



TUESDAY, August 16

WELCOME AND OPENING

Tuesday, August 16 8:30 AM - 9:20 AM Delta Hotel
Chair: Kim Gill, Aquaculture Association of Canada

Newfoundland Aquaculture Industry Association – Jamie Baker
Executive Director & Conference Co-Chair

Aquaculture Association of Canada – Kim Gill President & Conference Co-chair

World Aquaculture Society – Jay Parsons, Past President, Conference Co-chair

Other dignitaries to be confirmed

PLENARY 1

Tuesday, August 16 9:20 AM - 10:00 AM Delta Hotel
Chair: Jamie Baker

Introduced By: Matthew Galgay, Partner at BDO Canada LLP. National Fisheries & Aquaculture Industry Leader

9:20 Tavish Scott

SCOTLAND'S AQUACULTURE STORY – INFORMING AND EDUCATING GOVERNMENT, COMMUNITIES AND OUR STAKEHOLDERS

CLEANER FISH

Tuesday, August 16 11:00 AM - 5:30 PM Bannerman 1

Chair: Danny Boyce

Sponsor: Biomar Ltd.

11:00 Danny Boyce

WELCOME AND INTRODUCTION

11: 20 Jennifer Monk, Jillian Porter, Denise Tucker, Taylor Sheppard, Danny Boyce
CLEANER FISH RESEARCH AND PRODUCTION IN SUPPORT OF THE ATLANTIC
CANADIAN SALMON AQUACULTURE INDUSTRY

11:40 Geoffrey McBriarty, Cory Taylor, Tom Taylor, Sheldon George, Danny Boyce
COOKE AQUACULTURE CLEANERFISH PROGRAM DEVELOPMENT: LAND-BASED
GROWOUT AND TRANSPORTATION

12:00 Elizabeth A. FairchildCLEANERFISH AQUACULTURE IN THE UNITED STATES, WITH AN EMPHASIS ON
LUMPFISH RESEARCH IN NEW HAMPSHIRE**12:20 Stephen Eddy**, Benjamin Reed, Melissa MalmstedtCAPTURE OF YOUNG-OF-THE-YEAR LUMPFISH *Cyclopterus lumpus* FOR CAPTIVE
BREEDING IN MAINE, USA

12:40 Barbara Langille, Tony Kess, Amber Messmer, Steven J. Duffy, Mallory Van Wyngaarden,
Melissa K. Holborn, Tim Martin Knutsen, Matthew Kent, Danny Boyce, Robert Gregory,
Johanne Gauthier, Elizabeth Fairchild, Mike Pietrak, Steve Eddy, Paul Bentzen,
Ian R. Bradbury

DISTINCT SPATIAL GENOMIC STRUCTURE OF LUMPFISH *Cyclopterus lumpus*
ACROSS THE NORTHWEST ATLANTIC**1:00 LUNCH****2:30 Øyvind Kristoffersen**

THE GOOD CONCEPT

2:50 Paul Howes, C. Gutierrez Rabadan, C. Spreadbury, S. Consuegra, C. Garcia de Leaniz
DEVELOPMENT, VALIDATION AND TESTING OF AN OPERATIONAL WELFARE SCORE
INDEX FOR FARMED LUMPFISH *Cyclopterus lumpus* L.

3:10 Michael Doherty, Elizabeth FairchildAN ASSESSMENT OF SEA LICE IN COASTAL NEW HAMPSHIRE AND EXPLORING THE
USE OF LUMPFISH *Cyclopterus lumpus* AS CLEANERFISH OF STEELHEAD TROUT
Oncorhynchus mykiss IN EXPERIMENTAL AQUACULTURE CAGES**3:30 Haakon Lund**, Martin Munkeby, Fredrik Staven, Lars Berg-Hansen, Eskil Bendiksen

CANCELED PREFERRED MATERIALS IN ARTIFICIAL HIDES FOR LUMPFISH

3:50 Samuel Pountney, Ingrid Lein, Sarah-Louise Counter-Selly, Herve Migaud, Andrew Davie
CHANGES IN LUMPFISH *Cyclopterus lumpus* EGG COMPOSITION OVER EMBRYONIC DEVELOPMENT SUGGEST POTENTIAL EGG QUALITY DETERMINANTS

4:10 Antonios Chalaris, Torunn Forberg, Victoria Valdenegro, Kristian Sørenbø, Elisabeth Aasum, Hanne Johnsen, Lill-Heidi Johansen, Heidi E. Mikalsen
IMPROVING LUMPFISH *Cyclopterus lumpus* GROWTH AND ROBUSTNESS: EFFECTS OF REDUCED NUTRIENT DENSITY AND FUNCTIONAL ADDITIVES

4:30 Hoang Thi My Dung Le, Ramon Fontanillas, Kathrine Bakkemo, Seong-Chea Chua, Grethe Rosenlund
CANCELED
AN OVERVIEW OF GROWTH RATE, BONE DEVELOPMENT AND MINERAL COMPOSITION OF THE CLEANER FISH BALLAN WRASSE *Labrus bergylta*

GENERAL FISH HEALTH

Tuesday, August 16 11:00 AM - 1:00 PM Bannerman 2

Chair: Emile Vadboncoeur

Sponsor: New Found Mechanical

11:00 Karin Pittman, Carlo Lazado, Sindre Haddeland, Grigory Merkin, Mearge Okubamichael
FISH WEAR THEIR IMMUNE SYSTEMS ON THE OUTSIDE: WHAT THIS SLIME MEANS AND HOW TO PRACTICALLY MEASURE IT

11:20 Rodolfo del Rio-Rodriguez, Amelia Paredes-Trujillo, Jaime Navarro-Flores, Monica Gomez-Solano, Mariana Huchin-Cortes, Ana Delia Cu-Escamilla
PATHOGENS AND DISEASE EXPERIENCES IN THE AQUACULTURE OF THE YUCATAN PENINSULA, MEXICO

11:40 Krishna Thakur, Milan Gautam, Larry Hammell, Holly Burnley, Nicole O'Brien, Daryl Whelan
CANCELED
DESCRIPTION OF PATTERNS OF INFECTIOUS SALMON ANAEMIA VIRUS OUTBREAKS IN MARINE SALMON FARMS IN NEWFOUNDLAND AND LABRADOR

THE ART AND SCIENCE OF AQUACULTURE POLITICS

Tuesday, August 16 11:00 AM - 1:00 PM Bannerman 3

Chair: Tim Kennedy

As aquaculture expands around the world as a major force in the secure supply of seafood, so too does public, and correspondingly, political interest grow. In some geographic areas, the public is generally supportive as they see economic and sustainable food benefits. But in other locations, especially related to Atlantic salmon, public concern exists. This concern is exacerbated by increasing polarization and the inability to develop constructive and reasonable pathways of collaboration. How can politicians successfully navigate the challenges to facilitate a constructive path forward that achieves positive social, health and environmental outcomes?

Speakers:**Host: Tim Kennedy, President & CEO, CAIA**

- **Hon. Derek Bragg, Minister of Fisheries, Forestry and Agriculture (NL)**
(General Subject: Provincial approach to aquaculture and dealing with challenges)
- **Wayne Long, Member of Parliament, Saint John, NB (TBC)**
(General Subject: Canadian politics and resource development)
- **Tavish Scott, CEO Salmon Scotland, former MSP (Shetland) and leader of the Scottish Liberal Democrats** (General Subject: The Scottish experience)
- **Mayor Steve Crewe (Hermitage-Sandyville, NL)** (General Subject: the local experience)

Structure:**11:00 Welcome, Overview and Introduction of Minister – Kennedy****11:05 Opening Address (Provincial Minister)****11:20 3 other speakers****11:50 Questions from the moderator****12:10 Questions from the floor****12:30 Closing Comments – Mark Lane, former ED, NAIA**

TOWARDS FULL UTILIZATION OF AQUACULTURE RESOURCES: MANAGEMENT, VALORIZATION, AND QUALITY ASSURANCE

Tuesday, August 16 11:00 AM - 5:30 PM Bannerman 4

Chair: Kelly Hawboldt

11:00 Steinar Wasmuth

FISH SLUDGE – A PROBLEM OR A RESOURCE?

11:20 Richard Tingskou, Adrian Unc

CANCELED RECIRCULATING AQUACULTURE SYSTEM ORGANIC WASTE UTILIZATION IN BOREAL PODZOLIC AGRICULTURE INTENSIFICATION, AN OPPORTUNITY FOR SUSTAINABLE NUTRIENT MANAGEMENT

11:40 Kelly Hawboldt, Stephanie MacQuarrie, David Hopkins, Ahmadhi Sara

VALORIZATION OF SHELLFISH RESIDUES TO VALUE ADDED PRODUCTS FROM BIOACTIVES TO BIOMATERIALS

12:00 Stephanie MacQuarrie, Kelly Hawboldt, Haley Armstrong, Kuljit Kaur, Saher Hamid

CRAB BODY PYROLYSIS: CHARACTERIZATION AND APPLICATIONS OF CRAB BIOCHAR

12:20 Jennifer Perry, Delaney Greiner, Denise SkonbergUSE OF INVASIVE GREEN CRAB *Carcinus maenas* FOR PRODUCTION OF A FERMENTED CONDIMENT**12:40 Fabrice Berrue, Zied Khiari, Edmond Lam, Sean Tibbetts**

SUSTAINABLE AQUACULTURE – NEXT GENERATION OF AQUAFEEDS AND WASTE STREAM VALORIZATION

- 1:00 LUNCH**
- 2:30 David Hopkins**, Fabrice Berru , Zied Khiari, Kelly Hawboldt
A REVIEW OF MATRIX EFFECTS DURING THE ENZYMATIC HYDROLYSIS OF FISHERIES BY-PRODUCTS
- 2:50 Deepika Dave**
BEYOND PROCESSING: FULL UTILIZATION OF ATLANTIC SALMON BYPRODUCTS
- 3:10 Vijaya Raghavan**, Brenda Alvarez Chavez
KEY THERMOCHEMICAL PROCESSES IN THE AQUACULTURE INDUSTRY AS A TOOL FOR CLIMATE CHANGE MITIGATION
- 3:30 Juran Goyali**, Deepika Dave
DIFFERENT APPROACHES OF DRYING ATLANTIC SEA CUCUMBERS *Cucumaria frondosa*: PROS AND CONS
- 3:50 Julia Pohling**, Kelly Hawboldt, Deepika Dave
REVIEW OF NON-TOXIC AND MECHANICAL PRE-TREATMENT PROCESSES TO PREPARE NATIVE CHITIN FOR HIGH-STRENGTH NANOMATERIAL APPLICATIONS
- 4:10 Abul Hossain**, Deepika Dave, Fereidoon Shahidi
PHENOLIC COMPOUNDS AND THEIR BIOACTIVE PROPERTIES OF ATLANTIC SEA CUCUMBER PROCESSING DISCARD
- 4:30 Ali Shafiee**, Stephanie MacQuarrie, Kelly Anne Hawboldt
CALCIUM-BASED BIOCHAR DERIVED FROM SNOW CRAB WASTE AS CATALYSIS FOR TRANSESTERIFICATION
- 4:50 Laura Dwyer**
AQUACULTURE MOVING FORWARD, SUSTAINABILITY AND MODERN TECHNOLOGY HAND IN HAND

AQUACULTURE BIOTECHNOLOGY

Tuesday, August 16 11:00 AM - 5:50 PM Churchill 1

Chair: Tiago Hori

- 11:00 Tillmann J. Benfey**
AN INTRODUCTION TO THE PRODUCTION AND USE OF TRIPLOIDS IN AQUACULTURE
- 11:20 Eric Ignatz**, Tiago Hori, Surendra Kumar, Tillmann Benfey, Laura Braden, Dawn Runighan, Jillian Westcott, Matthew Rise
TEMPERATURE-MEDIATED EFFECTS ON THE HEPATIC TRANSCRIPTOME OF GROWTH HORMONE TRANSGENIC FEMALE TRIPLOID ATLANTIC SALMON *Salmo salar*

