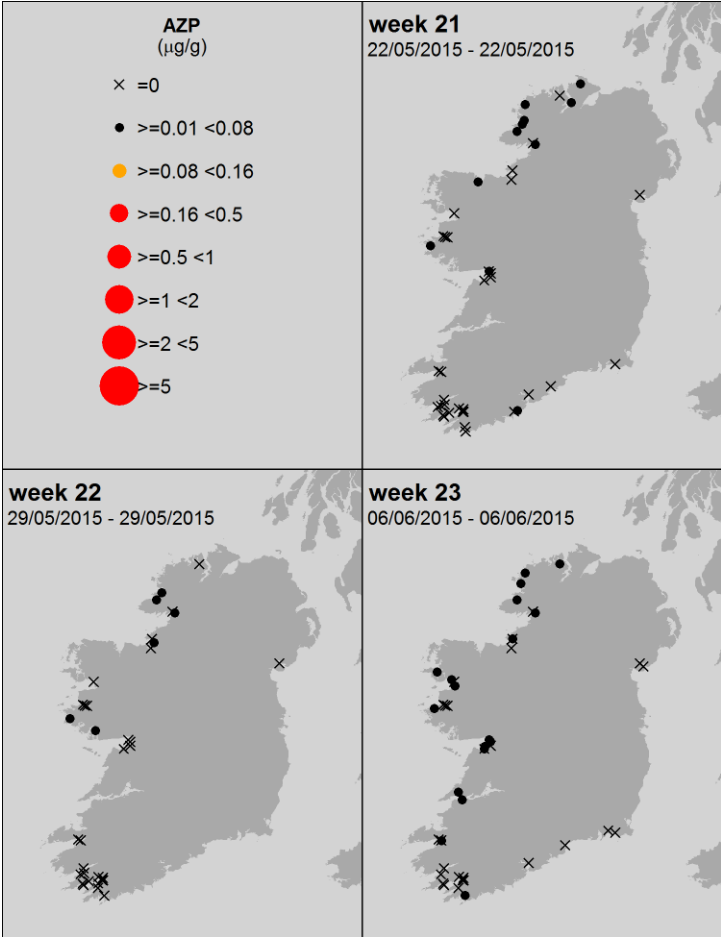
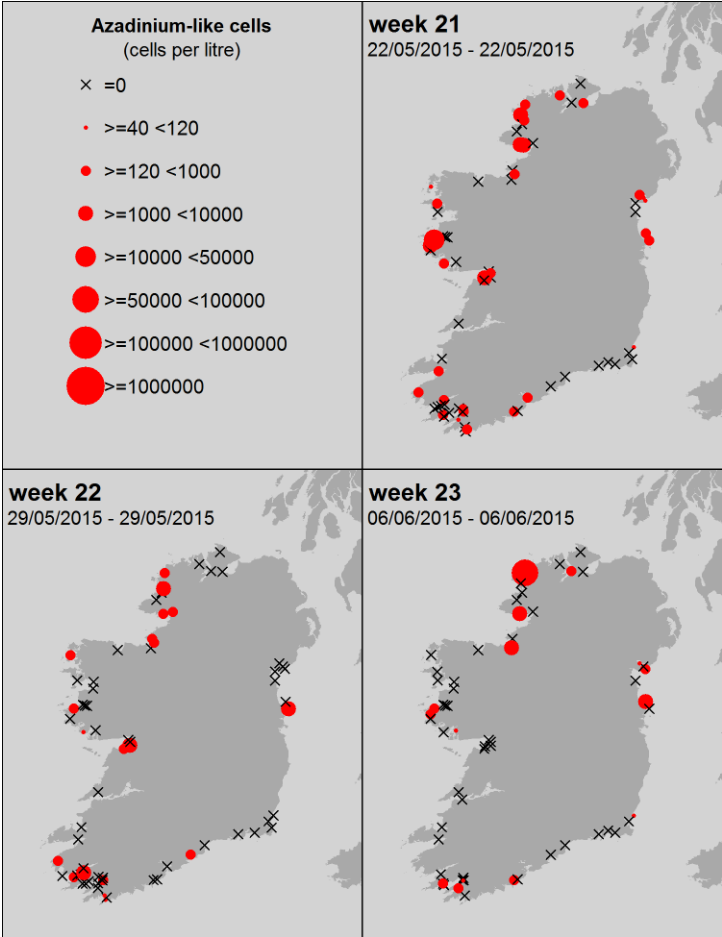
Ireland: Last 3 weeks of available National Monitoring Programme data



