

On-farm assessment of fish welfare

Norecopa, Gardermoen, Oslo

September 22-24, 2009

John Avizienius - Royal Society for
the Prevention of Cruelty to Animals
(RSPCA)



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Who are the RSPCA?

- The oldest and largest animal welfare organisation in the world
- Founded in 1824. Royal assent in 1840
- Over 200 welfare groups affiliated to it
- It is funded by the general public - circa £100million - no govt funding
- It has animal hospitals, rehoming centres and branches all over England and Wales



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This former racing greyhound - with open sores, threadbare coat and fleas - was the thinnest RSPCA staff had ever found alive.



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Why salmon?



- Only involved with terrestrial species
- Freedom Food established in 1994
- Approached by salmon farmer in 1999-2000



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Need to rethink



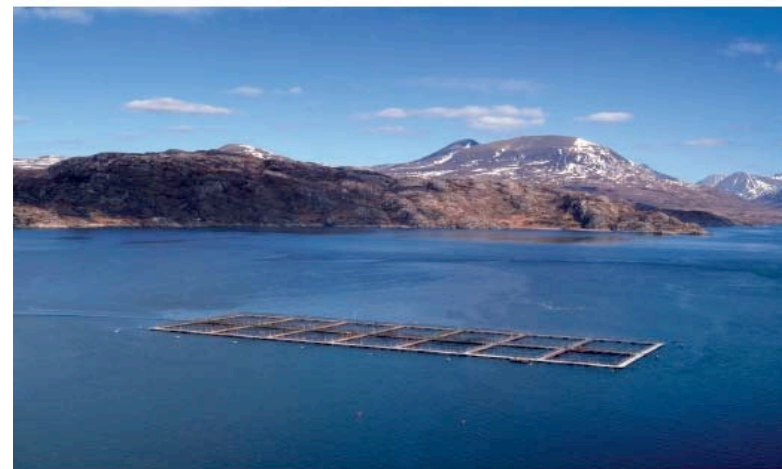
RSPCA welfare standards for **dairy cattle**

January 2008



RSPCA welfare standards for **farmed Atlantic salmon**

July 2007



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Principles behind standards

- Based on welfare (always) and science
- Don't agonize - do fish feel pain?
- Birth to slaughter
- Must cover the critical times in the life of the animals
- Must be achievable but stretching
- Economics



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Standards development

- Have to comply with the legal minimum
- Look at best practice within the industry
- Are best practices good/bad for welfare?
- Establish an expert Working Group
- Talk to veterinary surgeons and producers
- Look at all available science
- Be prepared to make decisions



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It took three years to develop the standards

- Management and stockmanship
- Husbandry practices
- Equipment/env quality
- Feeding
- Health
- Transport
- Slaughter
- Wider environmental impact



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Why we started to look at welfare assessment

- Whilst the salmon standards were being developed, the dairy, hen and pig standards were being scrutinised
- A set of welfare indicators were being developed for these species
- We needed to ask questions of the standards
- Input standards are not enough



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BWAP

Bristol Welfare Assurance Programme

CATTLE ASSESSMENT



Produced with support from

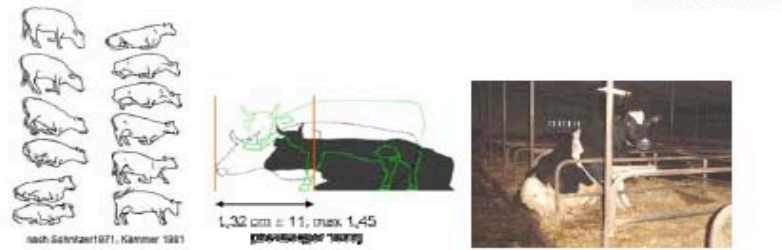


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This gives the assessor some guidance in terms of what to look for if they are in any doubt



Normal movements when standing up and lying down restriction
Note the space requirements for lunging, when standing up

1,32 cm ± 11, trunk 1,45

Dog sitting' posture indicating severe rising



2. Individual cow observations

2.1. Thin cows (<2 BCS)

YES, if body condition score (BCS) <2

Poor body condition: The tailhead area is a deep cavity with no fatty tissue under skin. Loin: The spine is prominent and the horizontal processes sharp. The ribs are easily visible.

The body condition score will be more accurate once the observer is familiar with the spectrum of body condition seen in dairy cattle. Stand behind and beside the cow and assess the body condition visually only. Look especially at the tailhead, loin and ribs and assess, if all the bones are easily visible and prominent. Refer to DEFRA booklets on Condition scoring dairy cows and beef and suckler animals.