- 11:40 Kevin Osterheld**, John Davidson, Luc Comeau, Tiago Hori, Isabelle Marcotte, Christian Pellerin, Jose M.F. Babarro, Réjean Tremblay
TRIPLOID MUSSELS FOR AQUACULTURE COULD LEAD TO BETTER PRODUCTION YIELD WITH HIGHER SURVIVAL RATE
- 12:00 Thomas Fraser**, Per Gunnar Fjelldal, Florian Sambraus, Tom Hansen
A NORWEGIAN PERSPECTIVE ON THE SUITABILITY OF TRIPLOID ATLANTIC SALMON FOR AQUACULTURE
- 12:20 Tiago S. Hori**
A FULLY PHASED GENOME ASSEMBLY FOR *Mytilus edulis* UNVEILS A HIGH DEGREE OF PRESENCE-ABSENCE VARIANCE BETWEEN MUSSEL POPULATIONS
- 12:40 Matthew L. Rise**, Khalil Eslamloo, Xi Xue, Albert Caballero-Solares, Umasuthan Navaneethaiyer, Surendra Kumar, Jennifer Hall, Mohamed Emam, Eva Jakob, Stanko Skugor, Javier Santander, Richard Taylor, Mark Fast
TRANSCRIPTOMICS OF ATLANTIC SALMON RESPONSES TO BACTERIAL PATHOGENS
- 1:00 LUNCH**
- 2:30 Melissa Allen**, Jason Stannard, Klara Verbyla
SNP GENOTYPING TOOLS AND THEIR APPLICATION IN AQUACULTURE BREEDING PROGRAMS: PEDIGREE MANAGEMENT TO GENOMIC SELECTION
- 2:50 Thomas Fraser**, Tom Hansen, Fernando Ayllon, Anna Wargelius, Per Gunnar Fjelldal
VGLL3 IS ASSOCIATED WITH THE AGE OF PUBERTY IN FARMED ALL MALE ATLANTIC SALMON
- 3:10 Opeyemi Bolaji**, Anuoluwapo Olatunji
SUSTAINABLE DEVELOPMENT IN BIOTECHNOLOGY AND AQUACULTURE
- 3:30 Hayin Tamut**, Raghvendra Singh, Santosh Kumar, Aditya Kumar, Ajay Kumar Singh, Achal Singh, Ramasankar Sah, Chandrabhushan Nishad, Arvind Verma, Kuldeep K. Lal
SEMEN CHARACTERISTICS AND OPTIMIZATION OF SPERM CRYOPRESERVATION PROTOCOL OF *Labeo gonius* (HAMILTON, 1822)
- 3:50 Mohamed (Moh) Salem**
GENOMIC SELECTION FOR MUSCLE GROWTH AND FILLET QUALITY TRAITS IN RAINBOW TROUT

ALGAE / SEaweEDS AND IMTA

Tuesday, August 16 11:00 AM - 1:00 PM Pippy 1

Chair: Jillian Westcott

- 11:00 Jennifer Perry**, Denise Skonberg
EFFECTS OF MINIMAL PROCESSING ON THE MICROBIAL SAFETY OF KELP
- 11:20 Kalani Ortiz**, Rafael Cuevas-Urbe
EVALUATING THE GROWTH OF BULL KELP *Nereocystis luetkeana* FROM HATCHERY TO LONG LINE CULTIVATION IN HUMBOLDT BAY

RECIRCULATING AQUACULTURE SYSTEMS AND AQUAPONICS

Tuesday, August 16 11:00 AM - 4:30 PM Victoria 1

Chair: Michael Schwarz

Sponsor: Sanimarc/East Chem

- 11:00 J. Andrew Forsythe**
YELLOWTAIL KINGFISH *Seriola lalandi* IN RAS TO MARKET – ARE WE MAD?
THE NEW ZEALAND EXPERIENCE
- 11:20 Chuck Weirich**, Clete Otoshi
NOAA OPTIONS TO SUPPORT THE U.S. RAS SECTOR
- 11:40 Gregory Beckman**
EVOLUTION OF RAS FACILITY PRODUCTION SCALE AND KEY DESIGN
CONSIDERATIONS
- 12:00 John F. Taylor**, Oran S. Fradkin, Yoav Barr, Gary Myers, Guy Alon, Neder Snir
OPTIMISATION OF EGG TO TABLE GROW OUT OF ATLANTIC SALMON IN A FULL
FRESHWATER RECIRCULATION AQUACULTURE SYSTEM
- 12:20 May-Helen Holme**
INNOVATING FOR SUCCESSFUL RAS OPERATIONS
- 12:40 John L. Holder**
INTRODUCING THE RASWAY – A VERY EFFICIENT SYSTEM THAT HAS LOW
ENERGY, LOWER CONSTRUCTION COSTS ALL RESULTING IN A LOWER COP
- 1:00 LUNCH**
- 2:30 Ana Fernández Astudillo**
CHANGES IN TEMPERATURE OVERRIDES LIGHT INTENSITY EFFECTS AND
TRIGGERS EARLY MATURATION IN PRE-SMOLT ATLANTIC SALMON
- 2:50 Michael Schwarz**, Christopher Bentley, Richard Snyder, Reza Ovissipour, Steve Urick,
Jonathan van Senten, Michael Congrove, Kasey Bond
UPDATES ON DEVELOPMENT OF A RECIRCULATING AQUACULTURE SYSTEM FOR
BIVALVE LARVAL CULTURE
- 3:10 Leo Fleckenstein**, Andrew Ray, Mark Johannemann
LOW-COST DENITRIFICATION IN BRACKISH WATER AQUACULTURE PRODUCTION
- 3:30 Andrew Ray**, Jill Fisk, Leo Fleckenstein
NON-HALOPHYTE PLANT SPECIES IN BRACKISH-WATER AQUAPONICS
- 3:50 Christopher Glen Williams**
AN ANALYTIC APPROACH TO INCREASING SUCCESS AND A POSITIVE PRESENCE
IN AQUAPONICS

- 4:10 Fabrice Teletchea**
WHY AND HOW TO PROMOTE AQUAPONICS IN HIGH SCHOOL? ASSESSEMENT OF A FIVE-YEAR PROJECT
- 4:30 Peace Chemis Mnelemba, Joshua Valeta**
ASSESSMENT OF TECHNICAL AND ECONOMIC FEASIBILITY OF A PORTABLE AQUAPONIC SYSTEM

ECONOMICS AND MARKETING

Tuesday, August 16 11:00 PM - 1:00 PM Victoria 3
Chair: Darrell Green

- 11:00 David Muriuki**
AQUACULTURE SUPPLY AND DEMAND DISRUPTIONS DURING THE COVID-19 PANDEMIC: A GLOBAL ECONOMIC ANALYSIS OF CHALLENGES AND SOLUTIONS
- 11:20 Steven Richards, Marzieh Motallebi, Michael Vassalos**
U.S. COASTAL RESTAURANT SURVEY HIGHLIGHTS MARKETING OPPORTUNITIES FOR LOCAL AQUACULTURE AND SEAFOOD PRODUCERS
- 11:40 Terrill Hanson, Leticia Fantini-Hoag, Jesse Chappell**
BIOECONOMIC ANALYSIS OF IN-POND RACEWAY SYSTEM GROWING STOCKER AND FOODSIZE HYBRID CATFISH PLUS TILAPIA
- 12:00 Bertrand Charron**
AQUACULTURE CERTIFICATION AS A MEANS TO MINIMISE SOCIAL AND ENVIRONMENTAL IMPACTS, WHILST HELPING TO PROVIDE TRANSPARENCY, TRACEABILITY AND SOCIAL LICENCE
- 12:20 Jacintha Mc Ivor, Jose Llorente**
BEYOND CERTIFICATION TO QUALITY – THE NEW PARADIGM?

FISH HEALTH - BACTERIAL DISEASES

Tuesday, August 16 2:30 PM - 5:30 PM Bannerman 2

Chair: Javier Santander

Sponsor: New Found Mechanical

- 2:30 Trung Cao**, Ignacio Vasquez, Hajarrooba Gnanagobal, My Dang, Setu Chakraborty, Ahmed Hossain, Danny Boyce, Javier Santander
ISOLATION AND CHARACTERIZATION OF OUTER MEMBRANE VESICLES FROM *Moritella viscosa*, TOXICITY AND IMMUNIGENICITY EVALUATION IN LUMPFISH *Cyclopterus lumpus*
- 2:50 Surendra Kumar**, Khalil Eslamloo, Kathleen Parrish, Mark Fast, Matthew Rise
IDENTIFYING ISOFORM SWITCHES IN ATLANTIC SALMON *Salmo salar* INFECTED WITH *Moritella viscosa*
- 3:10 Javier Santander**, Trung Cao, Alejandro Cohen, Cristopher Segovia, Joe Banoub
IRON ACQUISITION MECHANISMS OF *Moritella viscosa*, IMPLICATIONS FOR PATHOGENESIS AND FISH VACCINOLOGY
- 3:30 Monica Gausdal Tingbø**, Michael Ness, Siv Tunheim, Randy Peach, Ane Sandtrø, Anette Furevik
EMERGING VARIANTS OF *Moritella viscosa*
- 3:50 Jose Vasquez**, Manuel Soto-Davila, Hajarrooba Gnanagobal, Javier Santander
UPDATE OF THE TRANSCRIPTOMIC PROFILE OF ATLANTIC SALMON *S. salar* PRIMARY MACROPHAGES RESPONSE TO *Aeromonas salmonicida* subsp. *salmonicida* INFECTION
- 4:10 Hajarrooba Gnanagobal**, Trung Cao, Ahmed Hossain, Ignacio Vasquez, Setu Chakraborty, Joy Chukwu Osazuwa, Danny Boyce, Victor Garcia, Javier Santander
ROLE OF RIBOFLAVIN BIOSYNTHETIC PATHWAY PARALOGS, AND RIBOFLAVIN TRANSPORTER (*ribN*) IN *Aeromonas salmonicida* VIRULENCE IN LUMPFISH
- 4:30 Monica Gausdal Tingbø**
COMPARISON OF NORWEGIAN AND CANADIAN FIELD ISOLATES OF *Yersinia Ruckeri*
- 4:50 Trung Cao**, Ignacio Vasquez, Hajarrooba Gnanagobal, My Dang, Setu Chakraborty, Ahmed Hossain, Danny Boyce, Javier Santander
ISOLATION AND CHARACTERIZATION OF OUTER MEMBRANE VESICLES FROM *Moritella viscosa* AND EVALUATED ITS IMMUNIGENICITY IN LUMPFISH *Cyclopterus lumpus*
- 5:10 Khalil Eslamloo**
PROFILING THE GLOBAL GENE EXPRESSION RESPONSE OF ATLANTIC SALMON TO ENTERIC REDMOUTH DISEASE

INNOVATION NORWAY

Tuesday, August 16 2:50 PM - 5:30 PM Bannerman 3

Chair: Tim Kennedy

In collaboration with partners at Innovation Norway and the Norwegian Centre of Excellence Aquatech Cluster, the Embassy of Norway to Canada is proud to present a session on innovation for the sustainable aquaculture industry.

Hosted by Tim Kennedy from Canadian Aquaculture Industry Alliance, this multi-part session will include presentations from Canadian and Norwegian government agencies, a panel on adopting new technologies and methods and showcases of innovations available for the industry.