*Azadinium* – like spp.



AZP



Ireland: Last 3 weeks of available National Monitoring Programme data

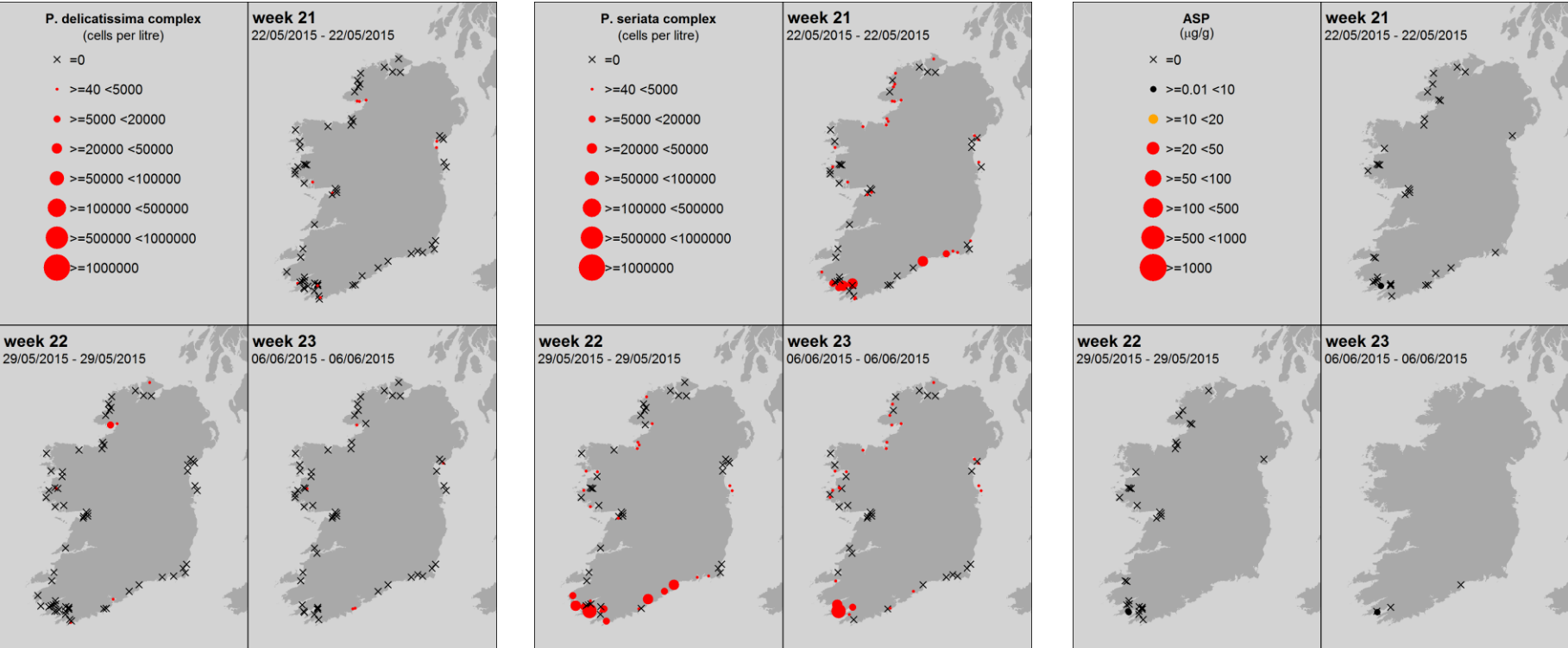
*Pseudo-nitzschia* spp.



