

# National Eel Monitoring Programme, 2009-2011

**(IFI - 3 staff, annual budget of 190,000)**

- Monitoring of recruitment, glass eel / elvers
- Monitoring of yellow eel
- Monitoring of silver eel
- These monitoring programmes set a benchmark to evaluate future changes to the eel stock over time and
- allow the outcome of the management actions to be evaluated

# Eel Monitoring Programme 2009-2011

- **Monitoring Objectives**

In 2009 the eel monitoring programme was initiated to carry out the monitoring Objectives in the National Management Plan.

## 2.1 Estimate silver Eel Escapement

- Burrishoole, Corrib, Erne, Lee and Shannon systems

## 3. Monitor the impact of fishery closure on yellow eel stock structure

- CPUE, Age and growth studies

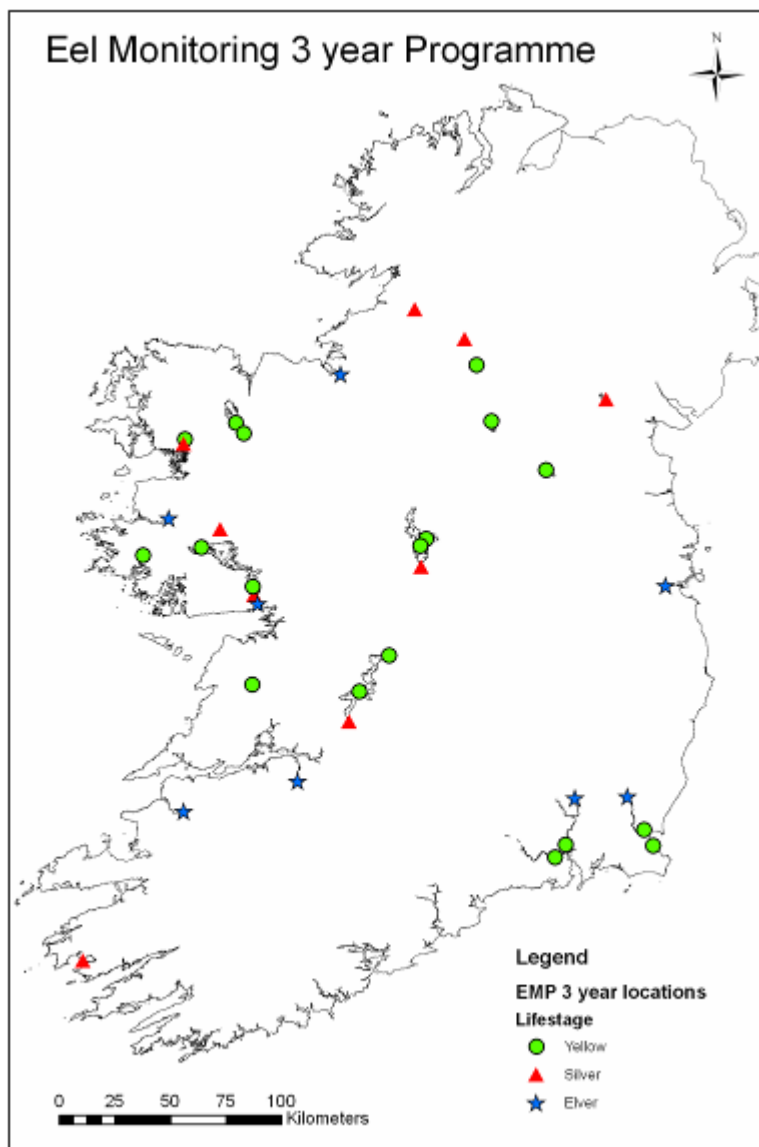
## 4. Inter-Calibration with Water Framework Sampling

- 78 lakes, 180 river sites, 90 transitional waters

# Eel Monitoring Programme 2009-2011

5. Compare current and historic brown eel stocks
  - Fisheries Research Centre fyke net surveys 1960's to 1990's.
6. Establish baseline data to track changes in eel stock over time
  - Elver monitoring programme
  - Intensive Fyke Net surveys
7. Evaluate impedance of upstream colonisation: migration and water quality effects.
8. Determine parasite prevalence and eel quality
  - Prevalence of *Anguillicoides crassus*, (swimbladder parasite)

# Eel Monitoring 3 year Programme



# Ch. 3: Recruitment

## European Overview

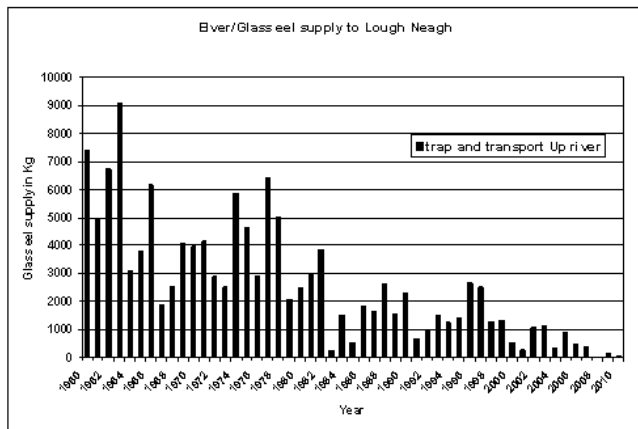
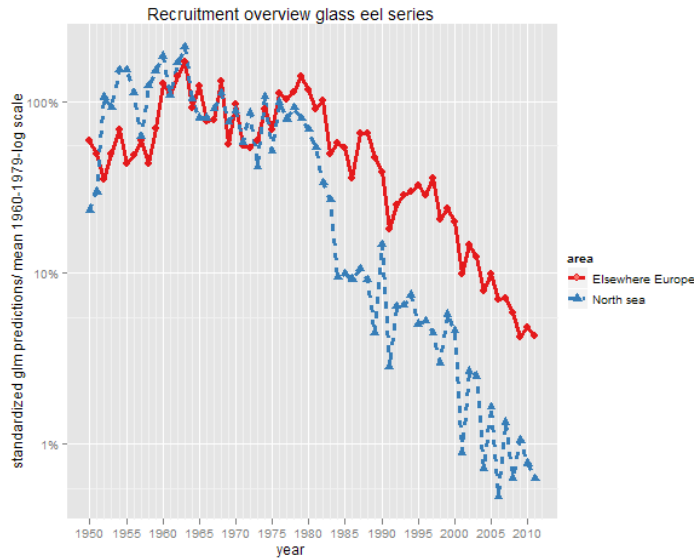
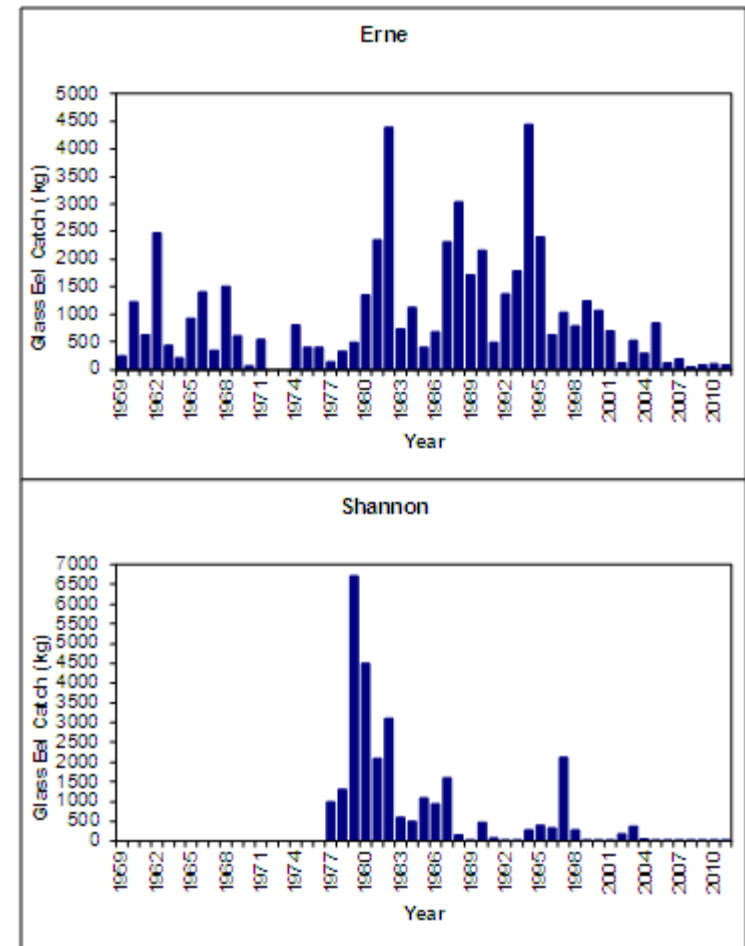


