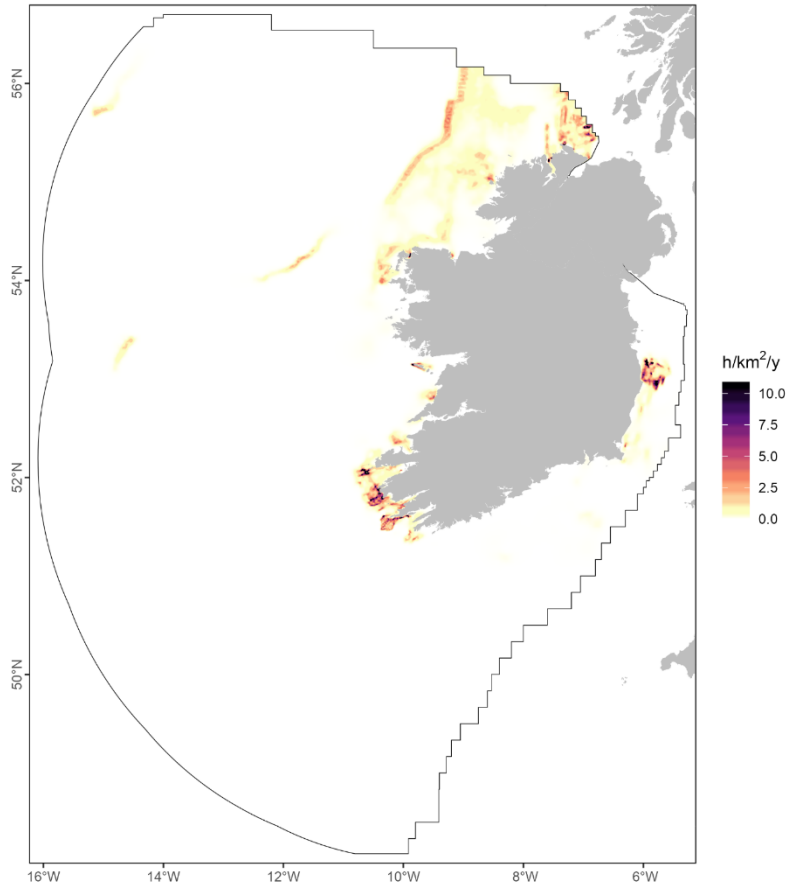


Crab Stock structure;  
assessment units in north west  
Europe

# Distribution of pot fishing by vessels over 15m

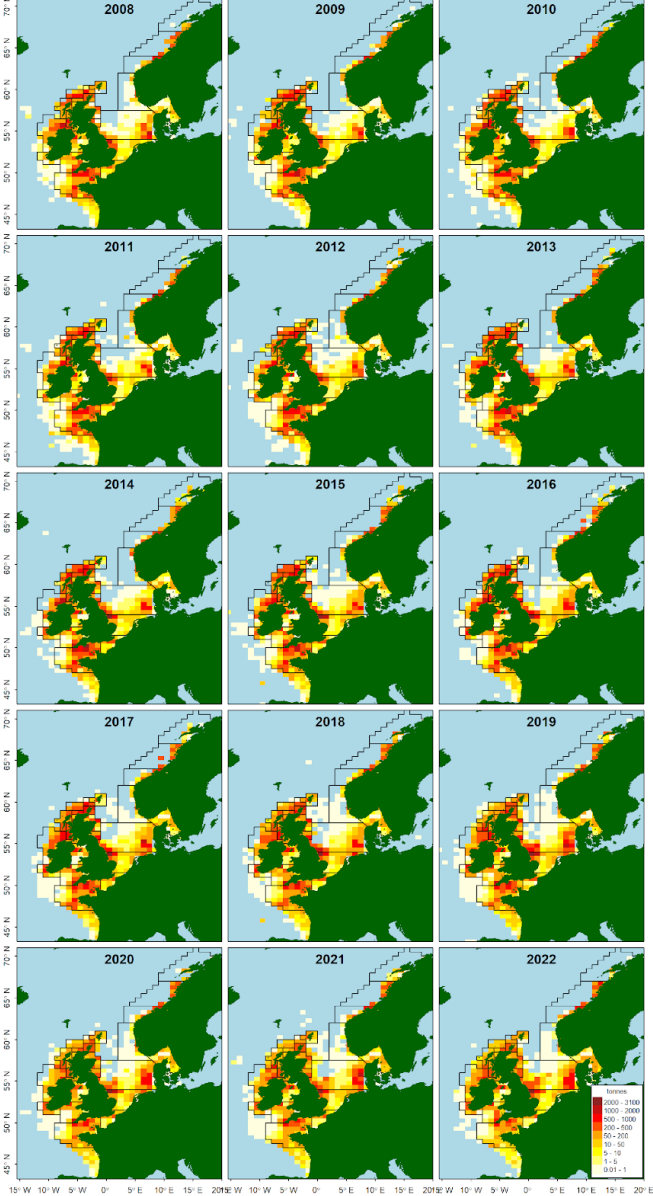
Irish + International potting vessels over 15m **Irish EEZ**