ASP

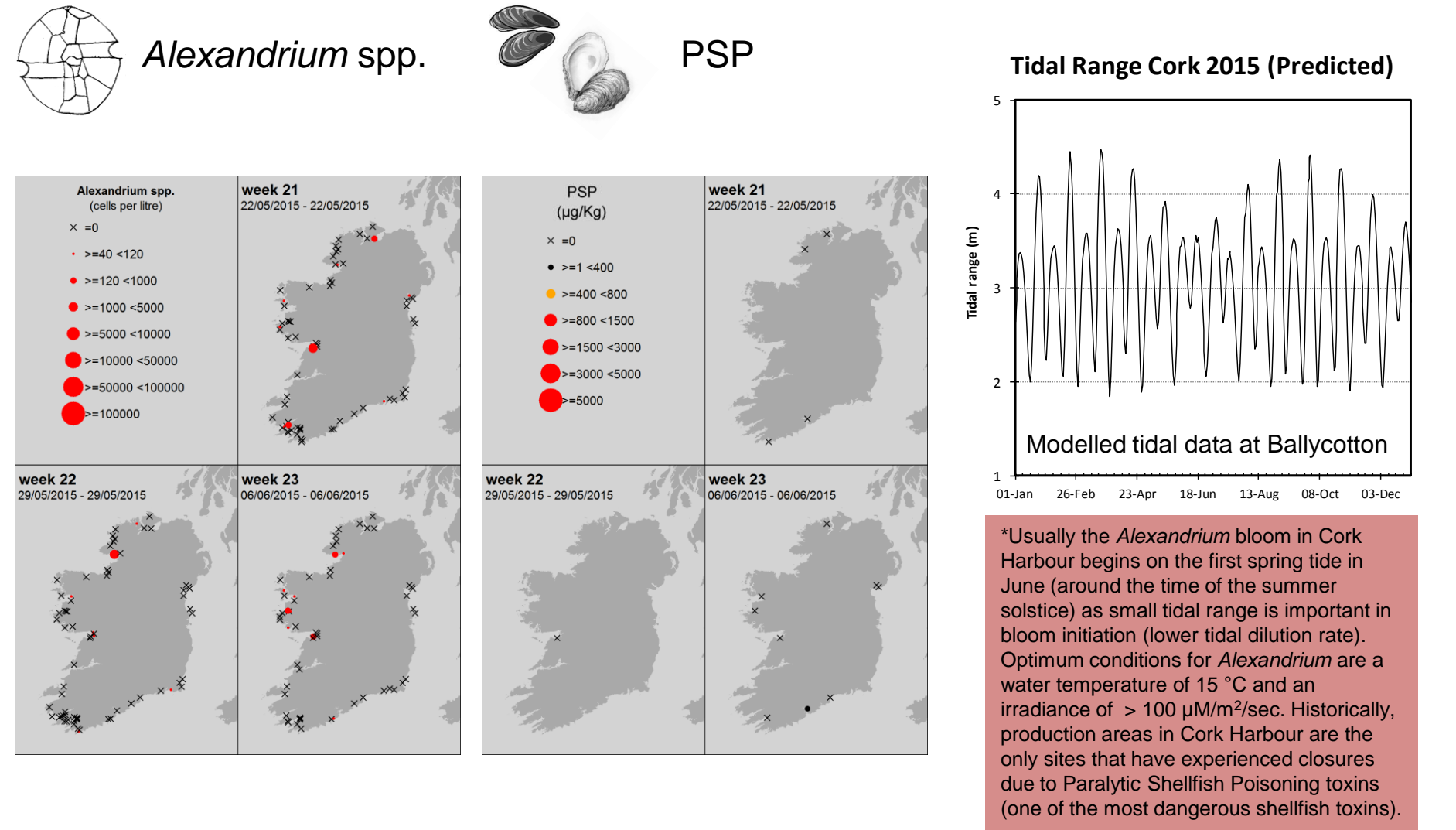
“*P. delicatissima*” complex = small cells  
Taken from the literature:  
3 species confirmed in Irish waters