Figure 3-6: Index of natural recruitment since 1960, River Bann, Northern Ireland



Figure 3-3: Fixed ramp trap on the Inagh River



Recruitment is now at low levels in Europe (<5% of 1960-79 level)

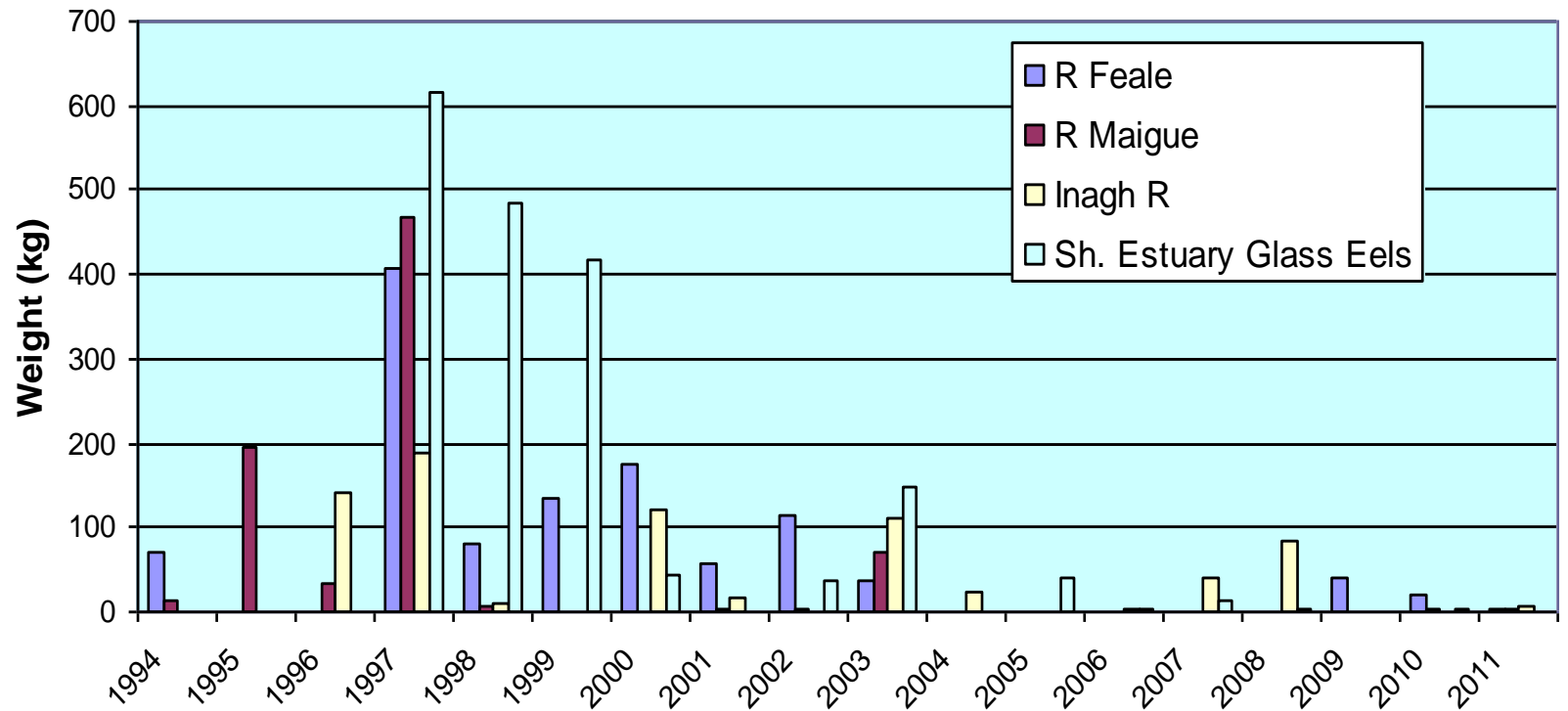
Shannon:	1%	Maigue:	3%	Inagh:	6%
Erne:	7%	Feale:	13%	Bann:	2%

