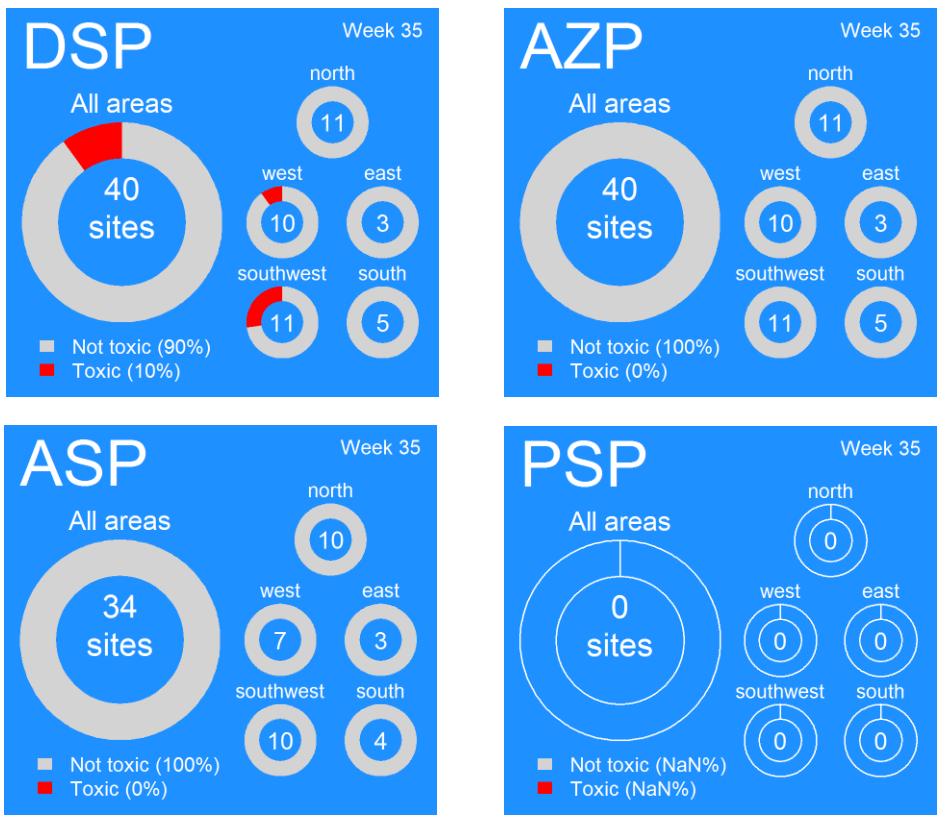


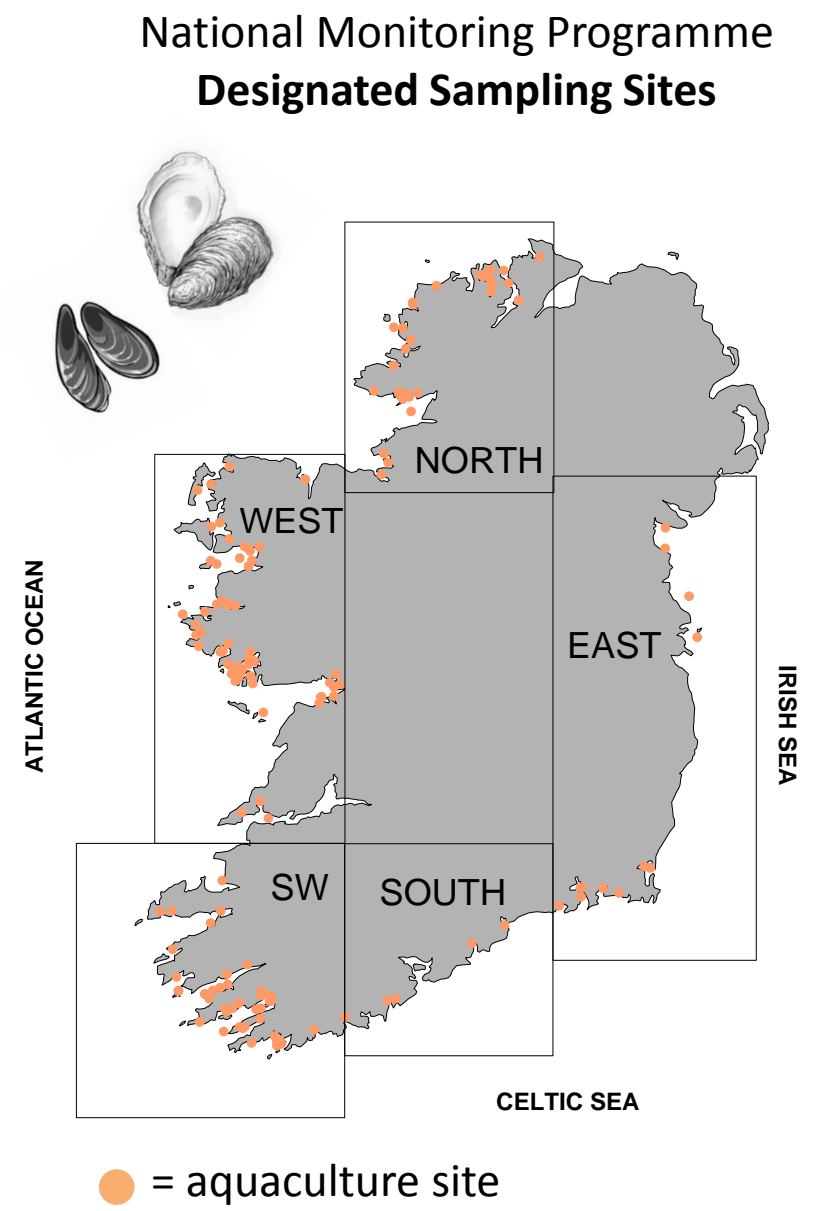
# Ireland: Current Conditions

## 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**mnesic **S**hellfish **P**oisoning; AZP = **AZ**aspiracid **P**oisoning;  
DSP = **D**iarrhetic **S**hellfish **P**oisoning; PSP = **P**aralytic **S**hellfish **P**oisoning



### Prediction for this week:

ASP event: Low Risk

AZP event: Moderate to high risk in the north, Moderate risk in west and SW

DSP event: Low risk in the north **Moderate Risk in west, High Risk in SW.**

PSP event: Low Risk

### Why do we think this?

ASP: Historically ASP has not been recorded at this time of year. However '*Pseudo-nitzshia seriata*' group has been present at many sites nationwide with no corresponding toxin increase in shellfish.

AZP: There is a history of AZP events at this time of the year in the north, west and SW. High levels of *Azadinium*-like species are present in the north accompanied by the toxin in many sites. There is an upward trend in AZP toxins nationwide.