Irish potting vessels over 15m

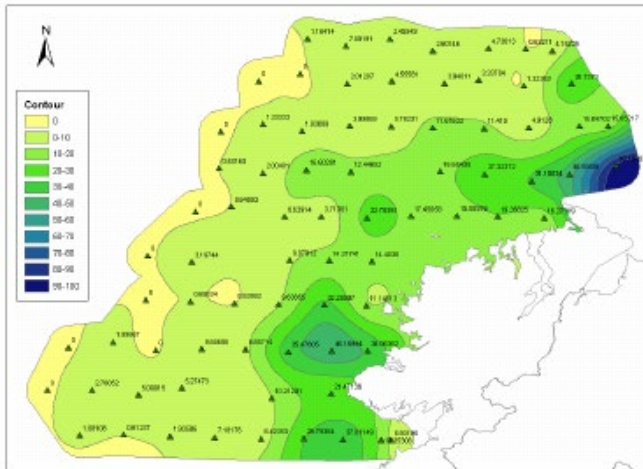


# Brown crab landings by ICES statistical rectangle between 2008 and 2022

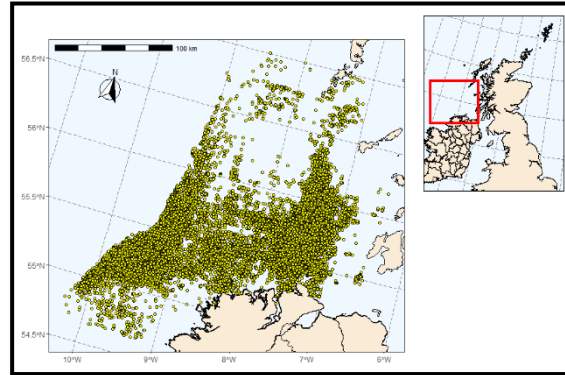


# Evidence for stock structure (North West)

## 1. Larval distribution



## 3. Offshore VMS data



## 2. Tag recoveries from release at Malin Hd

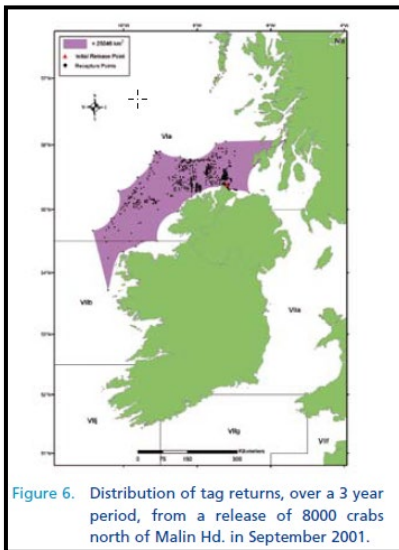


Figure 6. Distribution of tag returns, over a 3 year period, from a release of 8000 crabs north of Malin Hd. in September 2001.

