Fishing for a future- An assessment of the sustainable fisheries potential of Lough Neagh, Northern Ireland

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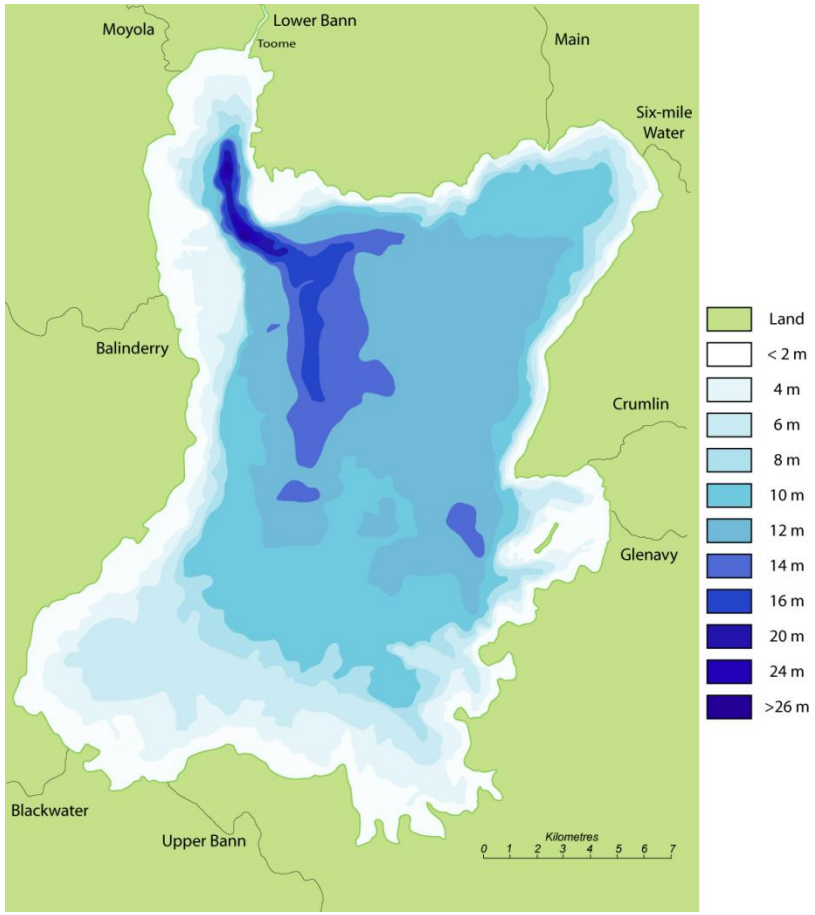
Lough Neagh



- Large (383 km^2)
- Shallow (mean depth 8.9 m)
- Highly eutrophic
  - Total P ca. 180 $\mu g.l^{-1}$
- Long standing fishery (largely eel)
  - 350 employed in 2010
  - Co-operative owns fishing rights
- Unusual fish community
  - Species of conservation concern [coldwater]
  - Invasive & naturalised species [cool and warmwater]

PhD Aims-

1. **Characterise the current status of the fish community of Lough Neagh to:**
   - Develop long-term monitoring methodology
   - Allow science-informed management
   - Investigate current and future status of fisheries

2. **Identify alternative fisheries to that of the declining eel fishery**
   - Inform diversification to support rural economy and a traditional way of life

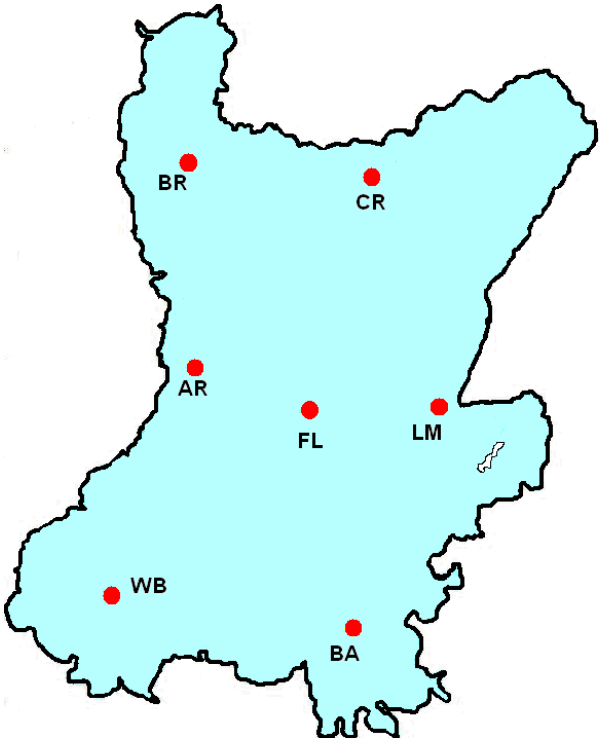
Methodology

7 areas sampled every 7weeks

- Gill netting- European CEN standard multimesh
- Draft netting- encircling of fish with a net of known size - a semi quantitative method