# Elver Monitoring





## Shannon Glass eel / elver runs



# Ch. 4: Yellow Eel Assessments 2009-2011

## Eel Specific intensive standardised fyke net surveys

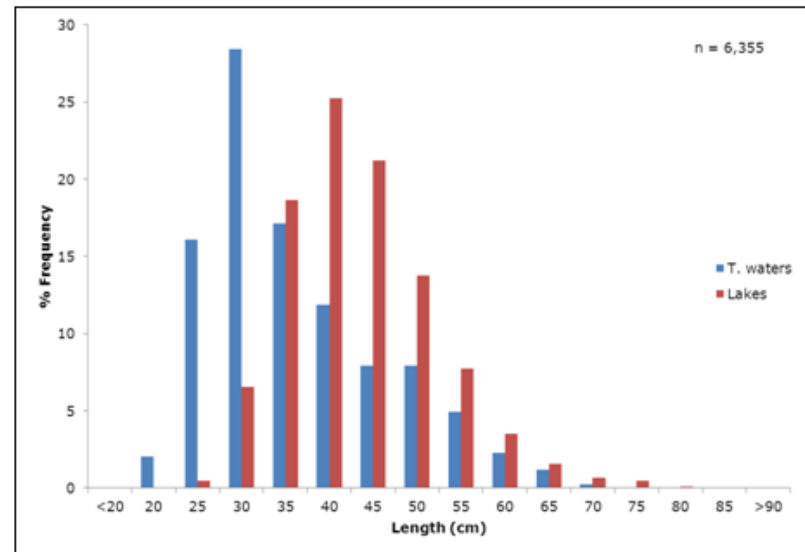
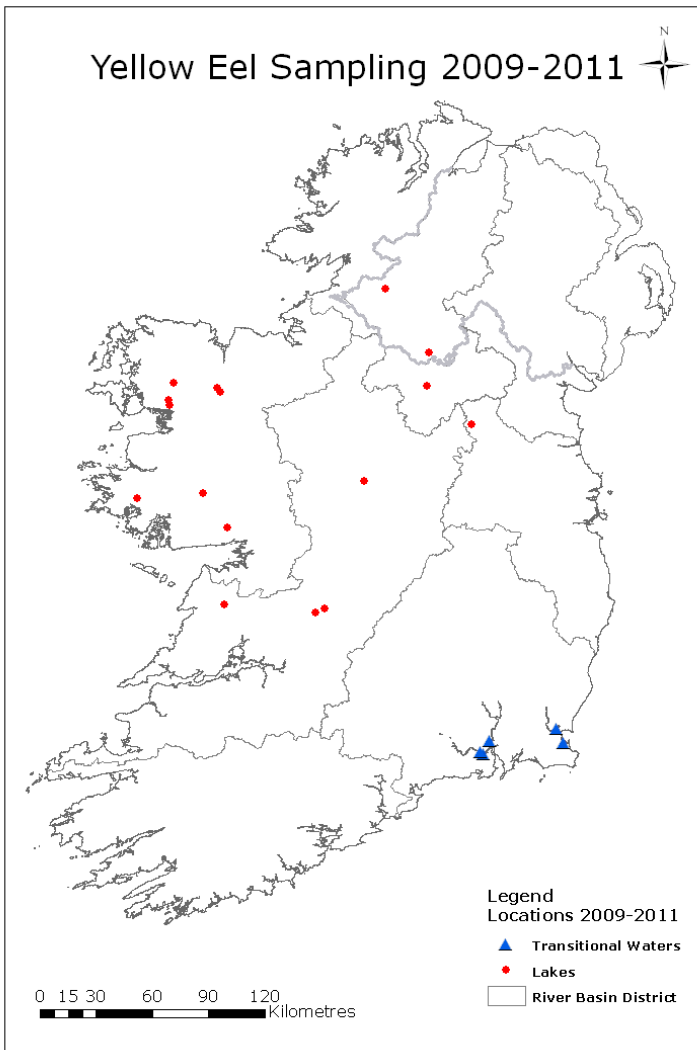


Figure 4-6: Length frequency of yellow eels from transitional waters and lakes.



# Ch 4 - Yellow Eel Monitoring

- This monitoring programme aimed to meet a number of objectives.
  - Estimate silver eel escapement using indirect assessment from yellow eel stocks
  - Monitor the impact of fishery closure on yellow eel stock structure
  - Compare current and historic yellow eel stocks
  - Establish baseline data to track changes in eel stock over time.

# Fyke Net Survey 2009-2011

Water body	2009	2010	2011
Burrishoole	√	√	√
Lower Derg*	√		√
Upper Derg		√	
Upper Corrib		√	
Lower Corrib	√		
L. Cullen	√		
L. Conn	√		
Upper L. Erne		√	
L. Ree (Upr.&Lwr.)		√	
L. Oughter			√
L. Ramor			√
L. Inchiquin			√
Ballynahinch			√
Waterford Estuary	√		√
Slaney Estuary		√	
South Sloblands		√	

