

# Programme

Monday, 9 May

## EXCURSIONS

### Excursion 1 MOWI

In the tiny village of Hellurnar, you will visit MOWI Faroes on-land smolt production facility which serves as the headquarters for the Norwegian parent company's North Atlantic operations.

The guests will receive a guided tour of the smolt station and routine farming operations. Refreshments will be served.

On the way to and from MOWI we will experience the famous subsea roundabout tunnel – the only one in the world.

The tour starts at 10.00 by bus from Tórshavn and we will be back in Tórshavn no later than 16.00

Maximum number of registrations is 15.

### Excursion 2 Hiddenfjord.

Hiddenfjord is located on the island of Vágur and is proud of its marketing strategy focused on highlighting environmental sustainability and research-driven innovation. A presentation of their on-land facilities will be followed by a boat tour at one of their salmon seagee sites. Refreshments will be served.

The tour starts at 10.00 by bus from Tórshavn and we will be back in Tórshavn no later than 16.00

Maximum number of registrations is 50.

### Excursion 3 Bakkafrost

Bakkafrost is the biggest company in the Faroe Islands with salmon farming activities in Scotland and Faroe Islands.

A presentation at the Bakkafrost headquarter in Glyvrar will be followed by a tour of their state-of-the-art processing plant located on-site.

On the way to and from Bakkafrost we will experience the famous subsea roundabout tunnel – the only one in the world.

Bakkafrost is welcoming 3 teams of 50 people and each tour lasts for 2,5 hours.

Depending on how many register for this excursion the first one starts at 08.30 from Tórshavn. The second one will start from Tórshavn 9.30 and the last by bus from Tórshavn 10.30.

Maximum number of registrations is 3x50

17:00 – 19:00 Welcome reception and registration

*Host: City of Tórshavn, Mayor Heðin Mortensen*

Address: SILO

Vestara Bryggja 15

Tuesday, 10 May

08:00 – 08:45 Registration

08:45 – 09:00 WELCOME AND OPENING

Ms Jóhanna Lava Køtlum, CEO of Fiskaaling

Mr. Magnus Rasmussen, Minister of Environment, Industry and Trade

### SEA LICE BIOLOGY SESSION, part I

Chairs: Kjell Maroni & Tróndur J. Kragesteen

09:05 – 09:25 Wild Juvenile Salmon and Sea Lice Monitoring in British Columbia Canada  
Lance Stewardson, *Registered Professional Biologist, Mainstream Biological Consulting, CANADA*

09:25 – 09:45 Linking abundance of free-swimming sea lice to fish farming activity and environmental cues.  
Gunnvør á Norði, *Researcher, Head of Department, Fiskaaling, FAROE ISLANDS*

09:45 – 09:50 Nicotinic Acetylcholine Receptors in *Lepeophtheirus salmonis*.  
Constance M. Bakke, *PhD student, Norwegian University of Life Sciences, NORWAY*

09:50 – 10:10 Antiparasitic susceptibility profile of *Caligus rogercresseyi* facing different temperature and luminosity conditions.  
Margarita P. González Gómez, *Senior Researcher, Instituto de Fomento Pesquero, CHILE*

10:10 – 10:15 Gene silencing by RNAi of voltage gated sodium channels in salmon lice (*Lepeophtheirus salmonis*).  
Julie M. Falken, *Veterinary student, Norwegian University of Life Sciences, NORWAY*

10:15 – 10:30 PANEL: Q&A I

10:30 – 11:00 BREAK

### MODELLING AND EPIDEMIOLOGY SESSION, part I

Chairs: Crawford Revie & Karin K. Boxaspen

11:00 – 11:20 Coupling hydrodynamic simulations to salmon lice population dynamics in Norway  
Tróndur J. Kragesteen, *Post Doc, Fiskaaling, FAROE ISLANDS*

11:20 – 11:40 Location- and time-dependent lice control effects  
Leif Christian Stige, *Senior researcher, Norwegian Veterinary Institute, NORWAY*

- 11:40 – 11:45 Refining enumeration of planktonic sea louse larvae detected by ddPCR; calibration by serial spiking.  
Nathan Mertz, *Stipendiat/PhD Research Fellow, Norwegian University of Science and Technology (NTNU), NORWAY*
- 11:45 – 12:05 A metapopulation model reveals hotspots in the evolution of treatment resistance in salmon lice  
Andrew Coates, *PhD, University of Melbourne, Australia*
- 12:05 – 12:20 PANEL: Q&A I

