Bergen 6th of March 2018

Anaesthesia of farmed fish implications for welfare

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FoMAS- Fiskehelse og Miljø as

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Our job: visiting farms, inspecting fish, sampling, consultancy due to treatments, training courses etc

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- **Fish health service and environmental tests**

- 5 offices
- 13 employees, 10 veterinarians and fish health biologists

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All staff on the fish farms has to take training courses in fish welfare every 5. year,- includes pain, how to use pharmaceuticals, killing etc

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Consciousness- how to evaluate?

	Mammals	Fish
Sedation/use of tranquilizer	Reduced reaction to stimuli	Reduced reaction to stimuli
Exitation	Restless, spasms,	Not usual in fish, may be increased activity of operculae
Anaestetized	Relaxed muscles, loss of reactions	Relaxed muscles, loss of reactions
Collapse, death	Stopped breathing and heart beating	Stopped movement of operculae, stopped heart beating

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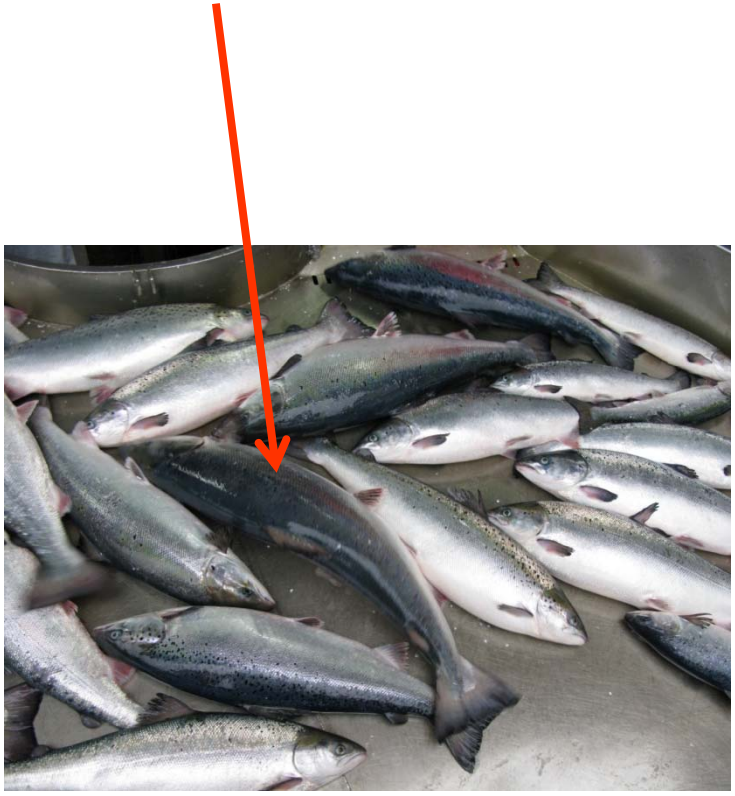
Eye rolling

Still conscious,
Not acceptable anaestetized



Flat eye

The eye is rolling

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Tranquilizers – few possibilities:

Research stations: Aquacalm

Metomidate hydrochloride

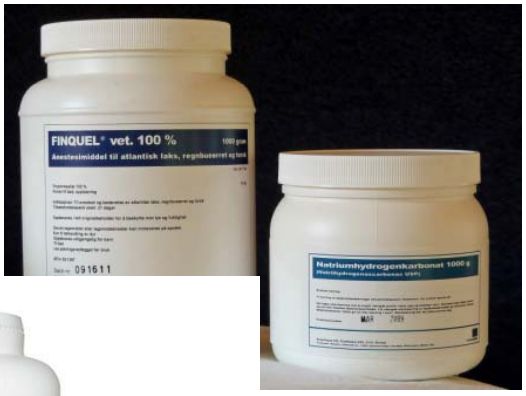
(not for food production)

NB: CO_2 virker også sederende

Anaesthetics -

- Finquel (Tricainmesilat)
- withdrawal: 25 ddegrees
- Tricaine Pharmaq (Tricainmesilat)
- withdrawal: 70 ddegrees
- Nytox vet (Tricainmesilat)

withdrawal: 70 ddegrees



Benzoak (benzocaine 200 mg/ml)

withdrawal: 70 ddegrees

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Stunning, - good anaesthetics linked to killing

