

# Aquaculture 2019



**FRIDAY, March 8**

## **PLENARY**

Friday, March 8 8:30 AM - 10:00 AM Salon E  
Chair: Sandra Shumway

**8:30 Opening**

**9:00 Peter A. Cook**

HAS INTERNATIONAL AQUACULTURE CERTIFICATION RESULTED IN BETTER ENVIRONMENTAL AND SOCIAL OUTCOMES OF THE INDUSTRY?

## **FRESHWATER RIVER ECOSYSTEM**

Friday, March 8 11:00 AM - 12:30 PM Galeries 1  
Chair: Festus I. Adeosun

**11:00 Mohammad Shahjahan Howlader, Knut Oberhagemann, Benthem Wandert, Mohammad Amir Faisal, Mohammad Jahangir Alom**  
IMPACTS OF RIVER STABILIZATION ON THE FRESHWATER AQUACULTURE PRACTICES IN THE FLOODPLAINS OF THE JAMUNA AND PADMA RIVERS IN BANGLADESH

**11:15 Festus I. Adeosun, D.O. Odulate., A.A. Idowu, I. Abdurraheem, O.C. Odebiyi, M.T.O. Oghenochuko**  
EFFECTS OF ANTHROPOGENIC ACTIVITIES ON WATER AND SEDIMENT OF RIVER OGUN AT IJAYE, ISABO AND OKE-SOKORI, OGUN STATE

**11:30 Festus I. Adeosun, Olaniyi D. Odulate, Adedoyin A. Idowu, B.J.O. Ayorinde, A.O. Saba, Oghenebrorhie M.T. Oghenochuko**  
FEEDING HABITS, LENGTH –WEIGHT RELATIONSHIP AND CONDITION FACTOR OF *Chrysichthys nigrodigitatus* (LACEPÈDE, 1803) FROM OGUN RIVER, NIGERIA

**11:45 Baba Usman Ibrahim**  
STUDY OF THE FISHERY DIVERSITY OF RIVER WUYA, NIGER STATE, NIGERIA

## BIOTECHNOLOGY

Friday, March 8 11:00 AM - 12:30 PM Galleries 5

Chair: Andrew Rhyne

FRIDAY

- 11:00 Patricio González-Galeana**, Carmen G. Paniagua-Chávez,  
M. del Pilar Sánchez-Saavedra, Víctor Ruiz-Cortés  
GROWTH KINETICS MODEL OF *Chaetoceros muelleri* IN A FLAT  
PHOTOBIOREACTOR
- 11:15 Chelsey Rollins**, Joseph Szczebak, Casey Murray, Bradford Bourque,  
Robert Jacobson, Andrew Rhyne  
GROWTH RESPONSE OF *Chaetoceros muelleri* AND *Tisochrysis lutea* TO VARYING  
NUTRIENT LEVELS MEASURED USING AN AUTOMATED CELL COUNTING  
PROGRAM
- 11:30 Indu Sharma**, Alexandra Salcedo-Bauza  
ASSESSMENT FOR VIABILITY AND MICROBIAL COMPOSITION OF COMMERCIAL  
PROBIOTIC REGIMENS USED IN AQUACULTURE
- 11:45 Keith Cox**, Chuck Anderson  
USING BIOELECTRICAL IMPEDANCE ANALYSIS (BIA) TO MEASURE FISH HEALTH  
AND RIGOR MORTIS IN AQUACULTURE FISH
- 12:00 Joel Putnam**, Justine E. Nelson, John N. Steiner, Tammy J. Clark  
A MACHINE LEARNING APPROACH TO IDENTITY NEW CHEMICAL CONTROLS  
FOR INVASIVE AQUATIC SPECIES
- 12:15 Saraya Tavornpanich**, Trude Lyngstad, Edgar Brun  
USE OF AUTOMATIC MARINE VESSEL TRACKING SYSTEM TO CREATE CONTACT  
NETWORKS OF AQUACULTURE FACILITIES IN NORWAY AND THE IMPLICATIONS  
FOR BIOSECURITY AND RISK-BASED SURVEILLANCE

## FISH VACCINES

Friday, March 8 11:00 AM - 12:30 PM Salon A

Chair: Suja Aarattuthodiyil

- 11:00 Kyle Farmer**, Wendy Olson, Hugh Mitchell, Tom Goodrich  
INTEGRATING VACCINES, DISINFECTION, AND MICROBIOLOGY INTO AN  
INTEGRATED FISH HEALTH BIOSECURITY PROGRAM
- 11:15 Aaron D. Porterfield**, Haitham Mohammed, Wenlong Cai, Stacey LaFrentz,  
Alison Aceves, Covadonga R. Arias  
REFINING THE DELIVERY METHODS OF A LIVE ATTENUATED VACCINE AGAINST  
COLUMNARIS DISEASE IN CHANNEL CATFISH *Ictalurus punctatus*
- 11:30 Suja Aarattuthodiyil**, Todd Byars, Matt Griffin, Lester Khoo, Terrence Greenway,  
Ganesh Kumar, David Wise  
A LIVE ATTENUATED *Edwardsiella ictaluri* VACCINE EFFICIENTLY PROTECTS  
CHANNEL CATFISH FINGERLINGS AGAINST MULTIPLE BACTERIAL ISOLATES

- 11:45 Jaime A. Tobar**, Cristián Socías, Ana María Rabanal, Luis Velasquez  
COMBINED *Streptococcus iniae/agalactiae* VACCINATION EFFECTIVELY PROTECTS AGAINST BOTH DISEASES IN BARRAMUNDI
- 12:00 Mark Lawrence**, Hasan Tekedar, Attila Karsi, Hossam Abdelhamed  
VACCINATION AGAINST VIRULENT *Aeromonas hydrophila* (VAH) USING VAH SURFACE ANTIGENS EXPRESSED IN A RECOMBINANT *Edwardsiella ictaluri* VACCINE

## STUDENT SPOTLIGHT PRESENTATIONS: HIGHLIGHTING AWARD-WINNING STUDENTS

Friday, March 8 11:00 AM - 12:30 PM Salon C

Chair: Chris Green

The Triennial meeting of the World Aquaculture Society, National Shellfisheries Association, and Fish Culture Section of the American Fisheries Society provides a unique opportunity to view research from a wide range of student scholars. This Student Spotlight session will highlight student research through abbreviated presentations. Selection of these students was based upon evaluations of their abstracts and these presentations will be judged by representatives from each society present at this meeting. This is a great opportunity to see back-to-back student researchers present their work in this competitive session. You won't be disappointed.

### Eric Gigli

THE EFFECTS OF INCUBATION SALINITY ON EGG QUALITY TRAITS AND EARLY DEVELOPMENT OF SPOTTED SEATROUT *Cynoscion nebulosus*

### Caroline Schwaner

OCEAN ACIDIFICATION INCREASES SUSCEPTIBILITY TO INFECTION OF *Crassostrea virginica* AND *Mercenaria mercenaria* BY *Vibrio spp.*

### Emma Taccardi

OVERWINTERING STRATEGIES OF THE SALMON LOUSE *Lepeophtheirus salmonis*

### Gagan Kolimandu

EVALUATION OF OMEGA-3 RICH MICRO-ALGAE AND ORGANIC MICRO-MINERALS IN THE DIETS OF LARGEMOUTH BASS *Micropterus salmoides L.*

### Laura Spencer

REPRODUCTIVE TRIGGERS IN FLAT OYSTERS, *Ostrea spp.*

### Arun Venugopalan

SIMULTANEOUS OPTIMIZATION OF HATCHING PERCENTAGE AND HATCHING TIME OF ARTEMIA USING SPLIT-SPLIT PLOT DESIGN BASED BOX-BEHNKEN DESIGN

### Michael Acquafredda

POSSIBLE NICHE PARTITIONING AMONG FOUR ECOLOGICALLY AND ECONOMICALLY IMPORTANT FILTER-FEEDING BIVALVES: A CASE STUDY OF BIVALVE POLYCULTURE

**Fernando Yamamoto**

GROWTH AND PHYSIOLOGICAL EFFECTS OF REPLACING FISH MEAL BY DRY EXTRUDED SEAFOOD WASTE BLENDED WITH PLANT PROTEIN CO-PRODUCTS IN DIETS FOR ADVANCED RED DRUM *Sciaenops ocellatus* JUVENILES

**Kayla Mladinich**

EXAMINATION OF MICROPLASTICS IN THE COASTAL ENVIRONMENT AND AN EVALUATION OF RELEVANT POLYMERS FOUND IN THE EASTERN OYSTER *Crassostrea virginica*

**Brittany Chesser**

EFFECT OF BROODSTOCK DENSITY AND SPAWNING SUBSTRATE SURFACE AREA ON REPRODUCTIVE OUTPUT OF GULF KILLFISH IN COMMERCIAL-SCALE RECIRCULATING AQUACULTURE SYSTEMS

**Harsha Galkanda Arachchige**

EFFICACY OF ALTERNATIVE SALT MIXTURE TO GROW PACIFIC WHITE SHRIMPS *Litopenaeus vannamei*

## COLLABORATIVE CHANGE IN AQUACULTURE GOVERNANCE AND RESEARCH SUBCOMMITTEE ON AQUACULTURE

Friday, March 8 11:00 AM - 2:00 PM Salon H

Chair: Jim Parsons

- 11:00 Jim Parsons**  
INTRODUCTION AND OPENING REMARKS
- 11:15 Deerin Babb-Brott**  
TRANSITION TO THE SUBCOMMITTEE ON AQUACULTURE
- 11:30 Paul Doremus**  
REGULATORY EFFICIENCY
- 11:45 Jeffrey Silverstein**  
SCIENCE PLANNING
- 12:00 QUESTIONS FROM ATTENDEES**
- 12:45 Jim Parsons**  
WRAP-UP AND NEXT STEPS

# THE NEXUS OF OYSTER REEF RESTORATION, CULTCH MANAGEMENT AND SUSTAINABLE FISHING

Friday, March 8 11:00 AM - 2:30 PM Balcony I

Chairs: Eddie Allison, Tom Soniat, Eric Powell

- 11:00 Thomas Soniat**, Eric Powell, Nathan Cooper  
THE NEXUS OF SHELL-BUDGET MODELING, SUSTAINABLE FISHING AND OYSTER REEF RESTORATION
- 11:15 Edward H. Allison**, Jack Cheney  
WHAT DO OYSTER REEFS DO FOR SOCIETY?
- 11:30 Eric N. Powell**, Kelsey M. Kuykendall, Sara M. Pace, Jeremy R. Timbs  
MSY REFERENCE POINTS AND THE BROODSTOCK-RECRUITMENT RELATIONSHIP IN OYSTERS: IS CULTCH CONTENT A SURROGATE FOR CLEAN SHELL?
- 11:45 Roger Mann**, Melissa Southworth, James Wesson  
ON THE STOCK RECRUIT RELATIONSHIP IN OYSTERS POPULATIONS OF THE VIRGINIA CHESAPEAKE BAY
- 12:00 Roger Mann**, Melissa Southworth, James Wesson  
GROWTH, MORTALITY AND SHELL TURNOVER RATES IN OYSTER POPULATIONS OF THE VIRGINIA CHESAPEAKE BAY
- 12:15 Christine C. Jensen**  
OYSTER RESTORATION, CULTCH MANAGEMENT, AND SUSTAINABLE FISHING IN TEXAS
- 12:30 LUNCH**
- 1:30 Carolina M. Bourque**, Patrick Banks  
LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES REHABILITATION TECHNIQUES TO MANAGE, CONSERVE AND RESTORE OYSTER PRODUCTION IN LOUISIANA
- 1:45 Melanie L. Parker**  
OYSTER MANAGEMENT AND RESTORATION EFFORTS IN APALACHICOLA BAY, FLORIDA
- 2:00 Daphne Munroe**, Kathy Ashton-Alcox, Jason Morson, David Bushek  
THE ROLE OF FISHERY ENHANCEMENT IN THE SUSTAINABLE OYSTER FISHERY IN DELAWARE BAY

FRIDAY

## GENERAL CONTRIBUTED

Friday, March 8 11:00 AM - 2:30 PM Galeries 4

Chair: Daniel Arabie

FRIDAY

- 11:00 Martin Perez-Velazquez**, Mayra Lizett González-Félix, Hugo Cañedo-Orihuela, Jorge Trujillo-Villalba  
STUDIES ON EURYHALINITY OF TOTOABA *Totoaba macdonaldi* AND GROWTH TO MARKETABLE SIZE IN LOW-SALINITY WATER
- 11:15 Casey C. Grimm**, Steven W. Lloyd  
PASS/FAIL METHOD TO SCREEN FOR THE PRESENCE OF EARTHY OFF-FLAORS IN FISH TISSUE
- 11:30 Mark Jude F. Trondillo**, Kevin F. Yaptenco  
COMPARISON AND ANALYSIS OF DIFFERENT DRYING TECHNIQUES FOR PHILIPPINE SANDFISH *Holothuria scabra*
- 11:45 Michael A. Pascucilla**, Colin Hemez, Emma Ryan, Joy Chiu, Jia Sun, Robert Dubrow  
CLIMATE CHANGE, ENVIRONMENTAL, AND PUBLIC HEALTH IMPACTS OF SOLAR-ELECTRIC PUMP-OUT BOATS
- 12:00 Daniel A. Arabie**, Lewis E. Deaton, Trey Guilbeaux  
THE IMPLICATIONS OF HEMOCYANIN TO THE RESPIRATORY REGIME OF THE INVASIVE APPLE SNAIL *Pomacea maculata*
- 12:15 Siddhartha Doshi**  
ANTI-FOULING ADDITIVE, EMBEDDED IN FISHNET
- 12:30 LUNCH**
- 1:30 João G. Ferreira**, Remigiusz Panicz, Beata Calka, André Sobral Lopes, João Lencart e Silva, Jacek Sadowski, Paulina Hofsoe-Oppermann, Slawomir Keszka, Nick Taylor, Adam Kennerley, James Guilder  
A RISK ASSESSMENT MODEL FOR COMMON CARP CULTURE IN EASTERN EUROPE UNDER CLIMATE CHANGE, ACCOUNTING FOR PATHOGEN SUSCEPTIBILITY AND BIOMASS GROWTH
- 1:45 Kathrin Steinberg**, Michiel Fransen  
THE NEW ASC METRICS METHODOLOGY – TRANSPARENCY IN GLOBAL AQUACULTURE PERFORMANCE
- 2:00 Matthew Craze**  
AQUACULTURE FRONTIERS: OVERALL PERSPECTIVES OF GROWTH IN ONE OF THE WORLD'S FASTEST GROWING FOOD SECTORS