## LUNCH

**12:20 – 13:20**

- 13:20 – 13:55 KEYNOTE SPEAKER  
Living conditions in the future Northeastern Atlantic under climate change  
Bogi Hansen, senior scientist, Faroe Marine Research Institute, FAROE ISLANDS

## MODELLING AND EPIDEMIOLOGY SESSION, part II

Chairs: Crawford Revie & Karin K. Boxaspen

- 13:55 – 14:15 The effect of a warmer climate on the salmon lice infection pressure from Norwegian aquaculture  
Dr. Anne D. Sandvik, *PhD, Institute of Marine Research, Bergen, NORWAY*
- 14:15 – 14:20 Towards ensemble models for predicting sea lice distributions: Evaluation of multiple coupled biophysical models in Loch Linnhe, Scotland  
Dr. Meadhbh Moriarty, *Senior Aquatic Epidemiological Modeller, Marine Scotland Science, UK*
- 14:20 – 14:40 Combining population models and larval dispersal – a tool for sea lice management  
John P. Phelan, *PhD student, Scottish Association for Marine Science, UK*
- 14:40 – 15:00 Designing a Decision Support System to inform “beyond best practice” farm management  
David Vale (placeholder), *Principal Consultant, BMT, UK*  
Emma McCall, *Engineer, BMT, UK*
- 15:00 – 15:10 Exploring the interaction between environmental conditions and control measurements on the population dynamics of *Caligus rogercresseyi* (Boxshall & Bravo 2000): a modelling approach in Atlantic salmon (*Salmo salar*)  
Jorge Mancilla Schulz, *Fish Health & Nutrition Manager, Mowi*

- 15:10 – 15:30 Developing a framework for assessing spatial and temporal variability in parasite density in Scottish waters – implications for wild salmon smolt migration  
Alexander G Murray, *Fish Health & Welfare group leader, Marine Scotland Science, UK*
- 15:30 – 15:45 PANEL: Q&A II
- 15:45 – 16:15 BREAK

## SEA LICE BIOLOGY SESSION, part II

Chairs: Kjell Maroni & Tróndur J. Kragestein

- 16:15 – 16:20 A novel study on sea lice (*Lepeophtheirus salmonis*) settlement success during Atlantic salmon (*Salmo salar*) encounters.  
Eleanor Glahn, *Graduate research student, Aquaculture Research Institute and School of Marine Sciences, University of Maine, USA*
- 16:20 – 16:40 Frontal filament formation in copepodids of the salmonid specialist *Lepeophtheirus salmonis* and the generalist *Caligus elongatus*: trade-offs and impact on the rate of parasitic development.  
Lars Are Hamre, *Cand. Scient., University of Bergen, NORWAY*
- 16:40 – 17:00 Energy consumption of the free-living stages of sea lice.  
Stine Østerhus, *PhD student, Norwegian University of Science and Technology (NTNU), NORWAY*
- 17:00 – 17:05 The effect of temperature on the interaction between salmon lice (*Lepeophtheirus salmonis*) and Atlantic salmon (*Salmo salar*).  
Mathias Stølen Ugelvik, *Postdoc. Institute of Marine Research, NORWAY*
- 17:05 – 17:25 Immune modulation – a comparison between the generalist *Caligus elongatus* and the specialist *Lepeophtheirus salmonis*.  
Aina-Cathrine Øvergård, *Associate professor, University of Bergen, NORWAY*
- 17:25 – 17:40 PANEL: Q&A II