2:50 Anders Gulbrandsen
WELCOMING REMARKS

2:55 Alf-Martin Sollund
TRANSPARENCY AND SHARED DATA AS FOUNDATION FOR SOCIAL LICENSE IN
AQUACULTURE

3:05 Tom-Ivar Bern
HOW TO SUPPORT DEVELOPMENT AND COMMERCIALIZATION OF GAMECHANGING
TECHNOLOGY IN NORWAY AND CANADA

3:20 Panel Discussion
R&D, FROM DRAWING BOARD TO COMMERCIAL SUCCESS – INCENTIVES AND
INHIBITORS FOR ADAPTATION OF NEW TECHNOLOGIES AND METHODS

3:45 Kristjan Kristjansson,
EXAMPLES OF NEW RESEARCH BASED TECHNOLOGY AVAILABLE FOR THE
INDUSTRY

3:55 Jan Rune Haukvik
EXAMPLES OF NEW RESEARCH BASED TECHNOLOGY AVAILABLE FOR THE
INDUSTRY

4:05 Tim Kennedy
CLOSING REMARKS

AQUACULTURE COMMUNICATION, PERCEPTION AND EDUCATION

Tuesday, August 16 2:30 PM - 5:30 PM Pippy 1

Chairs: Ian Roberts, Jay Parsons

- 2:30 Ian Roberts**
FRAMING THE NARRATIVE: HOW HEADLINES QUICKLY BECOME FACT
- 2:50 Jenny Weitzman**, Ramon Filgueira, Jon Grant
CONCERNS, CONFLICTS AND CONTROVERSY: UNDERSTANDING DRIVERS OF OPINION AND OPPOSITION TO SALMON FARMING IN NOVA SCOTIA, CANADA
- 3:30 Hugh Mitchell**
ENGAGING THE ANTI-AQUACULTURE CONTINGENT ON TWITTER – AS A PROFESSIONAL: WHY DO IT AND WHAT CAN WE LEARN?
- 4:10 Emily De Sousa**
SEAFOOD IN A TIKTOK ERA – MARKETING TO MILLENNIALS AND GEN Z

SHELLFISH AND INVERTEBRATES

Tuesday, August 16 2:30 PM - 5:30 PM Victoria 3

Chair: Cyr Couturier

- 2:30 Fernando A. Rodríguez-Reyes**, Roberto González-Gómez, Maite Mascaró, César Meiners-Mandujano, Piedad S. Morillo-Velarde
EFFECT OF THE TEMPERATURE AND THE SALINITY ON EMBRYONIC DEVELOPMENT OF THE OCTOPUS *Octopus insularis* (LEITE & HAIMOVICI, 2008)
- 2:50 Joy Liu**
EXPLORATION OF LENGTH-WEIGHT RELATIONSHIPS IN SCALLOPS
- 3:10 Behrang Daneshkhah**, Naser Agh, Farzaneh Noori
USE OF DESALINATION PLANT EFFLUENT AND SALTY GROUND WATER FOR CULTURE OF ARTEMIA
- 3:30 Gabrielle Kosmider**
FISHERIES AND OCEANS CANADA PACIFIC REGION BIVALVE TRACEABILITY INITIATIVE

WEDNESDAY, August 17

PLENARY 2

Wednesday, August 17 9:20 AM - 10:00 AM Delta Hotel
Chair: Kim Gill

9:20 Stefanie Colombo

AQUAFEEDS AND NUTRITION: FOR HEALTH, RESILIENCY, AND THE SUSTAINABILITY OF AQUACULTURE

CLEANERFISH - CONTINUED

Wednesday, August 17 11:00 AM - 5:30 PM Bannerman 1
Chair: Danny Boyce

11:00 Samuel Pountney, Bernat Morro, Amaya Albalt, Ingrid Lein, Mary Docherty, Sarah-Louise Counter-Selly, Herve Migaud, Andrew Davie

POST OVULATORY AGING OF LUMPFISH *Cyclopterus lumpus* EGGS SUGGESTS SHORT OVERRIPENING WINDOW, WITH POTENTIAL OVARIAN FLUID BIOMARKERS

11:20 Shelby Perry, Elizabeth Fairchild

THE EFFECTS OF FISH SIZE, STOCKING DENSITY, AND PHOTOPERIOD ON JUVENILE LUMPFISH AGGRESSION

11:40 Rachel Eisenberg, Rebecca Sandrelli, Denise Tucker, Jennifer Monk, Danny Boyce, Emile Vadboncoeur, Jillian Porter, Anthony Gamperl

THE THERMAL DEPENDENT BIOLOGY OF LUMPFISH: DIFFERENCES DUE TO TEMPERATURES DURING EARLY LIFE AND HOW TOLERANCE IS MEASURED

12:00 Javier Santander, Ignacio Vasquez, Katherinne Valderrama, Joy Chukwu-Osazuwa, Setu Chakraborty, Hajarroba Gnanagobal, Oluwatoyin Onireti, Vimbai Machimbirike, Surendra Kumar, Gabriela Bindae, Bereket Zakarias, Jennifer R. Hall, Andrew K. Swanson, Jennifer Monk, Danny Boyce, Trung Cao

LUMPFISH *Cyclopterus lumpus* IMMUNITY TO *Vibrio anguillarum* VACCINES AND TRANSCRIPTOMIC PROFILE OF SYSTEMIC IMMUNE RESPONSE

1:00 LUNCH

2:30 Tony Kess, Cameron Nugent, Matthew Brachmann, Steven Duffy, Sarah Lehnert, Brendan Wringe, Ian Bradbury

CHROMOSOME LEVEL REFERENCE OF CUNNER *Tautoglabrus adspersus* AND LOW-DEPTH RESEQUENCING REVEAL EVIDENCE OF ECOLOGICAL ADAPTATION THROUGHOUT ATLANTIC CANADA

- 2:50 Tony Kess**, Barbara Langille, Anthony Einfeldt, Melissa Holborn, Steve Duffy, Amber Messmer, Matthew Brachmann, Paul Bentzen, Tim Knutsen, Matthew Kent, Danny Boyce, Ian Bradbury
DEVELOPMENT OF A CHROMOSOME-SCALE REFERENCE GENOME AND POPULATION GENOMIC DATA TO CHARACTERIZE SIGNATURES OF SEX AND EARLY DOMESTICATION IN LUMPFISH *Cyclopterus lumpus*
- 3:10 Christopher J.D. Bender**, Jessica L. Roy, Camden D. Moir, Elizabeth G. Boulding
eDNA METABARCODING OF STOMACHS FROM TWO CANADIAN CLEANER FISHES: WILD CUNNER WRASSES AND LUMPFISH FROM ATLANTIC SALMON SEACAGES
- 3:30 Hajarrooba Gnanagobal**, Setu Chakraborty, Joy Chukwu Osazuwa, Trung Cao, Ignacio Vasquez, Surendra Kumar, Gabriela Bindae, Steven Hill, Danny Boyce, Javier Santander
PROFILING THE TRANSCRIPTOME RESPONSE OF LUMPFISH HEAD KIDNEY TO *Renibacterium salmoninarum* AT EARLY AND CHRONIC INFECTION STAGES
- 3:50 Surendra Kumar**, Setu Chakraborty, Ahmed Hossain, Trung Cao, Hajarrooba Gnanagobal, Danny Boyce, Christopher Segovia, Javier Santander
INNATE IMMUNE RESPONSE IN HEAD KIDNEY, SPLEEN AND LIVER OF CLEANER FISH *Cyclopterus lumpus* DURING *Aeromonas salmonicida* INFECTION
- 4:10 Nathaniel Spada**, Elizabeth Fairchild, Jesse Trushenski, Gary Burr, Michael Pietrak, David Berlinsky
NUTRITION AND DENSITY DEPENDENCE AS PROXIES FOR MANIPULATING JUVENILE LUMPFISH *Cyclopterus lumpus* GROWTH
- 4:30 Samuel Pountney**, Ingrid Lein, Sarah-Louise Counter-Selly, Herve Migaud, Andrew Davie
COMPARATIVE PROXIMATE ANALYSIS OF WILD AND CAPTIVE LUMPFISH *Cyclopterus lumpus* EGGS SHOW DEFICIENCIES IN CAPTIVE EGGS AND POSSIBLE EGG QUALITY DETERMINANTS

FISH HEALTH - BACTERIAL DISEASES - CONTINUED

Wednesday, August 17 11:00 AM - 1:00 PM Bannerman 2

Chair: Javier Santander

Sponsor: Elanco

- 11:00 Maryam Ghasemieshkaftaki**, Ignacio Vasquez, Trung Cao, Ahmed Hossain, Vimbai Machimbirike, Anthony K. Gamperl, Javier Santander
COMPARATIVE GENOMIC OF A NEW PATHOGENIC STRAIN ISOLATED FROM WINTER ULCER DISEASE IN ATLANTIC SALMON *Salmo salar* IN NEWFOUNDLAND
- 11:20 Vimbai Irene Machimbirike**, Ignacio Vasquez, Trung Cao, Joy Chukwu-Osazuwa, Oluwatoyin Onireti, Maryam Ghasemieshkaftaki, Ha Thanh Dong, Triwit Rattanarojpong, Marije Booman, Simon Jones, Manuel Soto-Davila, Javier Santander
CHARACTERIZATION AND COMPARATIVE GENOMIC ANALYSIS OF *Vibrio anguillarum* REVEALS SIGNATURE PATHWAYS OF THE O-ANTIGEN BIOSYNTHESIS IN SEROTYPES O1, O2 AND O3

- 11:40 Joy Chukwu-Osazuwa**, Trung Cao, My Dang, Hajarooba Gnanagobal, Ignacio Vasquez, Ahmed Hossain, Oluwatoyin Irete, Setu Charkraborty
CO-INFECTION OF LUMPFISH WITH *Aeromonas salmonicida* AND *Vibrio anguillarum*
- 12:00 Javier Santander**, Cristopher Segovia, Setu Chakraborty, Trung Cao, Ignacio Vasquez, Hajarooba Gnanagobal, Surendra Kumar, Robert L. Gendron, Matthew Rise, Andrew Swanson, Danny Boyce
Piscirickettsia salmonis INFECTION IN *Cyclopterus lumpus*
- 12:20 Mark Braceland**, Marije Booman
TENACIBACULOSIS IN ATLANTIC SALMON *Salmo salar* L.
- 12:40 David Peter Mina Baya**
Aeromonas hydrophila: FISH DISEASE AND CONTROL STRATEGY IN SOUTH SUDAN

ENVIRONMENT IMPACTS AND MONITORING

Wednesday, August 17 11:00 AM - 5:30 PM Bannerman 3

Chair: Dounia Hamoutene

- 11:00 Odunayo Adetuyi**, Damilola Awoku, Busola Adedokun, Taibat Bashar
TOXICITY EFFECTS OF SMOKED AND UNSMOKED FILTERED CIGARETTE BUTTS LEACHATE ON AFRICAN CATFISH *Clarias gariepinus*
- 11:20 Paula Quinteiro**, Tamiris Pacheco da Costa, Andrei Hidrovo, Ana Cláudia Dias
ENVIRONMENTAL IMPACTS OF OYSTER PRODUCTION FROM AQUACULTURE IN PORTUGAL
- 11:40 Olivier Laroche**, Xavier Pochon, Nigel Keeley
BEYOND TAXONOMY: VALIDATING FUNCTIONAL INFERENCE APPROACHES BASED ON EDNA METABARCODING DATA IN THE CONTEXT OF FISH-FARM IMPACT ASSESSMENT
- 12:00 Suzanne C. Dufour**, Joost T.P. Verhoeven
TRACKING AQUACULTURE IMPACTS ON BENTHIC ENVIRONMENTS USING MICROBIOMES AND eDNA BIOMARKERS
- 12:20 Ryan Horricks**, Leah M. Lewis-McCrea, Gregor K. Reid
INTERACTIONS BETWEEN AMERICAN LOBSTER *Homarus americanus* AND SALMONID AQUACULTURE IN THE CANADIAN MARITIMES
- 1:00 LUNCH**

- 2:30 Leigh Howarth**, Leah Lewis-McCrea, Lisa Kellogg, Eugenia Apostolaki, Gregor Reid
AQUACULTURE AND EELGRASS *Zostera marina* INTERACTIONS IN TEMPERATE ECOSYSTEMS
- 2:50 Dounia Hamoutene**, Sarah Marteinson, Melanie Kingsbury, Kathleen McTavish
SPECIES SENSITIVITY DISTRIBUTIONS FOR TWO WIDELY USED ANTI SEA-LICE CHEMOTHERAPEUTANTS IN THE SALMON INDUSTRY
- 3:10 Kiersten Watson**, Gregor K. Reid, Leah Lewis-McCrea
ESTABLISHING A STAKEHOLDER GROUP TO COMBAT VANDALISM OF DATA BUOYS AND MARINE SCIENTIFIC EQUIPMENT IN CANADIAN WATERS
- 3:30 Andry W. Ratsimandresy**, Flora Salvo, Vanessa Oldford, Kaitlyn Charmley, Bárbara Neves, Brent Law, Zachery Stowbridge, Aaron Bennett, Dounia Hamoutene
ASSESSMENT OF BENTHIC IMPACTS OF SALMON FARM ACTIVITIES ON A DEEP SITE IN NEWFOUNDLAND
- 3:50 Elham Maghsoudloo**, Reza Faizbakhsh
GREENHOUSE THEORY AND CLIMATE CHANGE BASED ON WELTENMEIER THEORY AND MATHEMATICAL MATRIX AND DETERMINATION OF THE DAMAGE PERSPECTIVE ON THE COASTAL STRUCTURE OF MARINE BIOLOGICAL RESOURCES
- 4:10 Nicole Torrie**, Danielle Dempsey, Gregor Reid, Leah Lewis-McCrea
SUPPORTING AQUACULTURE THROUGH COASTAL OCEAN MONITORING AT BIOLOGICALLY RELEVANT SCALES
- 4:30 Gregor Reid**, Danielle Dempsey, Leah Lewis-McCrea, Jessica Feindel
MEANS VERSUS MEDIANS: DOES IT MAKE A DIFFERENCE FOR AQUACULTURE REGULATORY COMPLIANCE OF BENTHIC SULFIDES?