**ARE WE SAVING HUMANITY?  
WHAT IS AQUACULTURE'S ROLE IN MEETING SUSTAINABLE  
DEVELOPMENT GOALS AND MAINTAINING  
PLANETARY BOUNDARIES**

Friday, March 8 11:00 AM - 4:00 PM Galeries 3

Chair: Michael Tlusty

- 11:00 Michael Tlusty**, Peter Tyedmers, Megan Bailey, Friederike Ziegler, Patrik Henriksson, Christophe Béné, Simon Bush, Richard Newton, Frank Asche, David Little, Ben Belton, Max Troell, Malin Jonell  
ARE WE SAVING HUMANITY? FIVE STEPS TO AVOID HYPERBOLE AND TO FOCUS SEAFOOD AS PART OF A FOOD-SECURE FUTURE
- 11:15 Jerry R. Schubel**  
THE OCEAN SAVED HUMANITY ONCE – WILL AQUACULTURE HAVE TO DO IT AGAIN?
- 11:30 Peter Tyedmers**, Angela L. Moores  
PRIMARY PRODUCTIVITY REQUIRED TO SUSTAIN GLOBAL AQUACULTURE: A RESOURCE INVENTORY FROM 1970 TO 2013
- 11:45 Dane H. Klinger**, Nathan Pelletier, Neil A. Sims, Janice-Renee Yoshioka, John N. Kittinger  
NUTRITIONAL ATTRIBUTES, SUBSTITUTABILITY, SCALABILITY, AND ENVIRONMENTAL INTENSITY OF CURRENT AND FUTURE PROTEIN SOURCES FOR AQUACULTURE FEEDS: JOINT CONSIDERATION OF POTENTIAL SYNERGIES AND TRADE-OFFS
- 12:00 Lisa Tucker**, Wendy Norden, Taylor Voorhees, Tyler Isaac, Tori S. McConnell  
STRATEGIES FOR IMPROVEMENT IN GLOBAL AQUACULTURE PRODUCTION
- 12:30 LUNCH**
- 1:30 Robert Jones**, Tiffany Waters, Seth Theuerkauf  
SUPPORTING AQUACULTURE TO BENEFIT NATURE AND PEOPLE: ADVANCING A NEW PARADIGM FOR CONSERVATION ORGANIZATIONS
- 1:45 Shaun M. Moss**  
AQUACULTURE AS A TOOL FOR MARINE CONSERVATION AND COASTAL RESOURCE MANAGEMENT IN ISLAND COMMUNITIES
- 2:00 Sophie Ryan**  
IS PRE-COMPETITIVE COLLABORATION ABLE TO CHANGE THE FUTURE OF AQUACULTURE?
- 2:15 Scott E. Nichols**  
COMMUNICATING AQUACULTURE'S BOUNDLESS PROMISE
- 2:30 DISCUSSION**

# MANAGING VIBRIOS IN SHELLFISH AQUACULTURE

Friday, March 8 11:00 AM - 5:00 PM Balcony L

Chairs: Steve Jones, Cheryl Whistler

FRIDAY

- 11:00 Cheryl Whistler**, Randi Foxall, Feng Xu, Jillian Means, Meghan Hartwick, Sarah Eggert, Ashley Marcinkiewicz, Stephen Jones  
THE CHALLENGES AND OPPORTUNITIES FOR *Vibrio parahaemolyticus* MANAGEMENT AS GLEANED FROM POPULATION GENOMICS
- 11:15 Meghan Hartwick**, Cheryl A. Whistler, Stephen H. Jones  
INTEGRATING THE SEASONAL ECOLOGY OF *Vibrio parahaemolyticus* INTO RISK CHARACTERIZATION IN OYSTERS
- 11:30 Christopher A. Schillaci**, Stephen Jones, Cheryl Whistler, Diane Regan  
APPLYING ENVIRONMENTAL SURVEILLANCE AND EPIDEMIOLOGY TO MANAGE *Vibrio parahaemolyticus* RISKS ASSOCIATED WITH SHELLFISH CONSUMPTION
- 11:45 Kimberly Stryker**, John Jacobs, Ava Ellett, Jessica Jones, Kris Holderied  
UTILIZING PARTNERSHIPS FOR INFORMED REGULATORY MANAGEMENT OF *Vibrio parahaemolyticus* AT COMMERCIAL OYSTER FARMS IN ALASKA
- 12:00 Michael Whitney**, Kristin DeRosia-Banick  
FORECASTING *Vibrio parahaemolyticus* IN LONG ISLAND SOUND OYSTERS AND MANAGEMENT STRATEGIES FOR AQUACULTURE
- 12:15 Enrico Buenaventura**, Isabelle Dufresne, Amalia Martinez  
RECOMMENDATIONS FOR THE CONTROL OF *Vibrio parahaemolyticus* IN OYSTER SHELLSTOCK IN CANADA
- 12:30 LUNCH**
- 1:30 Jessica L. Jones**, John J. Miller, Joey G. Marchant, Whitney Neil, Victoria Prunte, William C. Walton  
MANAGEMENT OF *VIBRIO* RISK FROM OYSTERS
- 1:45 Brett A. Froelich**, Rachel Canty, Justin Hart, Rachel T. Noble  
A COMPARISON OF HUMAN PATHOGENIC *VIBRIO* IN FARMED AND WILD OYSTERS *Crassostrea virginica*
- 2:00 Bill Dewey**  
EFFORTS TO ADDRESS SPORADIC *Vibrio parahaemolyticus* ILLNESSES IN THE UNITED STATES PACIFIC NORTHWEST
- 2:15 Ava Ellett**, John Jacobs, Salina Parveen, Rohinee Paranjpye  
GROWTH COMPARISON OF *Vibrio parahaemolyticus* STRAINS IN LIVE OYSTERS AND CULTURE
- 2:30 Benjamin Davis**, Jason Sun, Aspen Flynn, Erika Atherly, Frank Curriero  
ENVIRONMENTAL AND GENETIC DETERMINANTS OF *Vibrio parahaemolyticus* ABUNDANCE AND VIBRIOSIS IN WASHINGTON STATE
- 2:45 Angelo DePaola**  
PERFECT *VIBRIO* STORM
- 3:00 Detbra Rosales**, Gulnihah Ozbay, Salina Parveen, John Jacobs, Joseph Pitula  
HARMFUL ALGAE SUCCESSION AND *VIBRIO* ASSOCIATION IN THE DELAWARE INLAND BAYS
- 3:15 DISCUSSION**



# ZEBRAFISH HUSBANDRY – PART 1

Friday, March 8 11:00 AM - 5:00 PM Balcony M

Chair: Bobbi Baur

**11:00 ZHA Annual Meeting**

**12:30 LUNCH**

**2:00 Mark Francis**

INTRODUCTION

ZHA UPDATE & Stewardship Award

Claire Allen/ZHA President

ZIRC UPDATE

Katy Murray/ZIRC

ZEBRAFISH HUSBANDRY TRAINING UPDATE

Susan Farmer/U Alabama Birmingham

WAVMA RACE Veterinary CE

George Sanders/U Washington

## ZHA SESSION

**2:45 Chris Taylor, Stephen Watts, Robert Sorge**

SEX AND NUTRITIONAL HISTORY AFFECT STRESS RESPONSE BEHAVIORS OF THE ZEBRAFISH *Danio rerio*

**3:05 Lauren Krug**

THE EFFECT OF INCREASED FEEDING IN PROPORTION TO DENSITY ON SEX RATIOS IN ZEBRAFISH

**3:25 Amy Kolb, Friedhelm Hildebrandt, Christian Lawrence**

EFFECTS OF DIET AND SOCIAL HOUSING ON REPRODUCTIVE SUCCESS IN ADULT ZEBRAFISH *Danio rerio*

**3:45 Xavier Langa**

CHARACTERIZATION OF METALS AND METALLOIDS IN ZEBRAFISH SYSTEMS

**4:05 Stephen Watts**

A NOVEL INGREDIENT FOR ZEBRAFISH DIETS: SINGLE CELL PROTEIN

**4:25 Susan Farmer**

METOMIDATE AS A EUTHANASIA AGENT FOR ZEBRAFISH

FRIDAY

# MOLLUSC HEALTH AND DISEASES – PART 1

Friday, March 8 11:00 AM - 5:00 PM Balcony K

Chairs: Ryan Carnegie, Lydia Bienlien

FRIDAY

- 11:00 David Bass**, Stephen W. Feist, Georgia M. Ward  
ASCETOPOREAN PARASITES OF MOLLUSCS: AN UPDATE AND REVIEW
- 11:15 Sabrina Geraci-Yee**, Jackie Collier, Bassem Allam  
INSIGHTS INTO AN OPPORTUNISTIC PATHOGEN: THE ECOLOGY OF QPX, A PARASITE OF THE HARD CLAM *Mercenaria mercenaria*
- 11:30 Julieta C. Martinelli**, Heather M. Lopes, Lorenz Hauser, Isadora Jimenez-Hidalgo, Teri L. King, Paul Rawson, Jason D. Williams, Jaqueline L. Padilla-Gamifio, Chelsea L. Wood  
IDENTIFICATION AND DISTRIBUTION OF SHELL-BORING MUDWORM *POLYDORA* spp. (POLYCHAETA: SPIONIDAE) IN WASHINGTON STATE
- 11:45 Eileen E. Hofmann**, John M. Klinck, Eric N. Powell, Marjorie A.M. Friedrichs, Pierre St-Laurent, Hanqin Tian  
INCREASED DERMO DISEASE IN CHESAPEAKE BAY OYSTERS CAUSED BY CONTINUED WARMING AND NUTRIENT LOADING
- 12:00 Naoki Itoh**, Xia Yang, Kousuke Umeda, Tsukasa Waki, Tomoyoshi Yoshinaga  
NOVEL INSIGHTS IN DIFFERENTIATION OF *Perkinsus olseni* TROPHOZOITES INTO PREZOOSPORANGIA
- 12:15 Andrew McElwain**, Andrew Gascho Landis, Peter Hazelton  
TOWARDS UNDERSTANDING SHELL DEFORMITIES IN FRESHWATER MUSSELS: COMPARING POTENTIAL PATHOLOGICAL CHANGES TO TISSUES AND CHANGES IN SHELL GROWTH AND LONGEVITY OF MUSSELS (UNIONIDAE AND MARGARITIFERIDAE) FROM THE NASHUA AND NISSITISSIT RIVERS, MASSACHUSETTS
- 12:30 LUNCH**
- 1:30 Alex Gourlay**, Skyler Roberts, Allison Surian, Luisa Garcia, Roxanna Smolowitz  
WHITE OR GREY: THE NEW 'GREY AREA' ON THE GREY MEAT DISEASE OF THE ATLANTIC SEA SCALLOP *Placopecten magellanicus*
- 1:45 R. Smolowitz**, A. Gourlay, D. Murphy, S. Roberts, R. Gast  
AN UPDATE ON HEMOCYTIC NEOPLASIA IN HARD CLAMS CULTURED IN MASSACHUSETTS
- 2:00 José Antonio Fernández Robledo**, Nicholas D. Marquis, Theodore J. Bishop, Madeline M. Schuldt, Sarah E. Kingston, Peter D. Countway, Nicholas R. Record  
PROTOZOAN PARASITES IN OYSTERS FROM MAINE: A TWO-YEAR SURVEY
- 2:15 Emily B. Rivest**, Standish K. Allen Jr., Corinne Audemard, Christopher Bentley, Amanda Chesler, Olivia De Meo, Lauren Gregg, Eric Guevelou, Anthony R. Himes, Karen Hudson, Darian Kelley, David Kuhn, Renia Passie, Kimberly Reece, Annie Schatz, Michael Schwarz, Elizabeth H. Shadwick, Jessica Moss Small, Juliette L. Smith, Rebecca T. Smith, Richard A. Snyder, Bongkeun Song, Joana T. Sousa, Ryan B. Carnegie  
ENHANCING THE SUSTAINABILITY OF HATCHERY PRODUCTION: EFFECTS OF WATER QUALITY MANIPULATIONS ON LARVAL PHYSIOLOGY AND MICROBIOLOGY

- 2:30 Juergen Geist**  
REARING ENDANGERED FRESHWATER MUSSELS IN AQUACULTURE FACILITIES:  
PROS AND CONS
- 2:45 Zoë Hilton**, Norman Ragg, Julien Vignier, Hannah Mae, Samantha Gale,  
Aditya Kesarcodi-Watson, Mark Camara, David Burritt, Brendon Dunphy,  
Ben Mortensen, Nick King, Serean Adams  
EVOLVING RESILIENCE IN BOTH PACIFIC OYSTERS *Crassostrea gigas* AND  
THE OYSTER INDUSTRY IN NEW ZEALAND, IN RESPONSE TO OSHV-1  
MICROVARIANTS
- 3:00 Alison K. Aceves**, Paul D. Johnson, Franscisca A. Burgos, Stephen A. Bullard,  
Cova R. Arias  
EFFECTS OF ANTIBIOTIC TREATMENT AND INCREASED SUSCEPTIBILITY TO  
BACTERIAL INFECTION IN THE FRESHWATER MUSSEL THE ALABAMA RAINBOW  
*Villosa nebulosa*
- 3:15 Ryan B. Carnegie**  
PATHOLOGY PERSPECTIVE ON POLYPLOID EASTERN OYSTERS, AND ITS  
RELEVANCE TO REGIONAL DISEASE MANAGEMENT
- 3:30 David Bushek**, Ryan Carnegie, Lori Gustafson, Bob Rheault, Lisa Calvo,  
Karen Hudson, Lucas Marxen  
THE EAST COAST MOLLUSCAN HEALTH INITIATIVE – PART 1: OVERVIEW
- 3:45 Bob Rheault**, Lisa Calvo, Karen Hudson, David Bushek, Ryan Carnegie,  
Lori Gustafson, Lucas Marxen  
THE EAST COAST MOLLUSCAN HEALTH INITIATIVE – PART 2: HATCHERY  
CERTIFICATION
- 4:00 Lucas Marxen**, David Bushek, Lisa Calvo, Ryan Carnegie, Karen Hudson,  
Bob Rheault, Lori Gustafson  
THE EAST COAST MOLLUSCAN HEALTH INITIATIVE – PART 3: INTERACTIVE  
DATABASE DEMO
- 4:15 Lori Gustafson**, Ryan Carnegie, David Bushek, Lisa Calvo, Karen Hudson,  
Bob Rheault  
THE EAST COAST MOLLUSCAN HEALTH INITIATIVE – PART 4: EXPANSION
- 4:30 Bassem Allam**, Yuk-Ting Lau, Bianca Santos, Michelle Barbosa,  
Emmanuelle Pales Espinosa  
CELLULAR AND MOLECULAR INTERACTIONS BETWEEN *Perkinsus marinus* AND  
OYSTER *Crassostrea virginica* HEMOCYTES
- 4:45 Benjamin Morga**, Sandy Picot, Nicole Faury, Isabelle Arzul, Bruno Chollet,  
Tristan Renault  
FIRST CHARACTERIZATION OF THE AUTOPHAGY MACHINERY IN A MOLLUSC  
BIVALVE *Crassostrea gigas*

