

# *The Irish Approach to Sea Lice Management*

Current situation in Ireland

*Dr David Jackson*

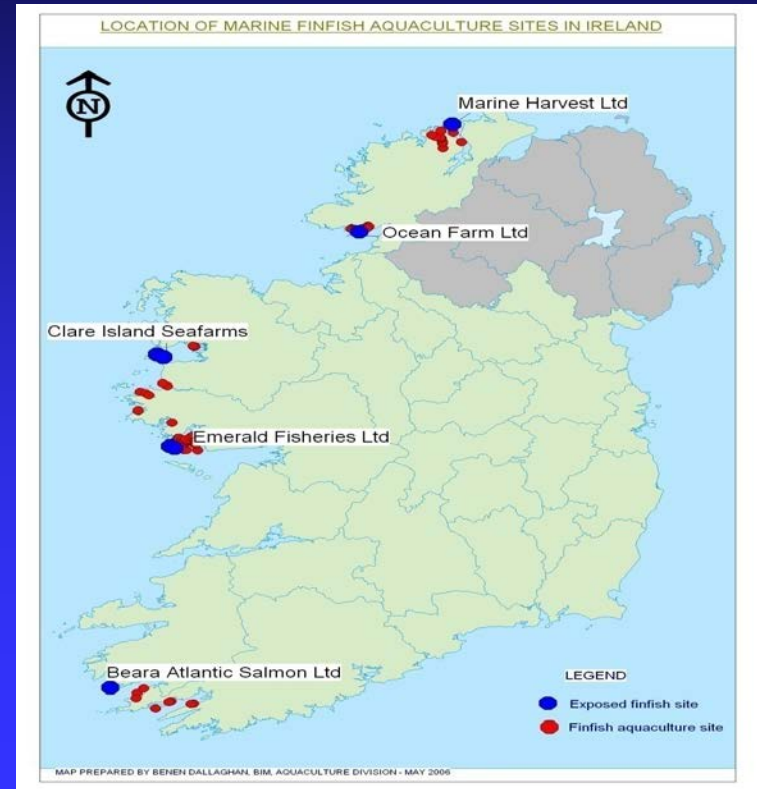
Inspector of Fisheries

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# National Monitoring and Control Programme

- All sites inspected 14 times p.a. and results published.
- Inspections carried out by Marine Institute staff.
- Notice to treat if trigger levels exceeded.
- Compliance license condition (Protocol No.3, 2000).
- Carried out as part of new control strategy (DAFF 2008).



# Single Bay Management

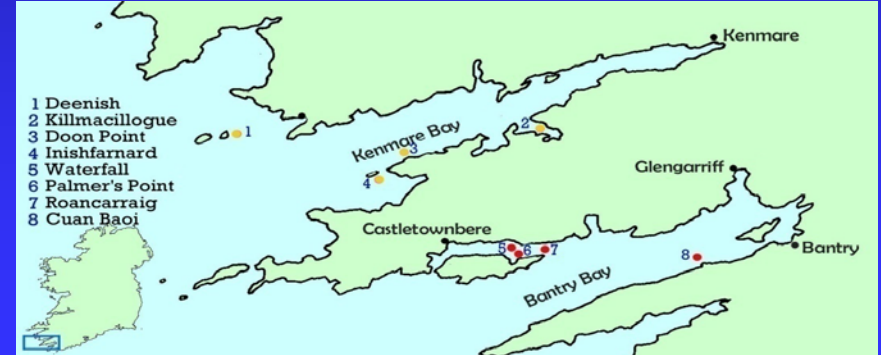
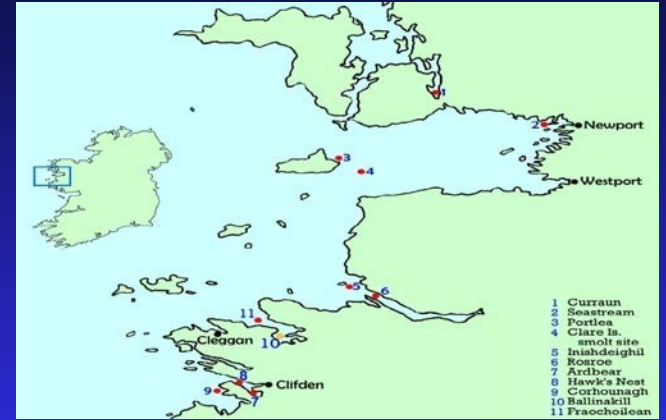
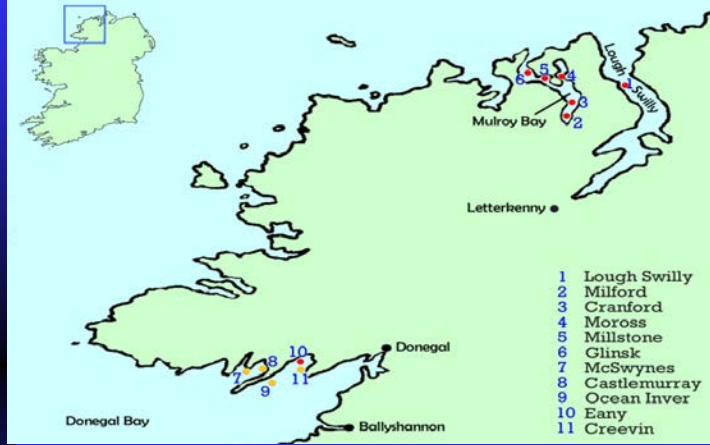
Integrated management treatment to control disease and parasites: - international best practice.