“*P. seriata*” complex = large cells  
Taken from the literature:  
7 species confirmed in Irish waters



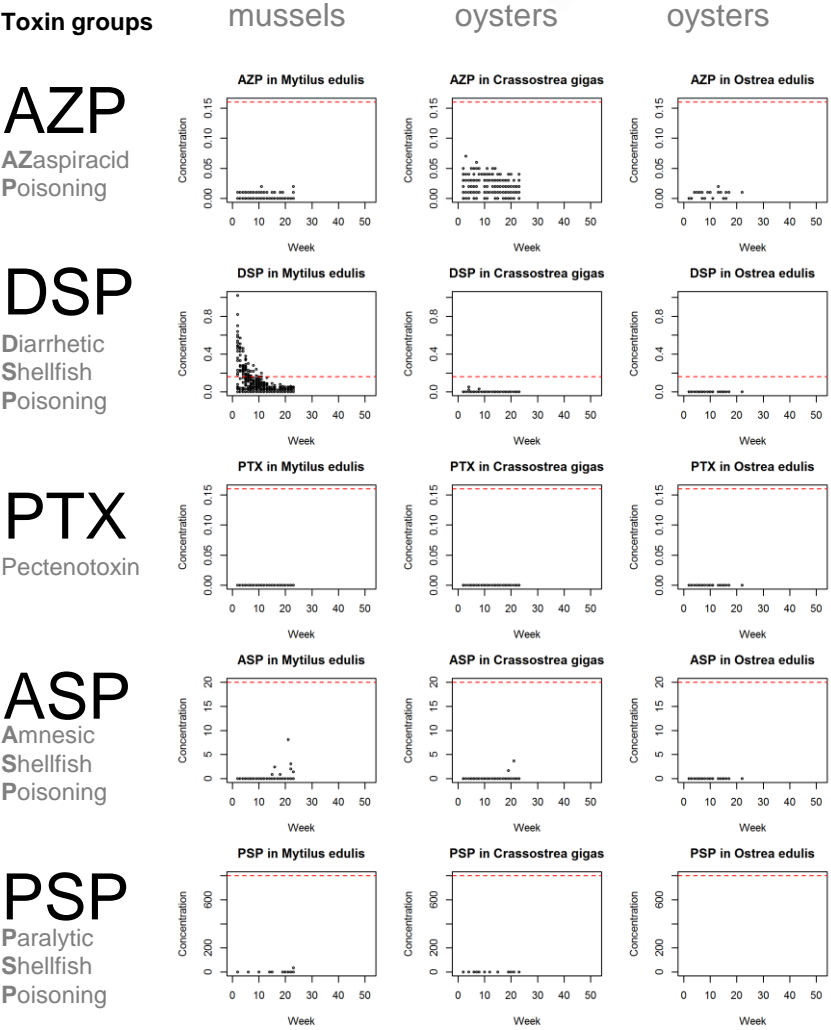
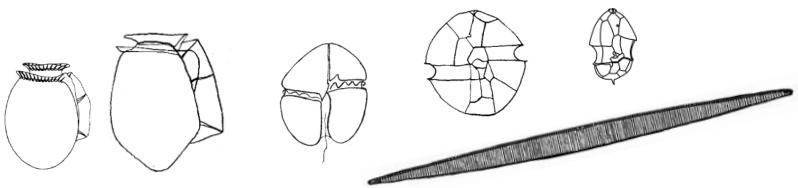
**Taken from the literature:** Of the 4 species (*P. fraudulenta*, *P. australis*, *P. pungens* and *P. delicatissima*) from Irish waters, tested for ASP toxins in culture work, only one, *P. australis* (from the “*P. seriata*” group) was toxic.