FISH NUTRITION - ALTERNATIVE FEED INGREDIENTS

Wednesday, August 17 11:00 AM - 5:30 PM Bannerman 4

Chair: Stefanie Colombo

- 11:00 Christopher C. Parrish**
USE OF MASS SPECTROMETRY IN AQUACULTURE NUTRITION STUDIES OF LIPIDS
- 11:20 Margareth Øverland**, Jeleel Agboola, Liv Torunn Mydland, Brankica Djordjevic, Byron Morales-Lange
GREEN & BLUE: FOREST BY-PRODUCTS A PROMISING FEED RESOURCE FOR ATLANTIC SALMON
- 11:40 David Huyben**
DIETARY EFFECTS ON THE GUT MICROBIOME OF SALMONID FISHES: A REVIEW

12:00 Santosh P. Lall

ASTAXANTHIN METABOLISM AND FLESH PIGMENTATION IN ATLANTIC SALMON:
GAPS IN KNOWLEDGE

12:20 David Stirling

PROTEIN INDUSTRIES CANADA – POSITIONING CANADA AS A GLOBAL SOURCE
OF HIGH-QUALITY PLANT PROTEIN FOR USE IN AQUACULTURE AND OTHER
INDUSTRIES

12:40 Bradley Saville, Michael Berry, Sandra Saville

SOLUBLE MANNO-OLIGOSACCHARIDES FOR PATHOGEN CONTROL IN
AQUACULTURE

1:00 LUNCH**2:30 Andre Dumas, David Dzisiak, John Brennan, Van To**

NUTRITIONAL EVALUATION OF AN AQUEOUS-PROCESSED OILSEED IN DIETS OF
POST-SMOLT ATLANTIC SALMON *Salmo salar*

2:50 Yubing Chen, Rebecca Lawson, I. Carmi Riesenbach, Elizabeth Gillians, Scott Thompson,

Marcia Chiasson, Dominique Bureau, Rich Moccia, David Huyben
DIETARY PROTEIN, LIPID AND INSECTS ON GROWTH, FEED EFFICIENCY AND
INNATE IMMUNE RESPONSE OF LAKE WHITEFISH *Coregonus clupeaformis*

3:10 Valentina Tapia Montt, Geronimo Leonardi, Kiranpreet Kaur, Lena Burri

EFFECTS OF ANTARCTIC KRILL PRODUCTS ON FEED INTAKE, GROWTH
PERFORMANCE, FILLET QUALITY AND HEALTH IN SALMONIDS

3:30 Guillaume Salze, Larry Feinberg

A BIOTECHNOLOGY PLATFORM FOR AQUACULTURE

3:50 Delbert Gatlin, Alton Burns, Alejandro Velasquez

CANCELED SYNTHESIZABLE AMINO ACIDS OF IMPORTANCE IN FISH NUTRITION

OFFSHORE AQUACULTURE AND CLOSED CONTAINMENT TECHNOLOGY

Wednesday, August 17 11:00 AM - 3:10 PM Churchill 1

Chair: Tyler Sclodnick

11:00 Kristine Cherry, Kristy Beard, Phaedra Doukakis

AQUACULTURE OPPORTUNITY AREAS: A NEW APPROACH TO U.S. AQUACULTURE
DEVELOPMENT

11:20 Leigh Howarth, Leah Lewis-McCrea, Gregor Reid

THE POTENTIAL OPPORTUNITIES AND BARRIERS FACING OFFSHORE
AQUACULTURE

- 11:40 Tyler Sclodnick**, Corey Sullivan
LESSONS LEARNED FROM OPEN OCEAN FARMS AROUND THE WORLD
- 12:00 Tyler Sclodnick**, Jennie Korus
THE CHALLENGES AND OPPORTUNITIES FOR FARMING SALMON IN SUBMERGED PENS
- 12:20 Ashleigh Currie**, Kine R. Marhaug, Margit Jakobsen
SEMI-CLOSED CONTAINMENT SYSTEMS FOR FINFISH AQUACULTURE: ASSESSING MULTIPLE PARAMETERS FROM A COMMERCIAL SCALE OPERATON
- 12:40 Marc Halverson**, Ingolf Goetz, Jeanne Chen, Trevor Schiele
INNOVATIVE CONTAINMENT TECHNOLOGY-NET PEN BIOFOULING CONTROL, THE ULTRASONIC METHODOLOGY
- 1:00 LUNCH**
- 2:30 Per Arild Aland**
REDUCING RISK IN OPERATION OF EXPOSED HIGH VOLUME ADVANCED FISH FARMS – HOW TO MAINTAIN SAFETY OF ASSET, PERSONNEL, MAINTAIN FISH WELFARE AND PREVENT FISH ESCAPE FOR OFFSHORE FISH FARMS
- 2:50 Elham Maghsoudloo**, Reza Faizbakhsh
IMPLEMENTING STRATEGIES FOR SUSTAINABLE DEVELOPMENT OF COASTAL AQUACULTURE IN IRAN
- 3:10 Josephine B. Edward**, Rasaan O. Agunbiade, Tayo O. Adetoyi
EVALUATION OF SOME PHYSICO-CHEMICAL PROPERTIES OF UREJE RESERVOIR, ADO-EKITI, EKITI STATE, NIGERIA

AQUACULTURE COMMUNICATION, PERCEPTION AND EDUCATION - CONTINUED

Wednesday, August 17 11:00 AM - 1:20 PM Pippy 1

Chairs: Ian Roberts, Jay Parsons

- 11:00 Cynthia Sandoval**, Christos Michalopoulos, Brianna Shaughnessy, Maggie Allen
CANCELED USING EDUCATION NETWORKS TO BUILD PUBLIC TRUST AND ENHANCE AQUACULTURE ACCEPTANCE
- 11:00 Brianna Shaughnessy**, Maggie Allen, Christos Michalopoulos, Cynthia Sandoval
LESSONS LEARNED AND NEXT STEPS FOR NOAA'S COMMUNITY OF PRACTICE FOR AQUACULTURE LITERACY (CoPAL)
- 11:40 Audrie-Jo McConkey**, Kiley Best
INTEGRATING AQUACULTURE INTO OCEAN EDUCATION

12:00 Kerry-Leigh Burchill, Nadine Dagenais Dessaint
FEEDING CURIOSITY: ENGAGING CONSUMERS THROUGH STORIES OF
INNOVATION AND SUSTAINABILITY

12:40 Leah Lewis-McCrea, Gregor K. Reid
COLLABORATIVE AQUACULTURE AND COASTAL SUSTAINABILITY RESEARCH:
SUCCESES, LESSONS LEARNED, AND CONSIDERATIONS FOR FUTURE
ADVANCEMENT

1:00 Ruth Machaki, David Muriuki

ANCELED AQUACULTURE EDUCATION: CHALLENGES, GAPS, AND IMPORTANCE IN SUCCESS
OF SMALL SCALE AQUACULTURE AND AQUAPONICS IN EAST AFRICA

WOMEN IN SEAFOOD

Wednesday, August 17 11:00 AM - 1:00 PM Victoria 1

Chair: Laura Halfyard

PANEL: WOMEN IN SEAFOOD

Jennifer Wright, M. Scarlett Tudor, Jennifer Woodland, Jennifer Wiper and Denise Avery

The recent United Nations Food and Agriculture Organization's State of Fisheries and Aquaculture (July 2022) acknowledges that women play a central process in seafood production. Recruitment, retention and labour shortages are chronic in the seafood sector, not just on farms or in harvesting, but also in processing and other parts of the value chain. Women and men are engaged about 50% in the production of farmed and wild seafood; women play a more central role in the post-harvest activities, while men play a greater role in the farming and harvesting sector. Women's roles in the seafood production from egg to plate will be critical for human resource development. This discussion panel will highlight opportunities, key messages, inclusive strategies and challenges for women in seafood sectors. The audience for this session would include those who strive to be inclusive in work and life, while looking to the future growth strategies for their industry and communities.

Both aquaculture and the wild fishery will be critical for global food security and sustainability, but meeting labour needs will be a key factor to sustain current production and to enable growth in the future. If population employment strategies do not adequately direct efforts to the recruitment and retention of women, then labour challenges will be exacerbated. The response of many developed countries has been to integrate automation, to train for specialized aquaculture technology and to recruit from other industry sectors. But general aging populations, attitude carry-over from 'traditional' male-dominated sectors, physical labour perceptions for seafood jobs, and rural to urban lifestyle shifts have negatively impacted employment into some sectors.

This session's dialogue will include: What has attracted these women to the seafood sectors, including opportunities, impacts on industry and their families, etc.? What are the needs to continue to grow/support the seafood industry for recruitment and retention? What are the challenges to women in the Canadian and World seafood sectors (e.g. management, workforce, service supply sectors, etc)? What are some recommendations to improve recruitment and retention (e.g. mentorship programs, hiring/recruitment practices, training

to target women for seafood sectors, male attitude remediation towards female workers)? How does women's participation affect their families, Indigenous and other communities? What are other perspectives for women and men employed in the seafood industry?

This panel discussion will shed light on what the industry can do to not only attract women, but also how to retain and promote more women within the industry, given their involvement in all components of the food security chain. It is also to understand what implications, negative repercussions, or positive effects this shift may cause in the family, community, workplace, relations with peers, their communities and Indigenous nations.

Jennifer Wright, Acting Exec. Dir., Canadian Agricultural Human Resource Council (CAHRC), Ottawa, ON, Canada. jwright@cahrc-ccrha.ca

"A Strategic Approach to the Workforce of the Future"

M. Scarlett Tudor, Education and Outreach Coordinator, Aquaculture Research Institute (ARI), Maine, USA. mary.tudor@maine.edu

"Aquaculture Research Institute's Aquaculture Workforce Development Programming"

Jennifer Woodland, CEO, Nuuchahnulth Seafood (NCN Seafood), Campbell River, BC, Canada. Also Chair, Canadian Aquaculture Industry Alliance (CAIA).

jennifer.woodland@ncnseafood.com

"Case Study 1 - Opportunities and Challenges of a Career in Seafood"

Jennifer Wiper, Manager, Compliance and Certification, Cooke Aquaculture Inc., Blacks Hr., NB, Canada. Also Pres-Elect, Aquaculture Association of Canada (AAC).

jennifer.wipercookeaqua.com

"Case Study 2 - Opportunities and Challenges of a Career in Seafood"

Denise Avery, Senior Director, HR Center, Clearwater Seafoods, NS, Canada.