BCS 1 BCS 2 BCS 3 BCS 4 BCS 5

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**RSPCA laying hen welfare outcome assessment
Summary of indicator significance**

Indicator	Significance
Calcium spotted/talc eggs	Caused by the egg remaining in the shell gland for an extended period. Often found in eggs from young flocks just coming into production and/or as a result of any stresses or disturbances at the time when the egg is due to be laid.
Group observation	
Birds appearing obviously sick/dull	Early recognition of sick animals and their treatment is of major relevance to animal health and welfare.
Thermal discomfort	Ruffling among the group is a sign of thermal distress. In cold conditions birds try to cope by ruffling their feathers and reducing movements. Both behaviours are an attempt to cope with environmental conditions.
Respiratory problems	Head shaking is a sign of respiratory challenge, which can be caused by infectious disease or poor air quality. Yawning can also be caused by gape worms (<i>Syngamus tracheae</i>) in the trachea.
Incidences of feather pecking	Feather pecking can be caused by a large number / combination of reasons, such as breed, food or housing. Therefore it indicates problems in those areas, but is also of relevance to the individual animal, as severe feather pecking is painful and a poor condition of feathers can lead to thermal discomfort (cold/sunburn) and reduced productivity.
Incidences of aggression	Aggression can increase stress and lead to feather pecking and difficulties for less dominant birds to access all facilities, e.g. nest boxes and popholes.
Uneven range wear/use	(Even) use of the range indicates appropriate design and management. Use of the outside range enables normal exploratory behaviour. Good use of the outside range is also believed to reduce feather pecking. Uneven use and high concentrations of animals in smaller areas (e.g. in front of the popholes) increase the risk of a build up of bacteria and parasites.
Poor quality of litter	Poor litter quality is of major relevance as a potential source for infection. It can also contribute to the occurrence of feather pecking, foot problems and respiratory problems. Can prevent or make dust bathing difficult.
General impressions	
Opportunity for natural behaviour	Opportunity to perform normal/natural behaviour is one of the basic considerations with regards to both the behavioural and physical welfare of the birds.
Physical appearance	Provides an overall impression of flock health, including positive aspects. A healthy looking flock is also more likely to produce optimally.
Mood	Increased/decreased activity can reflect normal diurnal rhythms, but a generally tense flock can indicate a potential problem (e.g., stockpersonship, insufficient number of nest boxes, infection/disease) and can also make handling more difficult. Activity levels can also be influenced by management activities, such as feeding, cleaning or handling procedures.
Air quality	Acceptable levels of ammonia, dust and moisture imperative to maintain bird health and productivity. Proper manure management and adequate ventilation and heating must be in place.
Red mites	Mites can cause anaemia and, in severe cases, egg death of its host. Infested birds become irritated and listless which can lead to decreased egg production. The mite is also a possible vector of protozoan, bacterial and viral agents.
Individual hens	
Poor comb colour	Comb colour is an indicator of acute and/or chronic disease. A normal coloured, red, intact comb can be a sign of positive health.
Poor beak condition	A hen's beak is well supplied with nerves and therefore poor/excessive beak trimming, in particular, can cause acute/chronic pain and can interfere with the birds' capacity to eat and drink.
Thin birds (<2 BC5)	Poor body condition can indicate insufficient quality or quantity of food, problems getting to the food because of deformed beak, lameness/blindness, insufficient provision of feeding space, parasites or infectious disease. Birds in poor condition are likely to produce no/less eggs.
Fractures	Fractures cause acute/chronic pain and can reduce the ability of birds to get to resources, such as perches and food. This leads to reduced welfare and productivity.
Soiling of feathers	Dirt on feathers might indicate inadequate litter quality, outside run and/or design of the resting/nesting area. It is a potential source for disease and of relevance for general hygiene.
Feather damage	Feather pecking can be caused by a large number / combination of reasons, such as breed, food or housing. Therefore it indicates problems in those areas, but is also of relevance to the individual animal, as a poor condition of feathers can lead to thermal discomfort (cold/sunburn) and reduced productivity.