$$1+2+3=$$

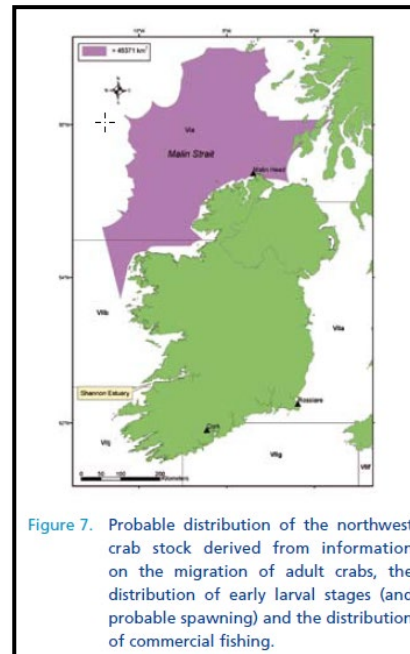


Figure 7. Probable distribution of the northwest crab stock derived from information on the migration of adult crabs, the distribution of early larval stages (and probable spawning) and the distribution of commercial fishing.

Malin Shelf stock

But where is the northern limit for Malin Shelf stock?

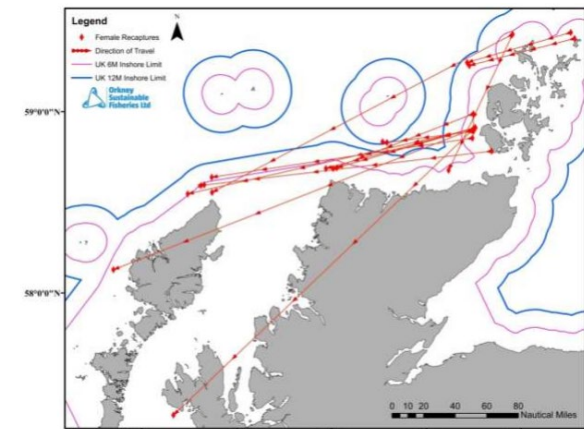
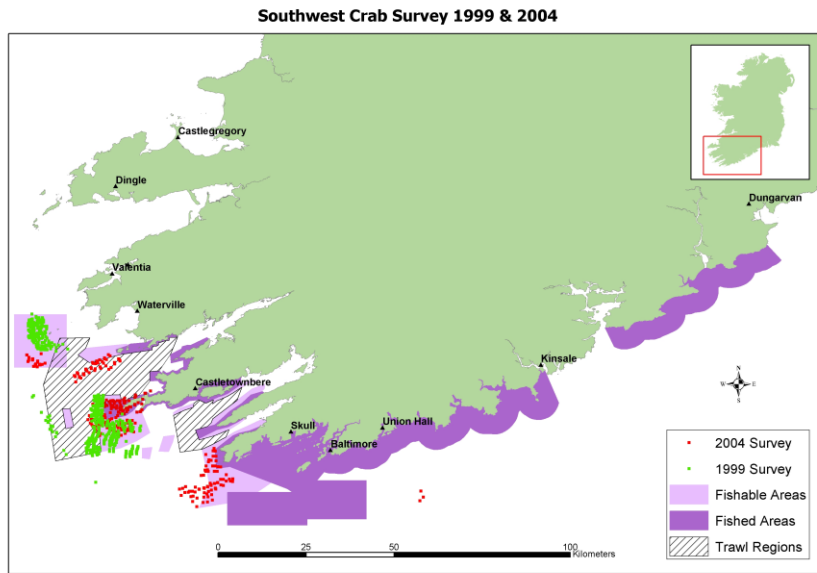


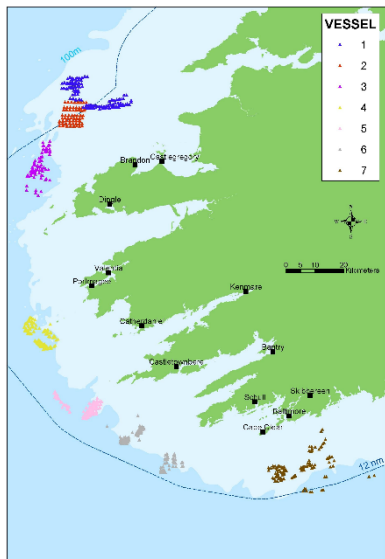
Figure 8 Long distance female brown crab movements from initial release points and recaptures from around North West Scottish Coast (2010-2016)