## AES PROGRAM

Friday, March 8 11:00 AM - 5:00 PM Galeries 2

Chair: Todd Guerdat

FRIDAY

- 11:00 Steven G. Hall**, Melody Thomas, Matthew Campbell, Diplina Paul, Mike Frinsko, Rifat Hasan, Vashti Campbell, Alexander Geddie  
MARINE AQUACULTURAL ENGINEERING RESEARCH AND DEVELOPMENT NEEDS
- 11:15 Chuck Blumenschein**, TJ Willetts  
THE IMPORTANCE OF INTAKE WATER AND ITS ECONOMIC IMPACT AT LARGE-SCALE RECIRCULATING AQUACULTURE FACILITIES
- 11:30 Bertrand Barrut**, Emmanuel Briquet, Julien Jacquety  
WATER DELIVERY CAPACITY, GAS EXCHANGE AND PARTICULATE REMOVAL EFFICIENCIES OF THE VACUUM AIRLIFT (VAL) – APPLICATION TO WATER RECYCLING IN AQUACULTURE SYSTEM (RAS)
- 11:45 Thomas L. Welker**, Ken Overturf, Jason Abernathy  
EFFECT OF SUPPLEMENTAL AIR AND OXYGEN ON GROWTH AND SURVIVAL OF RAINBOW TROUT IN A COMMERCIAL SERIAL-PASS, FLOW-THROUGH RACEWAY SYSTEM
- 12:00 Diplina Paul**, Steven G. Hall  
A STUDY OF NEWSPAPER AS AN ALTERNATIVE MEDIA FOR BIOFILTRATION OF AQUACULTURE EFFLUENTS
- 12:15 Todd Guerdat**, Joseph Tetreault, Michael Timmons  
OPTIMIZING RECIRCULATING AQUACULTURE WASTE SLUDGE NUTRIENT SOLUBILIZATION FOR IMPROVED NUTRIENT USE EFFICIENCY IN INTEGRATED AQUACULTURE FARMING SYSTEMS
- 12:30 LUNCH**
- 1:30 Matthew Louque**, Ronald Malone, Timothy Pfeiffer  
THEORETICAL MODELING OF THE EFFECTIVENESS OF A STATIC GRANULAR PLASTIC MEDIA BED TO REMOVE TURBIDITY
- 1:45 Ron Malone**, Matt Louque, Timothy Pfeiffer  
IN PURSUIT OF SMALL-SCALE INDOOR RAS PRODUCTION OF MARINE SHRIMP
- 2:00 Ronel S. Pangan**, Ampy Paulo K. Roxas  
DESIGN AND DEVELOPMENT OF A DRYING SYSTEM FOR SEAWEEDES
- 2:15 Ritu Prem**, V.K. Tewari  
DESIGN AND DEVELOPMENT OF A NOVEL FISH FEEDING SYSTEM FOR SMALL AND MARGINAL FARMERS
- 2:30 Maria Teresa Gutierrez-Wing**, Jin-Woo Choi, Pedro J. Chacon Dominguez  
OVERCOMING THE LIMITATION OF LIGHT PENETRATION IN MICROALGAL CULTURES
- 2:45 Yue Liu**, Terrence R. Tiersch, W. Todd Monroe  
DEVELOPMENT OF A STANDARDIZED ARTIFICIAL INSEMINATOR FOR ENDANGERED LIVE-BEARING FISHES

- 3:00 Steven Hall**, Daniel Peplinski, Michael Frinsko, Melody Thomas, Matthew Campbell  
VIRTUALLY THERE – ENGINEERING ASPECTS OF REMOTE AQUACULTURAL FARM TOURS
- 3:15 Peter Vonk**, Timothy Brewer, Kevin Madley  
AUTOMATED TOOLS FOR DETECTING ENTANGLEMENT RISKS ASSOCIATED WITH AQUACULTURE
- 3:30 Tobias Dewhurst**, Carter Newell, Spencer Hallowell  
ENGINEERING ANALYSIS OF A MOORING GRID FOR AN ARRAY OF SUBMERSIBLE MUSSEL RAFTS
- 3:45 Melody A. Thomas**, Matthew Campbell, Steven Hall  
A REVIEW OF THE IMPACT REEF STRUCTURE AND SIZE HAVE ON INTERTIDAL AND SUBTIDAL ZONES

## PHYSIOLOGICAL INSIGHTS TOWARDS IMPROVING FISH CULTURE V PART 1

Friday, March 8 11:00 AM - 5:00 PM Galeries 6  
Chairs: Brian Small, Beth Cleveland, Javier Santander

### GROWTH AND NUTRITION

- 11:00 Penny Swanson**  
WALT DICKHOFF – A RETROSPECTIVE OF A CAREER IN FISH PHYSIOLOGY
- 11:30 Brian R. Beckman**  
EXPERIMENTAL DESIGN FOR VALIDATING GROWTH BIOMARKERS
- 11:45 Josep V. Planas**  
GROWTH-PROMOTING MECHANISMS OF SWIMMING-INDUCED ACTIVITY IN TELEOST FISH
- 12:30 LUNCH**
- 1:30 Brian Peterson**, Gary Burr  
GROWTH COMPARISON OF GASPE AND ST. JOHN'S RIVER STRAIN ATLANTIC SALMON IN FRESH AND SALTWATER
- 1:45 Cunming Duan**  
ROLES OF IGFbps IN REGULATING IGF ACTIONS: NEW INSIGHTS FROM FISH STUDIES
- 2:00 Munetaka Shimizu**, Ryosuke Kizaki, Brian R. Beckman, Walton W. Dickhoff  
INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN-2B IN SALMON: ITS IDENTITY, UTILITY AS GROWTH INDEX AND POSSIBLE ROLE IN GROWTH
- 2:15 Beth Cleveland**, Ginnosuke Yamaguchi, Lisa Radler, Munetaka Shimizu  
EDITING THE DUPLICATED INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN-2B GENE IN RAINBOW TROUT *Oncorhynchus mykiss*

**2:30** **Lea Medeiros**, Andrew Pierce  
ESTABLISHMENT OF NON-RADIOACTIVE ASSAYS FOR PLASMA INSULIN-LIKE GROWTH FACTOR-I (IGF-I) AND GROWTH HORMONE (GH) IN RAINBOW TROUT *Oncorhynchus mykiss* AND EFFECTS OF SHORT AND LONG-TERM ADMINISTRATION OF GH AND GHRELIN ON PLASMA IGF-1 AND GH LEVELS

**2:45** **Peggy Biga**, Mary Latimer, Iban Seilliez, Jean-Charles Gabillard, Beth Cleveland  
DIET-EPIGENETIC INTERACTIONS REGULATE MUSCLE PROLIFERATION AND METABOLISM IN TELEOSTS

**3:00** **William Fairgrieve**, Edward Hayman, Adam Luckenbach, Jonelle Herman, Paul Chittaro, Irvin Schultz  
EFFECTS OF DIETARY STARCH LEVEL ON POST-ADSORPTIVE CARBOHYDRATE METABOLISM AND LIPID SYNTHESIS IN SABLEFISH *Anoplopoma fimbria*

**3:15** **BREAK**

#### HEALTH AND DISEASE

**3:30** **Jeffrey T. Silverstein**  
CAN GROWTH RATE STILL BE IMPROVED?

**3:45** **Ken Overturf**  
IMMUNOLOGICAL AND STRESS RESPONSES OF SELECTED AND UN-SELECTED RAINBOW TROUT REARED ON A PLANT PROTEIN FEED

**4:00** **Albert Caballero-Solares**, Kathleen Parrish, Navaneethaiyer Umasuthan, Xi Xue, Jillian D. Westcott, Zhiyu Chen, Mark D. Fast, Barbara F. Nowak, Richard G. Taylor, Matthew L. Rise  
EFFECTS OF A FUNCTIONAL FEED ON THE SKIN TRANSCRIPTOME OF ATLANTIC SALMON *Salmo salar* INFESTED WITH SEA LICE *Lepeophtheirus salmonis*

**4:15** **Umasuthan Navaneethaiyer**, Xi Xue, Albert Caballero-Solares, Javier Santander, Richard G. Taylor, Matthew L. Rise  
IMPACT OF PEPTIDOGLYCAN ON EXPRESSION OF IMMUNE RELEVANT TRANSCRIPTS IN ATLANTIC SALMON *Salmo salar*

**4:30** **Javier Santander**, Setu Chakraborty, Trung Cao, Ahmed Hossain, Haharooba Gnanagobal, Danny Boyce  
*Aeromonas salmonicida* INFECTION AND VACCINATION IN *Cyclopterus lumpus*

**4:45** **Gang Yang**, Xiangli Tian, Lifeng Liang, Shuanglin Dong  
INTESTINAL MICROBIOME INTERACTION AND FISH HEALTH

# SHRIMP BIOSECURITY: REDUCING THE ECONOMIC IMPACT OF DISEASES

Friday, March 8 11:00 AM - 5:00 PM Salon D

Chairs: Victoria Alday, Robins McIntosh

FRIDAY

- 11:00 Daniel Fegan**  
INTERNATIONAL BIOSECURITY MANAGEMENT: IS IT TIME FOR A RETHINK?
- 11:15 Kathleen Hartman**  
RISK-BASED APPROACH TO AQUACULTURE FARM BIOSECURITY
- 11:30 Victoria Alday-Sanz, J. Brock, T.W. Flegel, R. McIntosh, M. Bondada-Reantaso, M. Salazar, R. Subasinghe**  
FACTS, TRUTHS AND MYTHS ABOUT SPF SHRIMP IN AQUACULTURE
- 11:45 Sudharma Choosuk, Robins McIntosh**  
BIOSECURITY FOR NUCLEUS BREEDING: THE CONCEPT THAT DEFINES SPF SHRIMP
- 12:00 Craig L. Browdy, Susan Laramore, Diego Flores, Peter Van Wyk**  
SHRIMP HEALTH MANAGEMENT: DISEASE PREVENTION BEGINS IN THE HATCHERY
- 12:15 Victoria Alday-Sanz**  
ERADICATING WHITE SPOT SYNDROME VIRUS, THE SPF AND SPT APPROACH
- 12:30 LUNCH**
- 1:30 Robins McIntosh**  
SHRIMP FARM BIOSECURITY IN ASIA: AN EVOLVED AND HOLISTIC APPROACH
- 1:45 Hugo H. Montaldo, Héctor Castillo-Juárez, Gabriel R. Campos-Montes, Juan C. Quintana-Casares, Sonia A. Soto-Rodríguez, Leobardo Montoya-Rodríguez, Miguel Betancourt-Lozano, Alfonso Martínez-Ortega, Rodolfo Lozano-Olvera, Bruno Gómez-Gil, Erika P. Gallaga-Maldonado**  
INBREEDING EFFECTS FOR AHPND AND WSD CHALLENGES AND FIELD PERFORMANCE RESULTS IN *Litopenaeus vannamei*
- 2:00 James L. Anderson**  
THE ECONOMICS OF AQUACULTURE DISEASE
- 2:15 Stephen G. Newman**  
THE USE OF DISINFECTANTS IN AQUACULTURE
- 2:30 Parisa Norouzitallab, Daisy Vanrompay, Peter Bossier**  
EPIGENETIC MANAGEMENT OF STRESS AND DISEASE RESISTANCE IN FARMED SHRIMPS
- 2:45 Shuaib Thaiparampil Muhammed, Victoria Alday Sanz, Albert Ferrer**  
SURVEILLANCE PROGRAM AND ANIMAL HEALTH MONITORING: AN INVESTMENT RATHER THAN COST
- 3:00 DISCUSSION**

# FISH NUTRITION – PART 1

Friday, March 8 11:00 AM - 5:00 PM Salon E

Chair: Ian Forster

FRIDAY

- 11:00 Mette Sørensen**, Yangyang Gong, Ghana Vasanth, Dalia Dahle, Viswanath Kiron  
POTENTIAL OF CALANUS AS A FEED ATTRACTANT IN LOW FISH MEAL DIETS FOR ATLANTIC SALMON
- 11:15 Katarina Doughty**, Mirko Diaz, Shannon Balfry, Ian Forster  
INVESTIGATING THE USE OF GEL DIETS FOR PILE PERCH TO BE USED AS A CLEANER FISH SPECIES IN PACIFIC SALMONID AQUACULTURE
- 11:30 Sophie A. Lee**, Ingrid Lupatsch, Gilson A. Gomes, David Terrey, Ivan Tankovski, Jack James, Michael R. Bedford  
PHYTASE IMPROVES PERFORMANCE AND NUTRIENT RETENTION IN RAINBOW TROUT *Oncorhynchus mykiss* FED DIETS DEVOID OF INORGANIC PHOSPHORUS
- 11:45 Niang Mamadou Siley**, Patrice Brehemer, Diouf Malick, Abd El Rahman Gamal  
THE USE OF THE PHYTASE IN AQUACULTURE, ITS ZOOTECNICAL INTERESTS AND THE POSSIBILITIES OF INCORPORATION IN THE AQUAFEED
- 12:00 Mohamed El. Salem**, Heba M. Abdel-Ghany, Mohamed M. El-Feky, Ahmed El. Sallam  
EFFECTS OF DIETARY SUPPLEMENTED PHYTASE ON GROWTH PERFORMANCE OF SEA BREAM *Sparus aurata*
- 12:15 Habte-Michael Habte-Tsion**, Waldemar Rossi Jr.  
A REVIEW ON FISH IMMUNO-NUTRITIONAL RESPONSE TO INDISPENSABLE AMINO ACIDS IN RELATION TO TOR, NF- B AND Nrf2 SIGNALING PATHWAYS: TRENDS AND PROSPECTS
- 12:30 LUNCH**
- 1:30 Tom Kasiga**, Michael L. Brown  
“RE-THINKING” THE IDEAL PROTEIN CONCEPT
- 1:45 Margarida Saavedra**, Teresa Pereira, Marisa Barata, Luis Conceição, Laura Ribeiro, Ana Mendes, Pedro Pousão  
EFFECT OF DIETARY HISTIDINE SUPPLEMENTATION ON MEAGRE *Argyrosomus regius* JUVENILES GROWTH, HAEMATOLOGICAL PROFILE AND MUSCLE CELLULARITY
- 2:00 Frank Turano**, Michelle Price  
TAURINE PRODUCTION IN PLANTS AND BACTERIA FOR AQUAFEED
- 2:15 Jaehyeong Shin**, Min-Gi Kim, Chorong Lee, Bong-Joo Lee, Kyeong-Jun Lee  
REQUIREMENT OF VALINE IN DIETS FOR JUVENILE OLIVE FLOUNDER *Paralichthys olivaceus*
- 2:30 Kequan Chen**, Fernando Y. Yamamoto, Delbert M. Gatlin III  
EFFECTS OF INORGANIC AND ORGANIC DIETARY COPPER SUPPLEMENTATION ON GROWTH PERFORMANCE AND TISSUE COMPOSITION FOR JUVENILE RED DRUM *Sciaenops ocellatus*