Parameters measured:

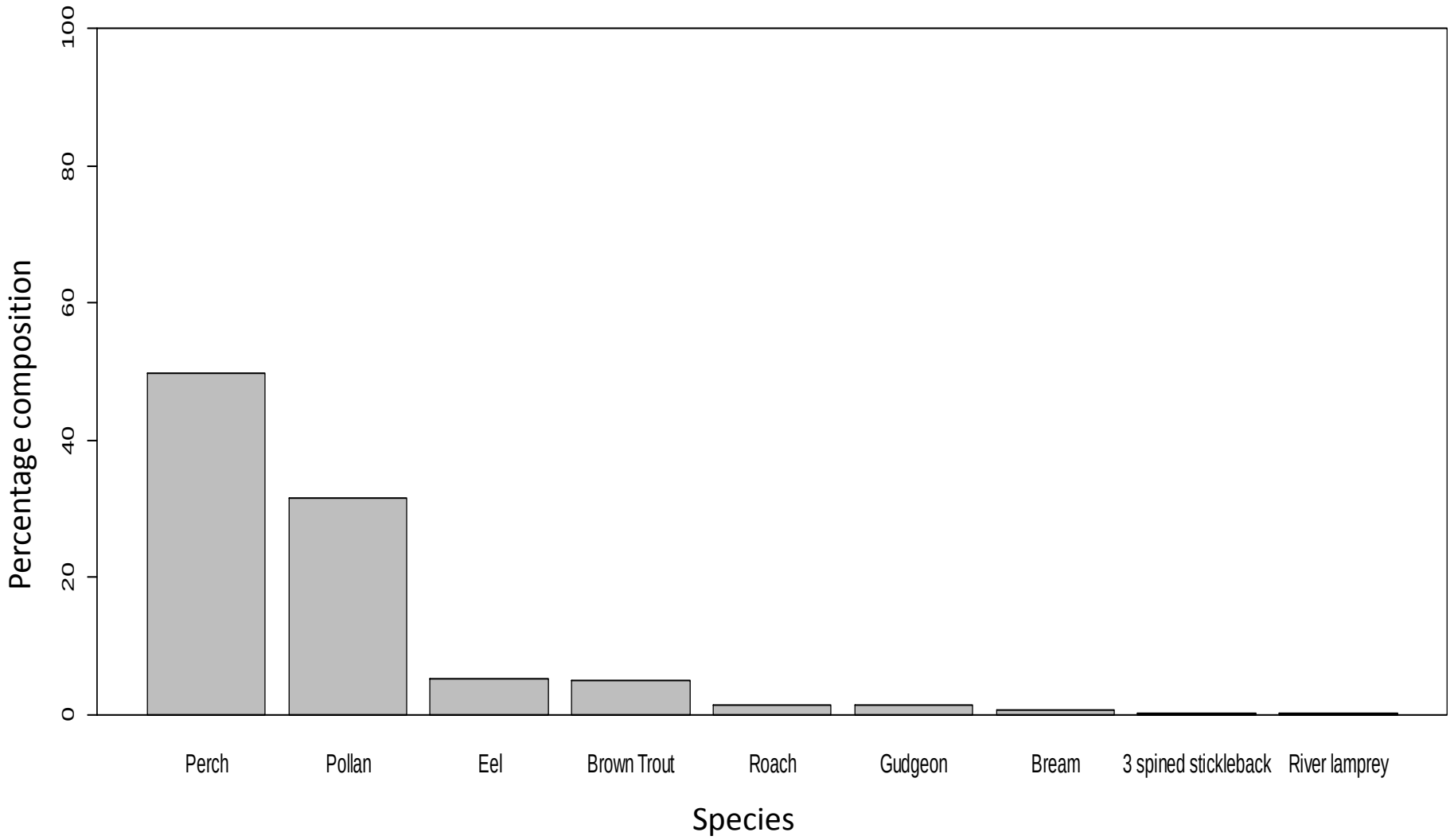
- Length & Mass
- Sex- Gonadosomatic Index of maturity
- Age & growth-scales operculae otoliths
- Diet- Gut contents