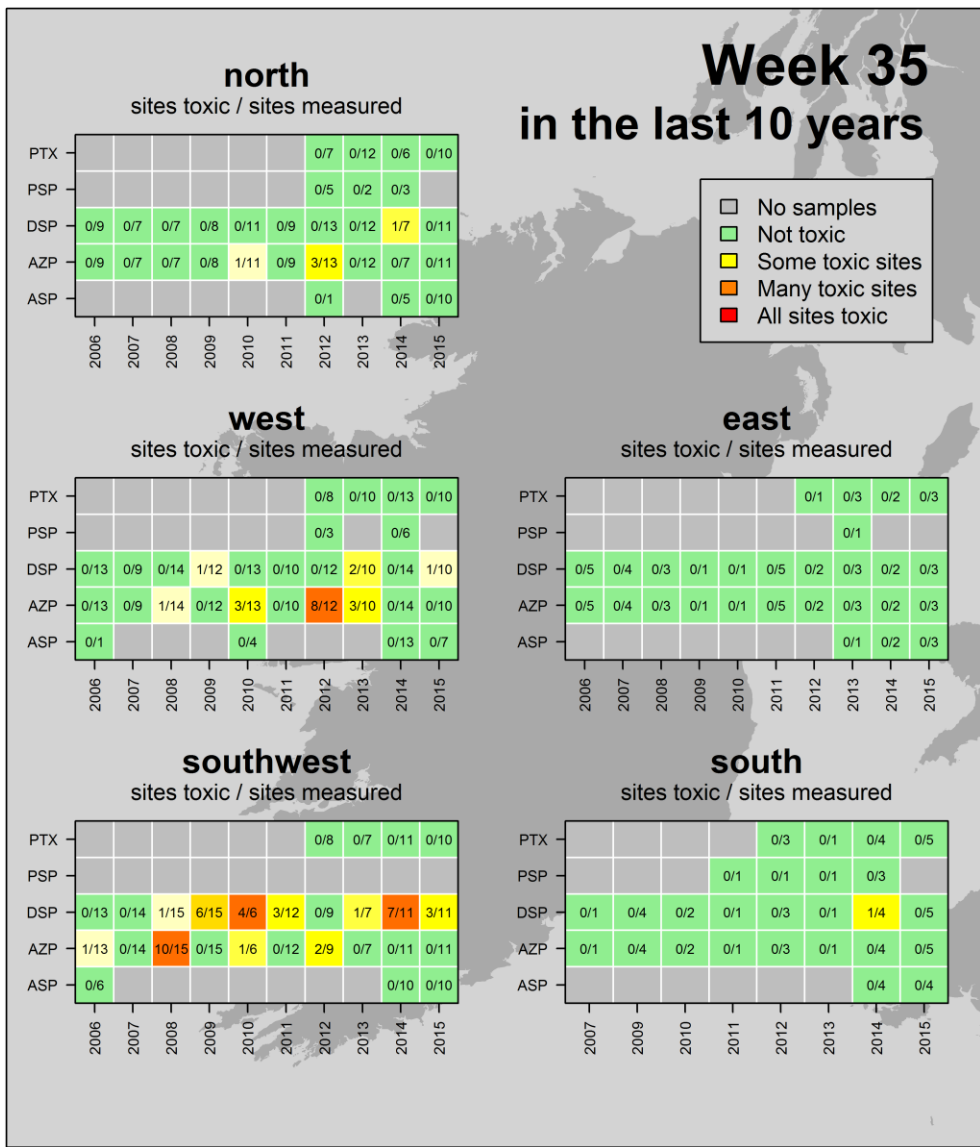
**DSP: In recent weeks, a strong upward trend is evident in the SW; this has been accompanied by increased levels of *Dinophysis* spp. However, an upwelling event is highly likely to occur in the SW in the coming days and *Dinophysis* populations may, therefore, decline in the Bays. Low levels of *Dinophysis* spp. have been observed in the west with one site closed due to DSP.**

PSP: Toxin trends have decreased in recent weeks and are now well below the EC Reg. limit. *Alexandrium* spp. have been detected at many sites around the coast. Based on historic information, it is highly unlikely that toxic species are present.

**EXCEPTIONAL HIGH BIOMASS BLOOMS: There is an exceptional bloom of *Karenia mikimotoi* in the south and SW coasts. This surface bloom is evident in satellite images and is likely to be blown offshore under northerly winds in the next couple of days.**

# Ireland: Historic Conditions

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



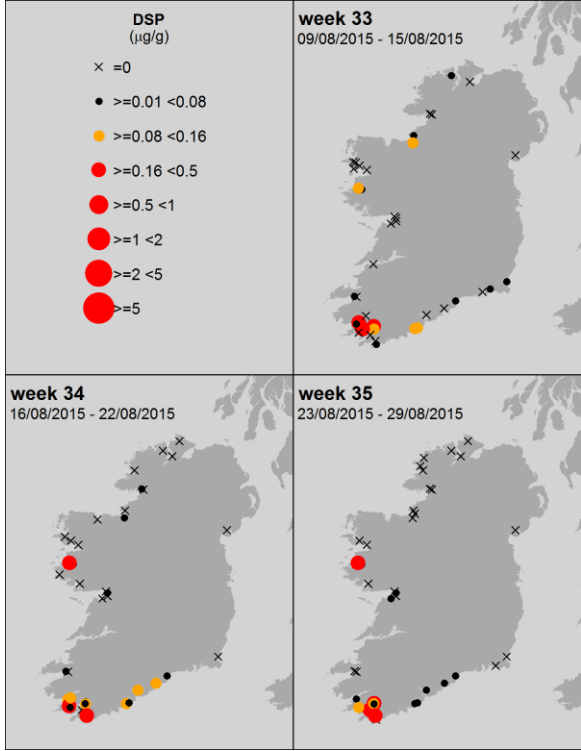
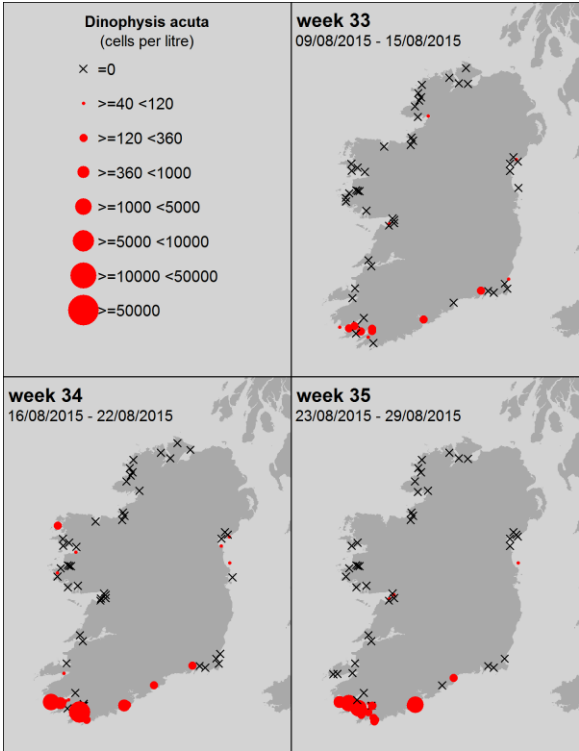
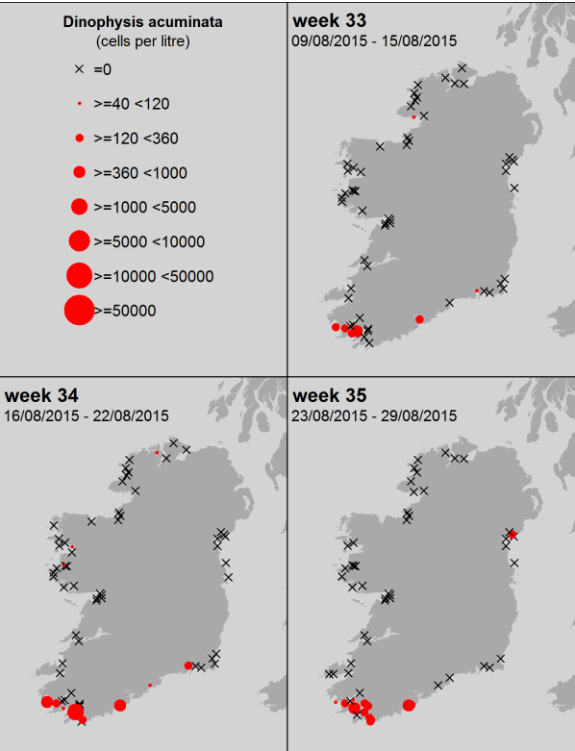
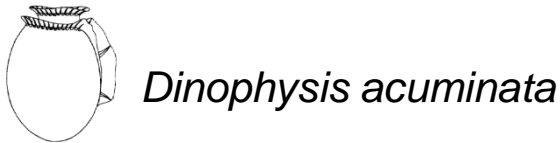
## Ireland HISTORIC TRENDS