- 2:45 Quang Duoc Do**, Hung Duc Pham, Minh Hoang Le  
EFFECTS OF VITAMIN C SUPPLEMENT IN DIET ON GROWTH PERFORMANCE, BODY PROXIMATE COMPOSITION AND HAEMATOLOGICAL PARAMETERS AT THE JUVENILE OF WAIGIEU SEA PERCH *Psammoderus waigiensis*
- 3:00 Romi Novriadi**, Guillaume Salze, Melanie Rhodes, João Reis, Jingping Guo, Anneleen Swanepoel, D. Allen Davis  
GROWTH, BODY COMPOSITION, AND DISTAL INTESTINE HISTOLOGY OF FLORIDA POMPANO *Trachinotus carolinus* IN RESPONSE TO DIETARY INCLUSION OF SALMON BYPRODUCT HYDROLYSATES
- 3:15 Nurulhuda Ahmad Fatan**, Konrad Dabrowski, Ebtehal El-Sayed Huzsein, Celestin AtseBoua, Rafael Jimenes-Flores, Alba Mayata-Apaza  
THE EFFECT OF FERMENTED FISH WASTE-BASED DIETS ON GROWTH, MATURATION AND OFFSPRING QUALITY OF ZEBRAFISH – MODEL STUDIES
- 3:30 Dmitry Pyanov**, Anna Fickler, Michael Schlachter, Carsten Schulz  
APPARENT DIGESTIBILITY OF SOME PLANT-DERIVED INGREDIENTS AND GASTROINTESTINAL TRANSIT TIME IN EUROPEAN PIKEPERCH *Sander lucioperca*
- 3:45 Ahmad Al Khraisat**  
APPARENT NUTRIENT DIGESTIBILITY OF TOMATO POMACE BY NILE TILAPIA *Oreochromis niloticus* USING THE FIBER METHODS AS INDICATORS
- 4:00 Michele Jones**, Rebecca Lochmann  
FERMENTED SORGHUM AS A SUBSTITUTE FOR SOYBEAN IN THE DIETS OF NILE TILAPIA *Oreochromis niloticus*
- 4:15 Lee Fuiman**, Zhenxin Hou, Cynthia Faulk, Xiyuan Lu, Renu Pandey, Meghan Collins, Stefano Tiziani  
USING LIPIDOMICS TO EXPLORE POSSIBLE CAUSES OF NUTRITIONAL PROGRAMMING IN LARVAE OF RED DRUM *Sciaenops ocellatus*
- 4:45 Joachim Kuzimbila Yongo**, Sylvain Kipoy Sumbu, Teddy Mbangu Kaya, Soleil Mwamwini, Richard Gasingwa, Bhely Angoboy  
NUTRITION, A LIMITING FACTOR FOR PERFORMANCE 'WEIGHT GAIN' STRAINS OF TILAPIA PRODUCED IN SUB-SAHARAN AFRICA: CASE OF PEASANT FARMING IN THE WEST OF THE DRC

## NUISANCE WILDLIFE

Friday, March 8 1:30 PM - 3:30 PM Galleries 5

Chair: Troy Bader

- 1:30 Carole R. Engle**, Luke Roy, Brian Dorr, Brian Davis, Anita Kelly, Stephen Clements, Terrel Christie  
WHAT DO PROBLEMS WITH FISH-EATING BIRDS REALLY COST U.S. CATFISH AND BAITFISH FARMS?
- 1:45 John McConnell**, Laurel Barnhill, Carmen Simonton  
STATUS AND DIRECTION OF CORMORANT MANAGEMENT UNDER THE 2017 FISH AND WILDLIFE SERVICE ENVIRONMENTAL ASSESSMENT
- 2:00 Fred L. Cunningham**, Katie C. Hanson-Dorr, Lorelei Ford, Lanna Durst, Raleigh Middleton, Larry A. Hanson  
POTENTIAL OF GREAT EGRETS TO SPREAD *Edwardsiella piscicida*

- 2:15 Brian S. Dorr**  
ECONOMICS OF WILDLIFE CONTROL AND PERMITTING TO LIMIT DAMAGE TO AQUACULTURE
- 2:30 Paul C. Burr**, Jimmy L. Avery, Garrett M. Street, Bronson K. Strickland, Brian S. Dorr  
FINE SCALE CHARACTERISTICS OF CATFISH AQUACULTURE PONDS INFLUENCING USE BY DOUBLE-CRESTED CORMORANTS *Phalacrocorax auritus* IN NORTHWEST MISSISSIPPI
- 2:45 Terrel W. Christie**, J. Brian Davis, Brian S. Dorr, Katie C. Hanson-Dorr, Luke A. Roy, Anita M. Kelly, Carole R. Engle  
DEPREDAATION IMPACT OF DOUBLE-CRESTED CORMORANTS *Phalacrocorax auritus* ON COMMERCIAL CATFISH PRODUCTION IN THE MISSISSIPPI DELTA
- 3:00 Stephen A. Clements**, Brian Davis, Brian S. Dorr, Katie C. Hanson-Dorr, Luke A. Roy, Anita M. Kelly, Carole Engle, Scott C. Barras  
FORAGING ECOLOGY AND DISTRIBUTION OF SCAUP *Aythya* spp. ON ARKANSAS COMMERCIAL BAITFISH AND SPORTFISH FARMS
- 3:15 Tommy King**, Ciera Rhodes  
USING UNMANNED AERIAL VEHICLES FOR BIRD HARASSMENT ON FISH PONDS

### **3-D PRINTED, CUSTOM, COST-EFFECTIVE DEVICES FOR ON-SITE CRYOPRESERVATION**

Friday, March 8 1:30 PM - 5:00 PM Galleries 1

Chair: Mike Christensen

We are presenting a workshop for beta testing of a 3-dimensional (3-D) printed device for on-site cryopreservation in a focus group format. The workshop will include an introduction to 3-D printing and user interaction with the freezing device. Attendees are strongly encouraged to pre-register and receive additional details on the session at: [www.WAScryofocusgroup.tagdatasolutions.com](http://www.WAScryofocusgroup.tagdatasolutions.com)

We will be holding the annual meeting of the Aquatic Species Committee of the National Animal Germplasm Program. Anyone with an interest in the preservation of germplasm or genetic resources of aquatic species is encouraged to attend.

- 1:30 Terrence Tiersch**  
WORKSHOP: FOCUS GROUP EVALUATION OF A CUSTOM-FABRICATED CRYOPRESERVATION DEVICE AND DATA MANAGEMENT SYSTEM FOR REPOSITORY MANAGEMENT OF AQUATIC GENETIC RESOURCES
- 3:45 Annual Meeting of the Aquatic Species Committee of the National Animal Germplasm Program**

## WARM WATER BACTERIAL PATHOGEN

Friday, March 8 1:30 PM - 5:00 PM Salon A

Chairs: Carolyn Chang, Ron Thune

- 1:30 Myron Kebus**, Nicole Nietlisbach  
AQUAPONIC TILAPIA DISEASES CASES
- 1:45 Robert Durborow**, Stephen Atkinson  
DEVELOPING A MOBILE APP, CLINICAL DATABASE, AND LEARNING GAMES FOR FISH DISEASE DIAGNOSTICS
- 2:00 Cova Arias**, Francisca Burgos  
EFFECTS OF AQUACULTURE PRACTICES ON THE GUT MICROBIOME OF CHANNEL CATFISH *Ictalurus punctatus*
- 2:15 Carolyn Chang**, Ronald Thune  
UNDERSTANDING THE ROLE OF THE *Edwardsiella ictaluri* T3SS EFFECTOR PROTEINS FOR VIRULENCE IN CHANNEL CATFISH *Ictalurus punctatus*

## STUDENT SESSION: CAREER ADVISORY SESSION WITH SIX PROFESSIONALS FROM DIVERSE SECTORS OF AQUACULTURE

Friday, March 8 1:30 PM - 5:00 PM Salon C

Chairs: Taylor Lipscomb, Allison Durland Donahou, Philipp Segler

### **Jim Bowker**

DIRECTOR OF RESEARCH AND ANIMAL WELFARE, RIVERENCE LLC

### **Nicole Rhody**

DIRECTORATE OF FISHERIES AND AQUACULTURE, MOTE MARINE LABORATORY

### **Matthew DiMaggio**

ASSISTANT PROFESSOR OF AQUACULTURE, TROPICAL AQUACULTURE LABORATORY, UNIVERSITY OF FLORIDA

### **Michael Denson**

DIRECTOR, MARINE RESOURCES RESEARCH INSTITUTE, SOUTH CAROLINA DNR

### **Leslie Sturmer**

MOLLUSCAN SHELLFISH AQUACULTURE EXTENSION AGENT, CEDAR KEY MARINE FIELD STATION, UNIVERSITY OF FLORIDA

### **Mike Freeze**

OWNER, KEO FISH FARM, INC.

### **Kathleen Hartman**

AQUACULTURE PROGRAM LEADER, USDA APHIS VETERINARY SERVICES

### **Bill Keleher**

CEO AND FOUNDER, KENNEBEC RIVER BIOSCIENCES, INC.

# NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITTING AND 404 PERMITTING UNDER THE CLEAN WATER ACT AND SECTION 10 PERMITTING UNDER THE RI

Friday, March 8 2:00 PM - 4:00 PM Salon H

Chair: Jenny Molloy

FRIDAY

## 2:00 **Section 10, Rivers and Harbor Act and Section 404, Clean Water Act** **Bonnie Rogers**

Overview: What is the Regulatory Program? What are the statutory and regulatory authorities? What types of permits apply to aquaculture activities? What are the roles of state programs and federal programs in these permitting processes?

### **Martin Mayer**

The Basics of the Application Process. Do I need a permit? Where do I apply? What constitutes a complete application? How long will it take? What approvals are required from other agencies prior to receiving a permit authorization or verification?

## 2:45 **National Pollutant Discharge Elimination System (NPDES), Clean Water Act** **Sieglinde Pylypchuk**

Overview and the Basics of the Application Process. What are the objectives of the NPDES program? What are the statutory and regulatory authorities? What are the roles of state programs and EPA in the permitting process? Do I need a permit? Where do I apply? Do I have a choice in whether I get coverage under a general permit or an individual permit? What constitutes a complete application? How long will it take? What about NEPA and approvals from other agencies for permit authorization or verification?

### **Lisa Kusnierz**

Permit Implementation. What is my permit likely to require me to do? How do effluent guidelines, TMDLs, etc. affect my permit requirements? Are these one-time only requirements or are they ongoing? What kind of records do I need to keep? Will I have reporting requirements? When does my permit coverage expire? How do I reapply? Is the process any simpler for reissuances than it is for the initial permit?

### **Kip Tyler**

Monitoring and Compliance. Will I need to conduct monitoring? What will I monitor for? What is the purpose of the monitoring? What happens if the monitoring demonstrates problems? What if the monitoring demonstrates that my operation is functioning appropriately? How do the agencies ensure that I'm complying with my permit? Will they conduct inspections? What will happen if I'm out of compliance with my permit?

## 3:30 **Panel Discussion.** An opportunity for participants to ask questions of the speakers and other panelists, make suggestions, and initiate discussion on any topic of interest. In addition to all of the speakers, the following specialists will be part of the panel to represent their perspectives on NPDES, Section 10 and 404 permitting of aquaculture operations:

**Jessica Beck-Stimpert, Gary Fornshell, Neil Sims**

## GENETIC ENGINEERING IN AQUACULTURE

Friday, March 8 2:30 PM - 5:00 PM Galleries 4

Chairs: Yoni Zohar, John Buchanan

- 3:30** **Yonathan Zohar**, Ten-Tsao Wong  
DEVELOPMENT OF REPRODUCTIVE STERILITY TECHNOLOGY TO CONTAIN GENETICALLY ENGINEERED FISH
- 3:45** **John Buchanan**  
THE CURRENT STATUS OF GENETIC ENGINEERING IN AQUACULTURE
- 4:00** **John Buchanan**, Xavier Lauth, Valerie Williams  
COMBINING GENETIC ENGINEERING AND SELECTIVE BREEDING FOR COMMERCIALIZATION OF GENETICALLY ENGINEERED TRAITS
- 4:15** **Richard Peterson**, Jarred Callura  
FLT 01 TILAPIA: NILE TILAPIA WITH ENHANCED PRODUCTION TRAITS AND SUSTAINABILITY DERIVED FROM NEW BREEDING TECHNIQUES
- 4:30** **Richard Peterson**, Brad Shurdut  
REGULATORY FRAMEWORK FOR GENE EDITING IN ANIMAL AGRICULTURE
- 4:45** **Rex Dunham**, Guyu Qin, Cuiyu Lu, Hanbo Li, Baofeng Su  
COMPARISON OF TRANSGENIC STERILIZATION AND GENE EDITING TO CONTROL REPRODUCTION IN CATFISH
- 5:00** **Rex Dunham**, Yingqi Huang, Yiliu Zhang, Abdallah Salah, Baofeng Su  
PERFORMANCE OF DESATURASE AND GROWTH HORMONE GENE TRANSGENIC CATFISH

## OYSTERS SOUTH: OYSTER AQUACULTURE IN THE SOUTHERN USA

Friday, March 8 2:45 PM - 5:00 PM Balcony I

Chairs: Bill Walton, Julie Davis

- 2:30** **Shannon Hood**, Matt Parker, Don Webster  
WATER COLUMN OYSTER AQUACULTURE IN THE CHOPTANK RIVER, MARYLAND: A COMPARATIVE ANALYSIS OF CULTURE METHODS
- 2:45** **Natalie Simon**, Leslie Sturmer, Reggie Markham  
GEAR TYPE COMPARISON FOR OFF-BOTTOM OYSTER AQUACULTURE IN FLORIDA, USA
- 3:00** **Shannon E. Kirk**, Thomas H. Bliss, Julie E. Davis, William C. Walton, Charles R. Weirich, Robert B. Bringolf  
EFFICACY OF BIOFOULING MITIGATION METHODS FOR FLOATING CAGE PRODUCTION OF SOUTHEASTERN TRIPLOID EASTERN OYSTERS *Crassostrea virginica*
- 3:15** **Ellis L. Chapman**, Julie Davis, Jason Rider, Leslie Sturmer, William C. Walton, John E. Supan  
COMPARING OFF-BOTTOM TECHNIQUES OF OYSTER AQUACULTURE *Crassostrea virginica* ON BIOFOULING IN THE NORTHERN GULF OF MEXICO

- 3:30 Kelsey A. Bisker**, F. Scott Rikard, William C. Walton  
EFFECTS OF LARVAL GROWTH DIFFERENCES UPON THE FIELD PERFORMANCE OF CULTURED EASTERN OYSTERS *Crassostrea virginica*
- 3:45 Sarah R. Bodenstein**, William C. Walton  
TESTING CAUSES OF DIFFERENTIAL MORTALITY RATES BETWEEN TRIPLOID AND DIPLOID EASTERN OYSTERS *Crassostrea virginica* IN THE NORTHERN GULF OF MEXICO
- 4:00 Victoria L. Prunte**, William C. Walton, Jessica L. Jones  
EFFECTS OF GEAR TYPE AND SEASON ON *Vibrio parahaemolyticus* AND *V. vulnificus* IN FARM-RAISED OYSTERS *Crassostrea virginica* AFTER ROUTINE HANDLING
- 4:15 Ryan B. Carnegie**  
INSIGHT INTO THE CONTEMPORARY DISEASE STATUS OF GULF OYSTER POPULATIONS
- 4:30 Adriane Michaelis**, Don Webster, William C. Walton, L. Jen Shaffer  
ARE WE DOING OYSTER AQUACULTURE A DISSERVICE BY IGNORING CULTURAL ECOSYSTEM SERVICES?

