

Aquaculture Innovation Workshop

WORKSHOP PROGRAM
Day 1: Wednesday, September 4

BREAKFAST (CAFETERIA, 6:30 – 7:45)

- 8:00 – 8:15** **Welcome and Introductory Remarks**
Jay Slack, National Conservation Training Center,
Steve Summerfelt, The Conservation Fund's Freshwater Institute (TCFFI),
Catherine Emrick, Tides Canada,
Maureen Geesey, Gordon and Betty Moore Foundation, and
Jon Carr, Atlantic Salmon Federation

SALMON HEALTH AND PERFORMANCE (PLUS HORMONES) IN LAND-BASED RAS (8:15 – 10:15)

- 8:15 – 8:45** **Effects of Water Salinity and Exercise on Atlantic Salmon Performance as Post-Smolts in Land-Based Closed-Containment Systems**
Bendik Fyhn Terjesen, NOFIMA, Norway
- 8:45 – 9:15** **UBC InSEAS Research Program to Determine Optimal Rearing Conditions for Salmon Growth in Recirculating Aquaculture Systems**
Jeff Richards, University of British Columbia, Canada
- 9:15 – 9:45** **Effects of Water Exchange Rate and Biofiltration on Circulating Hormones in Water Recirculation Aquaculture Systems Containing Sexually Maturing Atlantic Salmon**
Christopher Good, TCFFI, USA
- 9:45 – 10:15** **Atlantic Salmon Growout Trials in Freshwater Closed-Containment Systems at the Conservation Fund Freshwater Institute**
Steve Summerfelt, TCFFI, USA

BREAK (10:15 – 10:45)

ELIMINATING OFF-FLAVOR FROM FISH PRODUCED IN CLOSED-CONTAINMENT SYSTEMS (10:45 – 11:45)

- 10:45 – 11:15** **Occurrence of Off-Flavors in Water and Fish (Rainbow Trout) in RAS in Denmark and Procedures for Reduction of the Off-Flavors**
Niels Jorgensen, University of Copenhagen, Denmark
- 11:15 – 11:45** **Effects of H2O2 Disinfection and Aeration Column Packing on Off-Flavor Depuration Kinetics of 4 kg Atlantic Salmon Purged in Replicated Partial Reuse Systems**
John Davidson, TCFFI, USA

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Day 1 Cont'd.

LUNCH (CAFETERIA, 11:45 – 1:00)

DENITRIFICATION AND MICROBIOLOGY (1:00 – 3:00)

- 1:00 – 1:30 Microbial Water Quality in RAS – Concepts and Examples**
Lars-Flemming Pedersen, DTU Aqua, Denmark
- 1:30 – 2:00 Anaerobic Waste Treatment in Zero-Flushing Land-Based Closed-Containment Systems for Marine Warm-Water Species: Nitrate and Solid Wastes Removal**
Keiko Saito, University of Maryland, USA
- 2:00 – 2:30 Denitrification Woodchip Bioreactors for Treatment of Nitrate**
Laura Christianson, TCFFI, USA
- 2:30 – 3:00 Water Quality Control in RAS: The Importance of an Anaerobic Treatment Stage for Removing Nitrate, Phosphate, and Off-Flavor Compounds**
Jaap van Rijn, Hebrew University of Jerusalem, Israel

BREAK (3:00 – 3:30)

ASSESSMENT OF ALTERNATE PRODUCTION SYSTEMS FOR SALMON FARMING (3:30 – 5:00)

- 3:30 – 4:00 Land Based RAS and Open Pen Salmon Aquaculture: Comparative Economic and Environmental Assessment**
Trond Rosten, SINTEF, Norway and Brian Vinci, TCFFI, USA
- 4:00 – 4:30 Evaluation of Production Expansion Options – Including Land-Based Closed-Containment Systems – for the Tasmanian Salmon Industry**
Andrew King, University of Tasmania, Australia
- 4:30 – 5:00 Assessment of Atlantic Salmon Farming in Floating Closed-Containment Systems**
Svein Martinsen, Nekton AS / Smola Hatchery and Smolt Farm, Norway

DINNER (CAFETERIA, 5:30 – 7:00) and SOCIAL (ROOSEVELT ROOM, 7:00 – 9:00)

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WORKSHOP PROGRAM
Day 2: Thursday, September 5

BREAKFAST (CAFETERIA, 6:30 – 7:45)

GOVERNMENT AQUACULTURE STRATEGIES UPDATES (8:00 – 8:30)

8:00 – 8:30 **Update on Government Aquaculture Strategies, Including RAS**
Jeff Silverstein, USDA, ARS, USA

CLOSED CONTAINMENT PROJECT UPDATES (8:30 – 12:00)