- Bay wide management:- treatments, fallowing, single generation sites etc.
- S.B.M. techniques were progressively introduced from 1992 to 1994.

## C.L.A.M.S.

- Co-ordinated Local Aquaculture Management
- A Development of Single Bay Management.
- Integrate management practices for various species sectors.

# 52 sites along coastal fringe



# Sea Lice Monitoring



- All sites 14 times p.a. lice & environmental data
- Each year class: Standard & random cage
- Reported as mean number of lice per fish
- Results reported to farms within 5 working days
- Instructions required:- Management cell
- Reports to Dept & interested parties monthly
- Results & trends :- Published annually.

# Backdrop

- Long term declines in Atlantic salmon stock
- Conservation measures and restrictions on fisheries in many stocks
- Much of decline attributed to marine temperatures experienced by smolts (Friedland *et al*, 1999)
- Norwegian research (Finstad *et al*, various) showing impacts of lice infestation on post smolts.
- Causes of marine mortality poorly understood (Jones, 2009).

# DAFF Pest Management Strategy 2008

- Launched by Minister Coughlan in May 2008
- Implementation group in Place since Dec 2008
- Pilot mgt cells in place spring 2009



*A strategy for improved pest control on Irish salmon farms*

May 2008

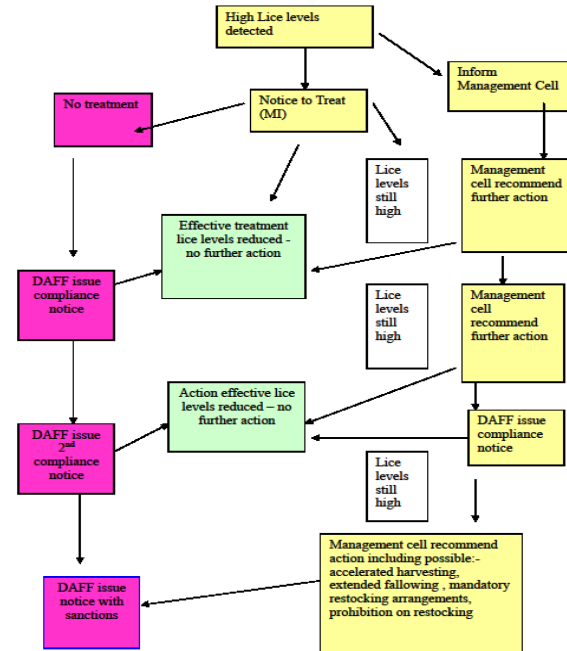
# Recommendations of DAFF Strategy

1. A joint DAFF/industry working group to identify “break out” site options for fallowing etc.
2. A review of treatments covering: environmental conditions, farming practices, sensitivity of lice and fish health issues.
3. Increased availability of well boats for controlled bath treatments.
4. The optimisation of product rotation for strategic treatments.
5. Intensive consultation with the fish farming industry
6. A working group on the potential of alternative treatment approaches .
7. A national implementation group to be established
8. A New role for SBM:- Management Cells