## IMPROVING AND EXTENDING PARTITIONED POND AQUACULTURE

Friday, March 8 3:30 PM - 5:00 PM Galleries 5

Chair: David Brune

- 3:30 Craig S. Tucker**  
SPLIT PONDS FOR CATFISH FARMING
- 3:45 Charles Mischke**, Ambika Tiwari  
COMPARING WATER QUALITY, PHYTOPLANKTON AND ZOOPLANKTON COMMUNITIES IN SPLIT-POND AQUACULTURE SYSTEMS TO INTENSIVELY AERATED PONDS
- 4:00 Jonathan Pote**, Charles L. Wax, Hazel Buka, Brian Ott  
IMPACT OF LOCATION AND WEATHER ON OXYGEN IN THE DESIGN OF SPLIT POND AQUACULTURE SYSTEMS
- 4:15 Gregory Schwartz**, David Brune  
MODELING OXYGEN AND NITROGEN DYNAMICS IN THE PARTITIONED AQUACULTURE SYSTEM
- 4:30 David Brune**, Jonathan Pote, Craig Tucker  
PARTITIONED POND AQUACULTURE: SPLIT POND VS. PARTITIONED AQUACULTURE SYSTEM PERFORMANCE
- 4:45 Ganesh Kumar**, Carole Engle, Craig Tucker  
ECONOMICS AND RISK OF CATFISH SPLIT-POND SYSTEMS

# RISK MANAGEMENT OPTIONS FOR AQUACULTURE: RMA WHOLE-FARM REVENUE PROTECTION

Friday, March 8 4:00 PM - 5:00 PM Salon H

Chair: Ben Thiel

- 4:00 Ben Thiel**  
INTRODUCTION AND OVERVIEW OF FEDERAL CROP INSURANCE ALONG WITH  
COMMENTS ABOUT THE 2018 FARM BILL
- 4:15 Ben Thiel**  
PRESENTATION ON WHOLE FARM REVENUE PROTECTION (WFRP) INSURANCE  
POLICY
- 4:45 Ben Thiel**  
QUESTIONS AND DISCUSSION

FRIDAY

# SATURDAY, March 9

## MACROBRACHIUM

Saturday, March 9 8:30 AM - 10:00 AM Galeries 4  
Chair: Patricia Moraes Valenti

- 8:30 Karina Ribeiro**, Mariana Cutolo Araujo, Petronio Alves Coelho Filho, Eduardo Luis Cupertino Ballester  
BRAZILIAN PRODUCTION OF *Macrobrachium rosenbergii*
- 8:45 Brian Nerrie**, Wanda Johnson  
VALUE-ADDED PROMOTION FOR FARM-RAISED FRESHWATER SHRIMP  
*Macrobrachium rosenbergii*
- 9:00 Karina Ribeiro**, Luciene Patrici Papa, Thalles Fernando Rocha Ruiz, Maria Angélica da Silva, Juliana Ferreira dos Santos, Irene Bastos Franceschini Vicentini  
STRUCTURAL STUDIES OF HEPATOPANCREAS OF *Macrobrachium carcinus*
- 9:15 Petrônio Coelho-Filho**, Alex P. Gonçalves, Darlyane dos Santos, Gerlane P.F. Lôbo, José Rodrigo Bezerra, Karina Ribeiro  
ADVANCES IN THE PAINTED RIVER PRAWN *Macrobrachium carcinus* HATCHERY
- 9:30 Dallas Flickinger**, Daniela Pimenta Dantas, Wagner Cotroni Valenti  
THE BUDGET OF CARBON, NITROGEN AND PHOSPHORUS IN THE CULTURE OF THE AMAZON RIVER PRAWN AND TAMBAQUI FARMED IN MONOCULTURE AND IN INTEGRATED MULTITROPHIC SYSTEMS

## FISH NUTRITION – PART 2

Saturday, March 9 8:30 AM - 10:00 AM Salon E  
Chairs: Ian Forster, Gibson Gaylor, Guiluame Salze

- 8:30 Ahmad Al Khraisat**  
REPLACEMENT YELLOW CORN WITH *Prosopis juliflora* NON-CONVENTIONAL FEED AS SOURCE OF ENERGY ON GROWTH PERFORMANCE OF NILE TILAPIA *Niloticus oreochromis* IN JORDAN
- 8:45 Ahmad Al Khraisat**  
COMPRESSION FEEDING EFFECT ON GROWTH PERFORMANCE BETWEEN TOMATO POMACE AND OLIVE CAKE AS SOURCE OF ENERGY FEEDS IN NILE TILAPIA *Oreochromis niloticus* L.
- 9:00 Dong Fang Deng**, Ming Jiang, Huihong Zhao, Annamarie Lofald, Ryan Newton, Swee Teh, Brian Shepherd, Silas Hung, Fred Binkowski  
EFFECTS OF DIFFERENT DIETARY CARBOHYDRATES ON GROWTH PERFORMANCE, HEALTH AND METABOLISM OF YELLOW PERCH *Perca flavescens*
- 9:15 Keshun Liu**, Mike Woolman, Rick Barrows, Jason Frost, Thomas Welker, Ken Overturf  
DEVELOPING SOFT TEXTURE AND WATER STABLE TROUT FEED



- 9:30 Karolina Kwasek**, Michal Wojno, Vance McCracken, Genciana Terova  
IS THE TIMING OF NUTRITIONAL PROGRAMMING CRITICAL TO IMPROVE  
DIETARY PLANT PROTEIN UTILIZATION IN FISH?
- 9:45 Jinho Bae**, Ali Hamidoghli, Seonghun Won, Kang-Woong Kim, Bong-Joo Lee,  
Sang-Woo Hur, Sang-Gu Lim, Hyon-Sob Han, Sungchul C. Bai  
EFFECTS OF FEED ADDITIVES IN A LOW FISH MEAL DIET FOR OLIVE FLOUNDER  
*Paralichthys olivaceus*

## UPDATES FROM THE USDA NIFA REGIONAL AQUACULTURE CENTERS

Saturday, March 9 8:30 AM - 10:00 AM Salon H  
Chair: Jimmy Avery

- 8:30 Gene W. Kim**  
A NATIONAL PERSPECTIVE ON THE HISTORY, MISSION, AND ROLE OF THE USDA  
NIFA – REGIONAL AQUACULTURE CENTER (RAC) PROGRAM
- 8:45 Joseph E. Morris**  
THE NORTH CENTRAL REGIONAL AQUACULTURE CENTER: INVESTMENT AND  
IMPACTS OF PRODUCER-FOCUSED RESEARCH AND EXTENSION PROJECTS
- 9:00 Jimmy L. Avery**  
USDA NIFA SOUTHERN REGIONAL AQUACULTURE CENTER: PRODUCER  
INVOLVEMENT, IMPACT PROJECTS, AND HOW TO BECOME INVOLVED
- 9:15 Cheng-Sheng Lee**  
NIFA PACIFIC REGIONAL AQUACULTURE CENTER: EXPLORATION OF  
AQUACULTURE OPPORTUNITIES IN U.S. AFFILIATED PACIFIC ISLANDS
- 9:30 Graham Young**  
THE WESTERN REGIONAL AQUACULTURE CENTER: IMPACTS OF INVESTMENT IN  
RESEARCH AND OUTREACH PROJECTS THAT ADDRESS INDUSTRY PRIORITIES
- 9:45 Reginal Harrell**  
USDA, NIFA NORTHEASTERN REGIONAL AQUACULTURE CENTER: PRODUCER  
INVOLVEMENT, IMPACT PROJECTS, AND HOW TO BECOME INVOLVED

## WILD-FARMED INTERACTIONS IN AQUACULTURE

Saturday, March 9 8:30 AM - 12:30 PM Galleries 1  
Chairs: Shawn Robinson, Marc Trudel

- 8:30 Thierry Chopin**  
IMTA = CatlIMTA + AnaIMTA AND THE LINK BETWEEN THE TWO TYPES OF IMTA IS  
CULTIVATED, OR NATURALLY OCCURRING, AUTOTROPHIC ORGANISMS SUCH AS  
MACRO-ALGAE, MICRO-ALGAE AND AQUATIC PLANTS
- 8:45 Johan Johansen**, Lars Svenningsson, Hallstein Baarset, Shawn Robinson  
ECOINTENSIFICATION OF AQUACULTURE: VALORIZATION OF AQUACULTURE SIDE  
STREAMS – AN APPROACH TO THE CIRCULAR BIOECONOMY

SATURDAY

- 9:00 Dror L. Angel**  
IMTA – LESSONS LEARNED FROM NATURE
- 9:15 Shawn Robinson**, Marc Trudel, Chris McKindsey, Peter Cranford  
AQUATIC FARMING AND THE “OASIS EFFECT” ON THE DYNAMICS OF WILD-FARMED SPECIES INTERACTIONS
- 9:30 Øivind Strand**, Tore Strohmeier, Skye Woodcock, Pierre Chauvaud  
FISH FARMING ORGANIC EFFLUENTS AND A SCALLOP FISHERY
- 9:45 Christopher W. McKindsey**, Annick Drouin, Shawn M.C. Robinson, Émilie Simard  
LOBSTER MOVEMENT AROUND SALMON FARMS IN SOUTHEASTERN CANADA
- 10:00 BREAK**
- 10:30 Erin L. Rechisky**, David W. Welch, Aswea D. Porter, Stephen Johnston, Scott G. Hinch  
EXPOSURE TIME OF FREE-RANGING JUVENILE SOCKEYE SALMON TO ATLANTIC SALMON FARMS IN BRITISH COLUMBIA, CANADA
- 10:45 Marc Trudel**, Brent Wilson, James Hawkes, Chris McKindsey, Émilie Simard, Jon Carr, Jason Daniels, Fred Page  
MIGRATION OF ATLANTIC SALMON POST-SMOLTS AND THEIR INTERACTIONS WITH AQUACULTURE IN PASSAMAQUODDY BAY, NEW BRUNSWICK, CANADA
- 11:00 Kevin A. Glover**  
SPEAKING FROM THE “FLAGSHIP EXAMPLE” OF GENETIC INTERACTIONS BETWEEN DOMESTICATED ESCAPEES AND WILD CONSPECIFICS: WHAT DO WE KNOW, AND WHAT DON'T WE KNOW?
- 11:15 Sahar Mejri**, Cameron Luck, Matthew J. Ajemian, Aaron Adams, Jon Shenker, Travis Van Leeuwen, Paul Wills  
COMPARATIVE STUDY OF REPRODUCTIVE DEVELOPMENT IN WILD AND CAPTIVE-REARED BONEFISH *Albula vulpes*

## BIOFLOCS

Saturday, March 9 8:30 AM - 12:30 PM Salon D

Chairs: Yoram Avnimelech, Wujie Xu

- 8:30 Wujie Xu**, Yu Xu, Xiaojuan Hu, Haochang Su, Xiaoshuai Huang, Zhuojia Li, Guoliang Wen, Yucheng Cao  
APPLICATION OF BIOFLOC TECHNOLOGY IN DIFFERENT INTENSIVE MARICULTURE SYSTEMS FOR *Litopenaeus vannamei*
- 8:45 Yu Xu**, Wujie Xu, Xiaojuan Hu, Haochang Su, Xiaoshuai Huang, Zhuojia Li, Guoliang Wen, Yucheng Cao  
EFFECTS OF FEEDING FREQUENCY ON GROWTH AND DIGESTIVE PERFORMANCE OF *Litopenaeus vannamei* IN BIOFLOC-BASED ZERO-EXCHANGE INTENSIVE SYSTEMS
- 9:00 Liping Liu**  
EFFECTS OF ADDITION OF MAIZE STARCH ON THE YIELD, WATER QUALITY AND FORMATION OF BIOFLOCS IN AN INTEGRATED SHRIMP CULTURE SYSTEM