Daveryclearwater.ca

"Case Study 3 - Opportunities and Challenges of a Career in Seafood"

Panel Facilitator - **Laura C. Halfyard**, Gen Mgr, Connaigre Fish Farms Inc., St. John's, NL, Canada. lhalfyard@bellaliant.net

ECHINODERMS SESSION

Wednesday, August 17 11:00 AM - 1:00 PM Victoria 2

Chair: Chris Pearce

11:00 Guangling Jiao

AN INTERNATIONAL OVERVIEW OF CURRENT WORLD SEA CUCUMBER RESOURCES AND UTILISATION

11:20 Emaline Montgomery, Barb Cannon, Chris Pearce

CANCELED BIOLOGICAL BIOFOULING CONTROL OF SALMON NET PENS USING THE GIANT RED SEA CUCUMBER *Apostichopus californicus*

11:40 Rachel Morrison, Jean-François Hamel, Jiamin Sun, Annie Mercier

COMPARISON OF BIOCHEMICAL PROFILES IN TWO LATITUDINALLY SEPARATE POPULATIONS OF *Cucumaria frondosa*

- 12:00 Chris Pearce**, Emily Warren, Mark Flaherty, Stephen Cross
FEED AND TEMPERATURE EFFECTS ON LAND-BASED GONAD ENHANCEMENT OF SEA URCHINS IN BRITISH COLUMBIA, CANADA
- 12:20 Brian Tsuyoshi Takeda**
ECOLOGICALLY RESTORATIVE URCHIN RANCHING: LEVERAGING AQUACULTURE TECHNIQUES TO RESTORE KELP ECOSYSTEMS AND GENERATING PROFITS
- 12:40 Noushin Arfatahery**, Jens Rolff
ANTIBACTERIAL ACTIVITY OF THE SEA CUCUMBER *Holothuria leucospilota* WHOLE BODY EXTRACT AGAINST METHICILIN RESISTANT AND ENTEROTOXIN PRODUCING *Staphylococcus aureus* STRAINS

LAWS, REGULATIONS AND POLICY

Wednesday, August 17 11:00 AM - 1:00 PM Victoria 3
Chair: Alex Templeton

- 11:00 Desai Shan**, Aldo Chircop
REVISITING OCCUPATIONAL HEALTH AND SAFETY GOVERNANCE IN THE CANADIAN AQUACULTURE INDUSTRY
- 11:20 Joachim Buarø**
THE SIGNIFICANCE OF INTRODUCING A DESIGN CODE TO THE AQUACULTURE INDUSTRY IN NORWAY AND THE EFFECT ON FISH ESCAPE
- 11:40 Myron Roth**
CURRENT STATUS OF THE BRITISH COLUMBIA AQUACULTURE SECTOR: WHERE DO WE GO FROM HERE?
- 12:00 James R. Parsons**, Anne Legars
SHIP-SOURCE OIL POLLUTION COMPENSATION FOR DAMAGES TO FISHERS, AQUACULTURISTS, AND ALL INVOLVED IN RELATED ACTIVITIES

FISH HEALTH - TREATMENT & THERAPEUTANTS

Wednesday, August 17 2:30 PM - 5:30 PM Bannerman 2
Chair: Matt Rise
Sponsor: Elanco

- 2:30 Matthew L. Rise**, Albert Caballero-Solares, Xi Xue, Wenlong Cai, Jennifer Hall, Umasuthan Navaneethaiyer, Khalil Eslamloo, Surendra Kumar, Nicole Smith, Richard Taylor, Rachel Balder, Rune Andreassen, Christopher Parrish, Mark Fast
AQUACULTURE NUTRIGENOMICS AND IMMUNOGENOMICS RESEARCH: TOWARD DEVELOPMENT OF SUSTAINABLE AND THERAPEUTIC DIETS FOR SALMON

- 2:50 Marcia Chiasson**, Michael Kirk, Scott Thompson, David Huyben
EFFECT OF OXIDIZED LIGNITE COAL AS A MICROBIAL CONTROL AGENT DURING THE INCUBATION OF RAINBOW TROUT *Oncorhynchus mykiss* EGGS
- 3:10 Mohamed Emam**, Khalil Eslamloo, Albert Caballero-Solares, Evandro Kleber Lorenz, Xi Xue, Navaneethaiyer Umasuthan, Hajarooba Gnanagobal, Javier Santander, Richard G. Taylor, Rachel Balder, Christopher C. Parrish, Matthew L. Rise
NUTRITIONAL IMMUNOMODULATION OF ATLANTIC SALMON RESPONSE TO *Renibacterium salmoninarum* BACTERIN
- 3:30 Jason Collins**, Sindre Rosenlund, Catrine Smørås
THE PLACE FOR THERAPEUTIC BATH TREATMENTS IN THE MODERN INTEGRATED PEST MANAGEMENT TOOLBOX
- 3:50 Kyle Rauch**, Jessica Bennett, Amina Stoddart, Graham Gagnon
UV LED DISINFECTION: A NOVEL TREATMENT FOR COMMON SALMON AQUACULTURE PATHOGENS
- 4:10 Richard Carpenter**, Jo Ella Barnes, Jack K. Crockett, John Gorsuch, Sih Yang Sim, Loc H. Tran, Josh Ison, Chris Kitts, Addison Lawrence
STRATEGIES USING PROBIOTICS TO MITIGATE MICROBIAL DISEASE PRESSURE IN SHRIMP AND FINFISH AQUACULTURE PRODUCTION
- 4:30 David Straus**, Thomas Meinelt, Dibo Liu, Lars-Flemming Pedersen, Chris Good, John Davidson
THE USE OF PERACETIC ACID IN AQUACULTURE
- 4:50 My Dang**, Trung Cao, Ahmed Hossain, Hajarooba Gnanagobal, Ignacio Vasquez, Kata Valderrama, Jillian Westcott, Javier Santander
IMMUNE RESPONSE OF LUMPFISH *Cyclopterus lumpus* L. LARVAE TO ORAL IMMUNIZATION

FISH WELFARE

Wednesday, August 17 3:30 PM - 5:30 PM Churchill 1
Chair: Jillian Westcott

- 3:30 Jennie Korus**, Jon Grant, Ramón Filgueira
BEHAVIOURAL STRESS RESPONSE OF FARMED ATLANTIC SALMON *Salmo salar* TO UNFAVOURABLE WATER QUALITY AND FARM OPERATIONS
- 3:50 Per Vidar Lange**, Martin Karlsen
FEED A GROWING WORLD POPULATION AND TREAT ANIMALS WITH RESPECT: AN OVERVIEW OF FARMED SALMON WELFARE REGULATIONS AND BEST PRACTICES, AND HOW THE INDUSTRY IS RETHINKING HARVEST AND PROCESSING

- 4:10** **Émile Vadboncoeur**, Eric Ignatz, Charlotte Nelson, Colin J. Brauner, Rebeccah M. Sandrelli, Andrew Swanson, A. Kurt Gamperl
LIVER DYSFUNCTION, STRESS AND HIGH MORTALITY IN ATLANTIC SALMON *Salmo salar* HELD AT 3°C
- 4:30** **Haragobinda Baidya**
BANGLADESH AQUACULTURE AND FISHERIES CHALLENGES WITH OPPORTUNITIES
- 4:50** **Joel Halse**
“PUMP FISH WITHOUT CROWDING” – TRANSFER FISH AT A HIGH RATE WHILE MAINTAINING LOW BIOMASS DENSITY
- 5:10** **Olarewaju Aro**, Odunayo Adetuyi, Taibat Baharu, Damilola Awoku
IMPACTS OF INGESTED MICROPLASTICS ON THE GROWTH PERFORMANCE AND RATE OF FEED CONSUMPTION OF AFRICAN CATFISH *Clarias gariepinus*

MUSSELS

Wednesday, August 17 2:30 PM - 4:10 PM Pippy 1

Chair: Aaron Ramsay

Sponsor: FCC I FAC

- 2:30** **Pierre-Olivier Fontaine**, Éric Bujold, Marcel Fréchette, Anne Tremblay-Gratton, Marie-Pierre Turcotte, Alexandra Caron, Maxime Bond
CO-CULTURE AND COMBINATION OF PASSIVE DUCK REPELLENT TO REDUCE DIVING DUCK FORAGING ON BLUE MUSSELS *Mytilus edulis* FARMS
- 2:50** **Aaron Ramsay**, Janelle Arsenault, Gary Smith, Amos Champion, Jesse Kerr, Kim Gill
SHELLFISH MONITORING ON PRINCE EDWARD ISLAND: BUILDING, MAINTAINING AND ADAPTING PROGRAMS TO CHANGING NEEDS
- 3:10** **Delphine Veillard**, Stéphane Beauclercq, Frédéric Olivier, Bertrand Genard, Isabelle Marcotte, Réjean Tremblay
IMPACT OF SOUND INTENSITY RELATED TO MARITIME TRANSPORT ON THE EMBRYOGENESIS AND METAMORPHOSIS OF THE BLUE MUSSEL *Mytilus edulis*
- 3:30** **Harry Murray**, Kimberley Hobbs, Daria Gallardi, Terry Mills
SPATIAL EXPRESSION PATTERNING OF SELECT GENES ASSOCIATED WITH EARLY SPERMATOGENESIS/SPERMIOGENESIS IN *Mytilus edulis*

OYSTERS

Wednesday, August 17 4:10 PM - 5:30 PM Pippy 1

Chair: Keith Rider

Sponsor: FCC I FAC

- 3:50 Guillaume Bridier**, Jeff C. Clements, Luc Comeau, André L. Mallet, Claire E. Carver, Réjean Tremblay
OVERWINTERING SURVIVAL IN JUVENILE OYSTERS: UNDERSTANDING THE ROLE OF ENERGETIC PHYSIOLOGY FOR *Crassostrea virginica* SEED
- 4:10 Camille Gravel-Brunet**, Lisandre Gilmore-Solomon, Réjean Tremblay
ANALYSIS OF STRESS ASSOCIATED TO INTER-SITES TRANSPORT ON THE AMERICAN OYSTER PRODUCTION
- 4:30 Noushin Arfatahery**, Jens Rolff, K. Mathias Wegner
IN VITRO AND *IN VIVO* EVALUATION OF INDUCED *Vibrio splendidus* TOWARD IMMUNE RESPONSE AND CROSS PROTECTION IN OYSTER *Crassostrea gigas*
- 4:50 Steen Gunderson**, Melanie Wall-Field, Ron Girouard, Marc Goguen, Raymond Ouellette
OYSTERGRO – A PROFITABLE, TRUSTED AND PROVEN SYSTEM FOR OYSTER AQUACULTURE
- 5:10 Dina Proestou**, Mary Sullivan, Kathryn Markey Lundgren, Keegan Hart
PHENOTYPIC AND TRANSCRIPTOMIC CHARACTERIZATION OF DERMO TOLERANT EASTERN OYSTER FAMILIES
- 5:30 Rod Beresford**, Jane Arnold
IT MUST BE SOMETHING IN THE WATER: THE IMPACT OF THE OYSTER PARASITE *Haplosporidium nelsoni* TO OYSTERS AND PEOPLE OF THE BRAS D'OR LAKE CAPE BRETON, NOVA SCOTIA AND THEIR COLLECTIVE EFFORTS FOR SURVIVAL

REGULATION AND MANAGEMENT OF MARINE AQUACULTURE HEALTH AND SAFETY

Wednesday, August 17 2:30 PM - 5:30 PM Victoria 1

Chair: Barbara Neis

- 2:30 Lissandra Souto Cavalli**, Flavielle Blanco Marques, Andrew Watterson
BRAZILIAN AQUACULTURE: TOWARDS IMPROVED SURVEILLANCE, REGULATION AND MANAGEMENT OF WORKER HEALTH AND SAFETY
- 2:50 Ingunn Marie Holmen**, Trine Thorvaldsen
REGULATORY FRAMEWORK CONDITIONS AND RISK MANAGEMENT IN NORWEGIAN FISH FARMING

- 3:10 Barbara Neis**, Andrew Watterson
REGULATION OF AQUACULTURE OCCUPATIONAL HEALTH AND SAFETY: A GLOBAL OVERVIEW
- 3:30 Cory Ochs**, Barbara Neis, Andrew Watterson, Javier Santander, Zhiwei Gao
ANTIMICROBIAL RESISTANT BACTERIA AND OCCUPATIONAL HEALTH IN AQUACULTURE: REGULATION OF ANTIBIOTIC USE ACROSS FOUR COUNTRIES
- 3:50 Wenzhao Gao**, Barbara Neis
MARINE AQUACULTURE HEALTH AND SAFETY REGULATION IN CANADA: INSPECTION OUTCOMES AND HEALTH AND SAFETY OPTIONS IN PROVINCIAL REGULATIONS.
- 4:10 Edgar McGuinness**, Barbara Neis, Cory Ochs
IDENTIFYING REGULATORY INSTRUMENTS FOR STRENGTHENING CANADIAN AQUACULTURE OCCUPATIONAL SAFETY AND HEALTH (OSH) – A COMPARATIVE ANALYSIS OF AQUACULTURE OSH REGULATORY REGIMES IN NORWAY AND CANADA

INDIGENOUS PARTNERSHIPS / ENGAGEMENT

Wednesday, August 17 2:30 PM - 5:30 PM Victoria 3

Chairs: Cyr Couturier, Levana Mastrangelo

Indigenous aquaculture takes place in many countries, including participation of over 50 First Nations in sustainable seafood production (harvesting, processing, and aquaculture) in Canada. Many forms of partnerships, business and social-economic opportunities exist for indigenous participation in seafood production, both farmed and wild. This session will commence with examples of seafood production developments and innovations by indigenous / First Nations operations in North America. Following this, leaders involved in Indigenous Aquaculture and seafood production will present their views in a round-table panel and engage in a discussion on opportunities and threats for indigenous participation in aquaculture, engaging the audience in a facilitated discussion.