**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



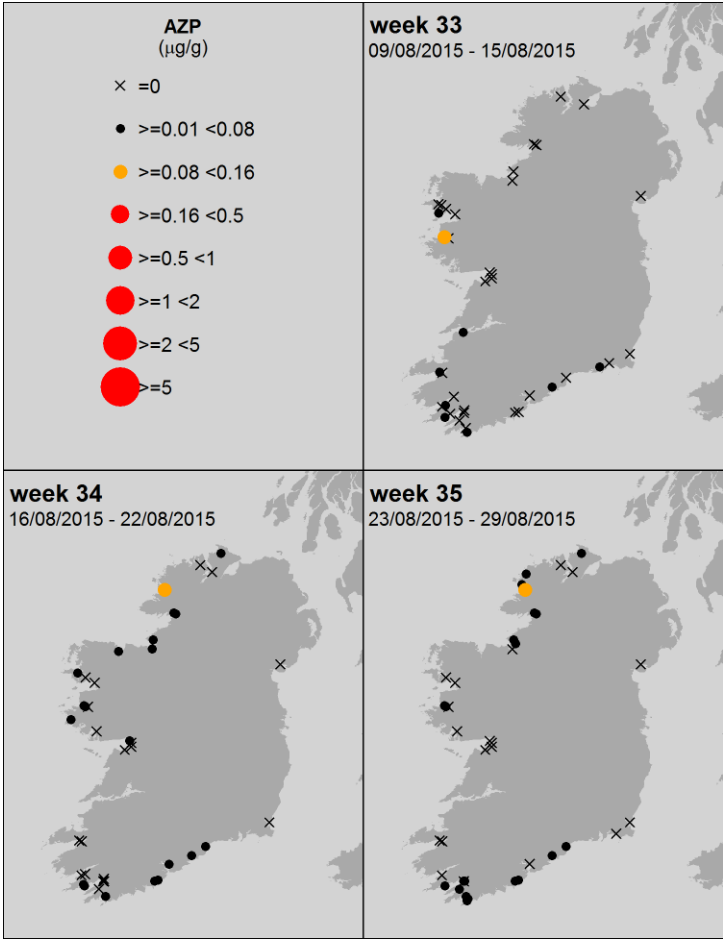
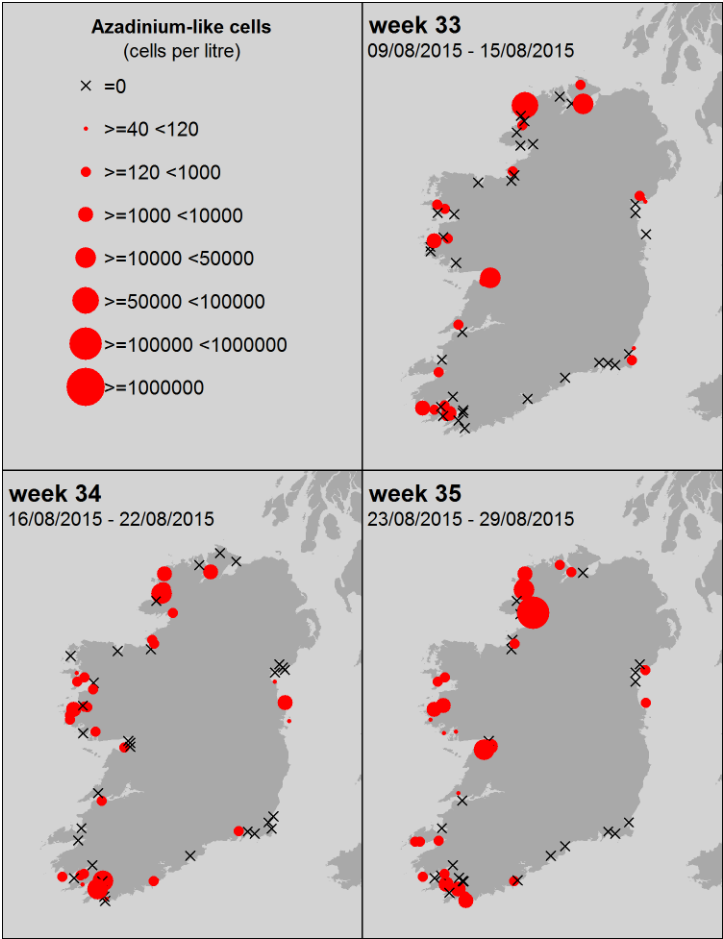
Ireland: Last 3 weeks of available National Monitoring Programme data



*Azadinium* – like spp.



AZP



Ireland: Last 3 weeks of available National Monitoring Programme data

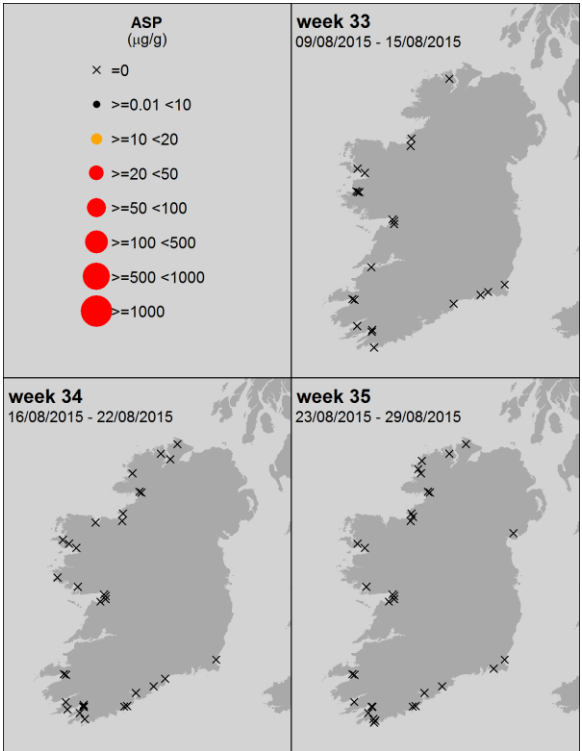
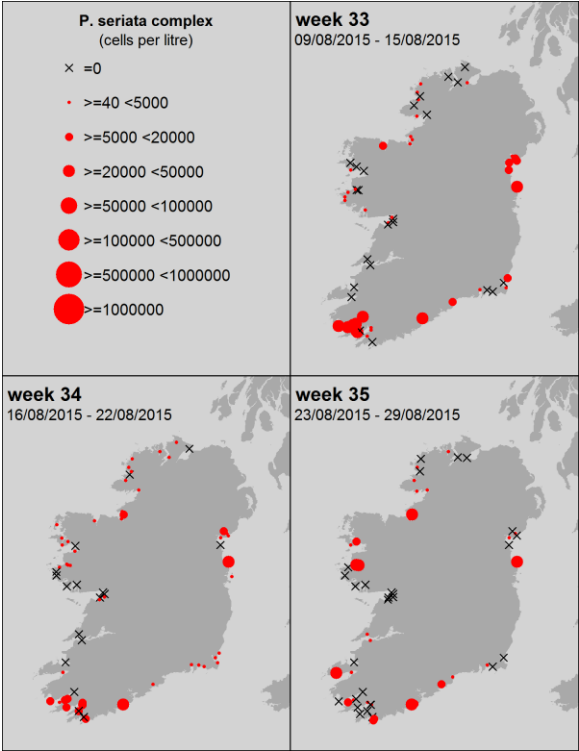
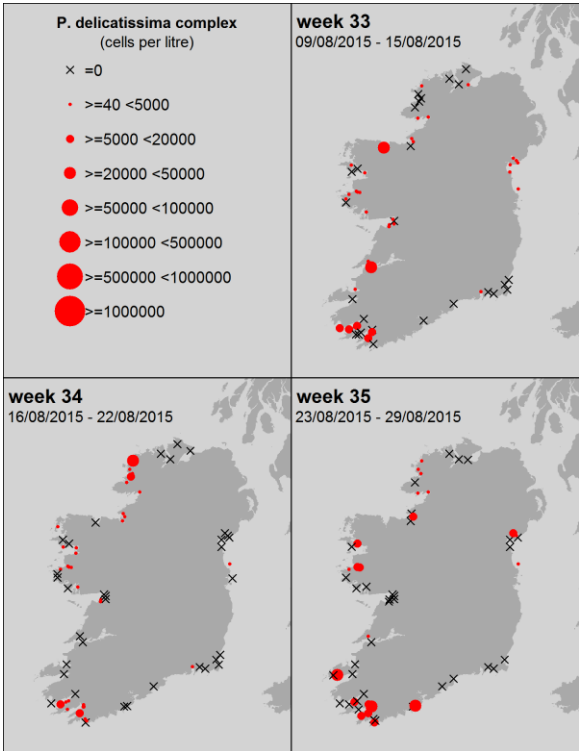
*Pseudo-nitzschia* spp.