- 9:15 Nathan A. Kring**, Andrew J. Ray  
THE EFFECTS OF STOCKING DENSITY AND ARTIFICIAL SUBSTRATE ON PACIFIC WHITE SHRIMP *Litopenaeus vannamei* PRODUCTION AND WATER QUALITY DYNAMICS IN GREENHOUSE-BASED BIOFLOC SYSTEMS
- 9:30 April Surratt**, Nicholas Romano, Amit Kumar Sinha, Nathan Egnew  
ASSESSING THE FEASIBILITY OF BIOFLOC TECHNOLOGY TO LARGEMOUTH BASS *Micropterus salmoides*
- 9:45 Bartholomew W. Green**, Steven D. Rawles, Kevin K. Schrader, T. Gibson Gaylord, Matthew E. McEntire  
REDUCING DIETARY PROTEIN FOR HYBRID TILAPIA REARED IN THE BIOFLOC PRODUCTION SYSTEM AFFECTS FISH PERFORMANCE AND WATER QUALITY DYNAMICS
- 10:00 Nicholas Romano**  
AQUAMIMICRY: ATTEMPTING TO BALANCE BIOFLOCS WITH LIVE PLANKTON TO POTENTIALLY CREATE A MORE STABLE SYSTEM
- 10:15 BREAK**
- 10:30 Bin Xia**, Jinghua Chen, Yichao Ren, Yuquan Li  
REGULATION OF GROWTH, INTESTINAL MICROBIOTA, NON-SPECIFIC IMMUNE RESPONSE AND DISEASE RESISTANCE OF SEA CUCUMBER *Apostichopus japonicus* (SELENKA) IN BIOFLOC SYSTEMS
- 10:45 Fei Huang**, Luqing Pan  
DENITRIFICATION MECHANISM AND BIOINFORMATIC ANALYSIS OF HETEROTROPHIC NITRIFICATION AND AEROBIC DENITRIFICATION BACTERIA FROM SHRIMP MARICULTURE PONDS
- 11:00 Jun Xie**, Er-meng Yu, Yun Xia  
ANALYSIS OF BACTERIAL COMMUNITY STRUCTURE OF BIO-FLOC BY PCR-DGGE AND NEW APPLICATION
- 11:15 Menaga Meenakshisundaram**, Felix Sugantham, Gopalakannan Ayyaru, Charulatha Muthukumar  
*IN VITRO* PROBIOTIC PROPERTIES OF *Bacillus* sp. ISOLATED FROM BIOFLOC REARED GENETICALLY IMPROVED FARMED TILAPIA *Oreochromis niloticus*
- 11:30 Yira Jimenez**, Felipe Collazos  
COMPOSITION AND BACTERIAL DYNAMIC IN A WHITE CACHAMA CULTURE *Piaractus brachypomus* WITH BIOFLOC TECHNOLOGY TO THREE DIFFERENT NITROGEN CARBON RATIOS
- 11:45 Felix Sugantham**, Menaga Meenakshisundaram, Gopalakannan Ayyaru, Charulatha Muthukumar  
METAGENOMIC ANALYSIS OF MICROBIAL POPULATION IN *IN SITU* AND *EX SITU* BIOFLOC IN THE FRESHWATER GIFT TILAPIA CULTURE
- 12:00 Aya S. Hussain**, Deyaaedin A. Mohammad, Elham M. Ali, Wafaa S. Sallam  
NUTRIENT OPTIMIZATION FOR THE PRODUCTION OF MICROBIAL FLOCS IN BIOREACTORS
- 12:15 Tung Hoang**, Chinh Minh Le, Hieu Chi Pham  
SUCCESSFUL APPLICATION OF FUNCTIONAL BIOFLOCS IN COMMERCIAL FARMING OF WHITELEG SHRIMP *Penaeus vannamei* IN VIETNAM

# SOCIO-ECOLOGICAL APPROACHES AND QUALITATIVE METHODS IN SHELLFISH MANAGEMENT

Saturday, March 9 8:30 AM - 2:30 PM Balcony L

Chair: Sean MacDonald

- 8:30 P. Sean McDonald**, Bridget E. Ferriss, Jonathan C.P. Reum  
SOCIO-ECOLOGICAL APPROACHES AND QUALITATIVE METHODS TO ADDRESS  
ISSUES IN THE MANAGEMENT OF SHELLFISH AQUACULTURE AND FISHERIES
- 8:45 Taylor Goelz**, Troy Hartley, Andrew Scheld, Mark Brush, Inga Carboni,  
Elizabeth North, Michael Wilberg, Jeff Blair, Robert Jones, Jeffrey Cornwell,  
Raleigh Hood, Lisa Wainger  
HUMAN DIMENSIONS OF A PARTICIPATORY MODELING PROCESS IN THE  
CHESAPEAKE BAY
- 9:00 Bridget Ferriss**, Jonathan C.P. Reum, Beth L. Sanderson, P. Sean McDonald  
EVALUATING THE SUSTAINABLE DEVELOPMENT OF SHELLFISH AQUACULTURE  
FROM A SOCIAL-ECOLOGICAL PERSPECTIVE
- 9:15 Jonathan C.P. Reum**, P. Sean McDonald, Kirstin H. Holsman, Chris Long  
A QUALITATIVE MODELING APPROACH TO ASSESS THE POTENTIAL EFFECTS OF  
MANAGEMENT ACTIONS AND ENVIRONMENTAL CHANGES ON PROBILOF ISLAND  
BLUE KING CRAB *Paralighodes platypus*
- 9:30 Carrie Byron**, Eric Chapman, Di Jin, Tracey Dalton  
AN INTEGRATED ECOLOGICAL AND ECONOMIC MODEL APPROACH FOR  
EVALUATING ECOSYSTEM SERVICES
- 9:45 Katharine F. Wellman**  
ECONOMIC, SOCIAL AND ENVIRONMENTAL BENEFITS OF SHELLFISH  
AQUACULTURE
- 10:00 BREAK**
- 10:30 Melina Kourantidou**, Brooks A. Kaiser  
CAPITAL INVESTMENTS FOR THE NORWEGIAN RED KING CRAB: A TALE OF  
ECOLOGICAL AND COMMUNITY RESILIENCE
- 10:45 Melina Kourantidou**, Brooks Kaiser  
INVASIVE CRAB SPECIES IN THE BARENTS SEA: STAKEHOLDER PERCEPTIONS,  
INCENTIVES, AND PATH DEPENDENCIES
- 11:00 Julia Bingham**, Grant Murray, Luke Fairbanks  
GROWTH AND OPPORTUNITY, BUT FOR WHOM? AQUACULTURE NARRATIVES  
OF DOWN EAST, NORTH CAROLINA
- 11:15 Elizabeth Darrow**, Troy Alphin, Martin Posey, Susanne Brander, Brandon Puckett,  
Suzanne Bricker, João Ferreira, Jessica Kinsella, Madison Lytle, Kelsey Billet,  
Alhambra Cubillo  
DECISION SUPPORT FOR DEVELOPMENT OF OYSTER MARICULTURE WITHIN AN  
ESTUARINE RESERVE
- 11:30 Hannah Brown**, Susan Jacobson  
THE FUTURE OF GULF OYSTER MANAGEMENT: STAKEHOLDER PREFERENCES  
FOR FUTURE MANAGEMENT OUTCOMES

SATURDAY

## MOLLUSC HEALTH AND DISEASES – PART 2

Saturday, March 9 8:30 AM - 3:15 PM Balcony K

Chairs: Ryan Carnegie, Lydia Bienlien

- 8:30 Benjamin Morga**, Sandy Picot, Nicole Faury, Bruno Chollet, Lionel Degrémont, Marie-Agnès Travers, Tristan Renault, Isabelle Arzul  
A CELLULAR APPROACH TO STUDY AUTOPHAGY IN HAEMOCYTES OF THE PACIFIC OYSTER *Crassostrea gigas*
- 8:45 Annie Schatz**, Jan McDowell, Emily B. Rivest  
DOES SALINITY EXPERIENCE DURING THE LARVAL STAGE IN HATCHERIES IMPACT GROWTH AND PHYSIOLOGICAL PERFORMANCE OF JUVENILE EASTERN OYSTERS *Crassostrea virginica*?
- 9:00 Caroline Schwaner**, Michelle Barbosa, Tae-Jin Park, Peter Connors, Andrew Griffith, Christopher Gobler, Emmanuelle Pales Espinosa, Bassem Allam  
OCEAN ACIDIFICATION INCREASES SUSCEPTIBILITY TO INFECTION OF *Crassostrea virginica* AND *Mercenaria mercenaria* BY *Vibrio* spp.
- 9:15 M. Victoria Agnew**, Colleen A. Burge, M. Portmann, C.S. Friedman, C. Langdon, K. Divilov, B. Schoolfield, B. Morga, L. Degremont, A.K. Dhar, P. Kirkland, B. Dumbauld  
INVESTIGATING THE RELATIONSHIP BETWEEN VIRAL COPY NUMBER AND PERFORMANCE OF OYSTERS EXPOSED TO MULTIPLE VARIANTS OF OSHV-1
- 9:30 Benjamin Morga**, Sandy Picot, Nicole Faury, Camille Pelletier, Bruno Chollet, Lionel Dégremont, Tristan Renault, Isabelle Arzul  
MONITORING OF THE AUTOPHAGY PATHWAY IN *Crassostrea gigas* DURING AN EXPERIMENTAL OshV-1 INFECTION
- 10:00 BREAK**
- 10:30 Erin M. Roberts**, Dina Proestou, Gary Wikfors, Tal Ben Horin, Kathryn Markey-Lundgren, Marta Gomez-Chiari  
APOPTOSIS PHENOTYPE AND GENE EXPRESSION IN RESPONSE TO THE PARASITE *Perkinsus marinus* IN THE EASTERN OYSTER *Crassostrea virginica*
- 10:45 Ieva Roznere**, Brandon T. Sinn, G. Thomas Watters  
DIFFERENTIAL GENE EXPRESSION BETWEEN WILD AND CAPTIVE FRESHWATER MUSSELS
- 11:00 Konstantin Divilov**, Blaine Schoolfield, Benjamin Morga, M. Victoria Agnew, Colleen A. Burge, Lionel Degremont, Daniel Mancilla Cortez, Carolyn S. Friedman, Gary B. Fleener, Brett Dumbauld, Chris Langdon  
GENETIC RESISTANCE TO TWO STRAINS OF OSHV-1 IN ELITE PACIFIC OYSTER FAMILIES
- 11:15 Eric Guévelou**, Jessica M. Small, Standish K. Allen Jr.  
NEAR INFRARED REFLECTANCE (NIR) SPECTROSCOPY TO QUANTIFY *Perkinsus marinus* IN *Crassostrea virginica* TISSUES: FEASIBILITY STUDY
- 11:30 Thao V. Nguyen**, Andrea C. Alfaro  
SHOWCASES OF METABOLOMICS APPLICATIONS TO CHARACTERIZE PATHOGEN INFECTIONS AND POLLUTANT-INDUCED STRESS IN MARINE BIVALVES

- 11:45 Kyoung-Mi Won**, Mi-Young Cho, Na-Young Kim, Ji-Hyun Yu, Yeong-Jun Choi, Sung-Hee Jung  
DEVELOPMENT OF THE DIAGNOSTIC KIT TO DETECT AND DIVIDE OF THE OsHV-1 *Ostreid herpesvirus 1* ISOLATED FROM CULTURED BIVALVES IN KOREA
- 12:00 Colleen A. Burge**, Stanley Langevin, Collin J. Closek, Carolyn S. Friedman  
GENOME SEQUENCING OF THE OSTREID HERPESVIRUS 1 INFECTING OYSTERS IN TOMALES BAY, CALIFORNIA
- 12:15 DISCUSSION**

## OFFSHORE AQUACULTURE

Saturday, March 9 8:30 AM - 3:15 PM Galleries 3  
Chairs: Neil Sims, Scott Lindell

- 8:30 Neil Anthony Sims**  
YES, THE FUTURE IS NOW FOR OFFSHORE AQUACULTURE! SO WHY ARE SO MANY OCEAN eNGOs STUCK IN THE PAST?
- 8:45 Dennis J. Peters**, Neil A. Sims, Lisa D. Vollbrecht  
THE VELELLA EPSILON PROJECT: PIONEERING OFFSHORE AQUACULTURE IN THE SOUTHEASTERN GULF OF MEXICO; CHAPTER 1 – PROJECT PERMITTING
- 9:00 Miguel Castellanos-Rico**, Miguel A. Cisneros-Mata, Steve Gaines, Garrett Goto, Adam Sachs, Andrew Steinkruger, Matthew Warham  
DRIVING SUSTAINABILITY IN THE GULF OF CALIFORNIA: FISHERY MANAGEMENT AND OFFSHORE CULTIVATION FOR TOTOABA *Totoaba macdonaldi*
- 9:15 Rodrigo Sánchez Raccaro**  
SPECIFIC ADVANCES OF THE TECHNOLOGY AVAILABLE FOR FISH FARMING OFF-SHORE
- 9:30 Tyler Sclodnick**, Langley Gace  
FULL PRODUCTION CYCLE ENVIRONMENTAL AND ECONOMIC IMPACTS OF BRASS MESH USED ON OPEN OCEAN AQUACULTURE PENS
- 9:45 Michael Chambers**, Corey Sullivan, Rob Swift, Igor Tsukrov, Chris Duffy, Erik Chapman  
COMMERCIAL SCALE OFFSHORE AQUACULTURE DEMONSTRATION, TRAINING AND PERMITTING ASSISTANCE TO INCREASE STEELHEAD TROUT AND BLUE MUSSEL PRODUCTION IN NEW ENGLAND
- 10:00 BREAK**
- 10:30 Lindsay Cruver**  
CHALLENGES AND BREAKTHROUGHS IN OFFSHORE MUSSEL AQUACULTURE IN THE U.S.
- 10:45 Everard Ashworth**, Oscar Pena, Brian Pendleton, Doug Bush, Linda Santchi, Ralph Imondi, Richard W. Parsons, Brooke Ashworth, Paul Olin, Diane Windham, Scott Lindell  
VENTURA SHELLFISH ENTERPRISE: IMPLEMENTING AN INTEGRATIVE MODEL FOR NEW SHELLFISH AQUACULTURE PERMITTING AND PRODUCTION IN CALIFORNIA