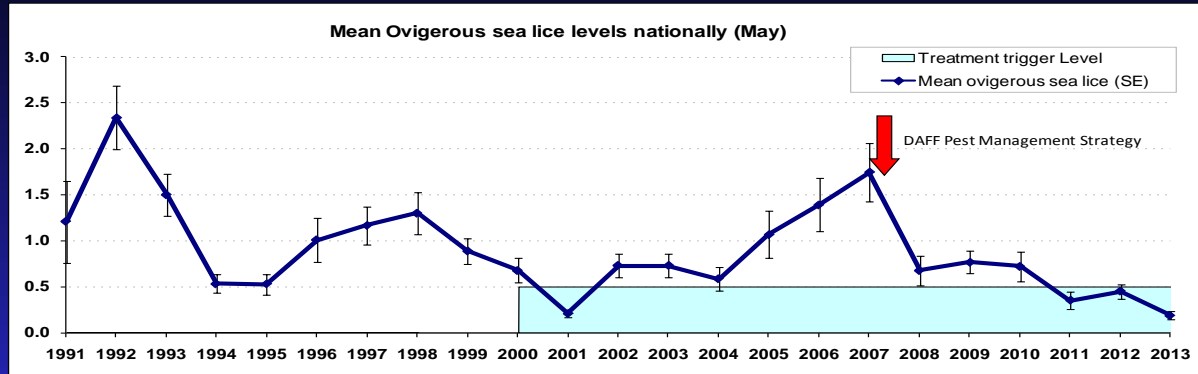


# What is a management cell?

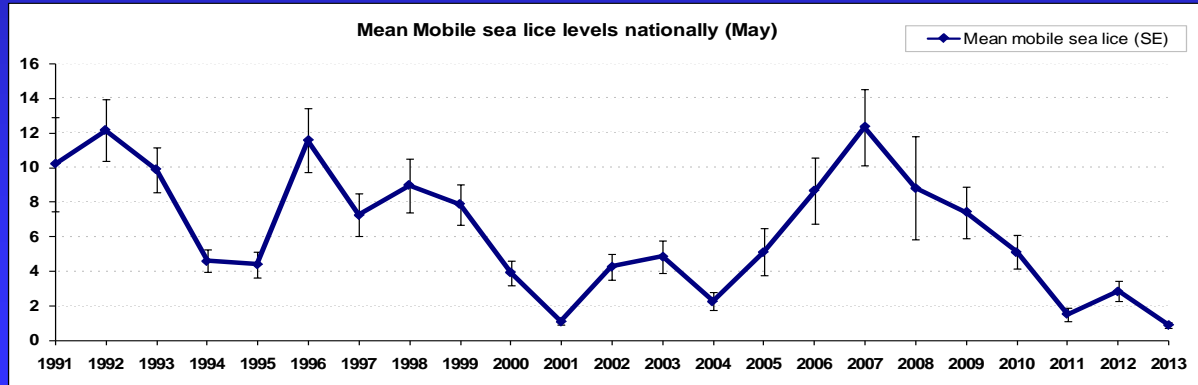
- Mgt Cell is a local Group
- Convened when there is a problem
- Give advice- way forward
- Can advise on DAFM intervention
- Comprised ISGA, MI, BIM, Vet, SBM, Affected farm