# Ch. 5: Comparisons of Historic and Current Data

Moy – L. Conn

Corrib – Upr & Lwr

Fergus – L. Inchiquin

Shannon – L. Ree & L. Derg

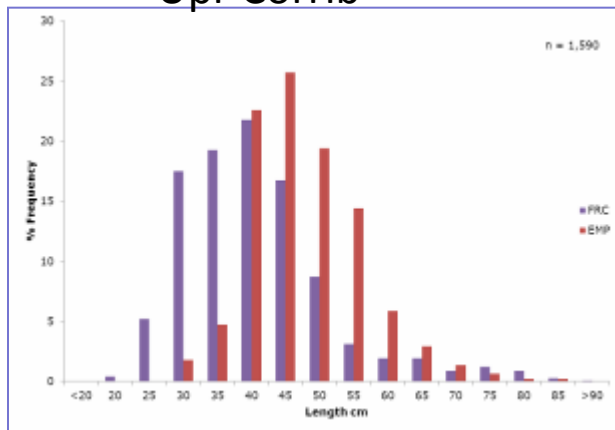
Wexford – South Sloblands

Transboundary – Erne – UL Erne, LL Erne

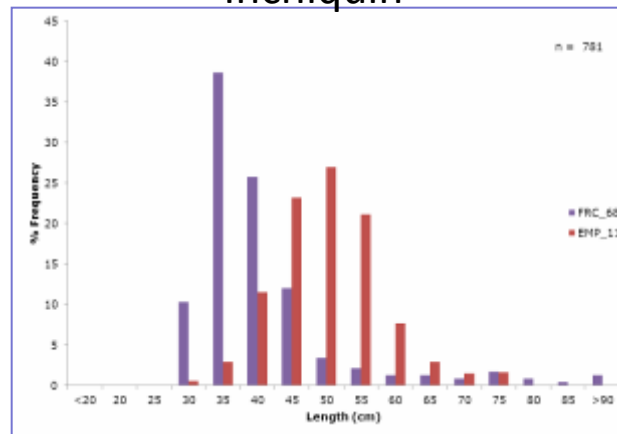
L. Oughter



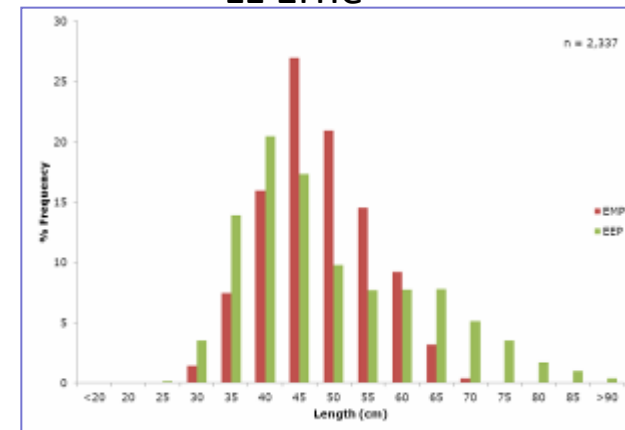
Upr Corrib

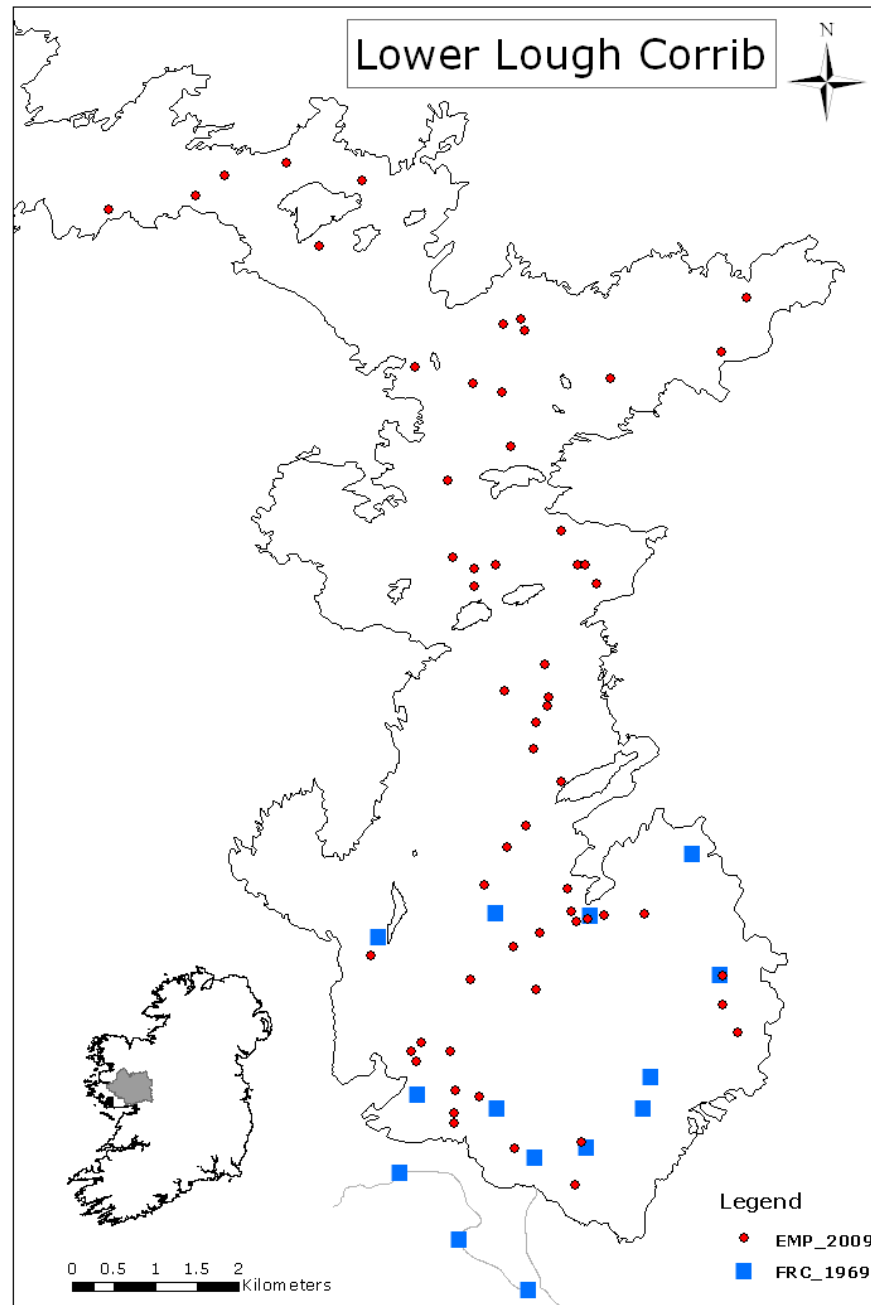


Inchiquin



LL Erne





# Ch. 5: Comparisons of Historic and Current Data



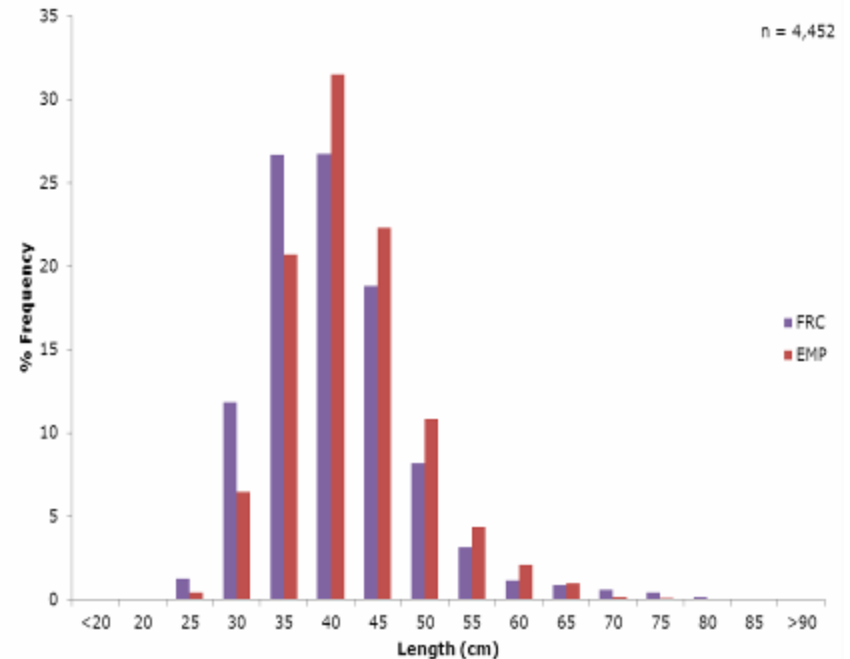
## Yellow eel fyke net lake surveys

- No change in CPUE in many waters (e.g. Derg, Conn, Inchiquin, Erne)
- Some areas showing lower CPUE, (Corrib, Ree)
- Change in length frequencies to larger eels, with smaller eels missing in many cases, indicative of a collapse in recruitment
- Relatively good catches of eels in some waters, such as the Erne, Waterford Est,