We wrote down indicators which could affect welfare and why



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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z			
1	Date/Time:	Observer:			Group ID & System:																		Cattle						
2	Farm ID:	Total #:			# in group:												Sheet #:	of		Breed:									
3	ANIMAL PARAMETER	Score (1= yes, 0 = no) (Add '+' if severe) (x = not able to assess)																							sum	Int. # / Checks---			
6	20x individuals: Cow ID																										Group/ Comments		
7	(s)ick/(d)ull/(b)loated/(e)ye.(n)asal (d)ischarge/(c)oughing																											0 (S,T)	
8	Body condition (note if 2 or less and 3.5+) (use '+' or '-')																											1 Fat / 4 thin (S,T)	
9	Dirty side																											2 (S,E)	
10	Dirty hind limb																											4 (S,E)	
11	Dirty udder/teat																											4 (S,E)	
12	Skin irritation* (incl. Hair loss)																											0 (S,E,T)	
13	Skin lesions (non hock)*																											1 (S,E,T)	
14	Swollen hock area																											2 (S,E)	
15	Swollen Knees																											2 (S,E)	
16	Abraded/ulcerated (h)ock, (k)nee																											0 (S,E)	
17	Claw overgrowth																											2 (S,T)	
18	Broken tails																											0 (S,T)	
19	Lameness (if score 2+)																											0 (S,E,T)	
20	Other, e.g. injuries*																												
21	Visit summary	To include general impression of the visit, i.e. highlights of above and information on prompts below																											
22	Behaviour**																												
23	Physical appearance, eg glossy																												
24	Stockmanship (attitude to animals)																												
25																													
27	*Record position: (H)ead, (N)eck, (B)ack, (S)ide, (L)eg, (K)nee, (U)dder. **Describe mood (e.g. tense, flighty, fearful, aroused, aggressive, calm, contented, relaxed, curious, confident) and distribution																												
28	***(S)tandard verification; (E)nvironmental factors; (T)reatment plans/VHP																												



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Is the terrestrial model for welfare assessment the same for fish?

- It has to be science, but it does not have to be rocket science.
- We could all draw up a set of welfare indicators with the available information we have at present
- We have to make a decision about which OWIs to use
- Be prepared to change them if they are wrong
- Communication is vitally important between the various partners - producer/RSPCA;retailer/RSPCA; scientist/RSPCA;retailer/producer



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What can we use welfare assessment for?

- To inform the RSPCA about their standards and how they are performing
- To inform the RSPCA where there is not much in the way of science, for example, the transportation of harvest weight fish to the processing plant by wellboat



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Example 1-Freshwater stocking density

- The standards say that production tanks must have a maximum stocking density of 30 kg per cubic metre
- Stocking density on its own is not meaningful
- Stocking density is influenced by a number of variables
- Take measurements for two years to find out with the help of the industry



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Indicators are based on?

- The fish
- The system and the environment
- Keep it simple where possible
- Includes behaviour, water quality, fish health
- Try to avoid invasive techniques



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What are we measuring?

- Fish weight
- Fin condition
- Opercular condition
- Eye damage
- Skin lesions, parasite damage, scale loss
- Fish behaviour
- Growth rate
- Deformities
- Water quality - Dissolved oxygen, carbon dioxide, temperature, acidity, free ammonia, flow rate
- Physiology if needed? More helpful to be able to make judgements using practical measurements? Carcase examination at the processors



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Example 2 - Transport of fish

- Handling and journeys are stressful for the fish
- Look to break transport procedures into chunks so that we can develop a set of checklists based on what we know about the needs of the fish
- Look at the CCPs - pre, during and after transport



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A journey into the unknown - start with harvest weight fish

- Existing general standards not enough on their own - must be able to make an informed judgement about the fish
- Fish based checklist of indicators which might denote whether things are good, bad, or indifferent
- Need to develop database to record and analyse



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Indicators based on?

- Fish behavior?
- Physical characteristics?
- Processor reports
- Risk assessment - site specific
- Setting intervention levels
- Action plans for when these are exceeded
- Based on ideal scenarios