Ireland: Last 3 weeks of available National Monitoring Programme data

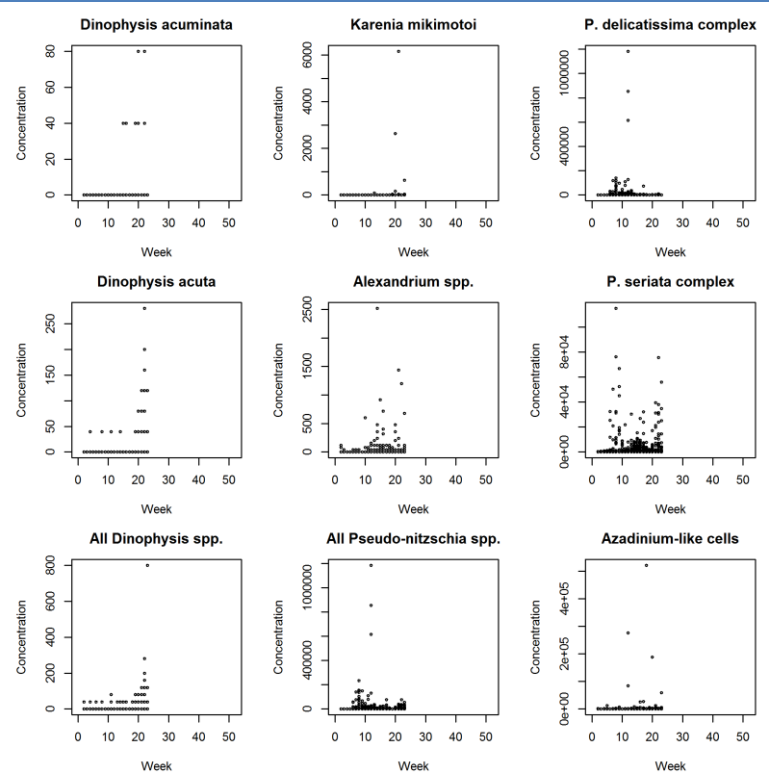


Ireland: **HABs and biotoxins** Levels from week 1 to present

Ireland: **Biotoxins**



Ireland: **HABs**

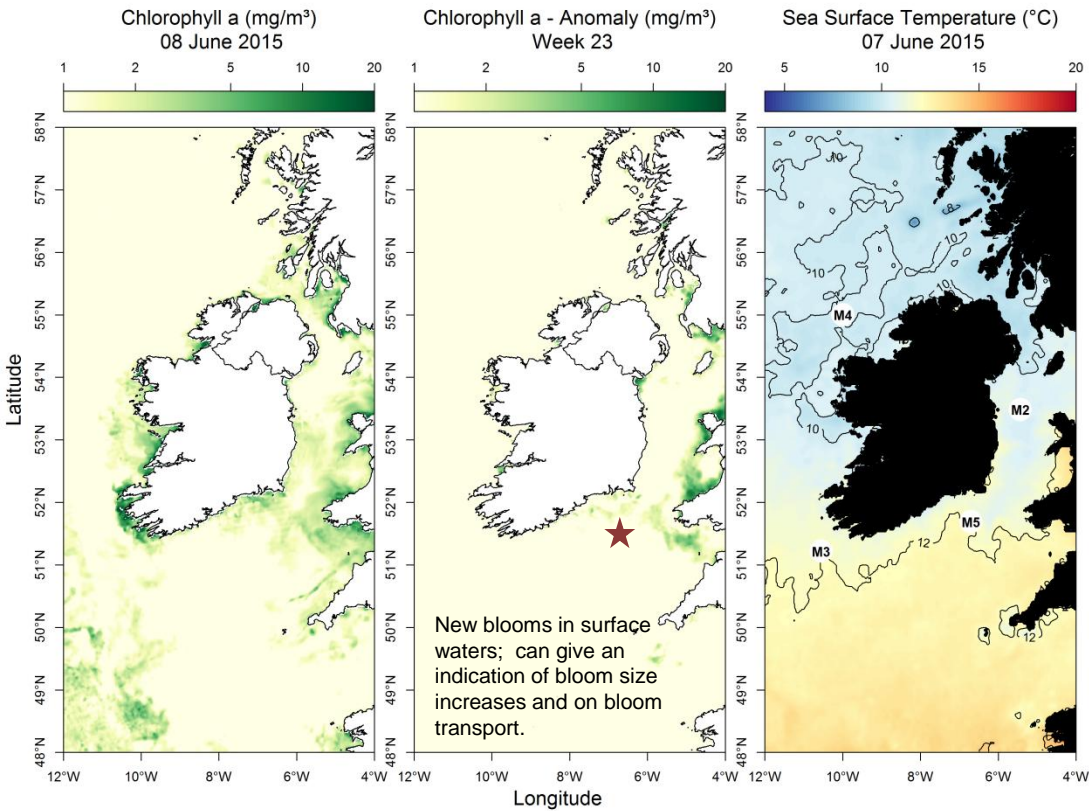


Week number: 1 to 23

EU Regulatory Limit: ASP 20 µg/g; AZP 0.16 µg/g; DSP 0.16 µg/g; PSP 800 µg/kg

Regulatory limit = ■■■■■

Most up to date available satellite data



SST (°C) anomaly for last week:

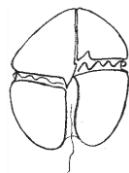
Data taken from the Irish data buoy network where the anomaly is the weekly difference in SST compared to the long term mean (~ 10 yrs)

- NW coast (M4) below average by 2.62 °C
- SW coast (M3) Offline
- SE coast (M5) below average by 1.67 °C

What phytoplankton were blooming at inshore coastal sites last week?