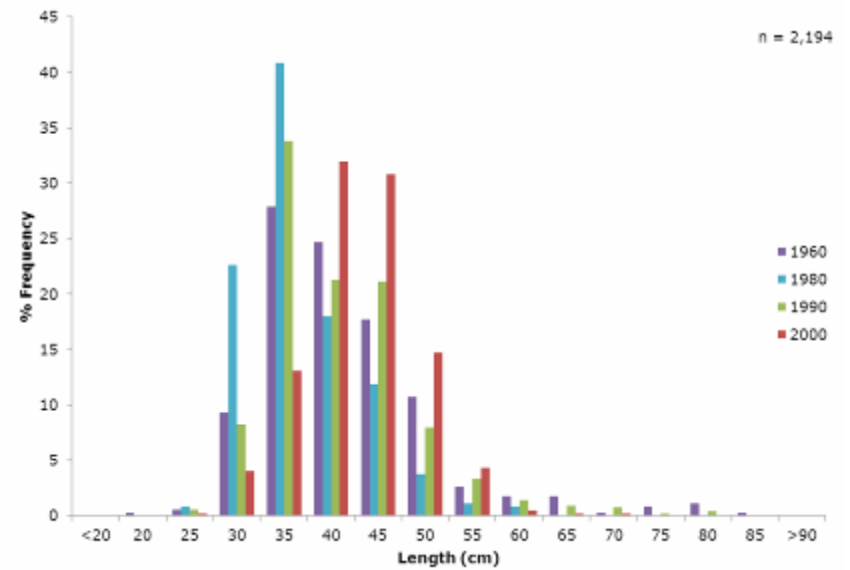
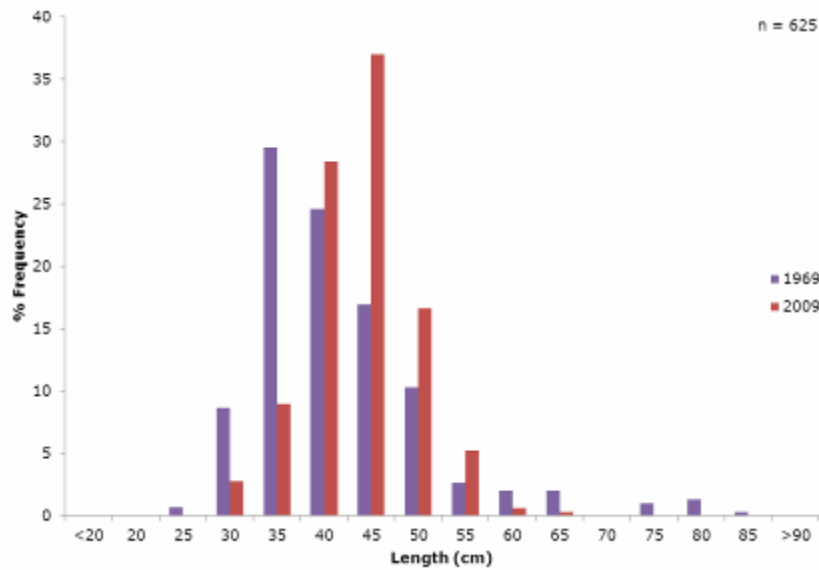
Lough Derg

# CPUE & Length for Lough Derg

Group	Year	Eels	net*nights	CPUE
FRC	1981	478	210	2.276
	1982	1039	300	3.463
	1983	830	320	2.594
	1984	1159	450	2.576
	1985	1255	520	2.413
	1986	927	380	2.439
	1987	941	340	2.768
	1988	744	280	2.657
EMP	2009	669	290	2.307
	2010	771	255	3.024
	2011	856	220	3.891