Crab migration from Orkney west and south to Hebrides

# Evidence for stock structure (south west); distribution of fishing

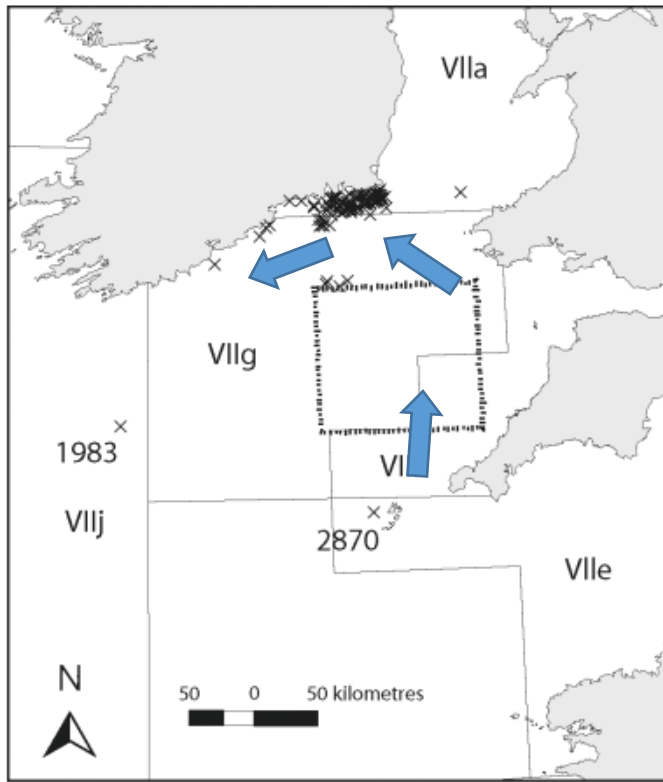


1. Older survey data shows limited distribution of crab outside 12nm off the south west
2. Current distribution of fishing effort is inside 12nm
  1. map of landings by ICES rectangle
  2. SVP data and Inshore grid



# Evidence for stock structure (south east); tag recoveries and distribution of fishing

Tag recoveries from releases south of Wexford (from Fahy and Carroll 2008). Ocean circulation (implying larval dispersal) indicated



Crab surveys 2002-2005. There is currently commercial fishing 30nm south of Wexford. Roscoff fleet previously active in this area



# Evidence for stock structure (Irish Sea); tag recoveries and distribution of fishing



AFBI are carrying out tagging of brown crab to begin to understand their movement in both ours and neighbouring waters. If you are interested in helping us tag brown crabs, please get in touch.

Crabs will be tagged with labelled cable ties placed on the base of a claw.



If you catch a tagged crab please record the 7 digit ID number printed on the tag. Also record the date caught, location captured, sex, carapace width and if the crab was returned or landed. Recapture forms can be supplied if this is easier.

The names of everyone who returns the details of a tagged crab will be entered in to a prize draw for a share of the £1000 cash prize provided by NIFF



(1st prize, £500; 2nd £250; 3rd £150; 4th £100, drawn December 2022)  
The more returns you make, the greater chance you have of winning!

For more details or to return the details of a recaptured tagged animal, contact  
Carrie.McMinn@afbini.gov.uk or phone 07909 095 182

Recapture of crab tagged off the coast of northern Ireland after 200 days at liberty show only local movements

Northern Ireland crab effort is very coastal

We can expect high larval retention in the north Irish Sea and east to Isle of Man (in the north Irish Sea gyre)