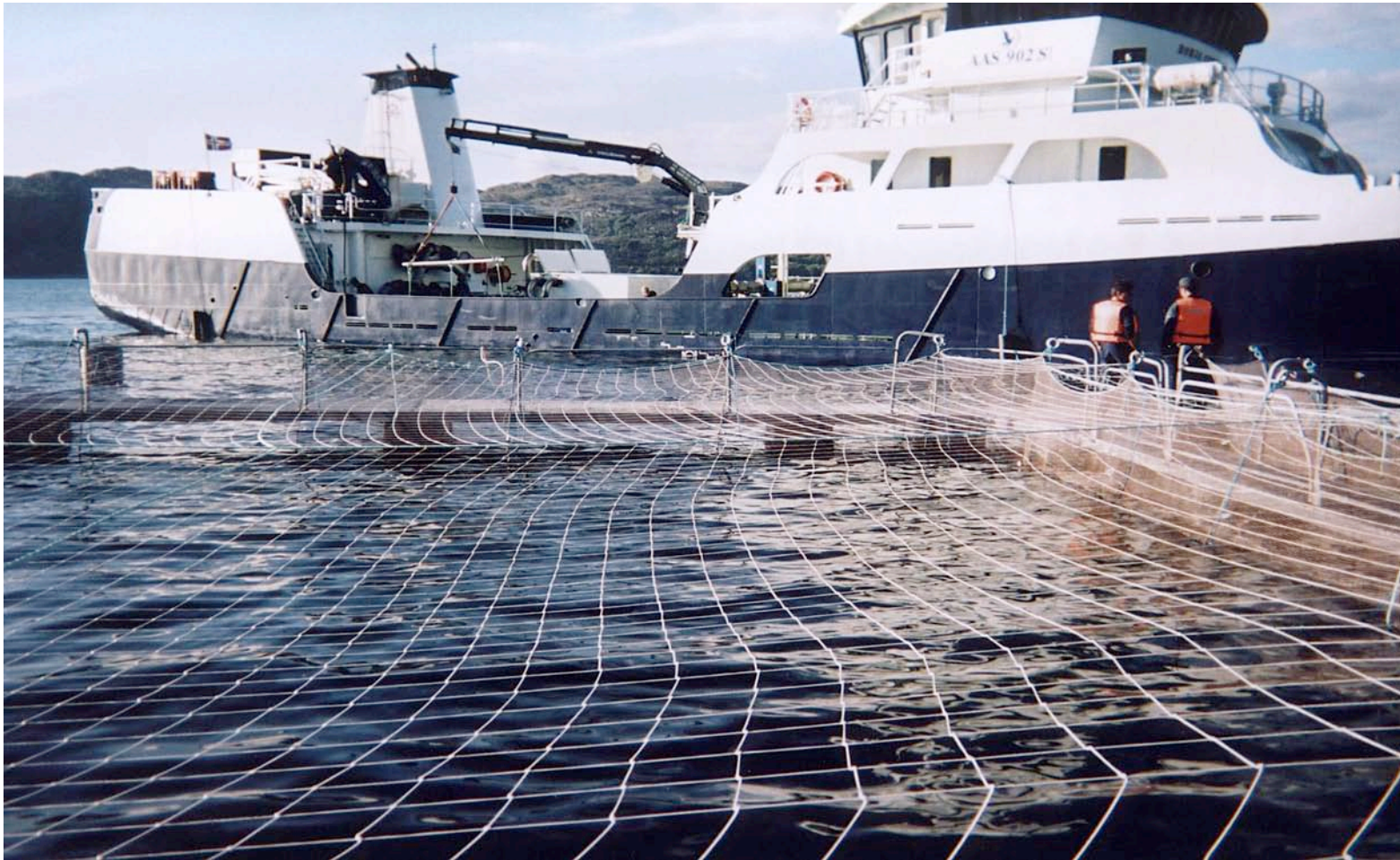


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Simple things can make a big difference

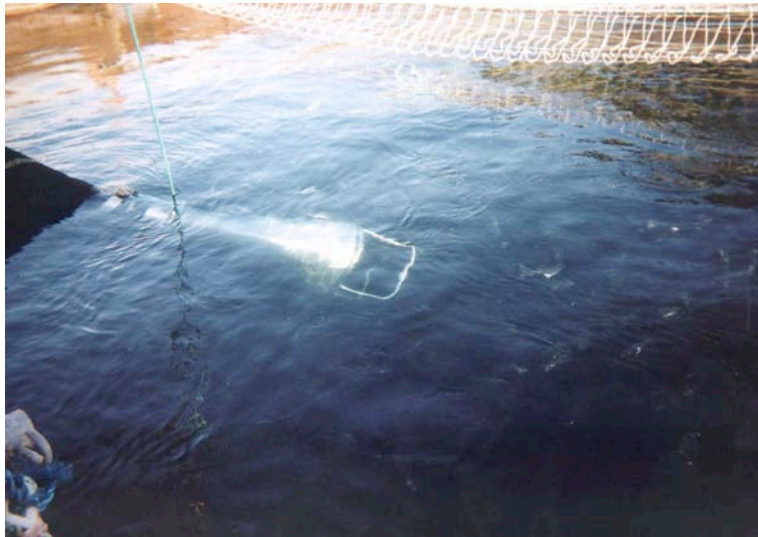


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Crowding/uplift



- Aggressive behaviour
- Non-aggressive behaviour
- Mouth gaping/rapid gill movement
- Obvious scale loss
- Fresh injuries to snouts etc