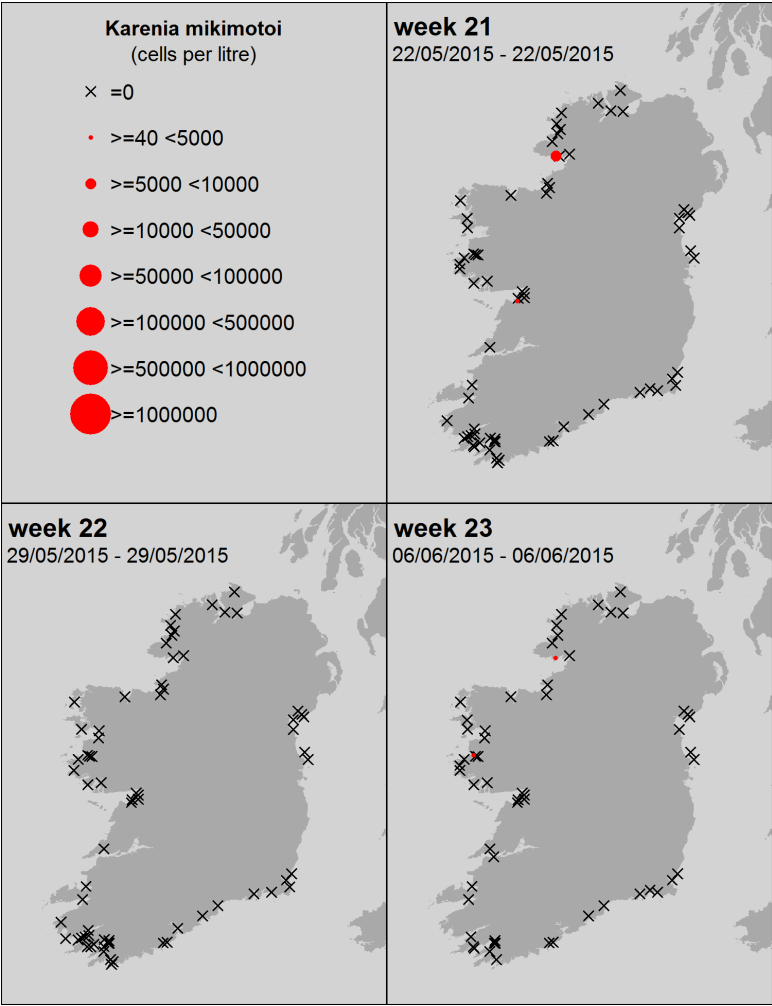
Region	Predominant Phytoplankton (most abundant taxa)	Cells/L (rounded)
north:	<b>Dinoflagellates:</b>	1,093,000
	<i>Heterocapsa triquetra</i>	
	<b>Diatoms:</b> spp.	853,000
	<i>Asterionellopsis</i>	812,000
	<i>C. closterium</i> / <i>N. Longissima</i>	502,000
west:	<i>Guinardia delicatula</i>	
	<b>Diatoms:</b>	
	<i>Chaetoceros</i> (Hyalochaete) spp.	89,000
	<i>Licmophora</i> spp.	66,000
	<i>Striatella</i> spp.	45,000
SW:	Pennate diatoms	38,000
	<b>Diatoms:</b>	464,000
	<i>Cerataulina pelagica</i>	243,000
	<i>Leptocylindrus minimus</i>	142,000
	<i>Thalassiosira</i> spp. (< 20 µm)	116,000
south:	<i>Leptocylindrus danicus</i>	
	<b>Diatoms:</b>	56,000
	" <i>P. seriata</i> " group	28,000
	<i>Ceratulina pelagica</i>	28,000
	<b>Other:</b> <i>Phaeocystis</i> spp. (cells)	
east:	<b>Diatoms:</b>	
	<i>Thalassiosira rotula</i> / <i>gravida</i>	266,000
	<i>Licomorpha</i> spp.	162,000
	<i>C. closterium</i> / <i>N. longissima</i>	26,000
	<i>Fragilariopsis</i> spp.	10,000

★ 51° 35' N 6 ° 46' W (south to southeast of Waterford / Dunmore East)  
Survey aboard the RV Celtic Voyager led by Dr. Robin Raine (NUIG)  
04 June 2015: Healthy (300-500 cells/L) populations of *Dinophysis acuminata* present in offshore waters  
Net samples pulled vertically through the water column contain diatoms (*Proboscia alata*) and dinoflagellates (*Ceratium fusus*) typical of the expected summer flora.



