

Monitoring & Control of Sea Lice

Current situation in Ireland

Possible international collaboration



Overview

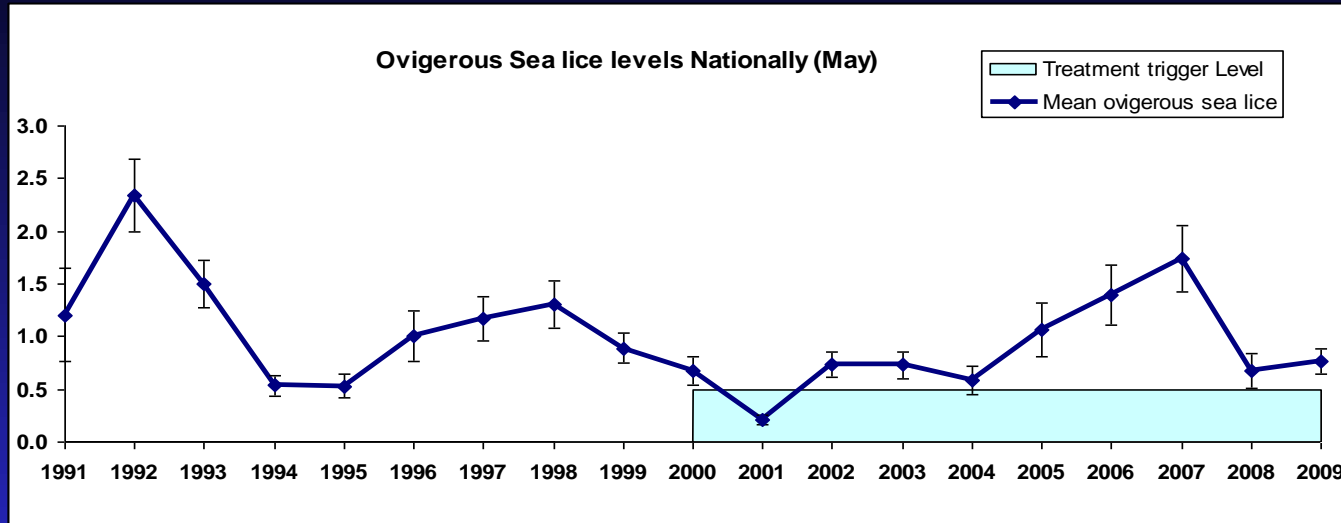
- Increasing trend in lice levels up to 2007
- New Strategy introduced in 2008
- Trend reversing
- Difficult issues remain
- What are the causes of poor clearance/failed treatments?

Key areas of Difficulty

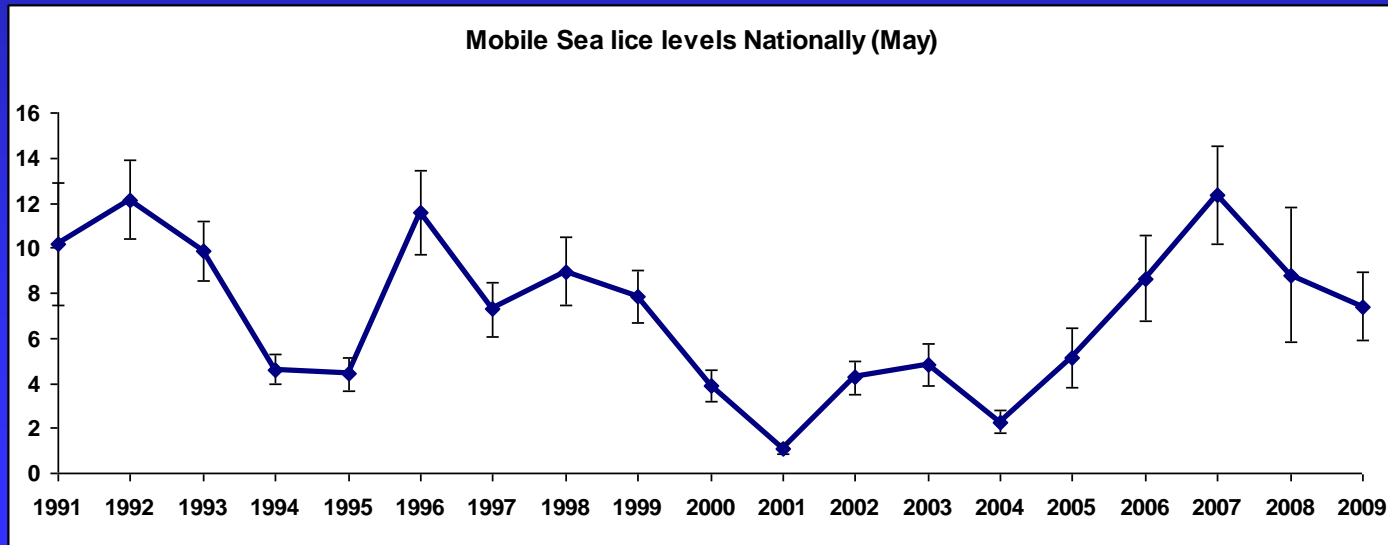
- In feeds – feed uptake and dosage issues
- Optimising product delivery for bath treatments
- Dealing with large numbers of cages
- Strategic treatments:- timing & extent
- Optimising well boat usage