8:30 – 9:00 **Updates on Land-Based Closed-Containment Systems For Salmon**
Steve Summerfelt, TCFFI, USA

9:00 – 9:30 **Coho Salmon Production Systems at Aquaseed's SweetSpring Salmon in Washington State**
Jim Terry, SweetSpring Salmon, USA

9:30 – 10:00 **Nanaimo Land Based Steelhead Model Aquafarm**
Steve Atkinson, Taste of BC, Canada

BREAK (10:00 – 10:30)

10:30 – 11:00 **'Namgis First Nation Land Based Atlantic Salmon RAS Project**
Chief Bill Cranmer, Eric Hobson and Jackie Hildering, K'udas Limited Partnership, Canada

11:00 – 11:30 **Trends for Atlantic Salmon Production in Land Based Systems in Chile**
German Merino, Universidad Catolica del Norte, Chile

11:30 – 12:00 **Developing Yellow Tail King Fish Farming In Land-Based Closed-Containment Systems**
Andries Kamstra, Wageningen-Imares, Holland

LUNCH (CAFETERIA, 12:00 – 1:15)

LESSONS LEARNED WHILE ENGINEERING AND BUILDING COMMERCIAL RAS (1:15 – 2:30)

1:15 – 1:45 **Challenges in Construction and Operation at Extremely Remote RAS Locations – Case Study, Finmark, Norway**
Ivar Warrer-Hansen, Inter Aqua Advance A/S, Denmark

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WORKSHOP PROGRAM
Day 2 Cont'd.

1:45 – 2:30 **Retrospective Assessment of Construction Costs for the First 400 tonne/yr Atlantic Salmon Growout Module at the Namgis' First Nations**
Gary Robinson, GRV Inc. and Andrew Wright, Tides Canada, Canada

BREAK (2:30 – 3:00)

RAS DESIGN INNOVATIONS AND OPPORTUNITIES IN LAND-BASED CLOSED-CONTAINMENT SYSTEMS (3:00 – 5:15)

3:00 – 3:45 **RAS Design Innovations and Opportunities for New Technologies**
Marius Haegh, Krugerkaldnes/Veolia, Norway

3:45 – 4:30 **RAS Design Innovations and Opportunities for New Technologies**
Thomas Losordo, Pentair Aquatics, USA

4:30 – 5:15 **Update on Atlantic Sapphire – Langsand Laks and RAS Design Innovations and Opportunities for New Technologies**
Bjarne Hald Olsen, Billund Aquaculture Service AP, Denmark

DINNER (CAFETERIA, 5:30 – 7:00) INFORMAL CONVERSATIONS (ROOSEVELT ROOM)

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WORKSHOP PROGRAM
Day 3: Friday, September 6

BREAKFAST (CAFETERIA, 6:30 – 7:45)

8:00 – 9:15

Discussion Panel - RAS Design Innovations and Opportunities

Marius Haegh, Eric Hobson, KC Hosler, Thomas Losordo, Bjarne Hald Olsen,
Nick Pranger, Ivar Warrer-Hansen, Andrew Wright
Moderated by Steven Summerfelt

SUSTAINABLE FEEDS (9:15 – 9:45)

9:15 – 9:45

U.S. Research on Sustainable and Alternate Feeds for Atlantic Salmon

William Wolters, USDA ARS, USA

BREAK (9:45 – 10:15)

CREATING VALUE FROM THE WASTE STREAM (10:15 – 11:30)

10:15–10:45

Creating Revenue by Converting Fish Processing Offal, Thickened Fish Manure, and Dissolved Nutrients into Fertilizer and Produce

Norman McCowan, Bell Aquaculture, USA

10:45 – 11:30

Opportunities in Aquaponics

Thomas Losordo and Huy Tran, Pentair Aquatics, USA

11:30 – 12:00

Wrap-Up

Eric Patel, Tides Canada, Canada

LUNCH (CAFETERIA, 12:00 – 1:00)

OPTIONAL TOURS OF FRESHWATER INSTITUTE

Please register for tour when registering for AIW #5

Tuesday, Sept. 3 – 3:00 – 5:00

Friday, Sept. 6 – 1:15 – 3:15

SHUTTLE BETWEEN DULLES INTERNATIONAL AIRPORT (IAD) AND NCTC

Please book shuttle when booking your accommodation at NCTC (shuttle time changes in white)

Tuesday, Sept. 3 – Shuttle leaves IAD at 12:30, 4:00 and 9:30; arrives at NCTC at 2:30, 6:00 and 11:30

Friday, Sept. 6 – Shuttle leaves NCTC at 1:30 and 4:00; arrives at IAD at 3:30 and 6:00