Lough Neagh sampling sites

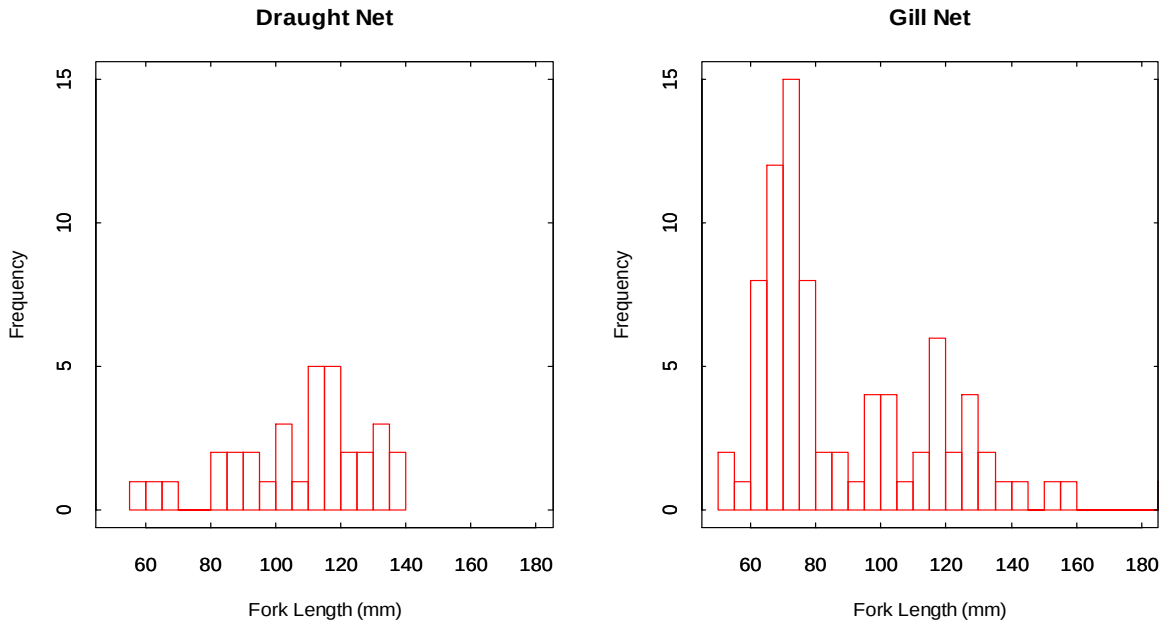
BR - Ballyronan Bay
AR – Ardboe
WB – Washing Bay
CR – Cranfield Bay
FL – Flats;
BA – Bartins Bay
LM– Lennymore Bay.

Current status- Summer 2011



Methods for a long term monitoring programme?

Gill and draft nets



Comparison of length frequency of perch taken by draught and gill nets (2 sample K-S: D = 0.489; P < 0.001)

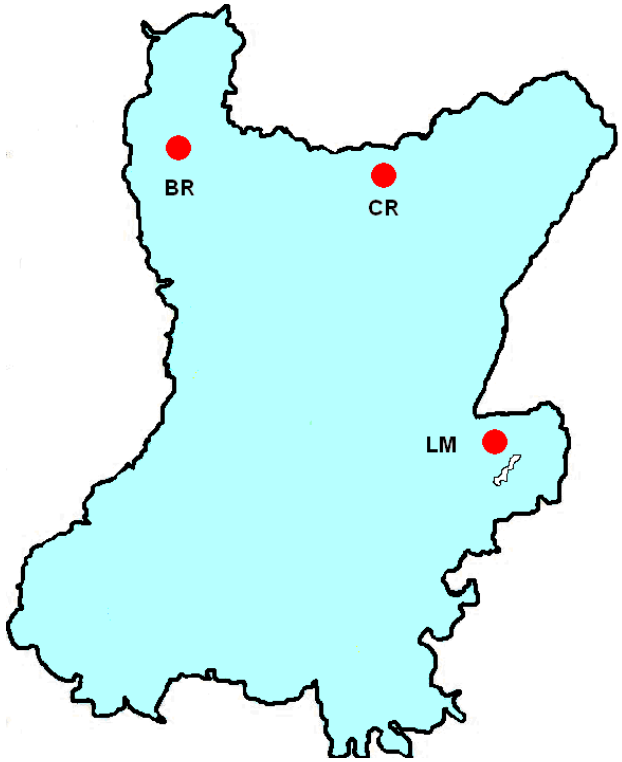
- Perch <80mm under-represented by draft netting
- However, draft netting is good for providing fish density data (semi-quantitative)
- Therefore, must create a correction.

Methods for a long term monitoring programme?