- 11:00 Kevin Heasman**, Nicholas Scott, Bela H. Buck, Malcolm Smeaton  
SUGGESTED PRE-REQUISITES FOR DEVELOPING OPEN OCEAN SHELLFISH AND SEAWEED CULTURE
- 11:15 Zhaoqing Yang**, Taiping Wang, Alicia Gorton, Jonathan Whiting, Gabriel Medina-Garcia, Molly Grear, Luca Castrucci, Kevin Haas, Martin Jang, Phillip Wolfram, Mathew Maltrud, Riley Brady, Dan Cox, Solomon Yim, Ming Chen  
MULTI-RESOLUTION, MULTI-SCALE MODELING FOR SCALABLE MACROALGAE PRODUCTION
- 11:30 Vincent Doumeizel**  
AQUACULTURE GOING OFFSHORE: MULTI-USE OF THE OCEAN AND THE SEAWEED CASE STUDY
- 11:45 Deniz R. Akin**, Neil A. Sims, Lisa Vollbrecht, Keelee J. Martin, Greg Rocheleau, Florian Hillenhagen, Donald Lasser, Carolina Camus, Alejandro Buschmann, Charley O’Kelly, Alexander Goldberg  
BLUE FIELDS: OPEN-OCEAN ARRAY FOR HIGH-YIELD MACROALGAE CULTURE
- 12:00 Tobias Dewhurst**, David W. Fredriksson, Andrew Drach, Adam T. St. Gelais, Barry Costa-Pierce, Kathryn Johndrow  
DYNAMIC FINITE ELEMENT MODELING OF A MACROALGAE LONGLINE SEGMENT
- 12:30 LUNCH**
- 1:30 Andrea Copping**, Michael Huesemann, Zhaoqing Yang, Taiping Wang, Jonathan Whiting, Jason C. Quinn, Jonah Greene, Jascha Gulden, Geoff Wood, Tom Mumford, Ming Chen, Solomon Yim  
DEVELOPMENT OF THE OCEAN NOMAD (NAUTICAL OFFSHORE MACROALGAL AUTONOMOUS DEVICE) FOR LOW-COST PRODUCTION OF BIOMASS FOR FOOD, FEEDS, AND FUELS
- 1:45 Tom W. Bell**, Kyle Cavanaugh, Robert Miller, Nicholas Nidzieko, Norman Nelson, Daniel Reed, David Siegel  
THE SCALABLE AQUACULTURE MONITORING SYSTEM (SAMS): AN AUTONOMOUS SYSTEM TO MONITOR THE QUANTITY AND QUALITY OF A LARGE-SCALE KELP FARM
- 2:00 Erin Fischell**, Daniel Gomez-Ibanez, Matthew Grund, Amy Kukulya, Andone Lavery, Timothy Stanton  
INTEGRATED MONITORING OF MACROALGAE FARMS USING AUTONOMOUS SENSING
- 2:15 Clifford A. Goudey**, Joseph A. Curcio, William A. Lincoln, Donald MacPherson, Domenic Manganelli, Hans J. Goudey, Hauke Kite-Powell  
APPLICATIONS OF AUTONOMY AND ULTRA-EFFICIENCY IN AQUACULTURE
- 2:30 Langley Gace**  
A COMPLETE AND FULLY INTEGRATED SOLUTION FOR OPEN OCEAN AQUACULTURE

# INTERPRETATION OF MOLECULAR DATA – IMPACTS ON AQUATIC ANIMAL HEALTH MANAGEMENT

Saturday, March 9 8:30 AM - 3:30 PM Salon A

Chair: Katie Haman, Pat Gaunt

- 8:30 Cova Arias**  
GENERAL INTRO TO MOLECULAR TOOLS, THEIR EVOLUTION, EASE OF USE, AND DIFFICULTIES INTERPRETING DATA
- 9:00 Jim Parsons**  
FROM A FARMER'S PERSPECTIVE: ADVANTAGES, DISADVANTAGES, LIMITATIONS TO MOLECULAR TOOLS
- 9:15 Wendy Olson**  
GREAT ADVANTAGES, BUT AT WHAT COST? THE PROS AND CONS OF RELYING ON MOLECULAR DIAGNOSTICS IN THE NEW ERA OF TECHNOLOGY
- 9:30 Kevin Snekvik**  
LABORATORY PILLARS NEEDED TO DEFINE MOLECULAR DIAGNOSTICS TESTING FOR POLICY DECISIONS
- 9:45 Kevin Snekvik**  
BENEFITS OF INTEGRATING MULTIPLE TESTING MODALITIES FOR POLICY DECISIONS
- 10:00 BREAK**
- 10:30 Kathleen Hartman**  
THE CHALLENGES OF REGULATING MOLECULAR SCIENCE
- 10:45 Jeffrey Hill**  
LESSONS LEARNED FROM eDNA WORLD
- 11:00 Justin Sanders**  
PRACTICAL APPLICATIONS OF eDNA IN FISH HEALTH
- 11:30 Jill Rolland**  
PRV CASE STUDY – THE SCIENCE BEHIND PRV
- 12:00 Jim Parsons, Jill Rolland**  
PRV CASE STUDY – THE POLICY BEHIND PRV
- 12:15 LUNCH**
- 1:30 Sebastian Belle**  
ISAV CASE STUDY
- 2:00 Nilima Renukdas, Anita Kelly**  
TRANSCRIPTOME PROFILING OF LARGEMOUTH BASS *Micropterus salmoides*
- 2:15 Aran Dhar**  
INVERT SPECIFIC
- 2:45 Katie Haman, Pat Gaunt**  
CONCLUDING PRESENTATION
- 3:00 PANEL DISCUSSION**

SATURDAY



# MOLLUSC RESTORATION

Saturday, March 9 8:30 AM - 5:00 PM Balcony I

Chairs: Kay McGraw, Megan Le Peyre

- 8:30 Kay McGraw**, Megan La Peyre  
MOLLUSC RESTORATION – AN INTRODUCTION TO THE SESSION
- 8:45 Peter R. Kingsley-Smith**, Gary W. Sundin, Benjamin W. Stone  
FROM BIG BOATS TO MUDDY BOOTS TO UNMANNED AIRCRAFT; MORE THAN 125 YEARS OF OYSTER REEF MONITORING EFFORTS IN SOUTH CAROLINA, USA
- 9:00 Alix Laferriere**, Brianna Group  
OYSTER RESTORATION BY DESIGN IN THE GREAT BAY ESTUARY, NEW HAMPSHIRE
- 9:15 Emma Cochran**  
OYSTER REEF RESTORATION AND EDUCATION THROUGH OYSTER GARDENING
- 9:30 David B. Eggleston**, Seth Theuerkauf, Brandon Puckett  
INTEGRATING ECOSYSTEM SERVICE CONSIDERATIONS WITHIN A GIS-BASED HABITAT SUITABILITY INDEX FOR OYSTER RESTORATION
- 10:00 BREAK**
- 10:30 Stephen P. Geiger**  
DOES MAGNITUDE, PERSISTENCE, OR LOCATION MATTER MOST? RESTORATION AND ENHANCMENT OF BAY SCALLOPS IN FLORIDA
- 10:45 Robert Isdell**, Donna Bilkovic, Amanda Guthrie  
USING ECOLOGICAL CONNECTIVITY TO INFORM BIVALVE RESTORATION TARGET LOCATIONS ALONG CHESAPEAKE BAY SHORELINES
- 11:00 Emily Read**  
MODELING SUITABLE SITES FOR OLYMPIA OYSTER RESTORATION
- 11:15 Julieta C. Martinelli**, Beth Sanderson, Jaqueline L. Padilla-Gamiño  
CONSERVATION PALEOBIOLOGY AS A TOOL TO SUPPORT OLYMPIA OYSTER RESTORATION IN WASHINGTON STATE
- 11:30 Erin M. Winslow**  
IMPACTS OF NATURAL DISASTERS ON WETLANDS AND *Ostrea lurida* POPULATIONS IN SANTA BARBARA, CALIFORNIA AND FUTURE IMPLICATIONS FOR MANAGEMENT
- 11:45 Phil Bloch**, Marlene Meaders, Chris Czielsa  
GROWING OYSTERS IN THE CONTEXT OF ECOSYSTEM RESTORATION: CHALLENGES AND OPPORTUNITIES
- 12:00 Katie Nichols**, Danielle Zacherl, Christine Whitcraft  
INTEGRATED OYSTER AND EELGRASS RESTORATION IN NEWPORT BAY, CALIFORNIA
- 12:30 LUNCH**
- 1:30 Chet F. Rakocinski**, Virginia R. Flear, Leah M. Morgan  
THE ROLE EARLY RECRUITMENT OF *Crassostrea virginica* RELATIVE TO OYSTER REEF RESTORATION IN MISSISSIPPI SOUND

- 1:45 Rochelle D. Seitz**, Melissa A. Karp, Mary C. Fabrizio  
ECOSYSTEM SERVICES OF RESTORED OYSTER REEFS: MACROFAUNAL COMMUNITIES IMPROVE WITH HABITAT COMPLEXITY
- 2:00 Bailie Lavan**, Patrice Ludwig  
AN APPROACH TO OYSTER REEF RESTORATION: EXAMINING THE EFFECT OF INTERSTITIAL SPACE ON EASTERN OYSTERS *Crassostrea virginica*
- 2:15 Kennedy Paynter**, Jake Schlenoff, Sophie Stypeck, Drew Needham, Anna Davis, Audrey McDowell, Sara Lombardi  
IS SHELL INTEGRITY AN IMPORTANT FACTOR THAT ALLOWS THE EASTERN OYSTER *Crassostrea virginica* TO TOLERATE LOW DISSOLVED OXYGEN LEVELS?
- 2:30 Meghan J. Martinez**, Terry A. Palmer, Natasha Breaux, Jennifer Beseres Pollack  
REBUILDING RESILIENT HABITAT: INFLUENCE OF OYSTER REEF RESTORATION ON DEVELOPMENT OF OYSTERS, INFAUNA AND REEF-ASSOCIATED MACROFAUNA IN ST. CHARLES BAY, TEXAS
- 2:45 Abby E. Williams**, Terence A. Palmer, Jonathan H. Grabowski, Jennifer Beseres Pollack  
ESTIMATING ENHANCEMENT OF FAUNAL PRODUCTION RESULTING FROM OYSTER REEF RESTORATION
- 3:00 Daniel Petrolia**, Just Cebrian, William Walton, Ardian Harri, Frederick Nyanzu, Jamie Amato  
ESTIMATING ECOSYSTEM SERVICES FOR OYSTERS USING EXPERT ELICITATION
- 3:15 Vincent Encomio**, Glenn Coldren  
MEASUREMENT OF SEDIMENT ELEVATION CHANGES DUE TO LIVING SHORELINE OYSTER REEFS
- 3:30 John Carroll**, Stephen Tettelbach, Bradley Peterson  
THINKING OUTSIDE THE BOX: LEVERAGING FUNCTIONAL REDUNDANCY TO SELECT ALTERNATIVE SPECIES FOR ECOSYSTEM RESTORATION
- 3:45 Laura Rogers-Bennett**, Kristin Aquilino, Cynthia Catton, Shelby Kawana, Ben Walker, Emily Hubbard, Katharine Magana, Blythe Marshman, James Moore, Ian Taniguchi, Kirsten Gilardi, Gary Cherr  
WORKING TO SAVE THE ENDANGERED WHITE ABALONE *Haliotis sorenseni* USING A COLLABORATIVE RESTORATION PROGRAM IN CALIFORNIA
- 4:00 Romuald N. Lipcius**  
CAUSE OF COLLAPSE AND RESTORATION OF THE ICONIC OYSTER FISHERY IN APALACHICOLA BAY, FLORIDA
- 4:15 Erin Olson**, Emily Baukema, Emily Craft, Brian Callam  
DEVELOPMENT OF PROTOCOLS AND HATCHERY SYSTEMS MADE AT THE MICHAEL C. VOISIN OYSTER HATCHERY IN GRAND ISLE, LOUISIANA TO PROMOTE LARVAL AND ALGAL QUALITY AND QUANTITY
- 4:30 Tyler Ortego**, Robert Beine, Steven Hall, Matthew Campbell  
USING OYSTER CULTURE FOR COASTAL RESILIENCE INFRASTRUCTURE: A BUSINESS MODEL APPROACH
- 4:45 Laura H. Spencer**, Katherine Silliman, Yaamini R. Venkataraman, Steven Roberts  
EFFECTS OF PARENTAL LOW PH EXPOSURE ON GONADAL AND LARVAL GENE EXPRESSION IN THE OLYMPIA OYSTER *Ostrea lurida*

# ZEBRAFISH HUSBANDRY – PART 2

Saturday, March 9 8:30 AM - 5:00 PM Balcony M

Chair: Bobbi Baur

## BASIC HUSBANDRY SESSION

**8:30 George Sanders**  
WATER QUALITY – MAINTENANCE AND MONITORING

**9:00 Rory Francis**  
FEEDING

**9:30 Stephen Canter**  
QUARANTINE

**10:00 BREAK**

## FISH DISEASES SESSION

**10:20 Justin Sanders**  
TRANSMISSION DYNAMICS OF *Pseudocapillaria tomentosa* AND THE IMPLICATIONS ON DETECTION

**10:40 Michael Kent**  
UPDATE ON THE USE OF EMAMECTIN FOR TREATING PSEUDOCAPILLARIA

**10:55 Chris Whipps**  
THE ROLE OF BIOFILMS IN MYCOBACTERIOSIS IN ZEBRAFISH

**11:15 Carolyn Chang**  
TRANSMISSION OF *MYCOBACTERIUM* spp. TO ZEBRAFISH THROUGH THREE LIVE FEEDS

**11:35 Sean Spagnoli**  
BUYER BEWARE: A SURVEY OF COMMERCIALY-SOURCED ZEBRAFISH UTILIZED IN NEUROBEHAVIORAL RESEARCH

**11:55 Marcus Crim**  
EMERGING VIRAL INFECTIONS OF LABORATORY ZEBRAFISH

**12:15 Tannia Clark**  
HEALTH ASSESSMENT OF INDIVIDUAL FISH IN TANKS

**12:30 LUNCH**

## GENERAL WORKSHOP SESSION

**1:30 JP Mocho**  
FELASA-AALAS FISH HEALTH WORKING GROUP UPDATE

**2:00 Anusha K.S. Dhanasiri**  
ACCLIMATION OF ZEBRAFISH TO TRANSPORT STRESS

**2:20 Christopher Green**  
ANTICIPATE THE UNEXPECTED: WHEN DISASTER STRIKES

**3:00 Allan Kalueff**  
ENVIRONMENTAL FACTORS AND HOW THEY AFFECT ADULT ZEBRAFISH BEHAVIORS

SATURDAY

**3:30 Chris Lawrence**, Steve Watts  
ORIP RIGOR EFFORTS UPDATE

**KEYNOTE SPEAKER**

**4:00 Philip Stark**  
PREPRODUCIBILITY: WHAT MAY WE, WITH ADVANTAGE, OMIT?

**5:00 Town Hall Meeting in Riverview 1 Room on 41<sup>st</sup> Floor**  
TOWN HALL MEETING – RESEARCH AND HUSBANDRY ARE INTERNATIONAL ENDEAVORS