Z. Zenobia, Sarah Moreau, Rosa Laucci, Shawna McCovey, Kat Meyer, James Ray, Megan Van Pelt, Jose Marin Jarrin

CO-MANAGEMENT AND STATUS OF NIGHT SMELT *Spirinchus starksi* IN NORTHERN CALIFORNIA IN 2021

Adrian Desbarats

LENNOX ISLAND FIRST NATION – DEVELOPMENT OF A COMMERCIAL SHELLFISH HATCHERY IN PEI

Cyr Couturier

PANEL DISCUSSION

Levana Mastrangelo

RELATIONSHIP BUILDING IN BC FIRST NATIONS

Misel Joe

REFLECTIONS ON DECADES IN SEAFOOD PRODUCTION

Dallas Smith

FIRST NATIONS RIGHTS AND PARTICIPATION IN AQUACULTURE/FISHERIES
MANAGEMENT, PRODUCTION AND

Cyrus Singh

THOUGHTS ON ECONOMIC DEVELOPMENT IN THE GN NATION

Jennifer Woodland

BENEFITS TO COMPANIES THAT PARTNER WITH FIRST NATIONS AND HOW WE
ASSESS BUSINESS OPPORTUNITIES

THURSDAY, August 18

PLENARY 3

Thursday, August 18 9:20 AM - 10:00 AM Delta Hotel

Chair: Jay Parsons

- 9:20 Sandra E. Shumway**, J. Evan Ward, Kayla Mladinich, Bridget Holohan, Noreen Blaschik
MICROPLASTICS AND MOLLUSCS – A BRIEF OVERVIEW OF A FLAWED FIELD

PHYSIOLOGICAL INSIGHTS INTO AQUACULTURE

Thursday, August 18 11:00 AM - 5:30 PM Bannerman 1

Chairs: Tillmann Benfey, Brian Petersen

- 11:00 Émile Vadboncoeur**, Charlotte Nelson, Colin J. Brauner, Rebecca M. Sandrelli, Andrew Swanson, A. Kurt Gamperl
AT WHAT TEMPERATURE DO CULTURED ATLANTIC SALMON *Salmo salar* EXPERIENCE COLD-INDUCED PHYSIOLOGICAL DISTURBANCES?
- 11:20 Emma Porter**, A. Kurt Gamperl
CARDIORESPIRATORY FUNCTION AND SWIMMING CAPACITY OF ATLANTIC SALMON *Salmo salar* AT COLD TEMPERATURES
- 11:40 Rebecca Sandrelli**, Eric H. Ignatz, A. Kurt Gamperl
THE ENVIRONMENTAL TOLERANCES OF ATLANTIC SALMON *Salmo salar*: WHAT MEASURES ARE THE MOST RELEVANT?
- 12:00 Kurt Gamperl**, Fabio Zanuzzo, Anne Beemelmans, Rebecca Sandrelli, Eric Ignatz, Matt Rise
TO WHAT EXTENT DO 'HIGH' WATER TEMPERATURES AFFECT THE PHYSIOLOGY OF ATLANTIC SALMON?
- 12:20 Tillmann Benfey**, Charlotte Bartlett, Serap Gonen, Amber Garber
PREDICTING AND IMPROVING THERMAL TOLERANCE WITHIN A COMMERCIAL ATLANTIC SALMON *Salmo salar* BREEDING PROGRAM
- 12:40 Tyson MacCormack**, Toni-Anne Dixon, Nathan A. Otley, Emma-Lee Rhyno, Andrea J. Morash, Simon G. Lamarre
DIET-INDUCED TAURINE DEFICIENCY INCREASES THERMAL TOLERANCE AND HYPOXIA SENSITIVITY IN BROOK TROUT: CARDIOVASCULAR MECHANISMS
- 1:00 LUNCH**

- 2:30 Jordan Poley**, Holly MacDonald, Mark Braceland
PREDICTING ATLANTIC SALMON *Salmo salar* L. SMOLTIFICATION READINESS USING GILL GENE EXPRESSION
- 2:50 Thomas Fraser**, Raneesha de Fonseka, Florian Sambraus, Sofie Remø, Tom Hansen, Per Gunnar Fjellidal
SALINITY DEPENDENT PERFORMANCE OF TRIPLOID ATLANTIC SALMON POST-SMOLTS
- 3:10 Sarah A. McGeachy**, Tillmann J. Benfey
INVESTIGATING HYPOXIA TOLERANCE OF TRIPLOID BROOK CHARR *Salvelinus fontinalis*
- 3:30 Yass Kobayashi**, Taylor White, Brian Peterson
CHANGES IN THE EXPRESSION OF MESSENGER RNA ENCODING TWO AMP KINASE SUBUNITS IN RESPONSE TO FOOD INTAKE IN THE MUSCLE AND LIVER OF ATLANTIC SALMON
- 3:50 Peggy Biga**, Beth Cleveland
SUPPLEMENTING RAINBOW TROUT BROODSTOCK DIETS WITH CHOLINE AND METHIONINE IMPROVES OFFSPRING GROWTH
- 3:50 Yangfan Zhang**, Anthony Farrell, Mark Polinski, Phillip Morrison, Colin Brauner, Kyle Garver
PISCINE ORTHOREOVIRUS (PRV) IN SALMON IN BRITISH COLUMBIA: RISK VS. CONSEQUENCES
- 4:30 Erin Legacki**, Ashley Boggs, Brian Peterson
THE MEASUREMENT OF STEROID HORMONES IN NORTH AMERICAN ATLANTIC SALMON *Salmo salar* SKIN MUCUS USING LIQUID CHROMATOGRAPHY TANDEM MASS SPECTROMETRY
- 4:50 Jamie Mankiewicz**, Beth Cleveland
PHENOTYPIC CHARACTERIZATION OF LEPTIN RECEPTOR DEFICIENT RAINBOW TROUT *Oncorhynchus mykiss*
- 5:10 Beth Cleveland**, Shiori Habara, Jin Okawa, Lisa Radler, Munetaka Shimizu
COMPENSATORY RESPONSE OF THE SOMATOTROPIC AXIS FROM IGFBP-2B GENE EDITING IN RAINBOW TROUT *Oncorhynchus mykiss*
- 5:30 Ken Overturf**, Jacob Bledsoe
SELECTION FOR UTILIZATION OF PLANT-BASED DIETS LEADS TO NON-SPECIFIC PATHOGEN RESISTANCE IN RAINBOW TROUT

FISH HEALTH - VACCINES

Thursday, August 18 11:00 AM - 1:00 PM Bannerman 2

Chair: Ignacio Vasquez

- 11:00 Setu Chakraborty**, Ahmed Hossain, Trung Cao, Hajarrooba Gnanagobal, Danny Boyce, Jennifer Hall, Gabriela Bindea, Cristopher Segovia, Surendra Kumar, Javier Santander
Aeromonas salmonicida CAUSES LETHAL INFECTION TO LUMPFISH *Cyclopterus lumpus* BY IMMUNE SUPPRESSION AND CELL CYCLE ARREST
- 11:20 Setu Chakraborty**, Hajarrooba Gnanagobal, Ahmed Hossain, Trung Cao, Ignacio Vasquez, Danny Boyce, Javier Santander
INACTIVATED *Aeromonas salmonicida* SUPPRESS THE ADAPTIVE IMMUNE SYSTEM OF LUMPFISH *Cyclopterus lumpus*
- 11:40 Jose I. Vasquez**, Trung Cao, Ahmed Hossain, Katherinne Valderrama, Hjarrooba Gnanagobal, My Dang, Robine Leeuwis, Michael Ness, Briony Campbell, Robert Gendron, Kenneth Kao, Jillian Wescott, Kurt Gamperl, Javier Santander
Aeromonas salmonicida INFECTION KINETICS AND AUTOGENOUS VACCINE EVALUATION IN SABLEFISH *Anoplopoma fimbria*
- 12:00 Joy Chukwu-Osazuwa**, Trung Cao, Ignacio Vasquez, Hajarrooba Gnanagobal, Vimbai Irene Machimbirike, Javier Santander
SCREENING OF SOME FREQUENT PATHOGENS OF MARINE FINFISH AQUACULTURE FOR COMMON ANTIGEN AND EPI TOPE TO BE USED IN UNIVERSAL VACCINE DEVELOPMENT
- 12:20 Oluwatoyin Onireti**, Trung Cao, Hajarrooba Gnanagobal, Joy Chukwu-Osazuwa, Ignacio Vasquez, Ahmed Hossain, Vimbai Machimbirike, Steve Hill, Zihyou Chen, Andre Khoury, Yenney Hernandez-Reyes, Antoine Khoury, Nicole O'Brian, Andrew Swanson, Jennifer Monk, Jillian Porter, Danny Boyce, Javier Santander
SAFETY AND EFFICACY EVALUATION OF AN AUTOGENOUS *Vibrio anguillarum* VACCINE IN LUMPFISH *Cyclopterus lumpus*

FISH NUTRITION

Thursday, August 18 11:00 AM - 5:30 PM Bannerman 3

Chair: Sean Tibbetts

- 11:00 JuDong Yeo**, Christopher C. Parrish, Stefanie M. Colombo
EVALUATION OF PHOSPHOLIPID AND EICOSANOID PROFILES IN ATLANTIC SALMON *Salmo salar* L. MUSCLE AFTER FEEDING MICROBIAL OIL USING ELECTROSPRAY IONIZATION (ESI) TRIPLE QUADRUPOLE MASS SPECTROMETRY
- 11:20 Eric Charles Peterson**, Christian Hermansen, Ashriel Yong, Rowanne Siao, Gi Gi Chua, Coleen Toledo, Megan Teo, Aaron Thong
MICROBIAL AQUAFEED PRODUCTION FROM LIGNOCELLULOSIC SIDESTREAMS VIA AN AEROTOLERANT CELLULOLYTIC CONSORTIUM

11:40 Christopher Parrish, Dana Gallardi, Manjusri P.A. Wijekoon, Kaushik Nag, Atef Mansour
DIET AND TEMPERATURE AFFECT LIVER LIPIDS AND MEMBRANE PROPERTIES IN
STEELHEAD TROUT *Oncorhynchus mykiss*

12:00 Naser Agh, Farzaneh Noori, Fatemeh Jafari
GROWTH, BIOCHEMICAL AND IMMUNE RESPONSES OF *Acipenser persicus* FED
DIFFERENT LEVELS OF PHOSPHOLIPID

12:20 David Dzisiak
CANOLA PROTEIN CONCENTRATE: CREATING A NOVEL, SCALABLE PROTEIN
INGREDIENT FOR GLOBAL AQUACULTURE

1:00 LUNCH

2:30 Stefanie Colombo, Mohamed Emam, Brian C. Petersen, Jennifer Hall, Gary Burr,
Zeyu Zhang, Matthew Rise
FRESHWATER, LANDLOCKED GRAND LAKE STRAIN OF ATLANTIC SALMON *Salmo
salar* L. AS A POTENTIAL GENETIC SOURCE OF LONG CHAIN POLYUNSATURATED
FATTY ACIDS SYNTHESIS