# Annual trend (May mean) (SE) ovigerous *L. salmonis* on one-sea-winter salmon.



# Annual trend (May mean) (SE) mobile *L. salmonis* on one-sea-winter salmon.



# Geographical correlation

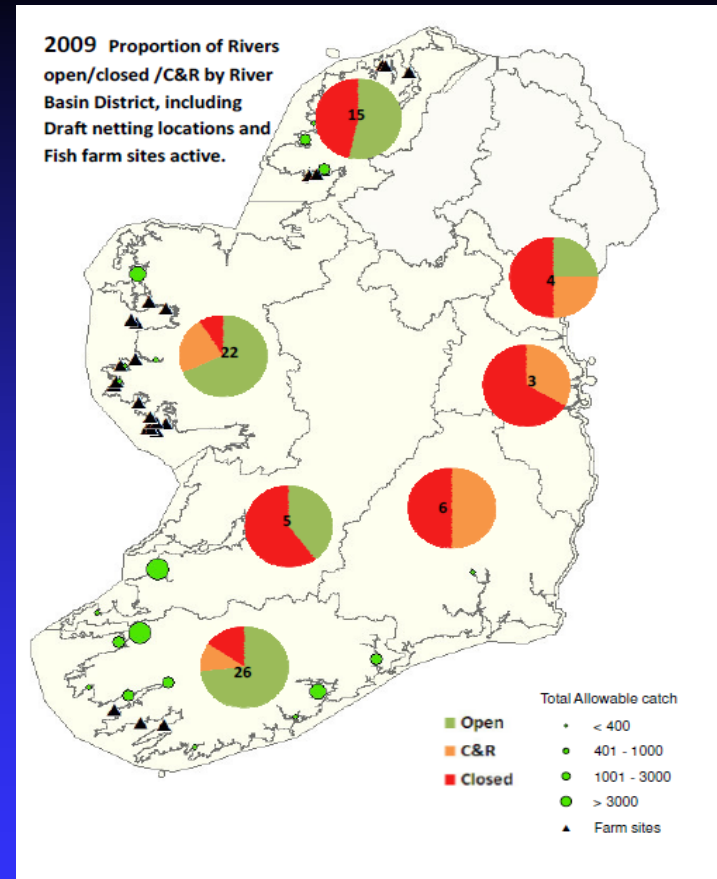
No negative correlation between CL status and fish farming

In fact significant positive correlation!