## RECEPTION

Host: The Ministry of Environment, Industry, Aquaculture and Trade

Address: The Nordic House

**17:40**

Wednesday, 11 May

GENETICS AND GENOME SESSION, part I

Chairs: Jonhard Eysturskarð & Mark Fast

**08:00 – 12:00**

- 08:05 – 08:25 Advances in Salmon Louse Genomics  
Michael Dondrup (placeholder), *Researcher, The Sea Lice Research Centre & Department of Informatics, University of Bergen, NORWAY*  
Frank Nilsen, *Professor, Sea Lice Research Centre, University of Bergen, NORWAY*
- 08:25 – 08:45 Identification of semiochemicals associated with resistance of Atlantic salmon to the salmon lice and assessment of their effects on lice  
Nick Robinson (placeholder)  
Bjarne Gjerde, *Senior scientist, Nofima, Rothamsted Research, Benchmark Genetics, NORWAY*
- 08:45 – 09:05 Molecular responses of salmon lice to reduced salinity  
Andreas Borchel, *Researcher, University of Bergen, NORWAY*
- 09:05 – 09:25 Nicotinic acetylcholine receptors in salmon lice  
Kiranpreet Kaur, *Scientist / Director R&D salmonids, Norwegian University of Life Sciences (NMBU), NORWAY*
- 09:25 – 09:45 Co-expression network analysis identifies modules and genes relevant for molting and development in the Atlantic salmon louse (*Lepeophtheirus salmonis*)  
Michael Dondrup, *Researcher, The Sea Lice Research Centre & Department of Informatics, University of Bergen, NORWAY*
- 09:45 – 10:00 PANEL: Q&A I
- 10:00 – 10:30 BREAK  
*Group photography*  
Posters 8, 9 and 10: Nadezhda Lekanova, Michael Dondrup and James Bron.

GENETICS AND GENOME SESSION, part II

- 10:30 – 10:50 Alteration of the gene expression in the skin of Atlantic salmon after experimental down-regulation of a salmon louse salivary gland protein  
Christiane Eichner, *PhD, University of Bergen, NORWAY*
- 10:50 – 11:10 A chromosome-level genome assembly reveals the genetic basis of a *Lepeophtheirus*

*salmonis* colour mutant

James Bron (placeholder), *Professor of Aquatic Animal Health, Head of Parasitology Research Group, University of Stirling, UK*

Armin Sturm, *Senior Lecturer, University of Stirling, Institute of Aquaculture, UK*

- 11:10 – 11:30 CrispResist with NoLice: Developing tools for boosting Atlantic salmon host resistance to sea lice  
Nick Robinson, *Senior Scientist, Nofima and The University of Melbourne, AUSTRALIA*
- 11:30 – 11:35 Does the salmon louse have an immune dampening effect on Atlantic Salmon?  
Helena Marie Doherty Midtbø, *PhD Candidate, University of Bergen, NORWAY*
- 11:35 – 11:40 LsNaV1.3-SNP in Norwegian populations of *L. Salmonis*  
Sine A. H. Hansen, *PhD candidate, Norwegian University of Life Sciences (NMBU), NORWAY*
- 11:40 – 11:45 A de novo full-length mRNA transcriptome for *Lepeophtheirus salmonis*  
Nadezhda Lekanova, *Senior Engineer, Norwegian University of Life Sciences (NMBU), NORWAY*
- 11:45 – 12:00 PANEL: Q&A II

## LUNCH – TECHNICAL PRESENTATION

Host: Benchmark Animal Health

**12:00 – 13:10**

## MEDICINAL TREATMENT SESSION

Chairs: Peter Østergaard & Sandra Bravo

**13:10 – 14:25**

- 13:15 – 13:35 Traveling resistance: rapid development and dispersal of lice resistant to delousing agents throughout the north Atlantic  
Helene Børretzen Fjørtoft, *PhD-student, Norwegian University of Science and Technology (NTNU), NORWAY*
- 13:35 – 13:40 Spatial heterogeneity in the distribution of the effectiveness of peroxide bath treatments in Chile  
Sandra Marín (placeholder), *Professor of Instituto de Acuicultura, Instituto de Acuicultura, Universidad Austral de Chile, Puerto Montt, CHILE*  
Daniel Jimenez, *Veterinarian, Aquabench SA, CHILE*

- 13:40 – 14:00 Monitoring sensitivity of *Caligus rogercresseyi* to lufenuron through larval bioassays: preliminary results  
Sandra Marín, *Professor of Instituto de Acuicultura, Instituto de Acuicultura, Universidad Austral de Chile, Puerto Montt, CHILE*
- 14:00 – 14:05 Bioassays in microtiter plates  
Linus J.H. Hauge, *Veterinary student, Norwegian University of Life Sciences (NMBU), NORWAY*
- 14:05 – 14:10 The electrophysiological properties of salmon lice ion channels and drug exposure – a frog eggs view  
Marit J. Bakke, *Associate Professor, Norwegian University of Life Sciences (NMBU), NORWAY*
- 14:10 – 14:25 PANEL: Q&A
- 14:25 – 15:15 BREAK  
*Posters 11, 12, 13, 14, 23 and 24: Daniel Jimenez (Sandra Marín), Alexis Slupe, Pietro Asproni, Julio Boettiger, Patrick Pageat and Cécile Bienboire-Frosnini.*