2:50 Eric Ignatz, Jeanette Wells, Stefanie Colombo, Sean Tibbetts, Rebecca Sandrelli,
Fábio Zanuzzo, Christopher Parrish, Matthew Rise, Kurt Gamperl
IMPACT OF TEMPERATURE AND SUPPLEMENTAL DIETARY CHOLESTEROL ON
TISSUE LIPID COMPOSITION AND HEPATIC TRANSCRIPT EXPRESSION OF FEMALE
TRIPLOID ATLANTIC SALMON

3:10 Omotoyosi T. Banjo, Olujinmi E. Faturoti, Emmanuel K. Ajani
NUTRITIONAL VALUE OF DIFFERENTLY PROCESSED KENAF *Hibiscus cannabinus*
SEED MEAL AND THEIR APPARENT NUTRIENT DIGESTIBILITY COEFFICIENTS FOR
AFRICAN CATFISH *Clarias gariepinus*

3:30 CANCELED lone Hunt von Herbing, Victoria Youngblood, Bailu Zhang
EFFECTS OF A MULTI-STRAIN PROBIOTIC (PRIMALAC®) ON THE GUT MICROBIOME
OF THE MARINE FISH RED DRUM *Sciaenops ocellatus*

3:50 CANCELED Gary Burr, Alberta Aryee, Michael Lomas
USE OF MICROALGAE AS AN ASTAXANTHIN SOURCE IN ATLANTIC SALMON *Salmo
salar* FEED

AQUACULTURE MONITORING TECHNOLOGIES

Thursday, August 18 11:00 AM - 5:30 PM Bannerman 4

Chairs: Jordan Matley, Jennie Korus

- 11:00 Tyler Sclodnick**, Jennie Korus, Matt Fallon, Dale Webber, Tim Stone
APPLYING LIVE DATA TO NET PEN FARM OPERATIONS
- 11:20 Meredith Burke**, Jon Grant, Ramon Filgueira
REAL-TIME DISSOLVED OXYGEN MONITORING IN A NOVA SCOTIA ATLANTIC SALMON FARM
- 11:40 Haesik Kim**
5G ENABLED AQUACULTURE MONITORING SYSTEM
- 12:00 Laila Nargis**, G.K. Reid, L. Lewis-McCrea
ENABLING EASE OF ACCESS TO COMPLEX SPATIAL DATA: DEVELOPMENT OF AN INTERACTIVE GIS MAP TO SIMPLIFY AQUACULTURE DECISION MAKING
- 12:20 Ryan Horricks**, Cody Bannister, Leah M. Lewis-McCrea, James Hicks, Kiersten Watson, Gregor K. Reid
COMPARISON OF DRONE AND VESSEL-BASED COLLECTION OF MICROBIOLOGICAL WATER SAMPLES IN MARINE ENVIRONMENTS
- 12:40 Arif R. Anwary**, Arnina Goodlad, Benjamin Small, Donald Sutherland, Nathan Pyne-Carter, Amir Hussain
AN ARTIFICIAL INTELLIGENCE-POWERED ACE AQUATEC SEAL DETECTION SYSTEM: REAL-WORLD EXPERIMENTAL DESIGN AND VALIDATION
- 1:00 LUNCH**
- 2:30 Muersha Wusiman**, Fariborz Taghipour
DETECTION OF CYANOTOXIN MICROCYSTIN-LR (MC-LR) WITH PORTABLE OPTICAL SENSOR
- 2:50 Jason Deglint**, Katie Thomas
AUTOMATIC ANALYSIS OF HARMFUL ORGANISMS IN WATER: A BIOLOGY AND MACHINE LEARNING POWERED APPROACH TO MONITORING WATER QUALITY
- 3:10 Reginald Blaylock**, Robert Gonzales, Eric Saillant
SENSITIVITY OF A LAMP ASSAY FOR DETECTION OF THE DINOFLAGELLATE *Amyloodinium ocellatum* IN SIMULATED FIELD CONDITIONS
- 3:30 Elham Maghsoudloo**, Reza Faizbakhsh
USING BIOSENSORS TO DETERMINE THE EFFECTS OF WATER POLLUTION IN COASTAL AREAS (CASE STUDIES OF COASTAL ZONE ASSALUYEH)

- 3:50** **Maxim Batalin**, Zoltan Gorocs, Dhruvin Naik, Lin Li, Andrew Jones, Miranda Jackson
CANCELED HIGH THROUGHPUT MONITORING OF WATER SAMPLES FOR AUTOMATED DETECTION OF HARMFUL ALGAE AND SEA LICE
- 4:10** **Laura Windatt**
DIGITALIZATION AND ARTIFICIAL INTELLIGENCE FEEDING INNOVATIONS IMPLEMENTED IN INDUSTRY APPLICATION
- 4:30** **Nigel Keeley**, Xavier Pochon, Olivier Laroche
CANCELED INTRODUCING SIBS: 'SUBSTRATE INDEPENDENT BENTHIC SAMPLER' FOR HARD AND MIXED-BOTTOM HABITATS: A PROOF OF CONCEPT STUDY
- 4:50** **Matt Clarke**
BEYOND NANOBUBBLES: RAPID ADVANCES IN AQUACULTURE OXYGENATION TECHNOLOGIES
- 5:10** **Andrew Lawrence**
USING REMOTE OPERATED VEHICLES TO STREAMLINE AQUACULTURE INSPECTIONS AND UNDERWATER TASKS

SEA LICE: CONTROL AND MITIGATION

Thursday, August 18 11:00 AM - 1:30 PM Churchill 1

Chair: Mark Fast

- 11:00** **Laura Sitter**, Derek Price, Alexandria Oswell, Howie Manchester, Kerra Shaw
ASSESSING THE EFFECTS OF IMPLEMENTING NEW REGULATIONS OVER SEA LICE MANAGEMENT AND CONTROL IN ATLANTIC SALMON FARMS IN BRITISH COLUMBIA, CANADA
- 11:20** **Mark Fast**, Dylan Michaud, Brent Weeks, Laura Braden, Marc Trudel
ASSESSING THE EVOLUTION OF VIRULENCE OF THE SALMON LOUSE *Lepeophtheirus salmonis* IN THE BAY OF FUNDY
- 11:40** **Albert Caballero-Solares**, Umasuthan Navaneethaiyer, Eva Jakob, Surendra Kumar, Xi Xue, Rachel Balder, Stanko Skugor, Richard G. Taylor, Mark D. Fast, Matthew L. Rise
DIETARY IMMUNOSTIMULATION: A POWERFUL TOOL AGAINST *Caligus rogercresseyi* AND *Piscirickettsia salmonis* CO-INFECTION IN FARMED ATLANTIC SALMON
- 12:00** **Umasuthan Navaneethaiyer**
ATLANTIC SALMON HEAD KIDNEY GENE EXPRESSION RESPONSE DURING SINGLE (BACTERIAL) AND CO (BACTERIAL AND SEA LICE) INFECTIONS
- 12:20** **Benjamin Clokie**, Ahmed Elsheshtawy, Are Nylund, Trond Einar Isaksen, Linda Andersen, Allan Beveridge, Simon MacKenzie
IMPACT OF THERMAL DELOUSING ON ATLANTIC SALMON *Salmo salar* GILL HEALTH
- 12:40** **Kathleen Frisch**
CHALLENGES WITH SEA LICE MANAGEMENT IN BRITISH COLUMBIA

FINFISH GENERAL

Thursday, August 18 11:00 AM - 4:30 PM Pippy 1

Chair: Jillian Westcott

- 11:00 Maria Martinez**, Clémence Gourtay, Réjean Tremblay, Céline Audet
USING GENE EXPRESSION TO UNDERSTAND FATTY ACID REGULATION IN STRIPED BASS *Morone saxatilis* UNDER DIFFERENT SALINITY AND DIETS
- 11:20 Samuel M. Pountney**
SURVEY OF HOBBYIST FISHKEEPERS INDICATES SIGNIFICANT LEVEL OF ORNAMENTAL FISH PRODUCTION UNDOCUMENTED BY CURRENT METHODS
- 11:40 Fabrice Teletchea**
WHY AND HOW AQUARIUMS AND FISHBASE CAN WORK TOGETHER TO PROMOTE FISH KNOWLEDGE AND CONSERVATION? ASSESSEMENT OF A FOUR-YEAR PROJECT
- 12:00 Marwa Mamdouh Tawfik**, Marlene Lorgen-Ritchie, Monica Betancor, Stuart McMillan, Elzbieta Król, Alex Douglas, Samuel Martin
GUT MICROBIOTA IN ATLANTIC SALMON *Salmo salar* AT DIFFERENT DEVELOPMENTAL STAGES
- 12:20 David Straus**, Anita Kelly, Herbert Quintero, Steve Rawles, Matt McEntire, Jason Abernathy
PRODUCTION OF TRIPLOID SUNSHINE BASS BY HEAT-SHOCK
- 1:00 LUNCH**
- 2:30 Elizabeth Mwikali Nyanchiri**, Phillip O. Raburu, Joseph O. Rasowo, Rebecca Tisi
EFFECT OF DIETARY PROTEIN ON SPAWNING PERFORMANCE OF THE ENDANGERED *Oreochromis esculentus* IN KENYA
- 2:50 Adiaha Ugwumba**, Femi Oluwale
ASPECTS OF REPRODUCTIVE BIOLOGY OF THE RETICULATE KNIFE FISH *Papyrocranus afer* IN LEKKI LAGOON, NIGERIA
- 3:10 Maryam El Bakali**, El Mostafa Talbaoui
STRIPED RED MULLET *Mullus surmuletus* L., 1758: STUDIES ON ITS AQUACULTURE POTENTIAL
- 3:30 Reza Faizbakhsh**, Elham Maghsoudloo
SWOT METHOD AND MATRIX IN A COMPARATIVE MODEL OF TRADITIONAL AND MODERN SYSTEMS IN STURGEON FARMS
- 3:50 Paul Bangura**, Katriina Tiira, Petri T. Niemelä, Jaakko Erkinaro, Petra Liljeström, Anna Toikkanen, Craig R. Primmer
LINKING *vgll3* GENOTYPE AND AGGRESSIVE BEHAVIOUR IN JUVENILE ATLANTIC SALMON *Salmo salar*

GENETICS AND REPRODUCTION

Thursday, August 18 11:00 AM - 1:30 PM Victoria 1

Chair: Amber Garber

- 11:00 Fabrice Teletchea**
FISH DOMESTICATION AND GENETICS: A BRIEF OVERVIEW
- 11:20 Thomas Delomas**, Joseph Matt, Dina Proestou, Christopher Hollenbeck, Neil Thompson
ESTIMATING THE NUMBER OF LOCI REQUIRED IN A LOW-DENSITY PANEL FOR IMPUTATION OF GENOTYPES IN OYSTER GENOMIC SELECTION PROGRAMS
- 11:40 Amber Garber**, Serap Gonen, Susan E. Hodgkinson, Christopher J. Bridger
INCIDENCE OF DEFORMITIES IN ATLANTIC SALMON: IMPACTS OF GENETICS AND ENVIRONMENT OVER TWO GENERATIONS
- 12:00 Ehab Misk**, Serap Gonen, Amber F. Garber
FISH TO FISH VARIABILITY IN RESISTANCE TO *Saprolegnia parasitica* INFECTION IN ATLANTIC SALMON *Salmo salar*
- 12:20 John Taylor**, Briony Campbell, Kris Christensen, Ben Koop, Gregory Owens, Xuekui Zhang
FULL-FILLING THE PROMISE OF SABLEFISH *Anoplopoma fimbria* GENOMICS: SEX-TESTING, PARENTAGE ANALYSES, WHOLE-GENOME SEQUENCING AND GENOME PREDICTION
- 12:40 Debbie Plouffe**, Alan Tinch
REPRODUCTIVE STERILITY IS FOUNDATIONAL TO SUCCESSFUL COMMERCIALIZATION OF GENOME EDITING FOR AQUATIC SPECIES
- 1:00 Erin Legacki**, Ashley Boggs, Brian Peterson
THE MEASUREMENT OF STEROID HORMONES IN NORTH AMERICAN ATLANTIC SALMON *Salmo salar* SKIN MUCUS USING LIQUID CHROMATOGRAPHY TANDEM MASS SPECTROMETRY