ASP

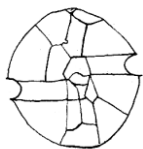
“*P. delicatissima*” complex = small cells  
Taken from the literature:  
3 species confirmed in Irish waters

“*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.

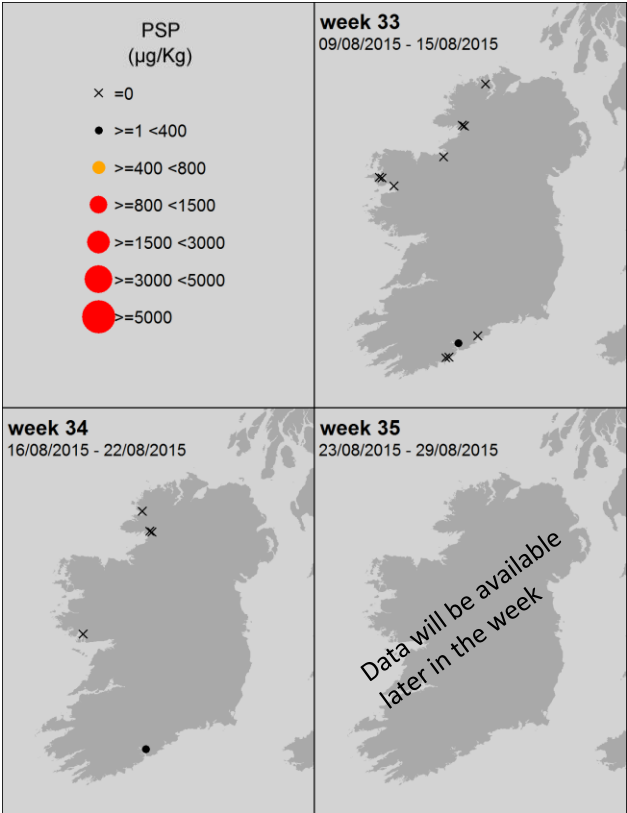
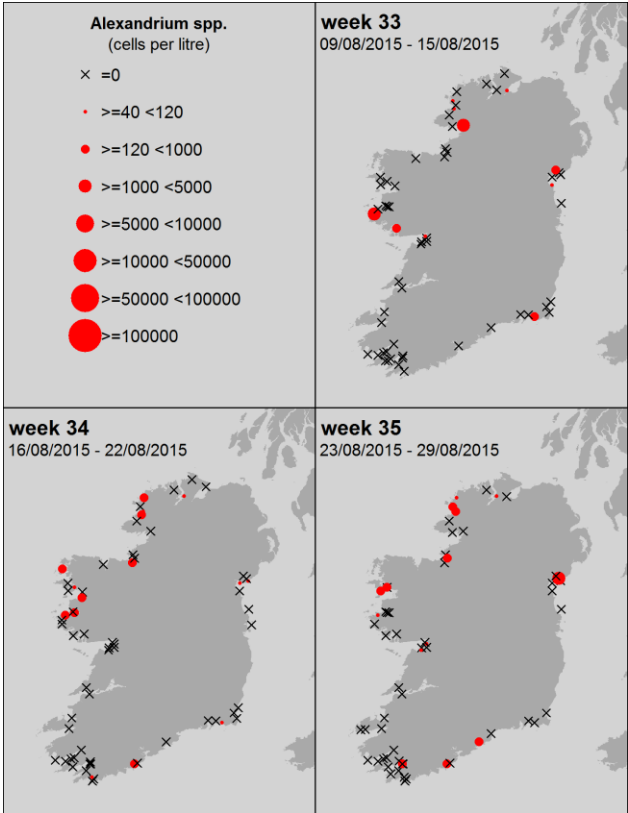
Ireland: Last 3 weeks of available National Monitoring Programme data



*Alexandrium* spp.



PSP



# Ireland HAB & Biotoxin temporal trends

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

## Ireland: Biotoxins



Toxin groups

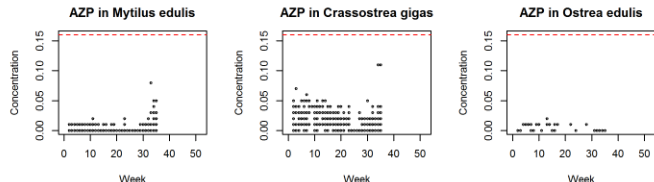
mussels

oysters

oysters

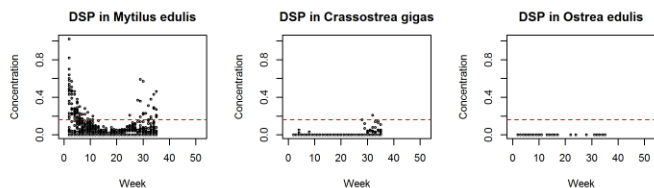
**AZP**

AZaspiracid  
Poisoning



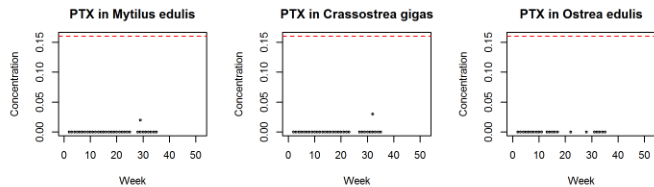
**DSP**

Diarrhetic  
Shellfish  
Poisoning



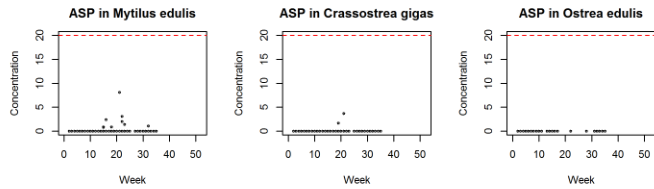
**PTX**

Pectenotoxin



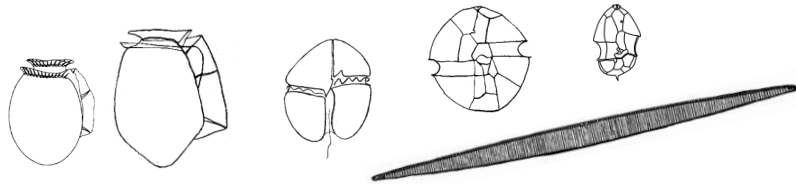
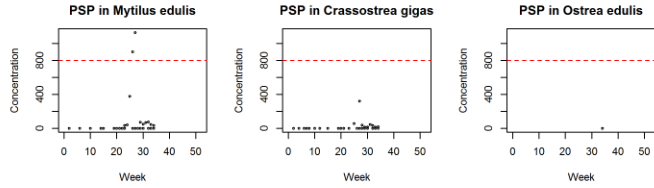
**ASP**