## Conclusions

### Irish stock assessment and management units

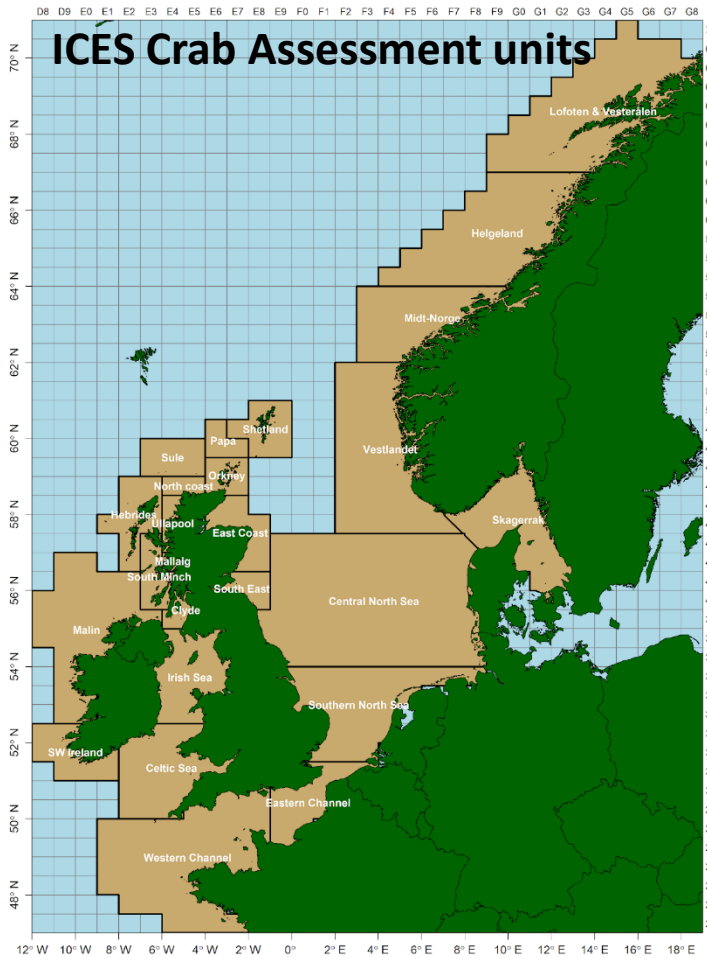
1. Malin shelf (Shannon to Malin and offshore)
2. South West (<12nm, Shannon to Cork)
3. South east (Celtic Sea)
4. North Irish Sea

### Transboundary

1. Malin shelf (Scotland and Northern Ireland)
2. South West (None)
3. South east (South west England and Wales, French offshore (previously))
4. North Irish Sea (Northern Ireland)

### Stock Connectivity

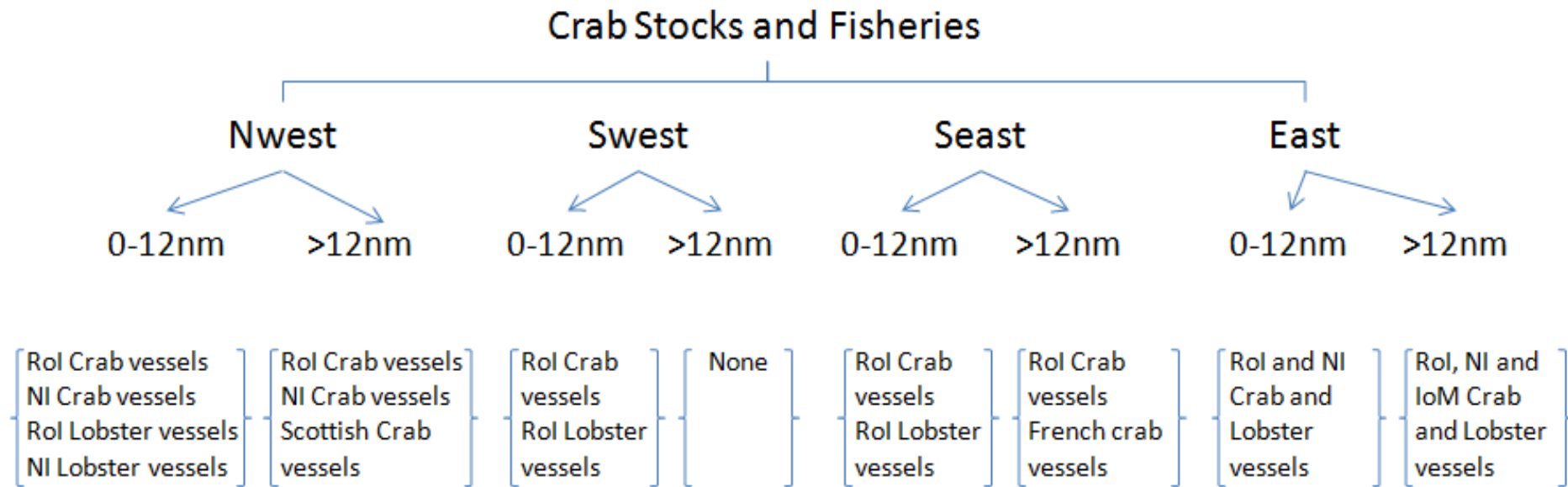
1. The stock units are not completely isolated
2. Larval flow from SW England and offshore Celtic Sea to Irish coast
3. Larval flow on Irish coastal current from south east to south west and north along west coast. Crab migration south from Irish coast towards Scilly.
4. Crab migration between inshore and offshore (Malin shelf) and to the south west
5. Directional sources of recruitment: Larvae will not disperse south from Malin Shelf!