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Electricity

Acceptable anaesthetics when killing

(Kjølaas / Seaside)

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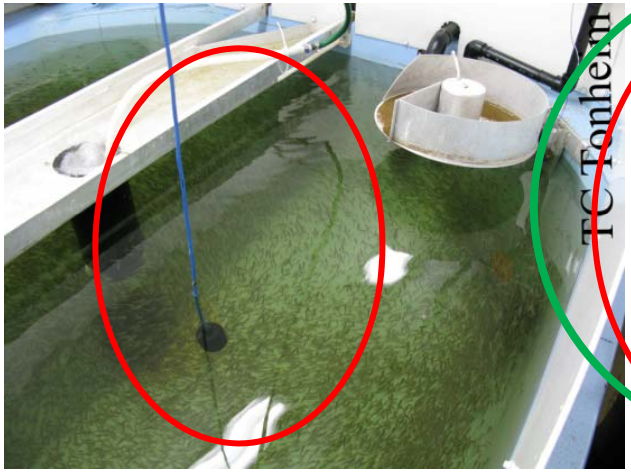
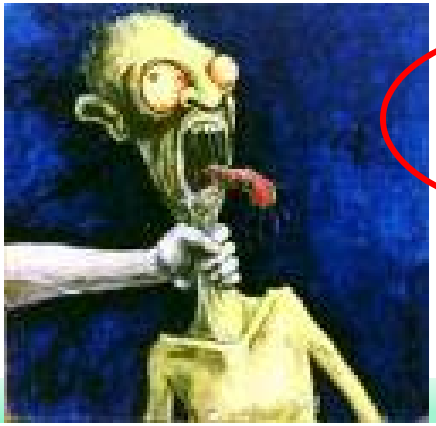
When do we need anaesthetics in the production in salmon hatcheries?

Vaccination



Euthanasia



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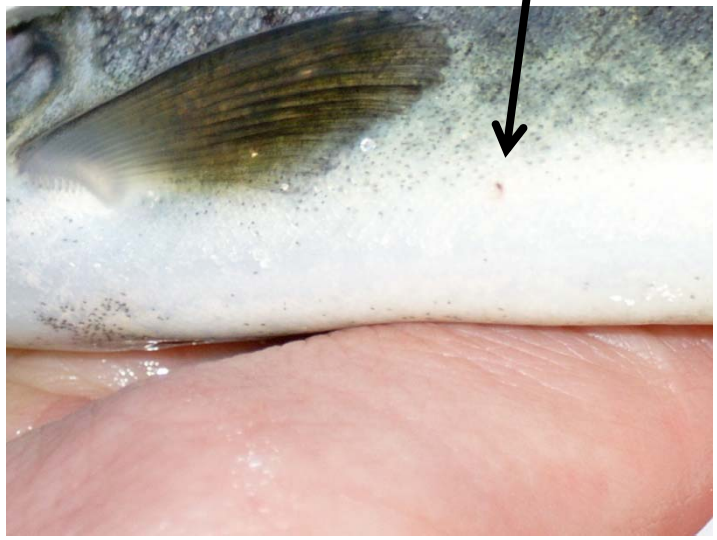
Why anaesthetize before vaccination?

- Injection may be painful
- The fish has to be anaestizide to achieve correct injection point

Injection too high and not in midline
Result: vaccine too close to liver



Anaesthetics before injection vaccination

Size salmon and rainbowtrout: 30 -150 gram

Our practice based on experiences:

- best to achieve effect after 40-50 seconds, max 60 seconds
- the dosage has to be adapted to temperature,- 3 x higher at low temp
- rapid transfer from anaesthetic bath to water immersion
- control oxygen level in anaestetic bath
- supervision of wake up – we prefer long pipes and that the fish is awake coming into the tank

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Challenges:

- Anaesthesize batches of fish and get them out of the bath at the right point
- Pharmaceutical SPC does not support our practice in details
-only 1 of 4 SPC `s advise to adapt dosage to temperature
-metacaine: safety not documented temp < 7˚C and > 17 ℃
-Anaesthetic bath turns slimy and dirty:- trend: rapid changes of anaesthetics

Buffer + metacaine
- used in fresh water to avoid pH drop

Experience from resirculation farms: have eliminated buffer after checking pH : drop not registered

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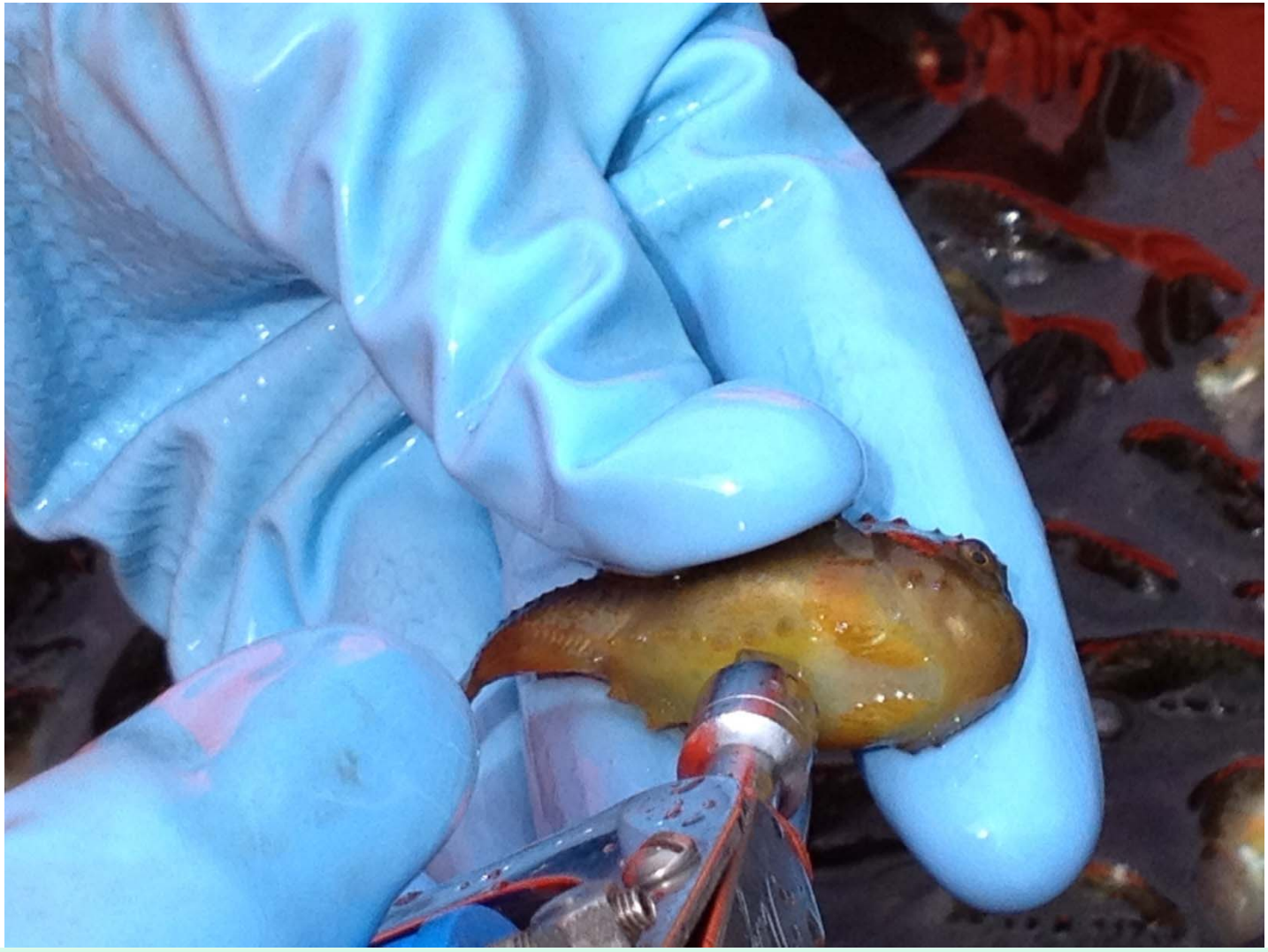
Vaccination lumpsucker: neither sedation or Anaesthetics used (we have tried……)