# Increasing yellow eel size - L. Corrib

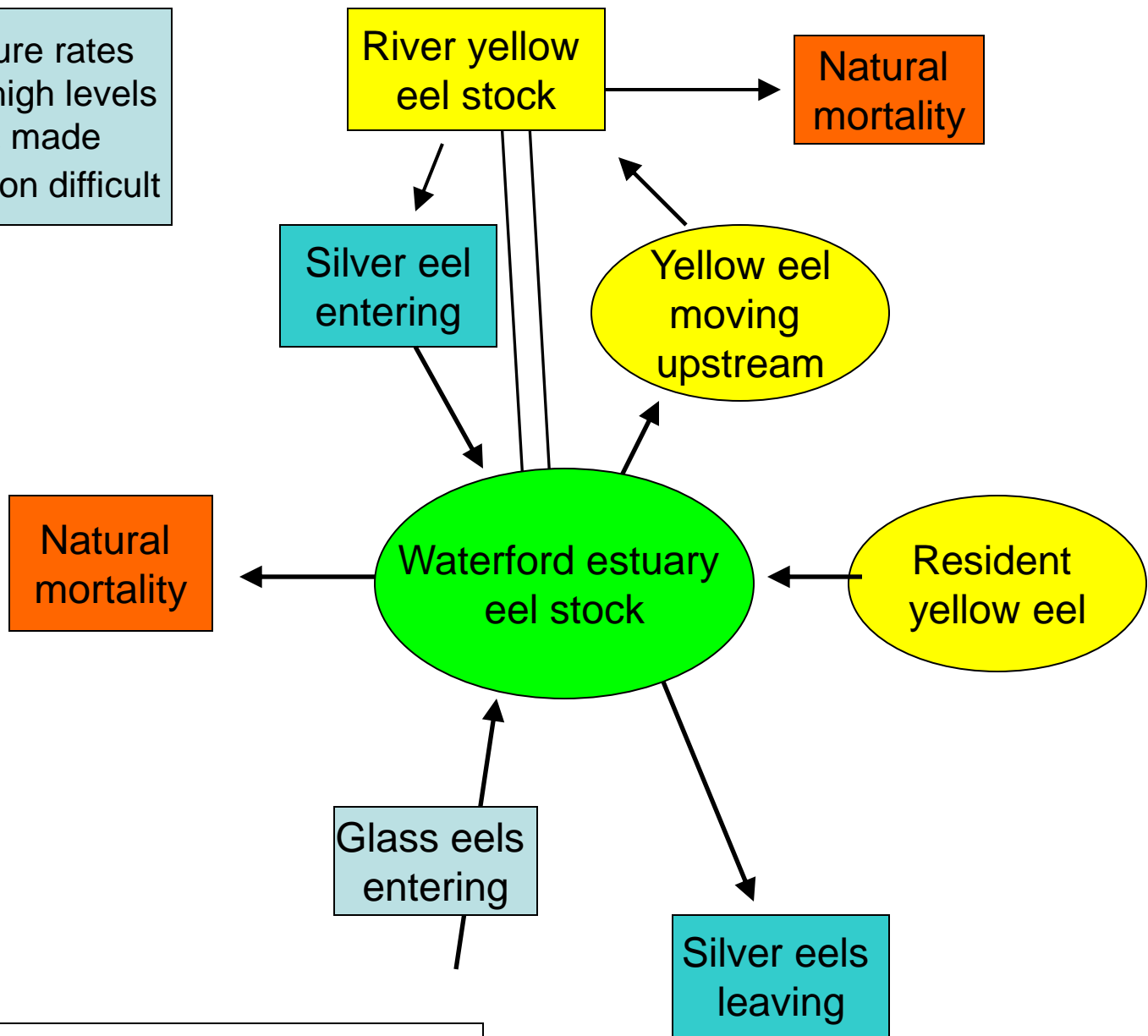




# Transitional Waters

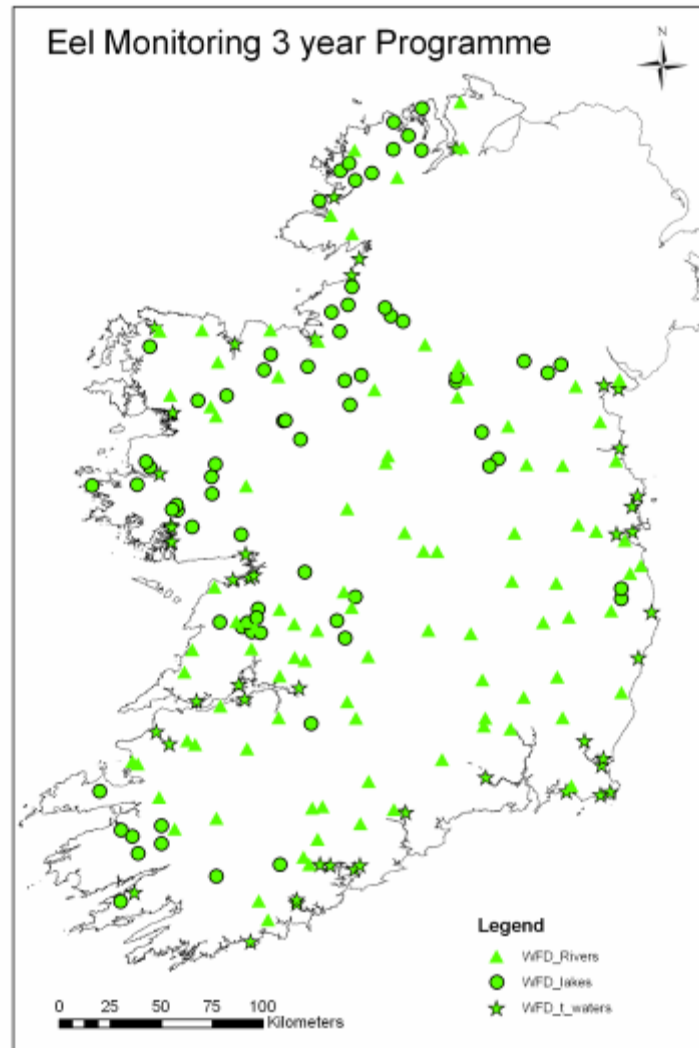
- Highest CPUE values were recorded in the Barrow/Nore and Suir estuary.
- Low mark-recapture rates indicated probable high levels of movement within these waters and made population estimation difficult.
- Due to the migratory habits of eels moving upstream into the rivers and/or leaving the transitional water as silver eel,
  - it is still not possible to estimate silver eel production and escapement for transitional waters
- Historic eel biomass estimates are not available for the Waterford estuary to assess achievement of the eel escapement target
- The use of telemetry studies will give a clearer indication of the movement habits of eels in estuaries and improve population density estimates

Low mark recapture rates indicate probable high levels of movement & made population estimation difficult



Currently can not provide quantitative eel stock advice for estuaries

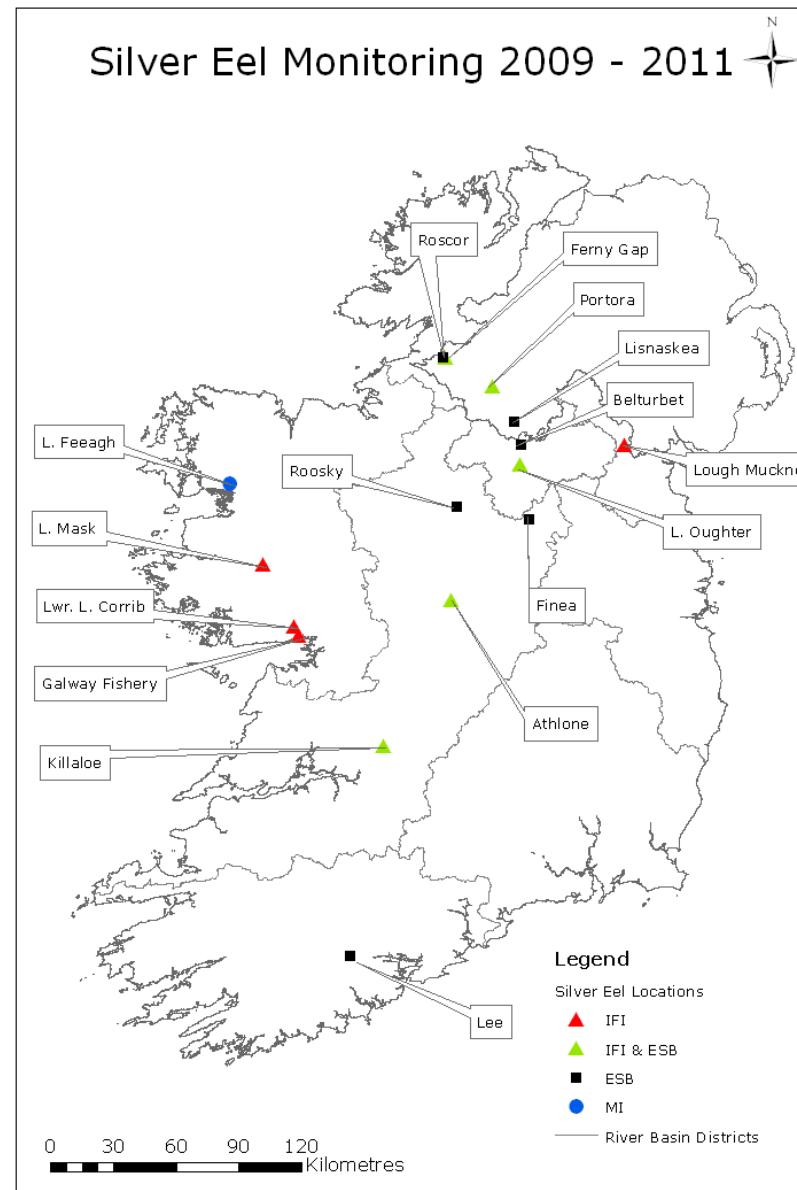
# Ch 6- Water Framework Directive Monitoring for Eel



# Ch. 7: Silver Eel Escapement 2009-2011

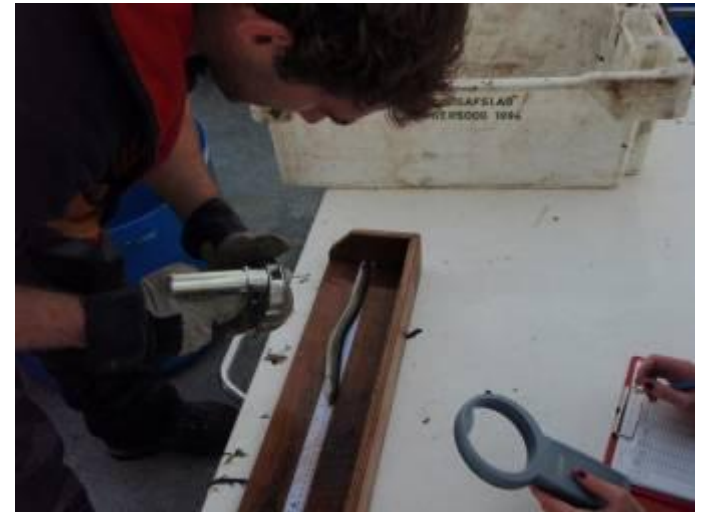


Shannon	2009 -2011
Erne	2010-2011
Burrishoole	2009 -2011
Corrib	2009
Mask	2010 – no estimate
Fane	2011 – partial estimate (good potential)