**Eg Genetic studies Irish Sea:** support the view that brown crabs belong to a single genetic stock. The high connectivity means international cooperation for sustainable management is needed



# Fleets operating in the stock areas and management jurisdiction



Stock	Irish Fleets	Other sources of fishing mortality on this stock	Stock boundaries and management jurisdiction
North West (Malin Shelf)	Dry-hold and vivier vessels over 8m registered in the Republic of Ireland (RoI) fishing in inshore and offshore waters	Northern Ireland and Scottish registered vessels over 8m fishing with pots and targeting crab in inshore and offshore waters mainly in the northern part of the stock	<ul style="list-style-type: none"> <li>✓ Inside 12nm, RoI (Republic of Ireland) authorities can introduce measures, following consultation with other authorities that can apply to all fleets fishing in that area. Such measures must be non-discriminatory across fleets.</li> <li>✓ RoI authorities can impose measures on RoI registered vessels fishing outside 12nm.</li> <li>✓ The majority of the NW stock occurs outside the 12nm limit and beyond the sole fishery jurisdiction of RoI. Additional mortality occurs from NI vessels operating in the eastern boundary of the stock and by Scottish inshore and offshore vessels to the north. The relevance of the Scottish fishing effort here depends on where the northern boundary of the stock is set.</li> <li>✓ RoI vessels over 18m fishing this stock also fish crabs in the North Sea and have previously fished in the Celtic Sea.</li> </ul>
		Vessels under 8m registered in RoI or NI fishing with pots and targeting lobster and which have a crab by-catch	
		RoI and NI vessels fishing with nets in the south of the stock area (ICES Area VII), targeting crayfish and with a small by-catch of crab	
South West	Dry-hold and vivier vessels over 8m registered in the Republic of Ireland (RoI)	Vessels under 8m registered in RoI fishing with pots and targeting lobster and which have a crab by-catch	<ul style="list-style-type: none"> <li>✓ All vessels fishing this stock are under 15m and there is no offshore (&gt;12nm) fishery or stock as such.</li> <li>✓ RoI authorities have full jurisdiction over the fishing mortality on this stock</li> <li>✓ The by-catch of crab in static nets may be more significant than in the north west</li> </ul>
		Vessels fishing with nets targeting crayfish and with a by-catch of crab	
South East	Dry-hold and vivier vessels over 8m registered in the Republic of Ireland (ROI)	<p>Vessels under 10m registered in RoI fishing with pots and targeting lobster and which have a crab by-catch</p> <p>French vessels previously worked in the south of the stock area.</p> <p>UK vessels fishing off south west England</p>	<ul style="list-style-type: none"> <li>✓ RoI vessels fishing this stock are under 15m</li> <li>✓ Some RoI fishing effort occurs outside 12nm</li> <li>✓ French vivier vessels fish in the south of the area. This effort has stopped in recent years</li> <li>✓ UK activity in the south east area of the stock boundary</li> <li>✓ In effect RoI authorities have jurisdiction over the vast majority of fishing mortality on this stock</li> </ul>
North Irish Sea	Dry-hold and vivier vessels over 8m registered in the Republic of Ireland (ROI)	The majority of fishing mortality on crab in the north west Irish sea is by NI registered vessels fishing out of Kilkeel and Isle of Man	<ul style="list-style-type: none"> <li>✓ Isle of Man vessels fishing eastern area of the stock with jurisdiction to 12nm</li> <li>✓ NI vessels straddle UK and RoI waters. Voisinage arrangements with UK allows NI vessels fish to the straight baselines of RoI</li> </ul>