## NON-MEDICINAL TREATMENT SESSION, part I

Chairs: Anne D. Sandvik & Sussie Dalvin

**15:15 – 17:45**

- 15:15 – 16:35 Sea lice (*Lepeophtheirus salmonis* and *Caligus elongatus*) during freshwater treatment.  
Maria Guttu, *PhD student, Institute of biology, Norwegian University of Science and Technology (NTNU), NORWAY*
- 15:35 – 15:55 Comparing mechanical and thermal delousing methods: effects on salmon lice (*Lepeophtheirus salmonis*) hatching success  
Cecilie Miljeteig, *Researcher, Norwegian University of Science and Technology, NTNU, NORWAY*
- 15:55 – 16:15 Efficacy of SCAIS as inhibitor of infestation behavior of *Lepeophtheirus salmonis* copepodid in Atlantic salmon (*Salmo salar*) with altered olfactory system.  
Patrick Pageat, *Professor Titular of the Chair of Ethology and Animal Welfare, IRSEA – E.I. Purpan, CHILE*
- 16:15 – 16:20 The Salmon-Nest-Appeasing-Pheromone (SNAP) effects on skin mucous cells development  
Pietro Asproni, *Head of Department, IRSEA (Research Institute in Semiochemistry and Applied Ethology), FRANCE*
- 16:20 – 16:30 The intraspecific semiochemical SNAP (Salmon-Nest-Appeasing-Pheromone) influences the skin gene expression and mucus composition of Atlantic salmon

Cécile Bienboire-Frosini, *Head of research department, IRSEA (Research Institute in Semiochemistry and Applied Ethology), FRANCE*

16:30 – 16:45 PANEL: Q&A I

## NON-MEDICINAL TREATMENT SESSION, part II

- 16:45 – 17:05 Investigation of potential increased tolerance to low salinities in salmon lice (*Lepeophtheirus salmonis*) as a consequence of freshwater delousing  
Anna S. Båtnes, *Researcher, Norwegian University of Science and Technology (NTNU), NORWAY*
- 17:05 – 17:15 Use of cleaner fish and optical laser in combination with depth-based prevention (snorkel sea cages)  
Lena Geitung, *Postdoc, Institute of Marine Research, NORWAY*
- 17:15 – 17:20 The influence of biofouling on lumpfish welfare and cleaning efficacy  
Kirstin Eliassen, *Biologist (PhD), head of department, Fiskaaling, FAROE ISLANDS*
- 17:20 – 17:25 Personality assessment as a predictor of cleaning behaviour in lumpfish  
Ása Johannesen, *Researcher (PhD), Fiskaaling, FAROE ISLANDS*
- 17:25 – 17:30 Delousing behavior of ballan wrasse (*Labrus bergylta*) studied by a sea lice model in commercial sea cages.  
Håvard Kaland, *PhD, Norwegian University of Science and Technology, (NTNU), NORWAY*
- 17:30 – 17:45 PANEL: Q&A II
- 19:30 – 23:00 CONFERENCE BANQUET  
Sponsored by SIGNS – Group Irsea  
Address: Hilton Garden Inn



Thursday, 12 May

## FISH WELFARE SESSION

Chair: Ása Johannesen & Kjell Maroni

**08:30 – 10:05**

- 08:35 – 08:55 Solving sea lice with data management and predictive analytics  
Anthony Chen, *Co-Founder and CEO, Manolin AS, NORWAY*
- 08:55 – 09:00 Efficacy of single and combined non-medicinal delousing treatments in a laboratory setting  
Sussie Dalvin, *Senior Researcher, Institute of Marine Research, NORWAY*
- 09:00 – 09:20 How do medicinal bath treatments fit into the Integrated Pest Management (IPM) toolbox?  
Catrine Smørås, *Strategic Sea Lice Manager, Benchmark Animal Health*
- 09:20 – 09:35 Prolonged and significant decrease in attachment and development of sea lice following pro-microbial enhancement with *Aliivibrio* spp.  
Kira Salonijs, *Managing director, Previwo AS, NORWAY*
- 09:35 – 09:45 Field experience with pro-microbial enhancement for lice prevention  
Ragnhild Hanche-Olsen, *Technical manager, Previwo AS, NORWAY*
- 09:45 – 09:50 Lumpfish welfare and nutrition in on-growing farms  
Jessica Di Toro, *PhD student, Institute of Aquaculture, University of Stirling/Fiskaaling, UK/FAROE ISLANDS*
- 09:50 – 10:05 PANEL: Q&A
- 10:05 – 10:40 BREAK  
Posters 6, 15, 16, 17, 18 and 19: Mari Austad Brandt, Andrew Bett, Rory Casey, David Vale, Malene Skuseth Slinning and Martin Welch.