Amnesic  
Shellfish  
Poisoning

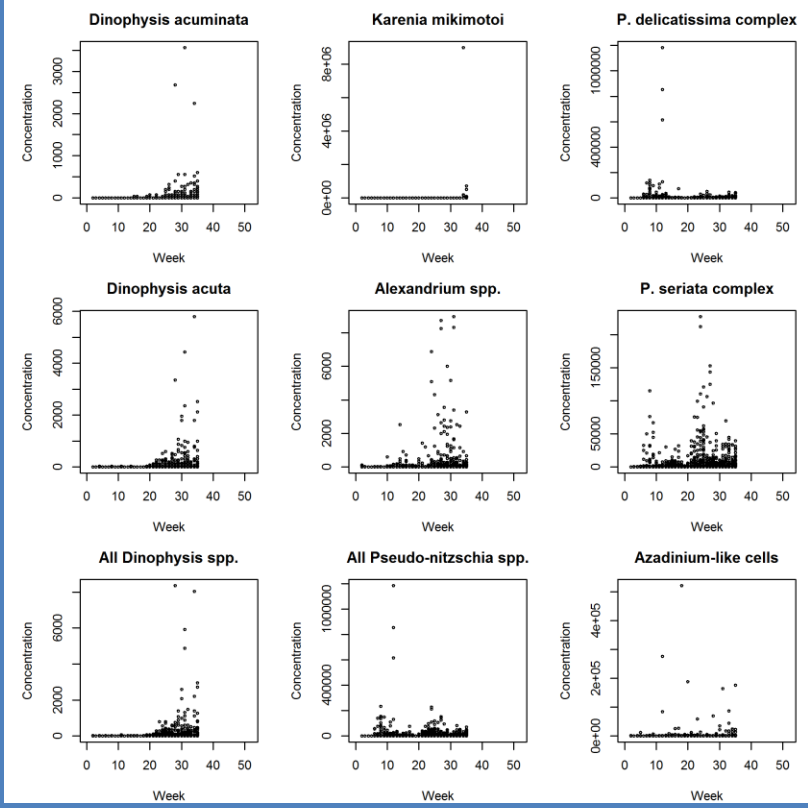


**PSP**

Paralytic  
Shellfish  
Poisoning



## Ireland: HABs

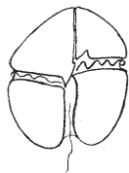


EU Regulatory Limit: ASP 20 µg/g; AZP 0.16 µg/g; DSP 0.16 µg/g; PSP 800 µg/kg

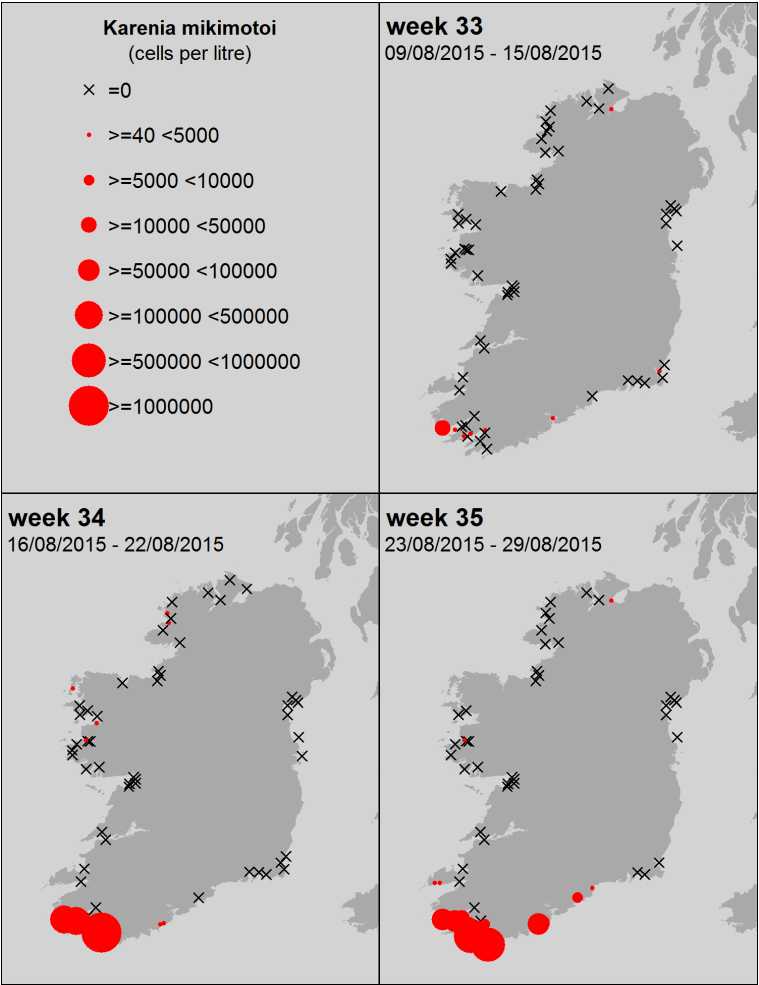
Regulatory limit = ■■■■■

# Ireland Fish killing phytoplankton Distribution maps

[current status of harmful and toxic algae]



*Karenia mikimotoi*  
(aka: *Gyrodinium aureolum*)



The large bloom of *Karenia mikimotoi* off the SW & south coasts is still evident

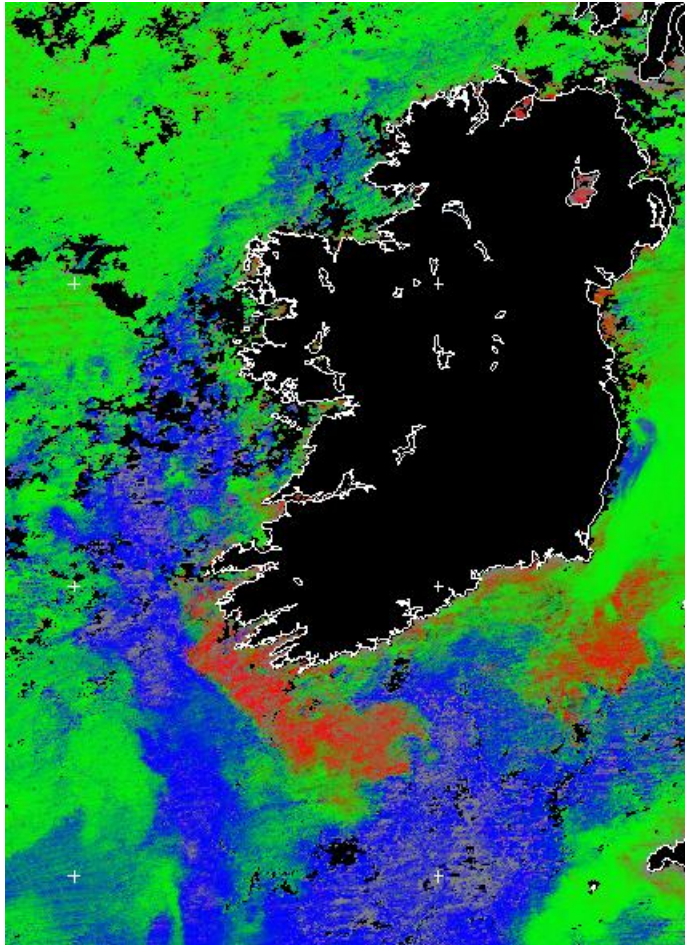


29 August, 2015: Bloom of *Karenia mikimotoi* extending along the south coast. West of Cork taken from the Air Corps Casa Aircraft .



Image of mixed species mortalities on Cockle Strand, Crookhaven, south coast, taken in the last week. Image courtesy of David Williams, Goleen Coast Guard

## Satellite tool to detect *Karenia mikimotoi*



The authors thank Plymouth Marine Laboratory for permission to use and evaluate their satellite products in this bulletin

([http://www.pml-applications.co.uk/Services/Remote\\_Sensing](http://www.pml-applications.co.uk/Services/Remote_Sensing))

## *Karenia mikimotoi*

When blooms reach millions of cells per litre, mass mortalities of farmed fish and coastal benthic communities can result. Unwanted affects are the product of a combination of hypoxia and toxicity. Historically, it is not uncommon for *Karenia* to bloom in August