Compound	Trade Name	Licensing status	Delivery Method	Group	Mode of action	Stages targeted	Withdrawal period
Animal medicines							
Azamethiphos	Salmosan®	AR-16	Bath	Organo-phosphate	Interferes with nerve transmission by blocking acetylcholinesterase at synapse	Adults, Preadults	24 hours
Cypermethrin	Excis®	Full MA	Bath	Pyrethroid	Interferes with nerve transmission by blocking sodium channels in nerve cells	Adults, Preadults, Chalimus III-IV	24 hours
Deltamethrin	Alphamax®	AR-16	Bath	Pyrethroid	Interferes with nerve transmission by blocking sodium channels in nerve cells	Adults, Preadults. Chalimus unknown	3 days (2 days for pen within 100m of treatment)
Emamectin benzoate	Slice®	Full MA	In-feed	Avermectin	Interferes with neurotransmission disrupting nerve cells causing paralysis and death. Effective at 3- 15°C. Protects fish for up to 11 weeks post treatment.	All stages	Zero
Teflubenzuron	Ektobann®	AR-16	In-feed	Insect Growth Regulator	Inhibits chitin synthesis preventing moulting and growth. Limited efficacy beyond medication period. Not authorized for use below 9°C	Moulting stages - Chalimus, Preadults only	7 days
Disinfectants							
Hydrogen peroxide			Bath	Oxidizer	Formation of gas bubbles on and within the sea lice.	Adults, Preadults	
Immuno-stimulants& Food supplements							
	Bio-mos®		In-feed	Extract from yeast wall	Increases mucus production		
	Ecoboost®		In-feed	Blend of aromatic herbs	Immuno-stimulant		
	Ergosan®		In-feed	Seaweed extract	Immuno-stimulant		
Others							
Bioemitters			In cage		Electromagnetic signal		
Wrasse			In cage		Cleaner fish. Issues with wrasse availability and efficacy	Adults, Preadults	

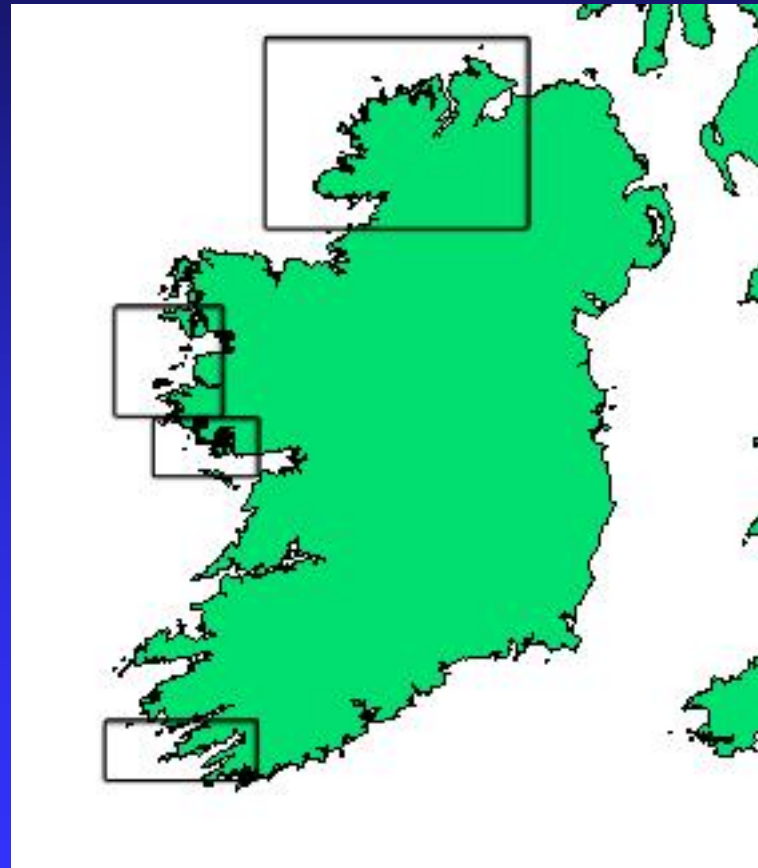
Annual trend (May mean) (SE) ovigerous *L. salmonis* on one-sea-winter salmon.