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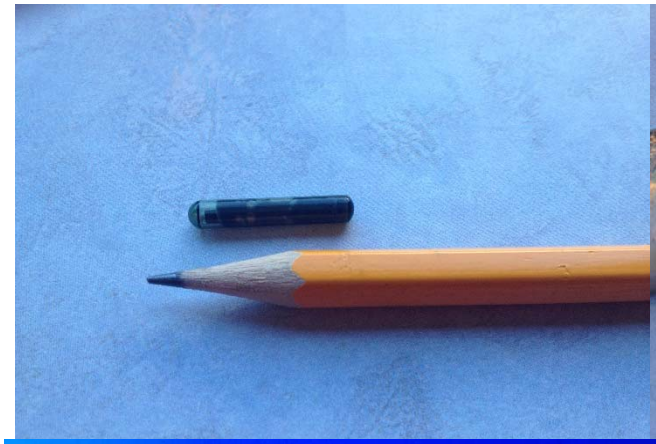
Cultivation – pit tag



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Research stations:

- Bottleneck when small groups are transferred to small tanks

- Ulcer problems, mortality

- Prevent by using sedation, focuse on water temperatures, equipment etc

When do we need anaesthetics i salmon sea production? Lice counting

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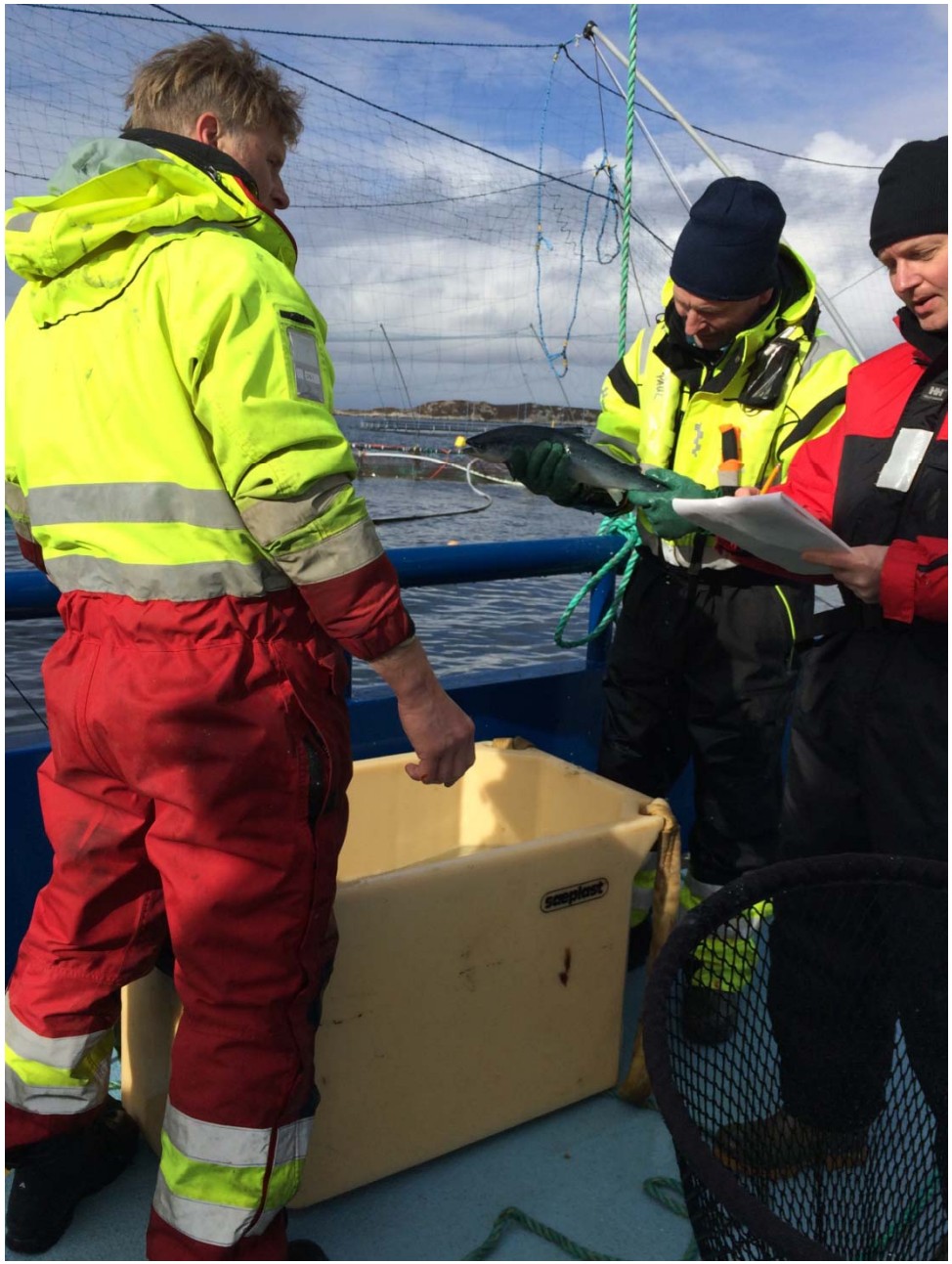