**If you spot discoloured water take a photo and let us know**

**Fill a clean bottle with surface water sample**

**Add a few drops of iodine to give a light orange colour**

**Take a second sample, do not add the iodine, label: LIVE**

**Send the samples to the Marine Institute phytoplankton laboratory**

### **Postal address**

#### **South and SW coast samples:**

**Marine Institute Phytoplankton Lab, The Pier, Gearhies, Bantry, Co. Cork.**

#### **Rest of the country:**

**Phytoplankton Unit, Marine Institute, Rinvile, Oranmore, Co. Galway.**

#### **Phone:**

**Bantry 027 – 51079**

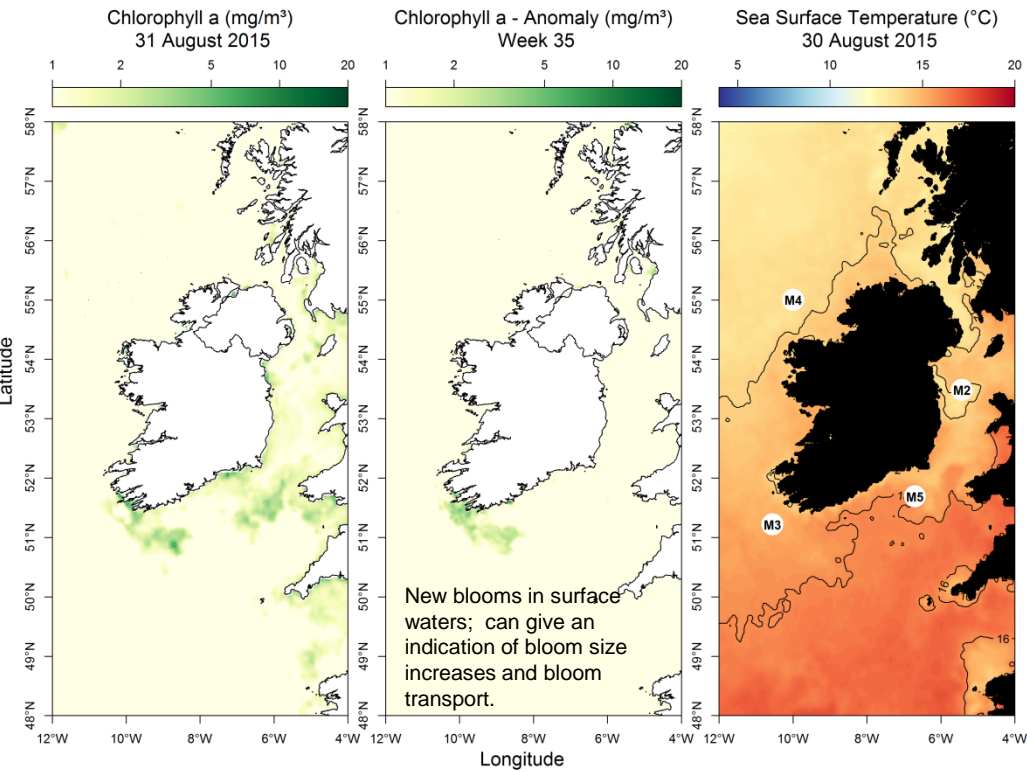
**Galway 091 – 387200**

**Email: [Phyto@marine.ie](mailto:Phyto@marine.ie)**

### **Include this information with the sample**

- **Date and time:**
- **Depth (metres): Surface**
- **Location name and position (lat & long in decimal degrees):**
- **Sampler's name:**

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 1.23 °C
- SW coast (M3)** Offline
- SE coast (M5)** above average by 0.58 °C

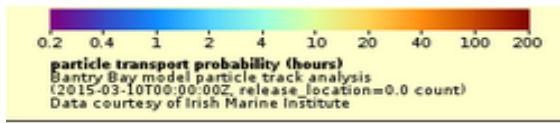
What phytoplankton were blooming at inshore coastal sites last week?

Region	Predominant Phytoplankton (most abundant taxa)	Cells/L (rounded)
north:	<b>Diatoms:</b>	
	<i>Leptocylindrus minimus</i>	5,537,000
	<b>Dinoflagellates:</b>	
	<i>Glenodinium</i> spp.	2,198,000
	<i>Azadinium/heterocapsa</i> spp.	177,000
	<i>Scrippsiella</i> spp.	58,000
	<b>Others:</b>	
west:	Microflagellate	347,000
	Cryptophyte	241,000
	<b>Diatoms:</b>	
	<i>Skeletonema</i> spp.	6,265,000
	<i>Cylindrotheca closterium/ Nitzschia longissima</i>	104,000
	<i>Lauderia / Detonula</i> spp.	79,000
	<i>Chaetoceros</i> ( <i>Hyalochaete</i> ) spp.	53,000
SW:	' <i>Pseudo-nitzschia seriata</i> ' complex	31,000
	<b>Others:</b>	
	<i>Mesodinium rubrum</i>	139,000
	<b>Diatoms:</b>	
	<i>Leptocylindrus minimus</i>	1,799,000
	<i>Cerataulina pelagica</i>	142,000
	<i>Chaetoceros</i> ( <i>Hyalochaete</i> ) spp.	134,000
south:	<i>Chaetoceros curvisetus/debilis</i>	128,000
	<i>Leptocylindrus minimus</i>	107,000
	<b>Dinoflagellates:</b>	
	<b><i>Karenia mikimotoi</i></b>	<b>729,000</b>
	<b>Diatoms:</b>	
	<i>Leptocylindrus minimus</i>	1,947,000
	<i>Skeletonema costatum</i>	134,000
east:	<i>Chaetoceros curvisetus/debilis</i>	103,000
	<i>Pseudo-nitzschia delicatissima</i> complex	35,000
	<b>Dinoflagellates:</b>	
	<i>Karenia mikimotoi</i>	74,000
	<i>Heterocapsa</i> spp.	44,000
	<b>Diatoms:</b>	
	<i>Asterionellopsis glacialis</i>	441,000
	<i>Chaetoceros</i> ( <i>Hyalochaete</i> ) spp.	253,000
	<i>Bacteriastrium</i> spp.	248,000
	Pennate diatom	97,000

# SOUTHWEST: Bantry Bay

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

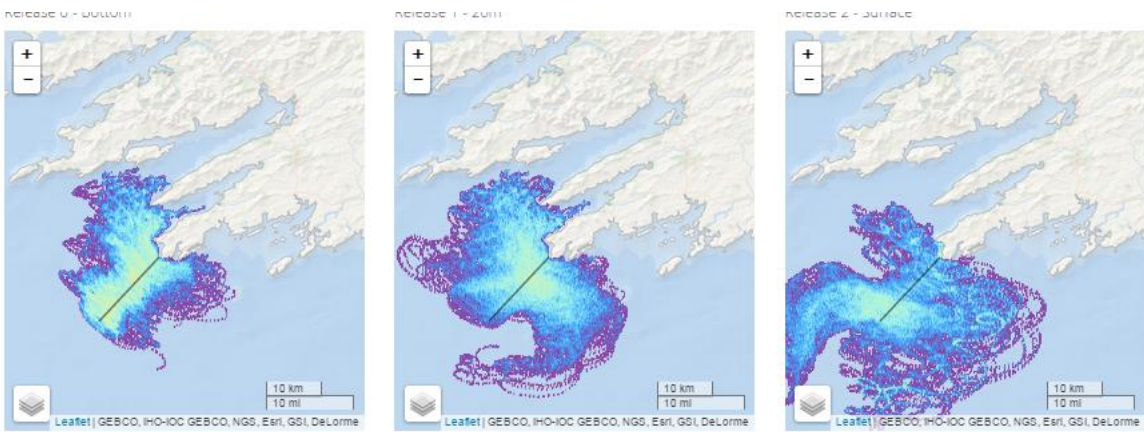


## Forecast for the next 3 days

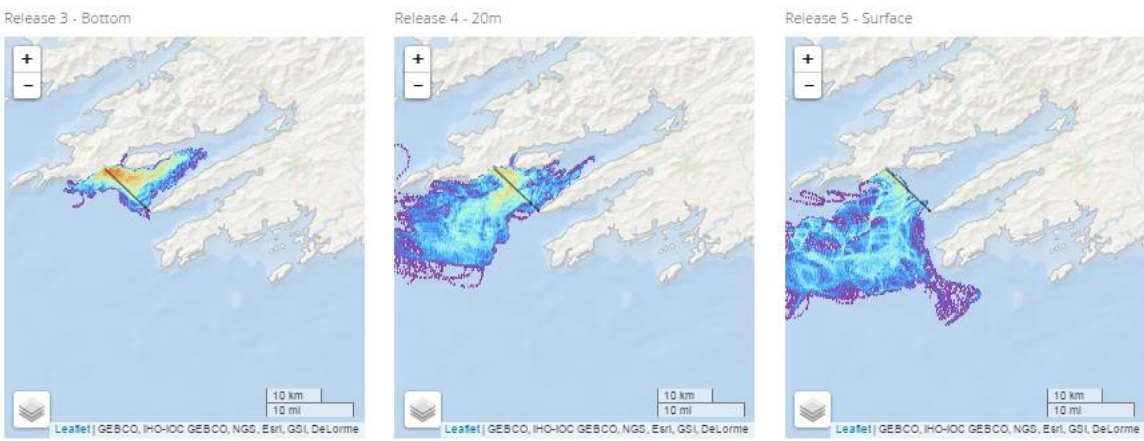
Bottom water

Water @ 20 metres

Surface water



Estimated water circulation patterns at Mizen Head will be mixed. Small amounts of subsurface waters are expected to reach the mouth of Bantry Bay.