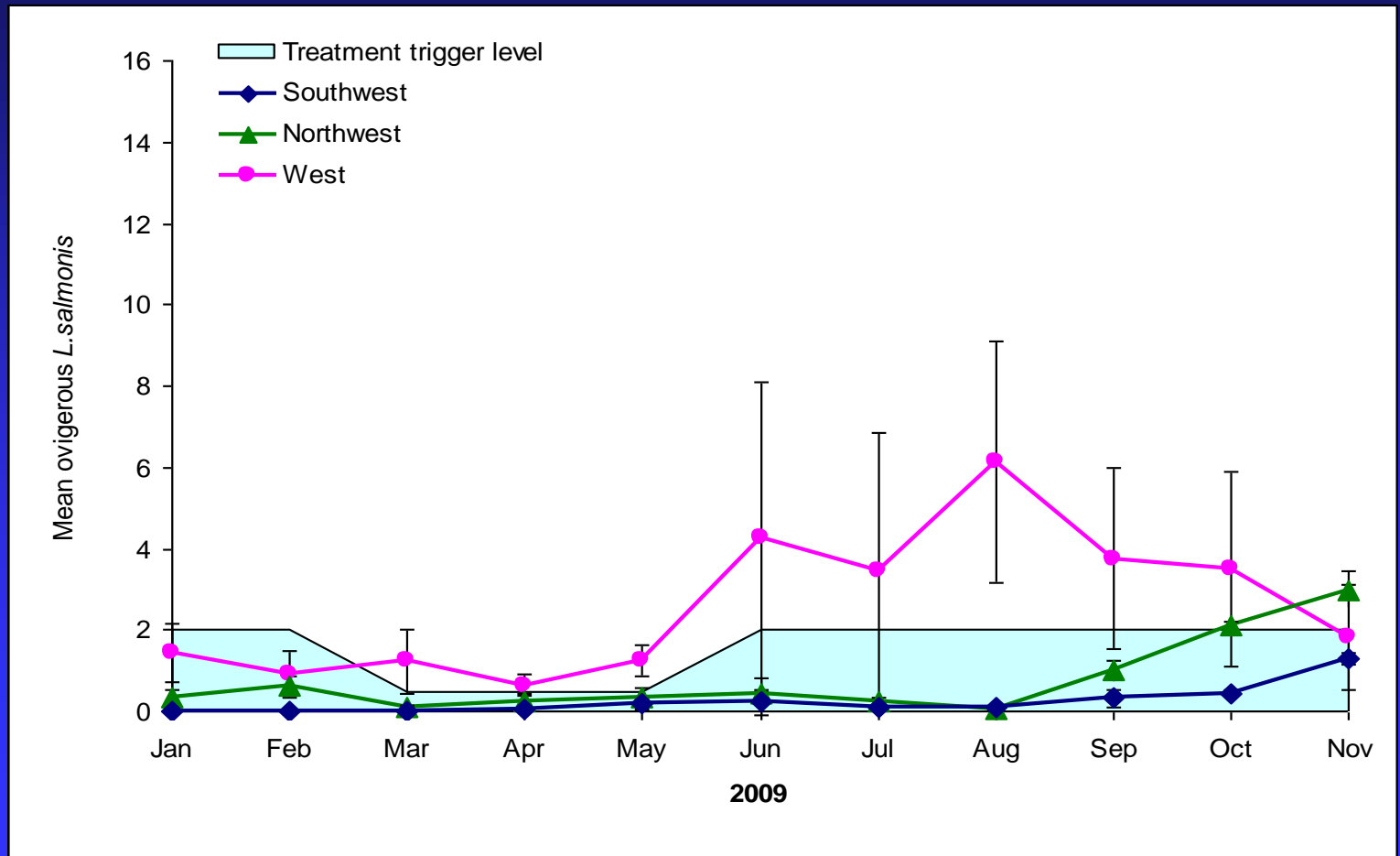
Annual trend (May mean) (SE) mobile *L. salmonis* on one-sea-winter salmon.