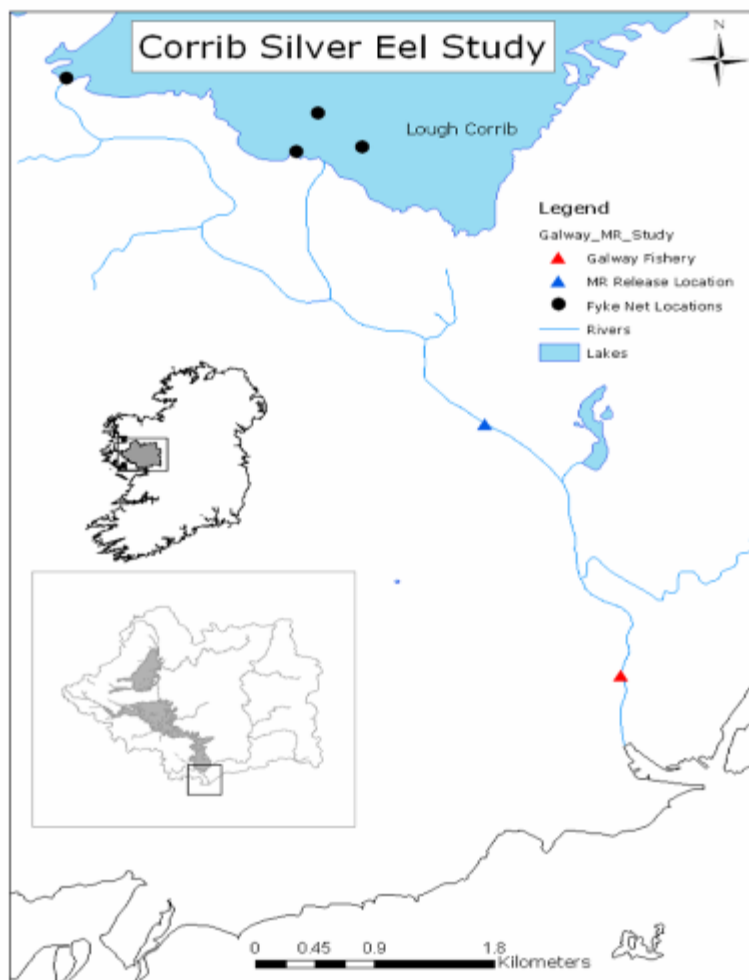


# Mark & Recapture

Passive Integrated Transponder



# Estimate of Corrib Silver eel escapement



Date tagged	20/10/2009	11/11/2009
No. Tagged	210	206
Total Recaptured	79	70
Aug Dark	-	-
Sept Dark	-	-
Oct Dark	76	9
Nov Dark	-	61
Dec Dark	-	-
No. Sacrificed	53	58
Yellow Recaptures	3	0
% Recapture	36%	34%





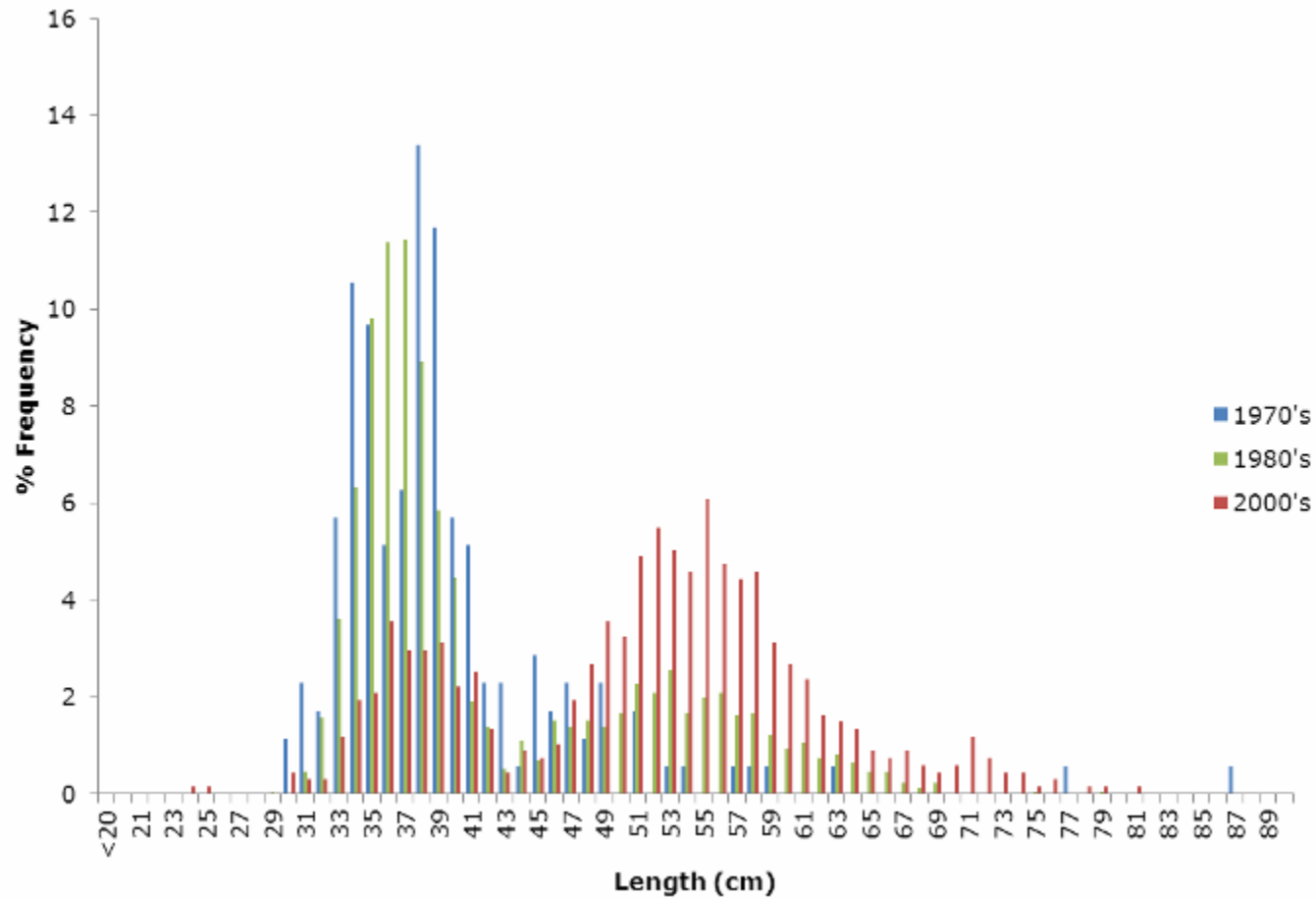


# Estimated silver eel escapement for Corrib catchment

	Monthly Recapture Rate	Av. Recapture Rate (35%)	Total Recapture Rate (36%)
Capture at Weir (t)	12.65	12.65	12.65
Catch past Weir (t)	22.59	22.42	22.48
Total Escaped Eels (t)	35.23	35.70	35.13
Numbers escaped	119,822	119,157	117,248

<b>% Escapement of Historic Production</b>	<b>36%</b>
<b>EU Target Escapement Required</b>	<b>40%</b>