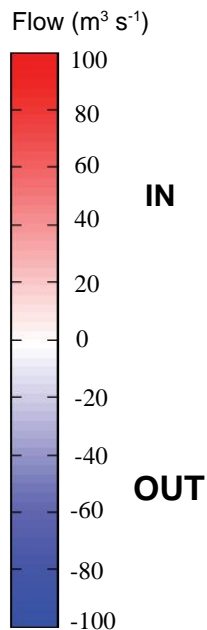


Bottom waters are expected to enter Bantry Bay while waters at shallower depths are expected to leave the Bay in the next couple of days.

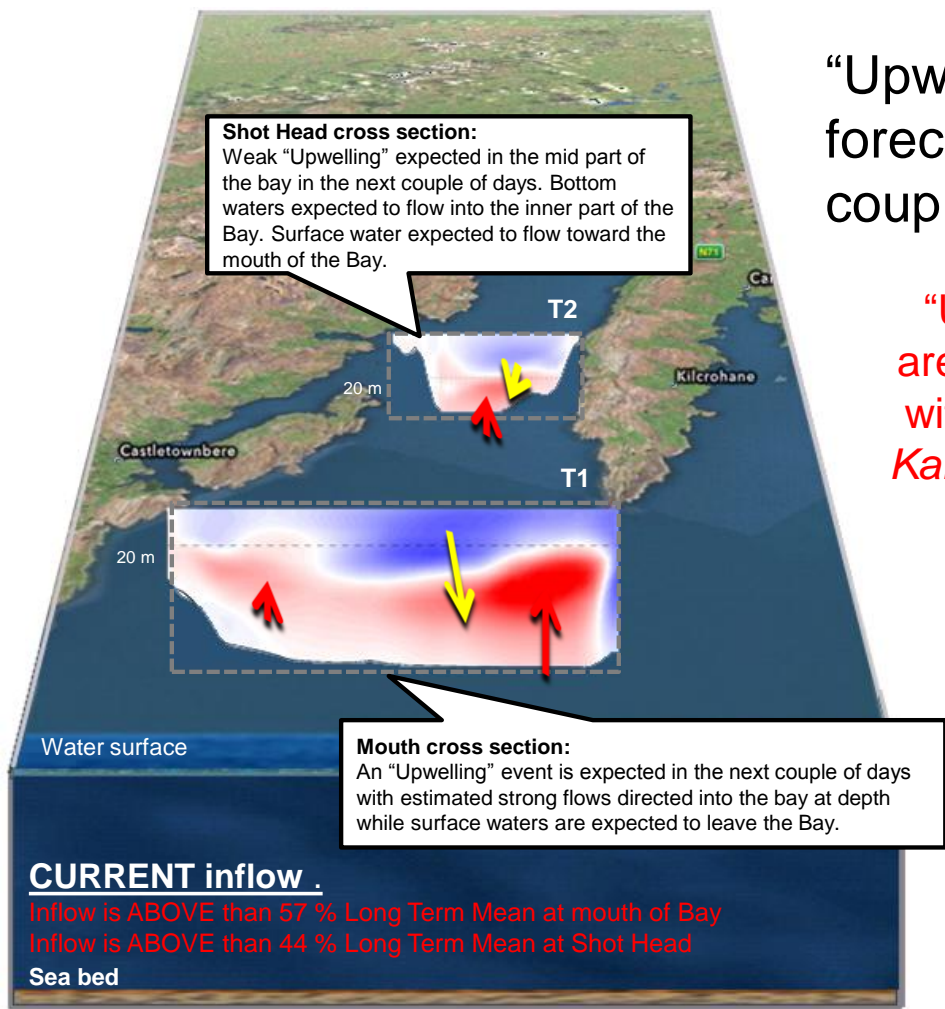
Go to <http://vis.marine.ie/particles/> to view daily forecasts

# Bantry Bay

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



Forecast for next 3 days



"Upwelling" event  
forecast in the next  
couple of days


"Upwelling" events  
are sometimes linked  
with the advection of  
*Karenia mikimotoi* into  
SW Bays.

Start date: 31 August

WEST: Killary Harbour

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)

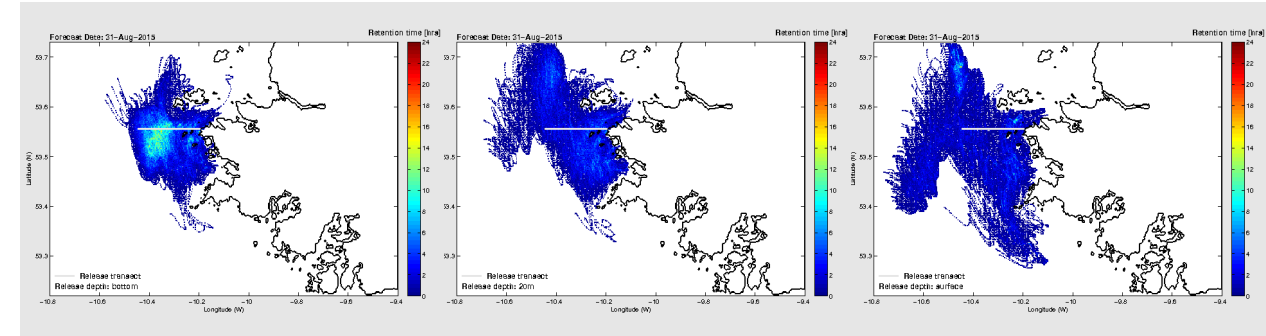
Reddish colours represent areas where phytoplankton remain longest  
Cooler colours represent areas where phytoplankton remain for shorter periods



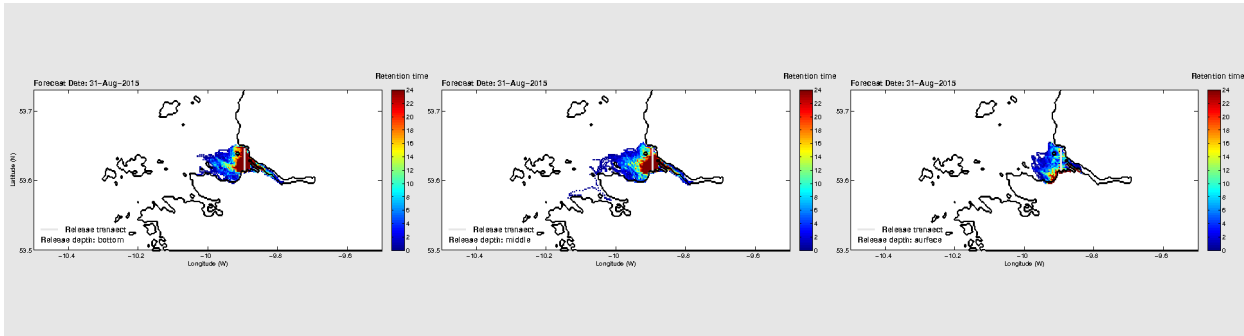
0.2 0.4 1 2 4 10 20 40 100 200  
particle transport probability (hours)  
Bantry Bay model particle track analysis  
(2015-03-10T00:00:00Z, release\_location=0.0 count)  
Data courtesy of Irish Marine Institute