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It's not just a tick box exercise



- We need to assess the welfare of the fish on board
- You have to travel with them
- We need to learn more about things such as water quality, e.g. carbon dioxide

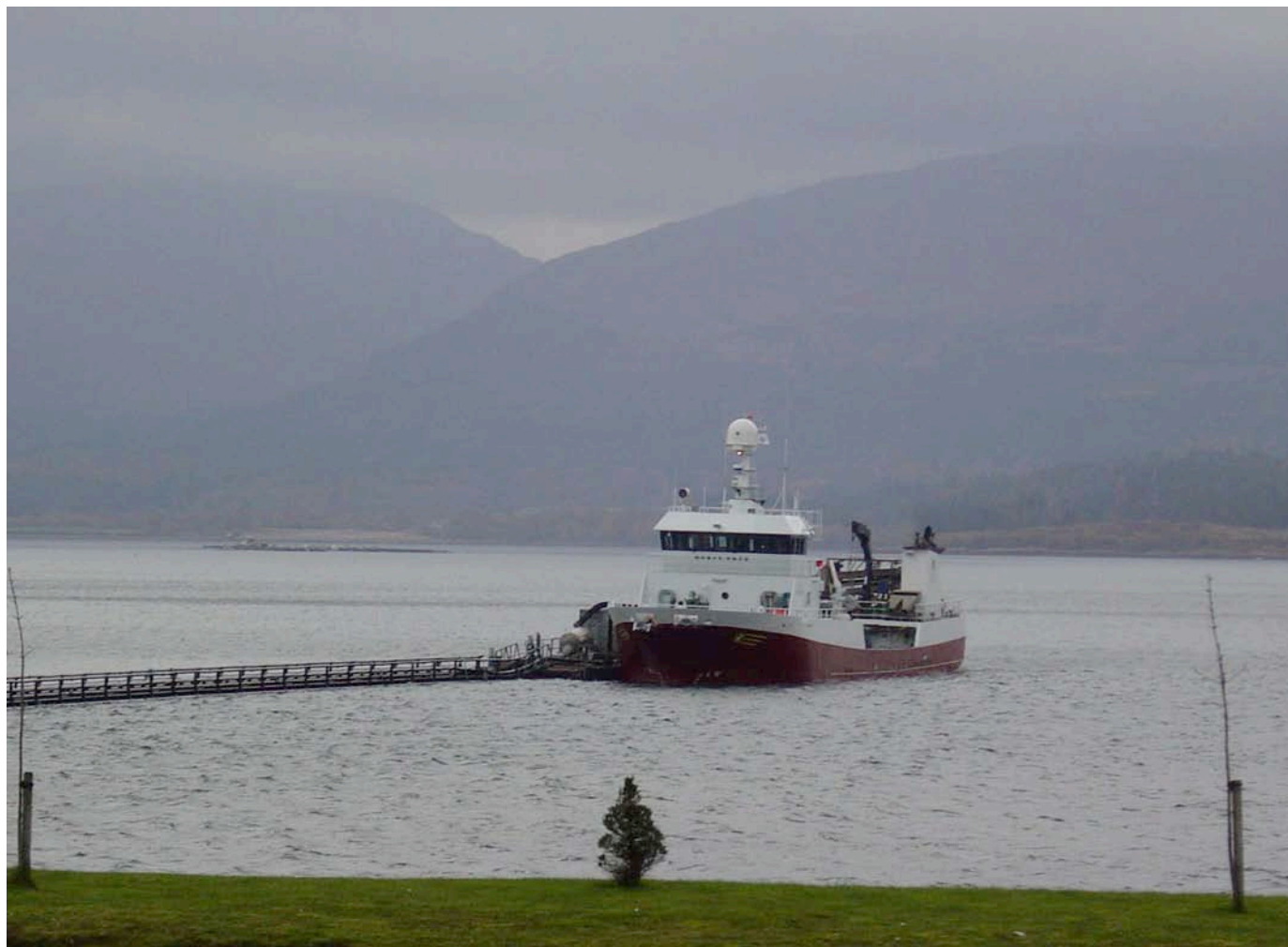


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Off-loading at the processing plant



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Tentative conclusions to date

- Seem to be primary indicators such as water quality
- Setting thresholds per se, may not be that meaningful
- Look at additive effects -build a picture-traffic light system for each site based on risk?



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Why does it matter?

- Always room for improvement
- Fish get a better deal
- Producer gets a better deal
- Third party verification/retailer needs
- Identify problems - find solutions
- Better to work together in partnership
- Consumer confidence



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