*Note:*

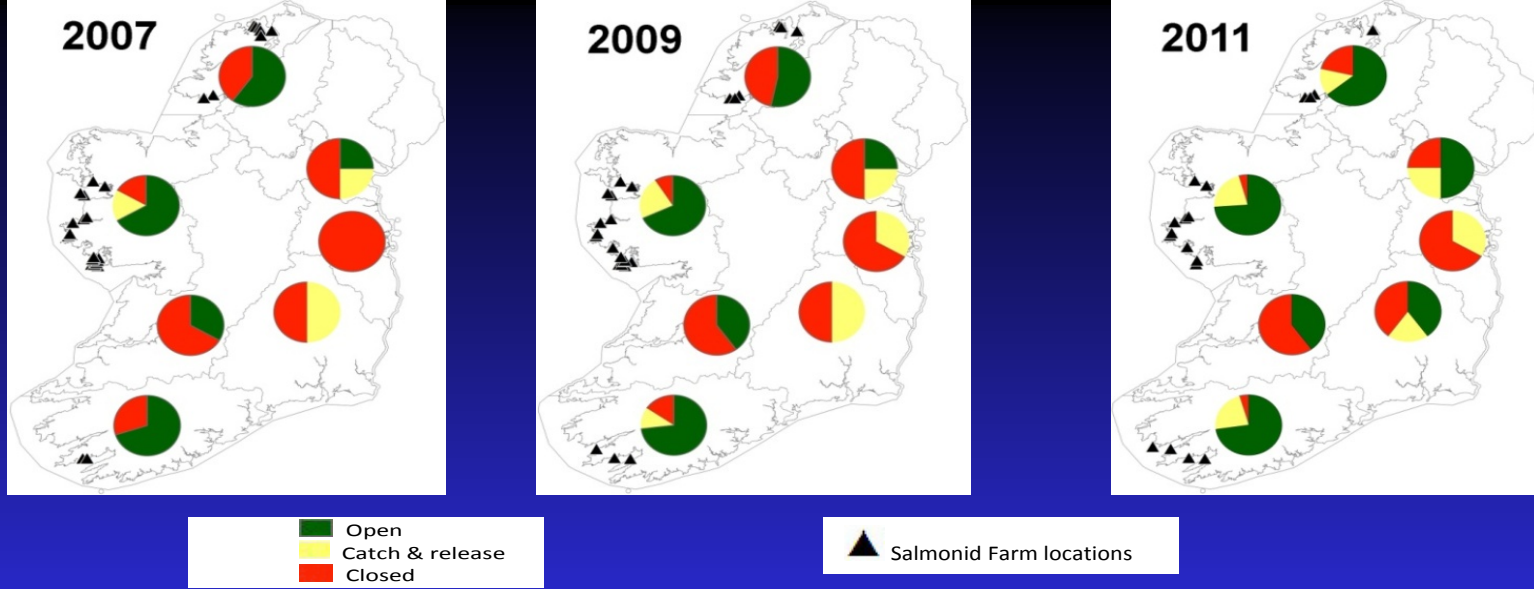
*CL = conservation limit*

*C&R = catch and release*

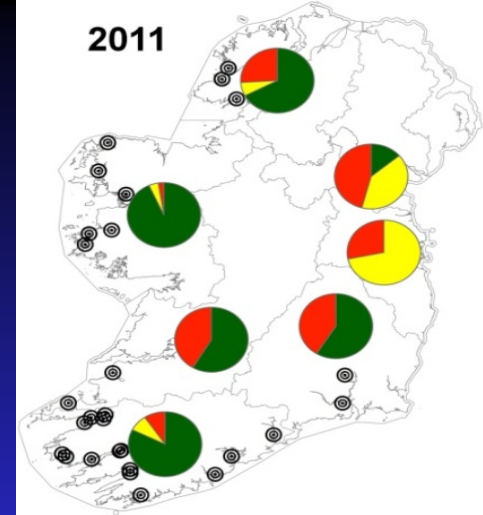
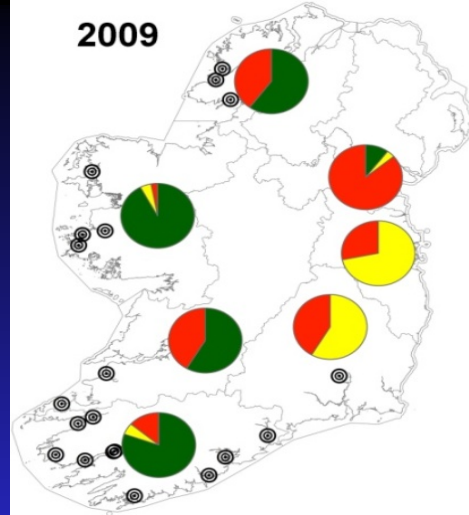
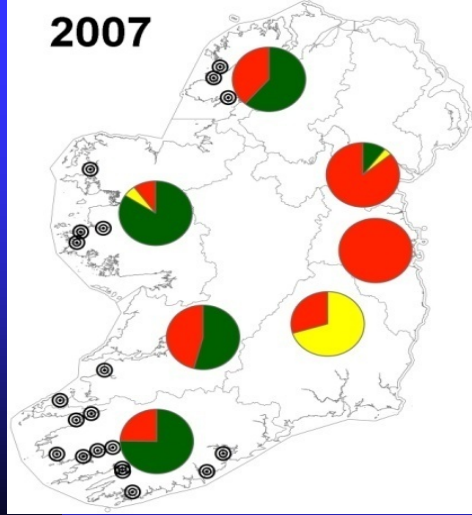


Salmon rivers open for exploitation by RBD (excluding rivers with less than 10 fish)