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Sedation in sea water production –linked to fresh water treatments / delousing

- Useful at high temperatures, reduces stress and oxygen consumption

-Always used in freshwater treatments at temperatures > 5- 6˚ C

-Risks: too lazy fish at low temperatures, clog together

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Grading broodfish 8-12 kg
- Anaesthetics necessary to read pit tags, find weight, length, female/male

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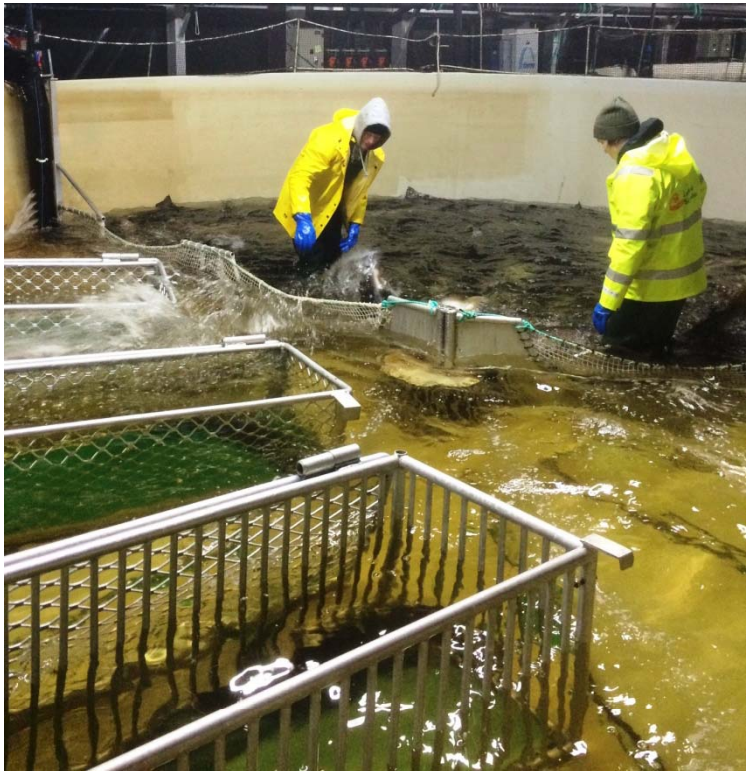
-Grading for maturation in the tanks
-Sedation with AquiS useful



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Adding AquiS 15-20 minutes before grading

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Anaesthetics in male broodfish before stripping – necessary – every male used 5 – 10 times

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Euthanasia female brood fish before bleeding and stripping

- Need really high consentrations at low temperatures

Summary:

- Anaesthetics in fish farming important to chieve good fish welfare

- Tranquilizer useful in some operations

- Important with quick effect of anaesthetics and following immersion or bath to clean the gills from anaesthetics

- Avoid too long time in anaesthetic bath