

MOREFISH

Ins and Outs: Life Cycle Assessment of Irelands Freshwater Aquaculture Sector

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Outline

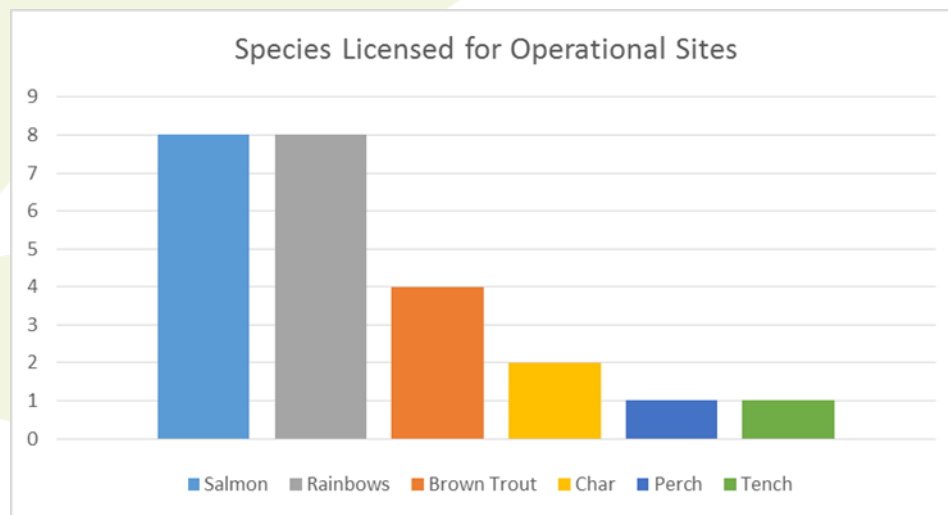
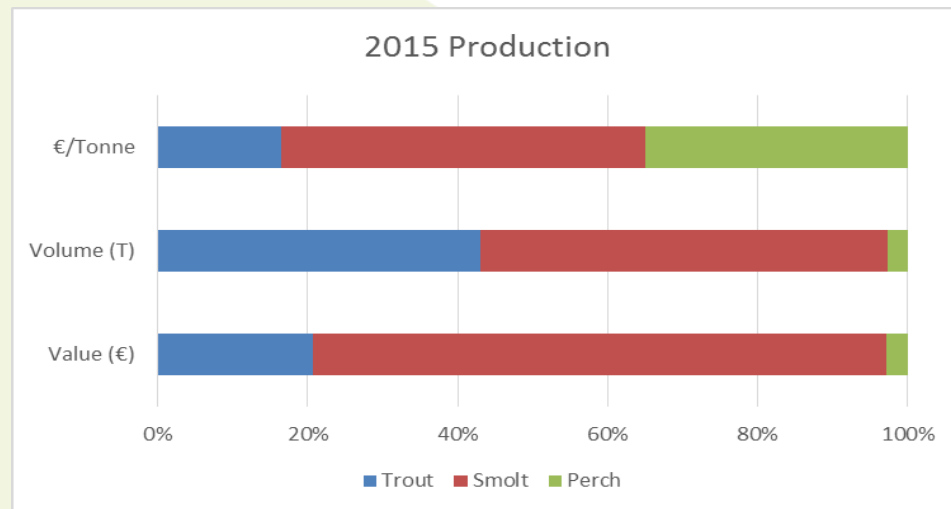
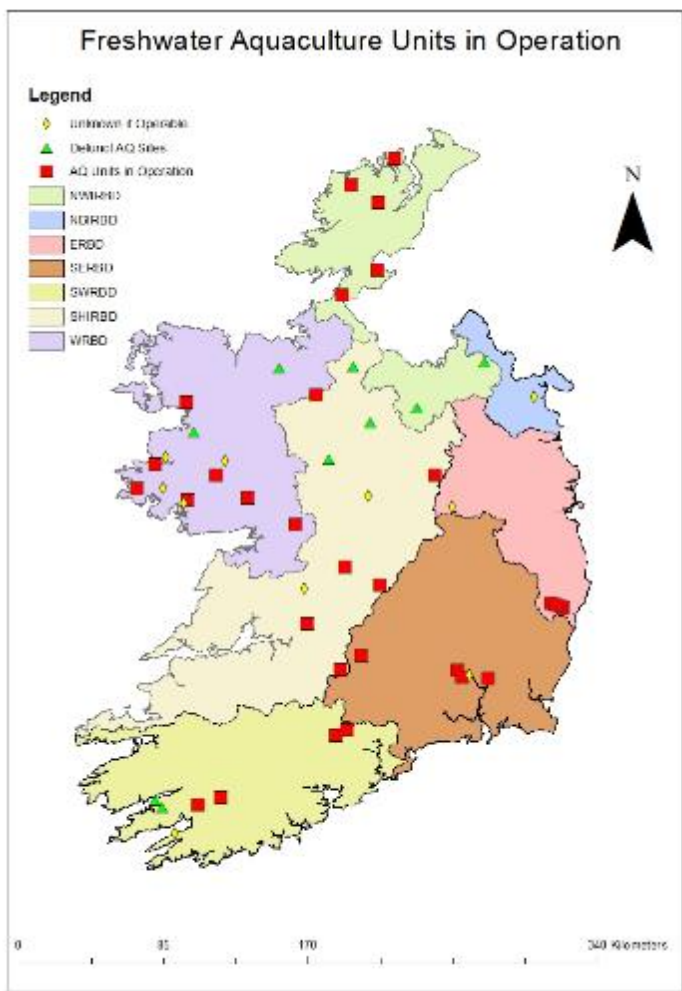
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Introduction

- MOREFISH: 2015- 2017 research project aims to enhance sustainability and increase production efficiencies in Irish freshwater aquaculture.
- Research areas include: advanced aeration (micro/nanobubble), PUV disinfection, microbial assays, LCA development of BIP metric, effluent remediation.
- LCA: ISO standardized technique which evaluates inputs, outputs and impacts associated with a production system based on a “functional unit”.
- 4 main stages- Goal & Scope, Inventory Analysis, Impact Assessment & Interpretation

Irish Freshwater Aquaculture



TELS

- As part of aquaculture license TEL/Section 4 must be granted.
- All CoCos with active and historic aquaculture units were contacted.
- 13 licenses received for the current 27 commercial operable sites.
- Variance in the parameters required and limits used.
- Using the TEL limits an LCA study can estimate the Eutrophication Potential of the sector.



Methods

- Eutrophication is defined as “Potential impacts from high levels of macronutrients” (Guineé 2002)
- Assumptions of this method include:
 - Unlimited supply of nutrients.
 - Assumed that algae are representative of average biomass of waterbody.
 - The only eutrophying emissions are N & P compounds.
- Nitrate, Orthophosphate, Total Phosphorous, BOD & Ammonia characterized.
- CML CFs used. BOD was converted to COD.
- Land use calculated using ArcMap and characterized using CML land occupation CF.

Results/Expected Outcomes

- Robust results using the maximum limits farms must meet under WFD and TEL
- Allow comparison between and within LAs i.e. use/omission of one parameter can affect the EP result
- Comparison between other production systems EP
 - Value €/kg per PO₄ eq. kg
 - Area required Tonne/m², €/m².
- Compare Irish FW aquaculture with international trends.
- Future work to include:
 - Expansion of the dataset
 - Comparison with environmental monitoring data.