Pollan larvae surveys

- **Towed Icthyoplankton net**
  - 1.5m x .5m mouth
  - 1.5mm mesh size
  - 3 tows/site each 1 min
  - Flow meter attached, allowing calculation of water volume sampled and thus larval density

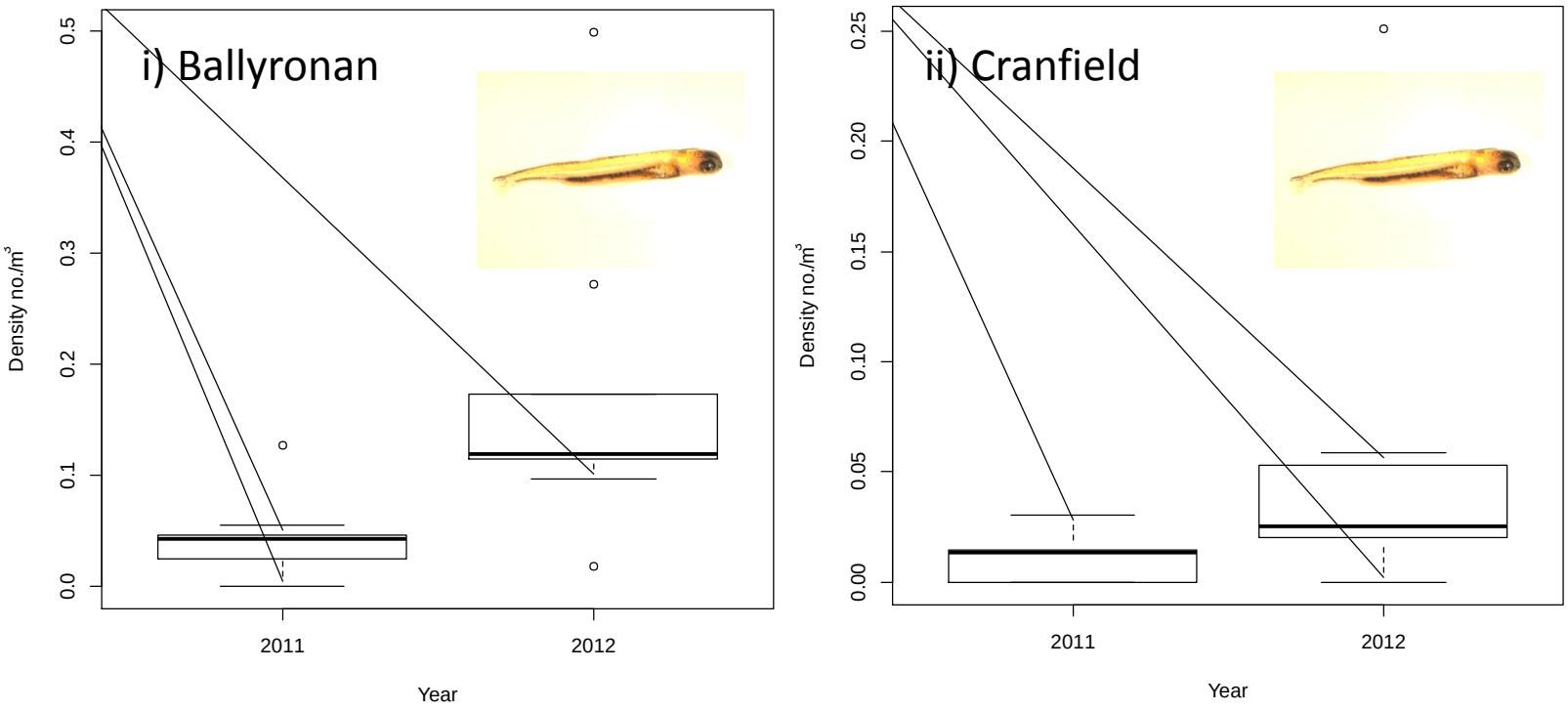
- **Completed at 3 known spawning sites**
  - Weekly, during March/April



Lough Neagh pollan larvae sampling sites

BR -Ballyronan Bay
CR – Cranfield Bay
LM– Lennymore Bay.

Temporal changes in pollan recruitment



Comparison of pollan larvae density at c. 30 days post first hatching in 2011 & 2012 in i) Ballyronan (Mann-Whitney U test: W=11, p=0.0078) & ii) Cranfield (Mann-Whitney U test: W=18, p=0.049)

- 2012- increased recruitment?

Implications for management so far

- **Data gained already influencing management**
  - Data presented to DCAL and Lough Neagh Fisheries Co-operative Society
- **Increased pressure on scale fish resource**
  - Increased unemployment means more people going back to fishing

Implications for management so far

- **Scale fish fishery owners need to take control**
  - Fishermen currently sell to independent fish dealers- cannot accurately quantify scale fish catches- Fishery anarchy!
  - Own rights, yet little interest in potentially lucrative scale fish
- **E.g. Pollan**
  - Fishermen currently given c. £1.10/Kilo by fish merchant.
  - Eventually sold as pike deadbait at £5.50/Kilo
  - A 400% mark up that could be taken advantage of by the community!
- Management in this manner could mean a better price gained by the fisherman for fewer fish. A win-win for the fish and the fisherman.

Take home message

- Uncontrolled fishery- threat
- Sustainably managed fishery- conservation benefit

- Good management, propagated from sound scientific advice, based on a robust, cost-effective monitoring programme

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