Bid presentations for the 14th Sea Lice International Conference

**10:40 – 11:10**

## WILD FISH INTERACTION SESSION

Chairs: Ian Bricknell & Kirstin Eliassen

## 11:15 – 12:35

- 11:15 – 11:35 Mortality thresholds for salmon lice infections in Atlantic salmon  
Sussie Dalvin, *Senior Researcher, Institute of Marine Research, NORWAY*
- 11:35 – 11:40 Critical lice loadings to protect wild Atlantic salmon smolts  
Stephen C Ives, *Researcher in fish health, Marine Scotland Science, UK*
- 11:40 – 12:00 Assessing the Evolution of Virulence of the Salmon Louse (*Lepeophtheirus salmonis*) in the Bay of Fundy.  
Mark Fast (placeholder), *Professor of Fish health and Immunology, Atlantic Veterinary College – UPEI, CANADA*  
Dylan Michaud, *PhD student, University of Prince Edward Island, CANADA*
- 12:00 – 12:20 Are farmed salmon the progenitors of lice on wild Pacific salmon?  
Jim Powell, *Director, Fidelis Aquaculture Management, CANADA*
- 12:20 – 12:35 PANEL: Q&A I

## LUNCH

## 12:35 – 13:45

- 13:45 – 13:50 Sea trout (*Salmo trutta*) in the Faroe Islands  
Unn V. Johannesen, *Biologist (MSc), Fiskaaling, FAROE ISLANDS*
- 13:50 – 14:10 Development of a risk assessment method for sea trout in coastal areas exploited for aquaculture  
Bengt Finstad, *Professor, Norwegian University of Science and Technology (NTNU), Department of Biology, NORWAY*
- 14:10 – 14:15 Increased sea lice infestation affect individual sea trout life history traits  
Ola H. Diserud, *Senior researcher, Norwegian Institute for Nature Research, NORWAY*
- 14:15 – 14:20 Effects of sea lice infestation on long-term sea trout population dynamics  
Richard Hedger, *Research Scientist, Norwegian Institute for Nature Research, NORWAY*
- 14:20 – 14:35 PANEL: Q&A II
- 14:35 – 14:55 FHF – Funding sealice research  
Kjell Maroni, *R&D director aquaculture & environment, FHF – The Norwegian Seafood Research Fund, NORWAY*
- 14:55 – 15:25 BREAK  
Posters 20, 21 and 22: Anne Stene, Margret Thorsteinsson and Rosa Maria Serra-

Llinares.

## MANAGEMENT; POLICY AND LEGISLATION SESSION

Chairs: James Bron & Sandra Marín

**15:30 – 17:15**

- 15:30 – 15:50 Combination of science, advice, and regulation towards a new system for sustainable growth of salmonid aquaculture – The Norwegian experience of implementing a regulatory system based on effect of salmon lice from fish farms on wild salmonid fish.  
Karin K. Boxaspen, *Research Director, Institute of Marine Research, NORWAY*
- 15:50 – 15:55 Surveillance strategies of sea lice – assessing environmental infection pressures  
Berit Rabe, *Inshore Physical Oceanographer, Marine Scotland Science, UK*
- 15:55 – 16:15 Marine spatial planning tool for digital environmental impact assessment: Case study application for Scottish salmon aquaculture.  
Cemlyn Barlow (placeholder), *Environmental Consultant, BMT, UK*  
Harrison Carmody, *Marine Environmental Consultant, BMT, UK*
- 16:15 – 16:20 Gender differences in the abundance of *Caligus rogercresseyi* after the application of an anti-sea lice treatment  
Sandra Bravo, *Universidad Austral de Chile, CHILE*
- 16:20 – 16:40 Breeding for lice resistance in Norwegian farmed atlantic salmon: What are the main barriers to this path for sustainable innovation?  
Ingrid Olesen (placeholder), *Senior Researcher, NOFIMA, NORWAY*  
Kristin Rosendal, *Research professor, The Fridtjof Nansen Institute, NORWAY*
- 16:40 – 17:00 Physical prevention of sea lice  
Frode Oppedal, *Researcher, Institute of Marine Research, NORWAY*
- 17:00 – 17:15 PANEL: Q&A

Conference wrap-up

**17:15 – 17:35**

- 17:35 – 19:30 Reception  
Host: Hiddenfjord  
Sea Lice Conference Awards and 14th Sea Lice Conference Bid Results