*From: -Jackson et al., 2013.*



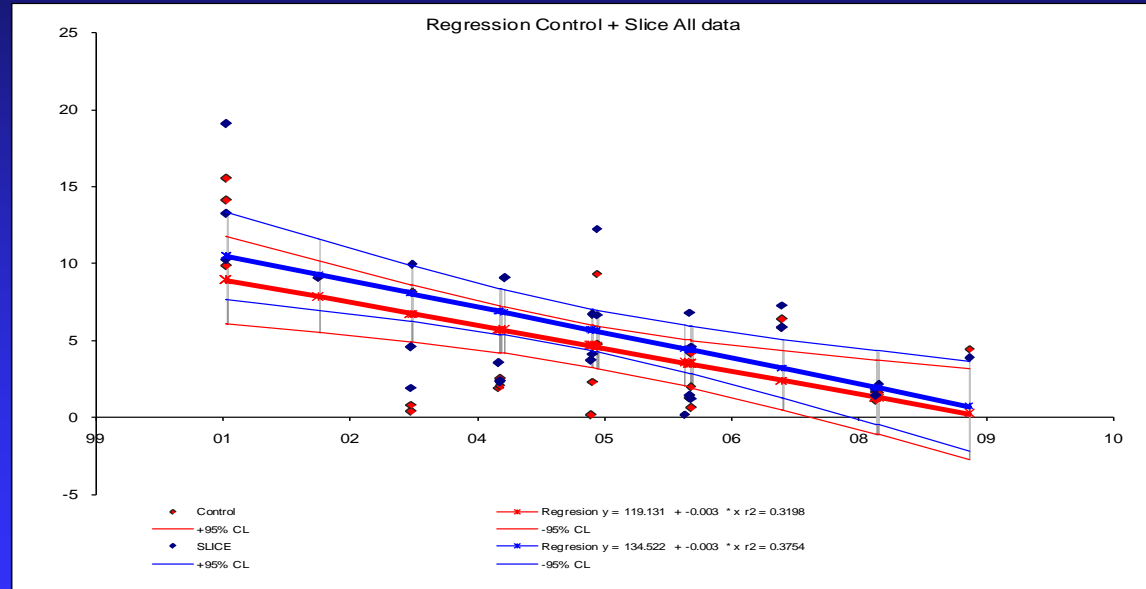
Map showing the proportion of rivers in each River Basin District which are either open for fishing, being fished on a Catch & Release basis or closed to exploitation. Locations of salmon farm sites operational in each year are indicated (after Jackson *et al.* 2013).

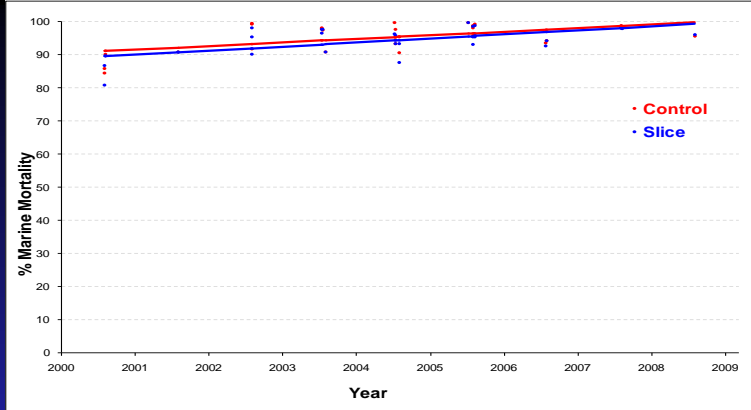


Map showing the proportion of rivers, measured as fluvial area accessible to salmon (m<sup>2</sup>), in each River Basin District which are open for fishing, being fished on a Catch & Release basis, or closed to angling. Locations of commercial salmon draft net fishing sites are indicated (after Jackson *et al.* 2013).

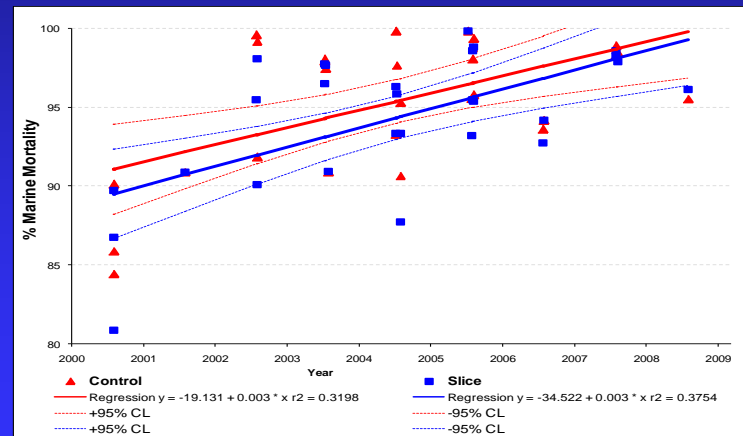
# Sea Lice related mortality in Atlantic salmon in Ireland

*survival of treated and control groups over time*





Marine mortality control and treated groups regression lines fitted.