Three farming regions in Ireland



Mean (SE) ovigerous *L. salmonis* per month per region in 2009 on one-sea-winter fish.



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



THE DEPARTMENT OF
AGRICULTURE, FISHERIES & FOOD
AN ROINN TALMHAÍOCHTA, IASCAIGH & BIA

A strategy for improved pest control on Irish salmon farms

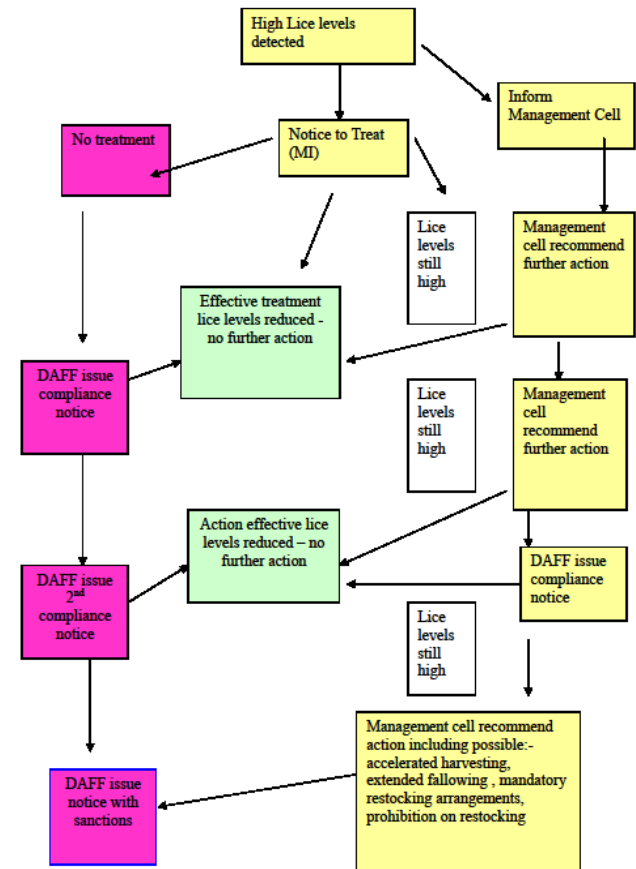
May 2008

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 DAFF intervention
- Comprised ISGA, MI, BIM, Vet, SBM, Affected farm



Ireland - a different industry

- Irish Production is circa 10,000 tonnes
- Multi site bays the norm
- Fish move from offshore smolt sites to inshore grow-out sites
- Prolonged (3 months +) harvest common
- Bays have high exposure level & strong water exchange

Lice control:-causes of poor results

- Poor clearance rates on treatment
- Rapid re-infection of sites post treatment
- Incomplete treatments
- Vertical transmission between generations
- Prolonged harvest situations

Concerns

- Difficult to separate reduced sensitivity from poor treatment delivery (dose and/or duration)
- High lice levels can overwhelm treatments (not enough molecules present)
- Homogeneity of dose rate an issue (hot spots)
- High reliance on Hydrogen Peroxide for early spring control

Potential areas for collaboration

- Optimising Hydrogen Peroxide treatments
- Modelling of suitable scales for strategic treatments
- Development of improved treatment delivery strategies
- Optimisation of IPM approach
- Optimise SBM and fallowing
- Standardisation of sensitivity bioassays

Thank you

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