THE USE OF EDNA AS A TOOL FOR UNDERSTANDING AND MANAGING MARINE ECOSYSTEMS

Thursday, August 18 11:00 AM - 4:30 PM Victoria 2

Chair: Anaïs Lacoursière

11:00 Alice C. Ortmann

CANCELED USING MICROBIAL GENOMICS TO MONITOR ECOSYSTEM RESPONSES TO ANTHROPOGENIC PERTURBATIONS: OIL SPILLS AS A CASE STUDY

11:20 Nicole A. Fahner, Avery McCarthy, Beverly McClenaghan, Greg Singer, Mehrdad Hajibabaei

OceanDNA: INFORMING SUSTAINABLE OCEAN MANAGEMENT AND ACTIVITY THROUGH ENVIRONMENTAL GENOMICS

11:40 Jessica Rieder, Adamandia Kapopoulou, Claudia Bank, Irene Adrian-Kalchhauser
EXPLORING MICROBIAL COMMUNITY DYNAMICS WITHIN RAS USING THREE DIFFERENT SEQUENCING APPROACHES

12:00 Yuan Liu, Renee Mercaldo-Allen, Paul Clark, Mark Dixon, Mike Jech, Judy Li, Richard S. McBride, Lisa Milke, Chris Orphanides, Dylan Redman, David Richardson, Julie Rose, Gary H. Wikfors
USING eDNA METABARCODING TO CHARACTERIZE MARINE FISH ASSEMBLAGES AND MICROBIAL COMMUNITIES

12:20 Phoebe Jekielek, Heather Leslie, Nichole Price, Erin Grey, Sue Ishaq, Sarah Hosler
DEVELOPING eDNA AS TOOL FOR MONITORING CULTURED AND WILD POPULATIONS OF SEA SCALLOPS *Placopecten magellanicus* IN MAINE, USA

12:40 Daniel Wieczorek, Krista Nichols, Kelly Goodwin, Renee Mercaldo-Allen, Diana Baetscher, Julie Rose, Yuan Liu
eDNA FOR ECOSYSTEM AND AQUACULTURE MONITORING TO SUPPORT IMPLEMENTATION OF THE U.S. NOAA 'OMICS STRATEGIC PLAN

1:00 LUNCH

2:30 Anaïs Lacoursière-Roussel, Kimberly Howland, Marc Trudel
MONITORING BAY-SCALE ECOSYSTEM CHANGES USING eDNA IN ENVIRONMENTAL SAMPLES

2:50 Thierry Baussant, Adriana Krolicka, Mari Mæland Nielsen, Andrea Bagi, Fiona Provan, David Strand, Trude Vrålstad, Brian Klidtgaard Hansen, Lars Magnus Wulf Jacobsen, Einar Eg Nielsen
USING INNOVATIVE e-DNA BASED APPROACH TO TACKLE CHALLENGES AND EVALUATE THE FOOTPRINT OF NORWEGIAN SALMON AQUACULTURE

- 3:10 Julie LaRoche**, Connor Mackie
TRACKING CHANGES IN MICROBIAL AND MEIOFAUNAL COMMUNITIES AROUND COASTAL FINFISH AQUACULTURE SITES USING ENVIRONMENTAL DNA METABARCODING AND METAGENOMICS
- 3:30 David Emerson**, Mike Kinnison, Kate Beard, Heather Leslie, Kody Varahramyan
MOLECULE TO ECOSYSTEM: ENVIRONMENTAL DNA AS NEXUS OF COASTAL ECOSYSTEM SUSTAINABILITY FOR MAINE

AQUACULTURE AND THE ENVIRONMENT

Thursday, August 18 11:00 AM - 1:00 PM Victoria 3

Chair: Sandra Shumway

- 11:00 Sandra E. Shumway**, Bobbi Hudson, Katie Houle, Joth Davis, Steve Morton, Tod Leighfield, Jerry Borchert, Brent Vadopalas
SAXITOXIN ACCUMULATION AND DEPURATION IN ROCK SCALLOPS *Crassadoma gigantea*: A PREREQUISITE FOR CULTURE ON THE WEST COAST OF NORTH AMERICA
- 11:20 Steve Morton**, Nia Rene, Jennifer Maucher-Fuquay, Andrew Shuler
USE OF CITIZEN SCIENTISTS TO MONITOR HARMFUL ALGAL BLOOMS AND CHANGES IN ENVIRONMENTAL CONDITIONS
- 11:40 Michael A. Oke**
THE LIVELIHOOD DIVERSIFICATION STRATEGIES, LANDSCAPING OF A TYPICAL FISH FARMS IN GWAGWALADA, ABUJA NIGERIA
- 12:00 Reza Faizbakhsh**, Elham Maghsoudloo
MATHEMATICS ECOLOGY MODELING METHOD OF NATURAL LAKES ECOSYSTEM INLAND WATERS IN IRAN

AQUACULTURE ENGINEERING

Thursday, August 18 2:30 PM - 5:30 PM Bannerman 2

Chair: Jason Nichols

- 2:30 Anis Somani**
COMPREHENSIVE BENEFITS OF DEEPCHILL ICE SLURRY FOR SUPERIOR PRESERVATION AND YIELD GAIN IN SHRIMPS
- 2:50 Philip Nickerson**, Kimberley Nickerson
PRACTICAL OBSERVATIONS IN REFRIGERATION FOR AQUACULTURE CHILLER AND HEAT PUMP SYSTEMS USING CARBON DIOXIDE AS A REFRIGERANT IN PLACE OF REFRIGERANTS WITH HIGHER GLOBAL WARMING POTENTIAL

- 3:10 Kris McNichol**
REMOTE AUTOMATED AERATION: THE BENEFITS OF CONTROLLED AERATION IN AQUACULTURE
- 3:30 Elham Maghsoudloo, Reza Faizbakhsh**
FEASIBILITY OF STURGEON CULTURE IN CAGES FOR STOCKS RECOVERY AND STURGEON PRODUCTION
- 3:50 David Ulloa Walker**
THE PRINCIPLES OF OXYGENATION IN AQUACULTURE TO MAXIMIZE SALMON *Salmo salar* HEALTH AND PERFORMANCE

**3RD PARTY CERTIFICATIONS:
PROCESS, PROGRESS AND PROGRESSION**

Thursday, August 18 2:30 PM - 5:30 PM Churchill 1
Chair: Jennifer Wiper

- 2:30 Megan Rector, Ramon Filgueira, Jon Grant**
ECO-CERTIFICATION AND SALMON FARMING IMPACTS OF CONCERN IN COMMUNITIES WITH AND WITHOUT FARMS
- 2:50 Katherine Dolmage, Fabiola Mustafaj, Kathrin Steinberg**
AQUACULTURE STEWARDSHIP COUNCIL (ASC) CERTIFICATION: EXPANDING THE SCOPE
- 3:10 Darrell Green**
AQUACULTURE CERTIFICATION ORIENTATION, PREPAREDNESS AND PLANNING: A ROLE FOR INDUSTRY ASSOCIATIONS
- 3:30 Rolando Ibarra, Wendy Norden, Tyler Isaac, Erin Hudson, Daniel Jimenez, James Griffin**
REDUCING THE USE AND IMPACT OF ANTIBIOTICS IN AQUACULTURE: THE COLLABORATIVE EXPERIENCE OF THE CHILEAN SALMON INDUSTRY
- 3:50 Anthony Camparone, Cormac O'Sullivan**
CERTIFICATION IN AQUACULTURE – LESSONS LEARNED AND FUTURE TRENDS
- 4:10 Kristin A. Storry**
PRECISION FARMING DRIVING INNOVATION AND THE BENEFITS TO ACHIEVING AND MAINTAINING MULTI-SITE CERTIFICATIONS
- 4:30 George Chamberlain**
GOING BEYOND CERTIFICATION TO MEET FOOD DEMANDS FOR 21ST CENTURY
- 4:50 Susan Fitzsimmons**
THE ROLE OF RISK & QUALITY MANAGEMENT SYSTEMS IN THE SEAFOOD INDUSTRY

SESSIONS - THURSDAY

AQUACULTURE AND CLIMATE CHANGE

Thursday, August 18 2:30 PM - 5:30 PM Victoria 1

Chair: Gregor Reid

- 2:30 Sebastien Donnet**
FORTUNE BAY SUMMER 2019 DIE-OFF: 'OUTLIER', 'NEW NORM' OR 'NORMAL VARIABILITY'?
- 2:50 Rebecca Sandrelli**, Zoe A. Zrini, A. Kurt Gamperl
ATLANTIC SALMON *Salmo salar* CAGE-SITE DISTRIBUTION, BEHAVIOUR AND PHYSIOLOGY MEASURED DURING A NEWFOUNDLAND HEAT WAVE USING DATA LOGGERS
- 3:10 Julie Nati**, Kathy Clow, Eric Ignatz, Doug Syme, Anthony Kurt Gamperl
ROS PRODUCTION MAY LIMIT THERMAL TOLERANCE AND CARDIAC PERFORMANCE AT HIGH TEMPERATURES IN ATLANTIC SALMON
- 3:30 Myron Roth**, Wiley Evans, Iria Giménez
BRITISH COLUMBIA FISHERIES AND AQUACULTURE OCEAN ACIDIFICATION AND HYPOXIA ACTION PLAN
- 3:50 Gregor K. Reid**
RECONCILING CLIMATE CHANGE AND AQUACULTURE: VULNERABILITY ASSESSMENTS AND EVOLVING RESEARCH NEEDS
- 4:10 Kurt Gamperl**, Zaman Sajid, Javier Santander, Chris Parrish, Albert Cabellero-Solares, Sarah Lehnert, Ramon Filgueira, Stefanie Colombo, Cynthia McKenzie, Gerald Singh
ABIOTIC AND BIOTIC CHALLENGES FACING SALMON AQUACULTURE IN THE ERA OF CLIMATE CHANGE: UNDERSTANDING AND MANAGING INTERACTIVE EFFECTS THAT RESULT IN MORTALITY

WILD-FARMED ECOLOGICAL INTERACTIONS

Thursday, August 18 3:30 PM - 5:30 PM Victoria 3

Chair: Ian Bradbury

- 2:30 Samantha Crowley**, Ian R. Bradbury, Amber M. Messmer, Steven J. Duffy, Christopher C. Parrish, Shahinur S. Islam, Ian A. Fleming
DIFFERENCES IN LIPID AND FATTY ACID ACQUISITION AND STORAGE OF FARM, WILD, AND HYBRID ATLANTIC SALMON *Salmo salar* COMPETING IN THE WILD
- 2:50 Nina Strand**, Sonnich Meier, Kevin A. Glover, Fernando Ayllon, Sofie Knutar, Vidar Wennevik, Abdullah Madhun, Øystein Skaala, Per Tommy Fjeldheim, Kristin Hamre, Monica F. Solberg
DIET- AND ESCAPE-HISTORY AMONG FARMED ATLANTIC SALMON *Salmo salar* ESCAPEES CAUGHT IN NORWEGIAN RIVERS AND ON THE COAST IN THE PERIOD 2011-2021

3:10 Ian Bradbury, Sarah Lehnert, Tony Kess, Mallory Van Wyngaarden, Steven Duffy, Amber Messmer, Brendan Wringe, Silje Karoliussen, Brian Dempson, Ian Fleming, Paul Bentzen
GENOMIC EVIDENCE OF RECENT EUROPEAN INTROGRESSION INTO NORTH AMERICAN FARMED AND WILD ATLANTIC SALMON

3:30 Ian A. Fleming, Shahinur Islam, Brendan Wringe, Xi Xue, Albert Caballero-Solares, Matt Rise, Ian Bradbury
INTERACTIONS AND CONSEQUENCES OF HYBRIDIZATION OF FARMED ATLANTIC SALMON OF NORTH AMERICAN AND EUROPEAN ORIGIN WITH WILD SALMON OF NEWFOUNDLAND

3:50 Monica F. Solberg, Wennevik Vidar, Kjell R. Utne, Kevin A. Glover, Øystein Skaala, Elisabeth Støger, Rosa Maria Serra-Llinares, Peder Fiske, Ola Diserud, Sten Karlsson, Kjetil Hindar, Lasse B. Andersen, Ellen S. Grefsrud
RISK OF GENETIC INTROGRESSION OF DOMESTICATED SALMON INTO WILD ATLANTIC SALMON POPULATIONS

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