Plot expanded to show regression line and 95% confidence intervals

# Conclusions from combined data

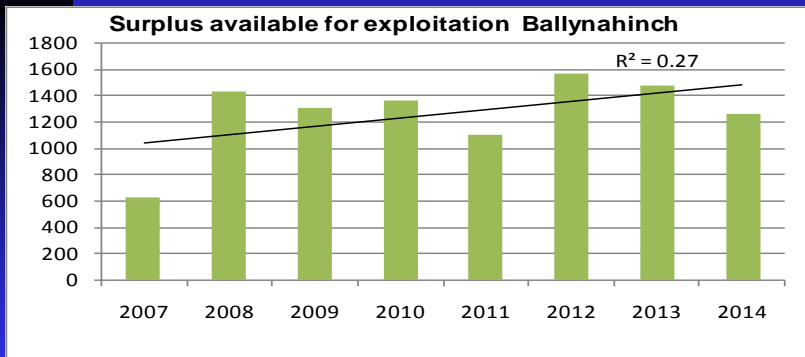
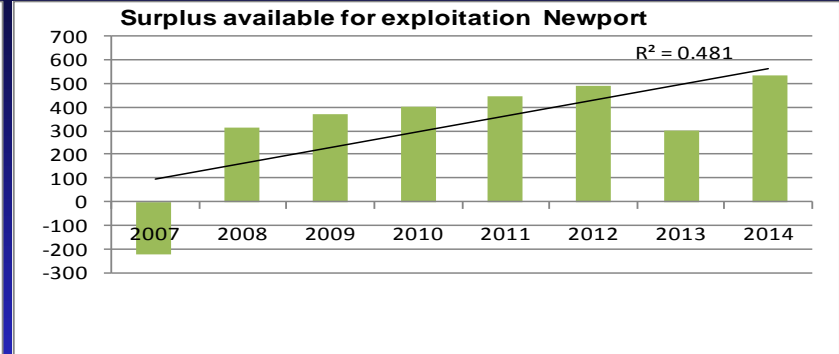
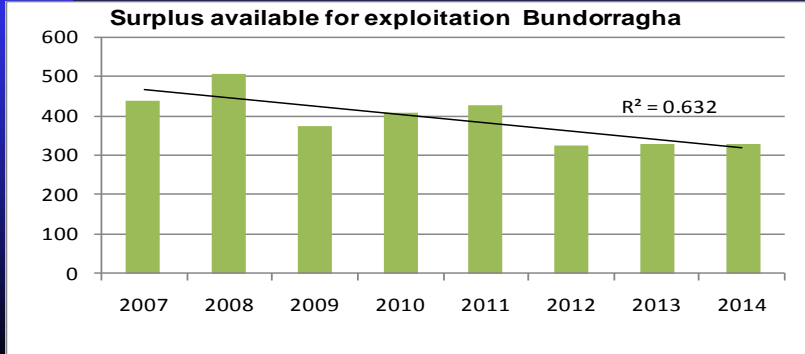
- Strong and significant trend in increasing marine mortality.
- This decline is independent of whether smolts are protected from lice infestation or not.
- Lice infestation of smolts a minor component of marine mortality in study areas.
- Lice infestation of smolts not implicated in observed decline in marine survival.



# Outline of Response to Pilot Case

- The complaint (764/09/ENV1) relates to three river systems in the west of Ireland, the Bundorragha River, the Newport River and the Ballynahinch catchment.
- An examination of the conservation status of salmon from the three fisheries named in the complaint showed that all three rivers were meeting their conservation objectives.
- In each case the rivers support a recreational fishery and in two cases support a commercial draft net and a commercial recreational fishery.

# Conservation status of Rivers in Complaint



**All rivers meeting CL and significant surplus available for exploitation**

**Surplus stable or increasing**

Source: All data plotted from *Report of the Standing Scientific Committee to the Department of Communications, Energy and Natural Resources – The status of Irish salmon stocks reports for each year and relevant S.I.s*



**Thank you**



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