

# 3<sup>rd</sup> Nordic RAS Workshop

## 30 September - 1 October 2015

### Program

#### DAY 1 - 30 September 2015

10<sup>00</sup>-10<sup>10</sup> Opening and welcome by Nordic RAS: J. Dalsgaard, DTU Aqua, Denmark

10<sup>10</sup>-10<sup>20</sup> Welcome address by H. Toften, Nofima, Norway

10<sup>20</sup>-10<sup>45</sup> **Opening keynote: K. Steen, Lerøy Midt AS, Norway**

**Session 1: Particles, diets and diet-related waste characteristics in RAS**

*Chair: B.F. Terjesen, Nofima, Norway*

10<sup>45</sup>-11<sup>15</sup> **Keynote: T.O. Leiknes, King Abdullah University of Science and Technology, Saudi Arabia**

11<sup>15</sup>-11<sup>30</sup> K.S. Ekmann and M.D. Jensen Recirculation feed for Atlantic salmon

11<sup>30</sup>-11<sup>45</sup> B.-S. Sæther et al. When the shit hits the fan: diet composition, indigestible binders and fecal stability

11<sup>45</sup>-12<sup>00</sup> M. Schumann and A. Brinker First experiences of floating faeces and its rapid removal in RAS

12<sup>00</sup>-13<sup>00</sup> **Lunch**

**Session 1 - continued**

*Chair: A. Brinker, Fisheries Research Station, Langenargen, Germany*

13<sup>00</sup>-13<sup>15</sup> C.O. Letelier et al. Feed composition affects sludge as a resource for denitrification

13<sup>15</sup>-13<sup>30</sup> P.M. Fernandes et al. Biofilter effects on micro particle dynamics

13<sup>30</sup>-13<sup>45</sup> A.B. Holan et al. Evaluation of membrane treatment effect on water quality in recirculating aquaculture systems (RAS) for Atlantic salmon post-smolts (*Salmo salar*)

13<sup>45</sup>-14<sup>00</sup> A.C. Hambley et al. Monitoring RAS organic matter by fluorescence EEM spectroscopy

14<sup>00</sup>-14<sup>15</sup> G. Yamin and J. van Rijn Humic substances in recirculating aquaculture systems and their effect on fish health

14<sup>15</sup>-14<sup>30</sup> C. Becke et al. First findings on the effects of suspended solids in recirculating trout aquaculture on selected health parameters

14<sup>30</sup>-15<sup>00</sup> **Coffee break**

**Session 2: Microbial water quality in RAS**

*Chair: J. van Rijn, The Hebrew University of Jerusalem, Israel*

15<sup>00</sup>-15<sup>30</sup> **Keynote: H.-J. Albrechtsen, Technical University of Denmark, Denmark**

15<sup>30</sup>-15<sup>45</sup> P.B. Pedersen et al. Particle surface area and bacteria activity in recirculating aquaculture systems

15<sup>45</sup>-16<sup>00</sup> O. Vadstein et al. Beneficial fish-microbe interactions: the fourth dimension of RAS

16<sup>00</sup>-16<sup>15</sup> B. Seredyńska-Sobecka and M. Dahlqvist A novel real-time bacteria sensor for monitoring water in recirculating aquaculture systems

16<sup>15</sup>-16<sup>30</sup> I. Bakke et al. Microbial community dynamics in three RAS with different salinities for production of Atlantic postsmolt

16<sup>30</sup>-17<sup>00</sup> **Coffee + sandwich break**

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#### DAY 1 - 30 September 2015

Session 2 - continued

Chair: C. Good, *The Conservation Fund's Freshwater Institute, USA*

17 <sup>00</sup> -17 <sup>15</sup>	K. Attramadal et al.	Microbial influence in different rearing systems: flow through, microbially matured and recirculating aquaculture systems
17 <sup>15</sup> -17 <sup>30</sup>	I. Rud et al.	Microbiota in recirculating and semi-closed aquaculture systems for post-smolt production
17 <sup>30</sup> -17 <sup>45</sup>	P.A. Tirado et al.	Microbial water quality dynamics in RAS during system start-up
17 <sup>45</sup> -18 <sup>00</sup>	B. Hillestad	Crossbred fish will lower the risk of disease outbreaks and increase the eyed-egg supply for RAS-facilities