# Length frequency of historical silver eel data from Galway fishery



# Ch. 7: Fane

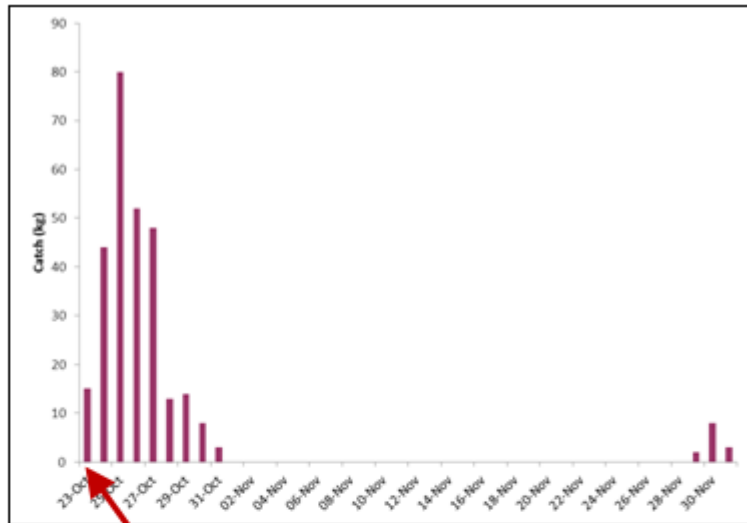


Figure 7-36: Silver eel catch from the Fane catchment 2011.

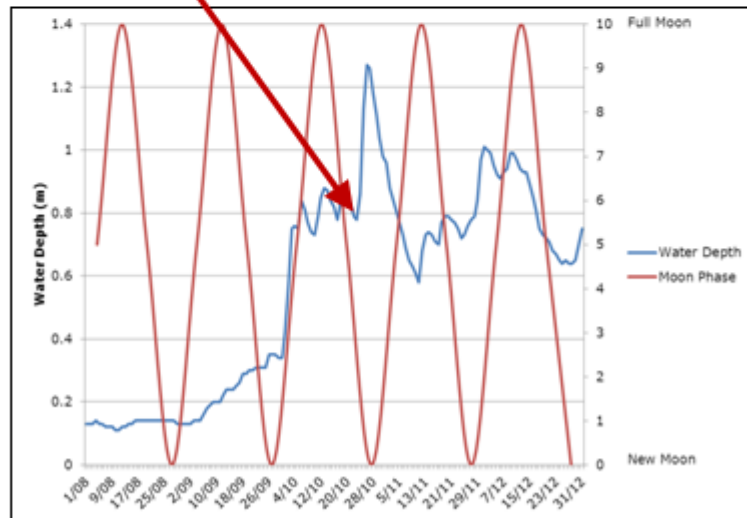
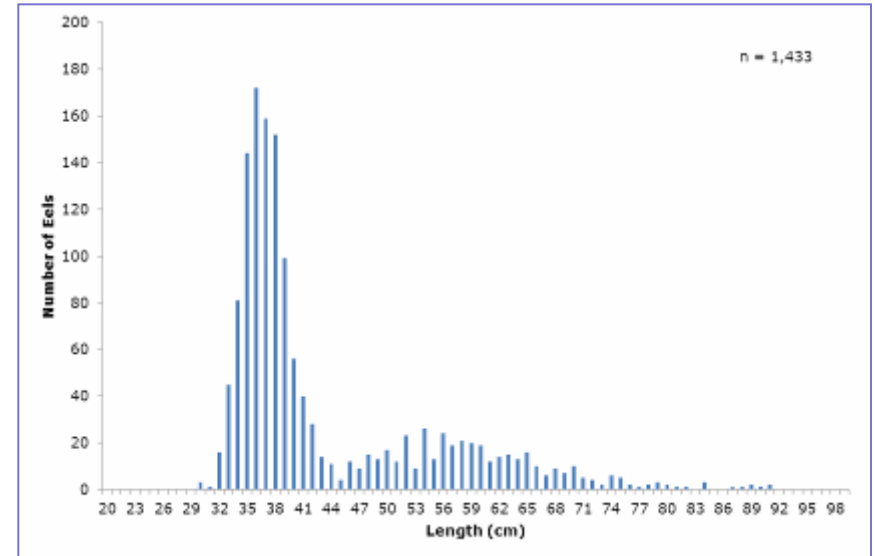
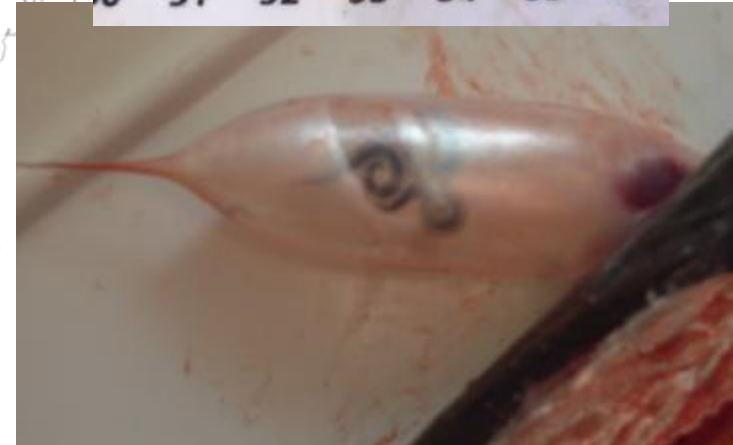
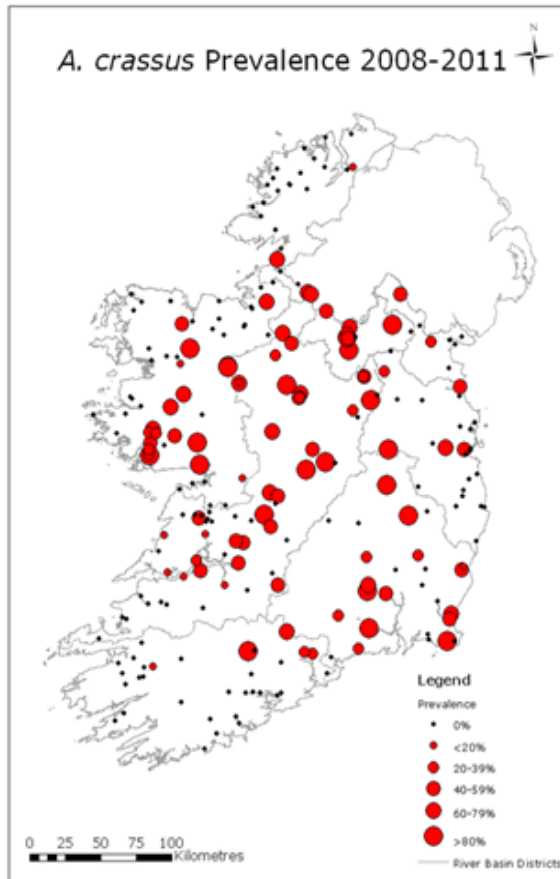


Figure 7-37: Water depth and moon cycle for the silver eel season 2011.



High proportion of males may be due to:  
High recruitment/high density  
Run timing  
High exploitation on larger yellows

# Determine parasite prevalence and eel quality



*Anguillicoloides crassus* prevalence and mean intensity distribution in Ireland.