Forecast for the next 3 days

- Bottom water
- Water @ 20 metres
- Surface water



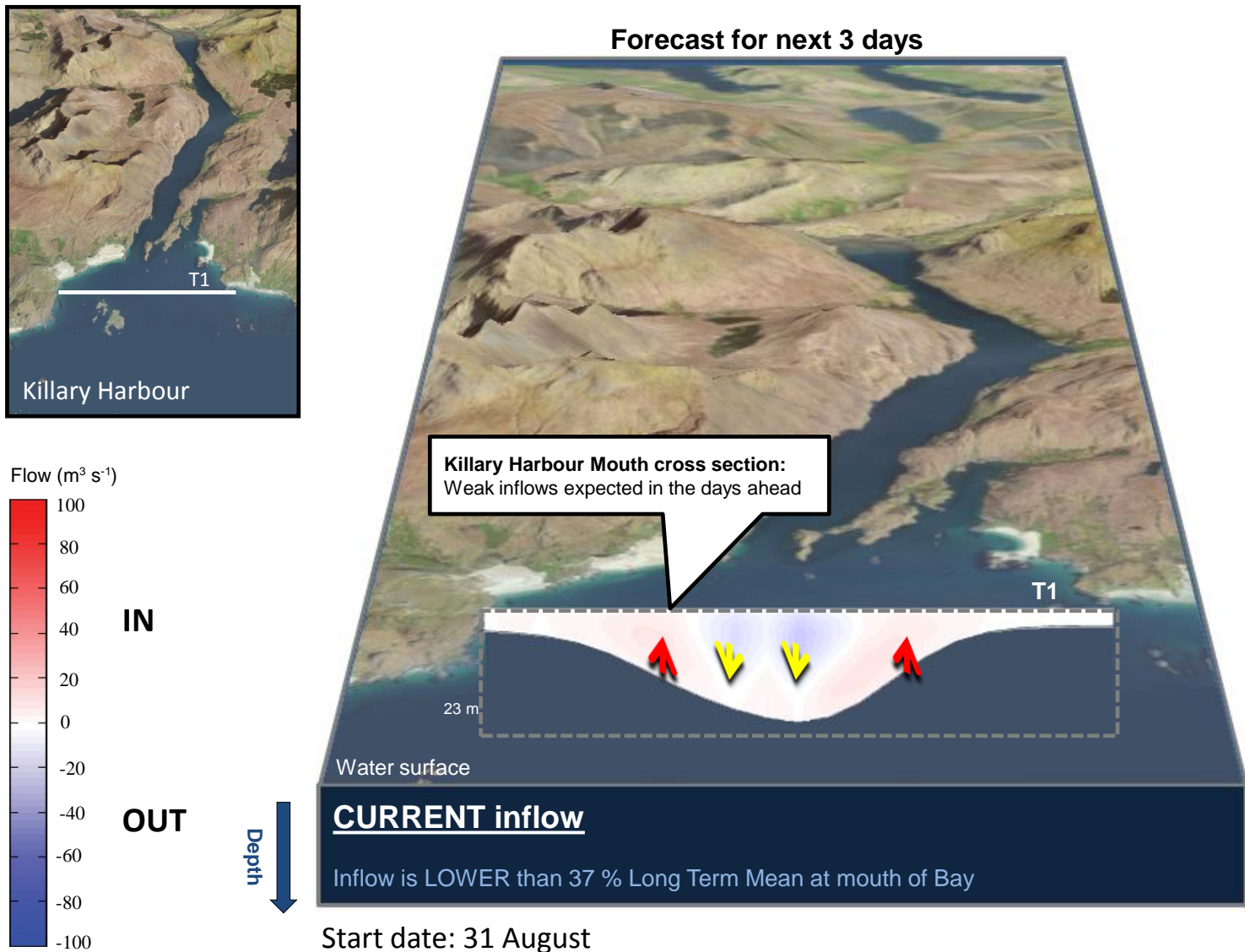
Water flows off the west coast will be variable with prevalent southward directed flows. Offshore water masses are unlikely to reach the mouth of Killary Harbour in the next couple of days.



Estimated water circulation at the mouth of Killary shows that in general, waters will be retained at the mouth. However, a small volume of subsurface water will be able to reach the mid-bay region.

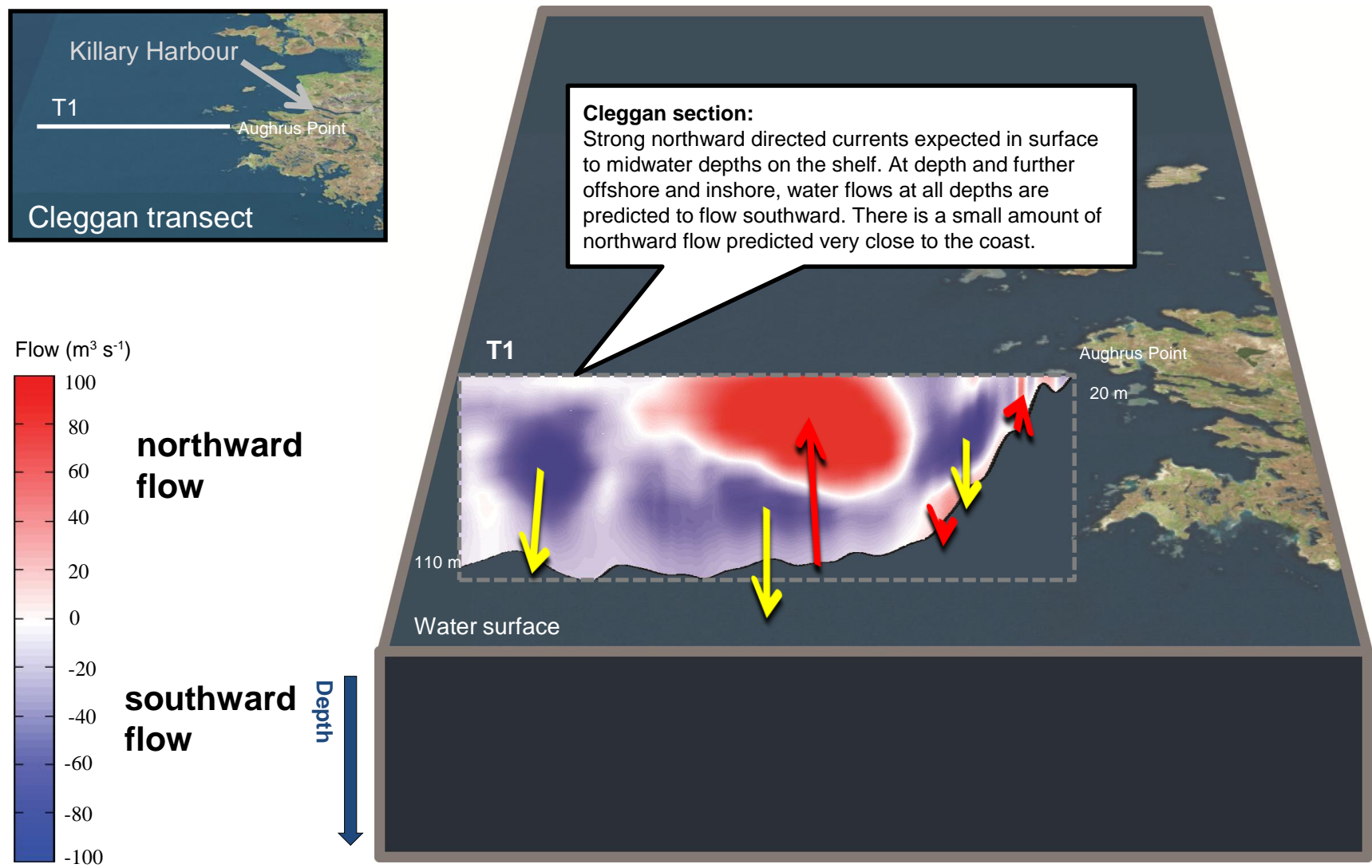
# Killary Harbour

3 day estimated water flows at the mouth of Killary Harbour



# West Coast - 3 day estimated water flows along a transect off Aughrus Point

## Forecast for next 3 days



Start date: 31 August