18<sup>00</sup>-20<sup>00</sup>

Posters and exhibition area

20<sup>00</sup>-24<sup>00</sup>

Workshop dinner at Hotel Scandic Seilet  
Gideonveien 2  
6429 Molde

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Nofima



# 3<sup>rd</sup> Nordic RAS Workshop

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#### DAY 2 - 1 October 2015

08<sup>45</sup>-08<sup>55</sup> Good morning and welcome to the 2nd workshop day, J. Dalsgaard, DTU Aqua, Denmark

#### Session 3: Water quality in RAS

Chair: L.-F. Pedersen, DTU Aqua, Denmark

08<sup>55</sup>-09<sup>15</sup> **Invited speaker: P. Lauesen, Billund Aquakulturservice, Denmark**

09<sup>15</sup>-09<sup>30</sup> T. Ytrestøyl et al. Atlantic salmon post-smolts in RAS: effects of salinity, exercise and timing of seawater transfer on performance, physiology and welfare

09<sup>30</sup>-09<sup>45</sup> J. Davidson et al. Comparing the effects of high versus low nitrate on post-smolt Atlantic salmon performance and physiology in RAS

09<sup>45</sup>-10<sup>00</sup> C. Good et al. The influence of nitrate nitrogen on post-smolt Atlantic salmon (*Salmo salar*) reproductive physiology in replicated RAS

10<sup>00</sup>-10<sup>15</sup> C. Frisk et al. Performance improvements with stable pH values in RAS

10<sup>15</sup>-10<sup>30</sup> A.M. Eriksson-Kallio et al. Monitoring water parameters, fish health and welfare in production scale RAS – a follow up study

10<sup>30</sup>-10<sup>45</sup> J. Kolarevic et al. The automatization of the water quality monitoring in recirculation aquaculture systems (RAS)

10<sup>45</sup>-11<sup>15</sup> **Coffee break**

#### Session 4: Integrated system approach

Chair: E. Eding, Wageningen University, the Netherlands

11<sup>15</sup>-11<sup>45</sup> **Keynote: S. Summerfelt, The Conservation Fund's Freshwater Institute, USA**

11<sup>45</sup>-12<sup>00</sup> M. Badiola et al. A sustainability evaluation, based on environmental indicators, of Recirculating Aquaculture Systems (RAS) applied to all countries and all species

12<sup>00</sup>-12<sup>15</sup> M.N.D. Khan et al. Co-culture of Japanese short-neck clam (*Ruditapes philippinarum*) and sea cucumber (*Apostichopus Japonicus*) by feeding *Pyropia spheroplasts* based diets in Recirculating Aquaculture System (RAS) - a preliminary report

12<sup>15</sup>-12<sup>30</sup> T. Bennich Salmon farming -an integrated research project on land-based aquaculture systems in Norway

12<sup>30</sup>-13<sup>30</sup> **Lunch**

#### Session 4 - continued

Chair: J. Vielma, Natural Resources Institute Finland, Finland

13<sup>30</sup>-13<sup>45</sup> T. Lasner et al. Ponds, raceways, RAS - benchmarking trout grow-out economics

13<sup>45</sup>-14<sup>00</sup> L. Christianson et al. Woodchip denitrification bioreactor nitrate and solids removal from RAS wastewater

14<sup>00</sup>-14<sup>15</sup> M. von Ahnen et al. End-of-pipe removal of nitrogen using woodchip beds

14<sup>15</sup>-14<sup>30</sup> V. Hilstad et al. Comparison of Atlantic salmon postsmolt (*Salmo salar*) produced in recirculating aquaculture systems (RAS) and a traditional sea cage

14<sup>30</sup>-14<sup>45</sup> B.F. Terjesen et al. Scaling of culture tanks and unit processes, relevant for Atlantic salmon post-smolt production in land-based systems

14<sup>45</sup>-15<sup>00</sup> NordicRAS: Goodbye and see you next time, J. Dalsgaard, DTU Aqua, Denmark