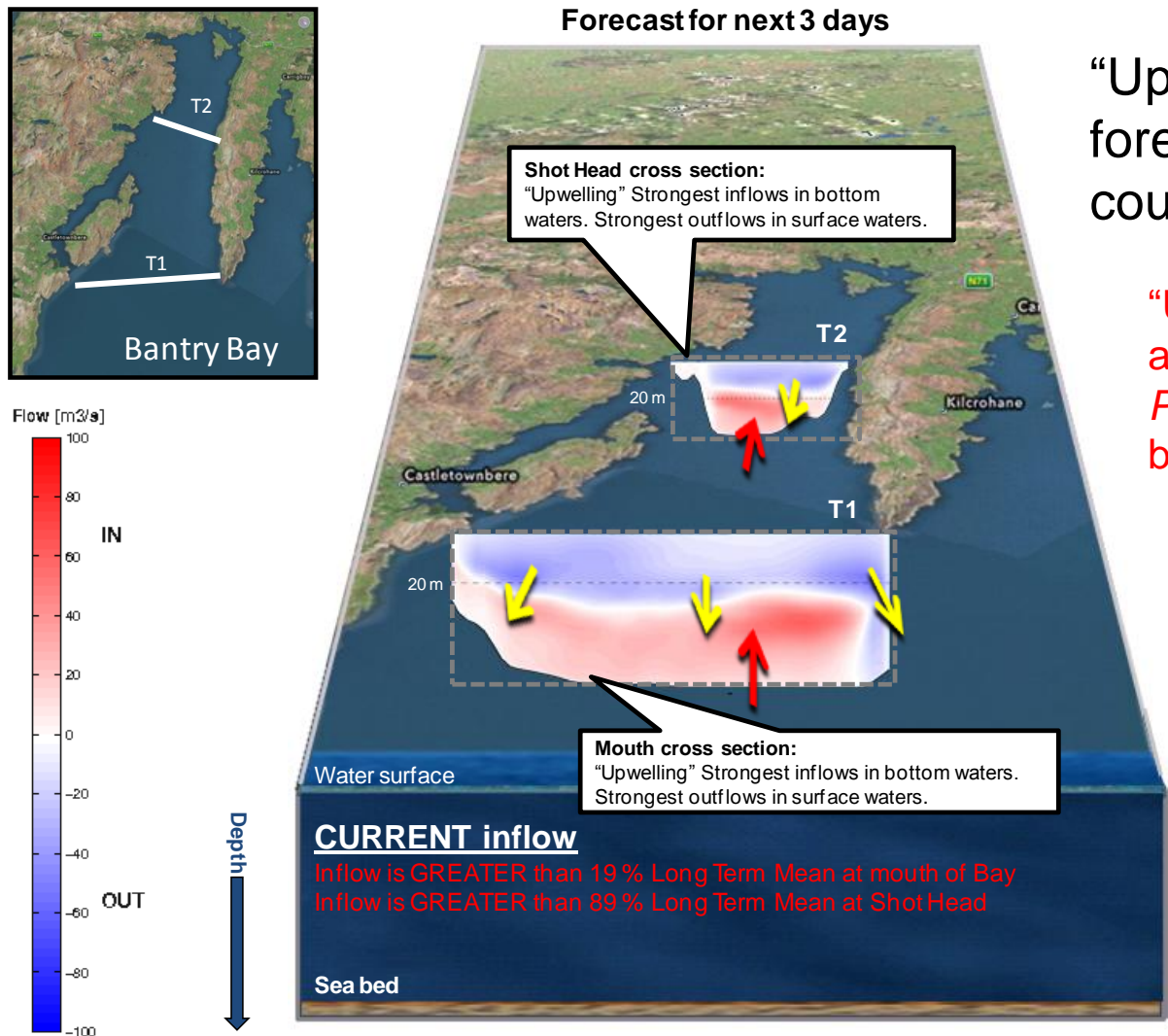
*Karenia mikimotoi*  
(old name: *Gyrodinium aureolum*)

A *Karenia mikimotoi*  
bloom is NOT expected  
this week



# Bantry Bay

3 day estimated water flows at the mouth and mid-bay sections of Bantry Bay



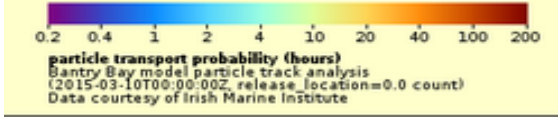
“Upwelling” event  
forecast in the next  
couple of days

“Upwelling” events  
are linked with  
*Pseudo-nitzschia*  
blooms

Please go to <http://vis.marine.ie/particles/> to view daily forecasts in more detail

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



0.2 0.4 1 2 4 10 20 40 100 200  
particle transport probability (hours)  
Bantry Bay model particle track analysis  
(2015-03-10T00:00:00Z, release\_location=0.0 count)  
Data courtesy of Irish Marine Institute