**TILAPIA**

Saturday, March 9 8:30 AM - 5:00 PM Galleries 2  
Chair: Kevin Fitzsimmons

- 8:30 Nassrin Mashaii**, Farhad Rajabipour, Mohammad Jafari, Habib Sarsangi, Mohammad Mohammadi  
LIMNOLOGICAL STUDY OF EARTH PONDS OF TILAPIA CULTURE
- 8:45 Farhad Rajabipour**, Nassrin Mashaii, Mohammad Jafari, Mohammad Mohammadi, Habib Sarsangi  
CAGE CULTURE OF TILAPIA IN FRESH AND BRACKISH WATER RESOURCES
- 9:00 Ademola Akinsorotan**  
BEHAVIOURAL AND MORPHOLOGICAL ASSESSMENT OF PARAQUAT TOXICITY ON JUVENILES OF NILE TILAPIA *Oreochromis niloticus*
- 9:15 Antonio Campos-Mendoza**  
THE HISTORY AND ADVANCEMENTS OF TILAPIA CULTURE IN LATIN AMERICA AND CARIBBEAN COUNTRIES
- 9:30 Shahid Mahboob**, Khalid Al-Ghanim, Zubair Ahmed, Norah Al-Mulham  
PARTICLE BOUND POLLUTANTS IN SUSPENDED SEDIMENTS AND TILAPIA IN WATER RESERVOIR IN RIYADH, SAUDI ARABIA
- 9:45 Seonghun Won**, Wonsuk Choi, Ali Hamidoghli, Jinho Bae, Sungchul C. Bai  
EFFECTS OF DIFFERENT DIETARY PROBIOTICS ON GROWTH PERFORMANCE AND IMMUNE RESPONSES IN JUVENILE NILE TILAPIA *Oreochromis niloticus*
- 10:00 BREAK**
- 10:30 João Fernando Albers Koch**, Nycolas Levy Pereira  
EFFECTS OF BETA-GLUCANS AND OXYTETRACYCLINE ON THE PERFORMANCE AND MORTALITY OF NILE TILAPIA *Oreochromis niloticus*
- 10:45 Ryan A. Mass**, Kurt Dieker, Charles Gallop, Jesse Spooner, Jeremy Javers, HW Harris, Steve Craig  
GROWTH OF NILE TILAPIA *Oreochromis niloticus* IS SUPPORTED BY DIETS WHERE SOYBEAN MEAL IS SUBSTITUTED WITH HIGHER PROTEIN / LOWER FIBER DISTILLERS DRIED GRAINS
- 11:00 Kenneth Saillant**, Destin Furnas, Aparna Biswas, Madison Bieber, Ahmed Mustafa  
EFFECTS OF PREBIOTIC AND PROBIOTIC SUPPLEMENTATION ON PHYSIOLOGICAL AND IMMUNOLOGICAL PARAMETERS OF NILE TILAPIA *Oreochromis niloticus* RAISED IN A RECIRCULATING AQUACULTURE SYSTEM

- 11:15 Kenneth Saillant**, Destin Furnas, Aparna Biswas, Madison Bieber, Ahmed Mustafa  
EVALUATION OF INULIN PREBIOTIC AND PROBIOS® PROBIOTIC SUPPLEMENTATION ON GROWTH PERFORMANCE OF NILE TILAPIA *Oreochromis niloticus* RAISED IN A RECIRCULATING AQUACULTURE SYSTEM
- 11:30 Destin Furnas**, Cecelia Smith, Austin Petras, Ahmed Mustafa  
THE EFFECTS OF ISOFLAVONE EXTRACTS ON THE MODULATION OF STRESS, IMMUNE HEALTH, AND GROWTH IN NILE TILAPIA *Oreochromis niloticus*
- 11:45 Menaga Meenakshisundaram**, Felix Sugantham, Gopalakannan Ayyaru  
SCREENING OF A BIODEGRADABLE POLYMER, POLYHYDROXY BUTYRATE (PHB) ACCUMULATING BACTERIA FROM THE BIOFLOC BASED GIFT TILAPIA PONDS
- 12:00 Jorge M.O. Fernandes**, Ioannis Konstantinidis, Caroline Pohlmann, Thomas Tsoulia, Hannes Liedtke  
DIFFERENCES IN LIVER HYDROXYMETHYLOMES OF NILE TILAPIA WITH DISTINCT GROWTH RATES
- 12:15 Ainulyakin H. Imlani**, Cherry Nian, Larah Dianna May S. Duyanan, Queenie A. Matriano, Samiya U. Damsik, Braisam T. Salahuddin  
EFFECTS OF DIFFERENT GRADED LEVELS OF HORSE RADISH *Moringa oleifera* ON THE GROWTH AND SURVIVAL RATE OF GET EXCEL TILAPIA FRY
- 12:30 LUNCH**
- 1:30 Steve Amisah**, Nathaniel Adjei Gyasi, Daniel Adjei-Boateng, Eгна Hillary, Emmanuel Anokye Frimpong  
RESPONSE OF POND WATER QUALITY TO VARYING PROTEIN LEVELS DURING PRODUCTION OF NILE TILAPIA *Oreochromis niloticus* IN EARTHEN PONDS IN GHANA
- 1:45 Ioannis Konstantinidis**, Pål Sætrom, Artem V. Nedoluzhko, Jorge M.O. Fernandes  
TISSUE-SPECIFIC HYDROXYMETHYLOME PROFILES OF NILE TILAPIA *Oreochromis niloticus* AT SINGLE NUCLEOTIDE RESOLUTION
- 2:00 Bowei Li**, Xiang Xu  
THE DEVELOPMENT AND TECHNICAL EFFICIENCY OF TILAPIA PROCESSING INDUSTRY AND ITS INFLUENCING FACTORS – EVIDENCE FROM 16 LISTED COMPANIES AND 4 PROVINCES WHICH MAINLY PRODUCT TILAPIA IN CHINA
- 2:15 Lanre Badmus**, Muinat M. Bello, Ndubisi Aviara Aviara, Ademola Kabir Aremu  
THIN LAYER DRYING KINETICS OF TILAPIA *Oreochromis niloticus* IN CONVENTIONAL AND HYBRID SOLAR DRYERS DURING THE WET SEASON
- 2:30 Cedric Simon**, David Blyth, Nurul Ahmad Fatan, Sharon Suri  
MICROBIAL BIOMASS (NOVACQ™) STIMULATES FEEDING AND IMPROVES THE GROWTH PERFORMANCE ON EXTRUDED LOW TO ZERO-FISHMEAL DIETS IN TILAPIA (GIFT STRAIN)
- 2:45 Samwel M. Limbu**, Li Zhou, Sheng-Xiang Sun, Mei-Ling Zhang, Zhen-Yu Du  
CHRONIC EXPOSURE TO LOW ENVIRONMENTAL CONCENTRATIONS AND LEGAL AQUACULTURE DOSES OF ANTIBIOTICS CAUSE SYSTEMIC ADVERSE EFFECTS IN NILE TILAPIA *Oreochromis niloticus* AND PROVOKE DIFFERENTIAL HUMAN HEALTH RISK

- 3:00 Lindee Mason**, Destin Furnas, Cecelia Smith, Ahmed Mustafa  
MEETING CHALLENGES IN AQUACULTURE: NUTRACEUTICALS USED TO IMPROVE FISH PHYSIOLOGY AND GROWTH OF STRESSED *Oreochromis niloticus*
- 3:15 Kevin Fitzsimmons**  
GLOBAL DEVELOPMENTS AND MARKET TRENDS FOR TILAPIA IN 2019
- 3:30 R. S. N. Janjua**, Sehar Munawar, Shafaq Fatima  
JOURNEY FROM INTRODUCTION TILL LOCAL PRODUCTION OF SOY-BASED FLOATING EXTRUDED AQUAFEED IN PAKISTAN; A REVOLUTION IN AQUACULTURE INDUSTRY
- 3:45 Abdul Mateen**  
VARIATION IN LYSOZYME ACTIVITY, IMMUNITY AND GROWTH RESPONSE AS INFLUENCED BY DIETARY SUPPLEMENTATION OF ZEOLITE IN NILE TILAPIA *Oreochromis niloticus*
- 4:00 Farkhanda Manzoor**, Ghazala Jabeen, Jaweria Omer  
ASSESSMENT OF NUTRITIVE POTENTIAL OF TERMITES AS PROTEIN SUPPLEMENT IN TILAPIA *Oreochromis niloticus*

## LARGE MOUTH BASS

Saturday, March 9 8:30 AM - 5:00 PM Galleries 5

Chair: Jim Tidwell

- 8:30 Phillip W. Bettoli**, Leandro E. Miranda  
LARGEMOUTH BASS NATURAL LIFE HISTORY
- 8:45 Leigh Anne Bright**, John G. Nickum, James H. Tidwell  
HISTORY OF LARGEMOUTH BASS CULTURE
- 9:00 Chengyue Liu**, Yangen Zhou  
LARGEMOUTH BASS *Micropterus salmoides* PRODUCTION IN CHINA
- 9:15 Joe Tomasso**  
ENVIRONMENTAL REQUIREMENTS FOR THE CULTURE OF LARGEMOUTH BASS
- 9:30 Ken Semmens**, Shawn Coyle, Boris Gomelsky  
REPRODUCTION OF LARGEMOUTH BASS
- 9:45 Eric Peatman**, Boris Gomelsky, Kenneth Semmens, Shawn Coyle, Michael Matthews  
REPRODUCTION AND GENETICS IN LARGEMOUTH BASS
- 10:00 BREAK**
- 10:30 Shawn D. Coyle**, Mike Matthews  
PRODUCTION OF FEED TRAINED LARGEMOUTH BASS FINGERLINGS: NURSERY PHASE THROUGH FEED TRAINING
- 10:45 Michael Matthews**, Shawn Coyle, Rick Stout  
FLEXIBILITY IN INTENSIVE LARGE-SCALE BASS PRODUCTION
- 11:00 Waldemar Rossi Jr.**, Habte-Michael Habte-Tsion  
A REVIEW ON LARGEMOUTH BASS *Micropterus salmoides* NUTRITION

- 11:15 James Tidwell**, Shawn Coyle, Leigh Anne Bright  
LARGEMOUTH BASS *Micropterus salmoides* FEEDS AND FEEDING – A REVIEW
- 11:30 Kathryn Mitchell**, Robert Durborow  
COMMON DISEASES OF LARGEMOUTH BASS: BOOK CHAPTER THAT INCLUDES LMB DISEASE CASES SUBMITTED TO KENTUCKY STATE UNIVERSITY FISH DISEASE DIAGNOSTIC LABORATORY OVER ITS 28-YEAR HISTORY
- 11:45 Shawn D. Coyle**, Todd S. Harmon  
HARVEST AND TRANSPORT OF LARGEMOUTH BASS
- 12:00 Angela Caporelli**  
MARKETING LARGEMOUTH BASS
- 12:15 Leigh Anne Bright**, James H. Tidwell  
PRODUCT FORMS FOR LARGEMOUTH BASS SALES IN CURRENT FOOD MARKETS
- 12:30 LUNCH**
- 1:30 Carole Engle**  
ECONOMICS OF LARGEMOUTH BASS FOODFISH PRODUCTION
- 1:45 Eric Peatman**, Sarah Johnson, Matthew Lewis, Honggang Zhao, Megan Justice  
MICROPTERUS MADNESS: AN UPDATE ON TAXONOMY, DIVERSITY, AND CONTROVERSY IN THE BLACK BASSES
- 2:15 Amit Sharma**, Kenneth Semmens  
EFFICACY OF A FERTILIZATION SOLUTION CREATED WITH TESTES EXTRACTION AND MACERATION IN LARGEMOUTH BASS *Micropterus salmoides*
- 2:30 David Prangnell**, Michael Matthews, Bella Jaime, Mar Huertas  
THE IMPACT OF MATERNAL STRESS ON *Micropterus* spp. BIOCHEMISTRY AND FRY PERFORMANCE
- 2:45 Gagan Kolimadu**, Kasondra Miller, Habte-Michael Habte-Tsion, Vikas Kumar, Waldemar Rossi Jr.  
EVALUATION OF OMEGA-3 RICH MICRO-ALGAE AND ORGANIC MICRO-MINERALS IN THE DIETS OF LARGEMOUTH BASS *Micropterus salmoides* L.
- 3:00 Kasondra Miller**, Gagan Kolimadu, Habte-Michael Habte-Tsion, Waldemar Rossi Jr.  
OPTIMIZING SUPPLEMENTAL PHOSPHORUS IN SOYBEAN MEAL-BASED DIETS FOR LARGEMOUTH BASS *Micropterus salmoides*
- 3:15 Xinyu Li**, Guoyao Wu  
CHANGES OF NUTRIENTS OXIDATION IN TISSUES OF LARGEMOUTH BASS IN RESPONSE TO DIFFERENT DIETARY PROTEIN AND STARCH LEVELS
- 3:30 Nathan Egnew**, Nilima Renukdas, Anita M. Kelly, Rebecca Lochmann, Amit Kumar Sinha  
INSIGHTS INTO PHYSIOLOGICAL, METABOLIC NITROGEN EXCRETION AND MOLECULAR DEFENSIVE STRATEGIES IN LARGEMOUTH BASS *Micropterus salmoides* TO LONG-TERM SUBLETHAL AMMONIA TOXICITY
- 3:45 Nathan Egnew**, Amit Kumar Sinha  
PHYSIOLOGICAL RESPONSES OF LARGEMOUTH BASS *Micropterus salmoides* TO LONG-TERM SUBLETHAL IRON EXPOSURE

- 4:00** **Sujan Bhattacharai**, Kenneth Semmens  
EVALUATION OF STOCKING DENSITY IN A LIVE HOLDING RECIRCULATING SYSTEM FOR FOOD SIZE LARGEMOUTH BASS *Micropterus salmoides*
- 4:15** **Amit Kumar Sinha**, Nathan Egnew  
IONO-OSMOREGULATORY ADJUSTMENTS IN LARGEMOUTH BASS *Micropterus salmoides* EXPOSED TO CHRONIC SUB-LETHAL AMMONIA TOXICITY

## PHYSIOLOGICAL INSIGHTS TOWARDS IMPROVING FISH CULTURE V PART 2

Saturday, March 9 8:30 AM - 5:00 PM Galleries 6

Chairs: Brian Small, Greg Weber, Adam Luckenbach, Kurt Gamperl

- 8:30** **Frederick Goetz**, Mary Arkoosh, Matthew Cook, Walton Dickhoff, Joseph Dietrich, William Fairgrieve, Kurt Grinnell, Jose Guzman, Andrew Jasonowicz, Cort Jensen, Jonathan Lee, Adam Luckenbach, Ken Masee, Sean Oden, Jim Parsons, Tom Wade, Graham Young  
PHYSIOLOGICAL STUDIES TO INFORM THE AQUACULTURE OF SABLEFISH (BLACK COD)
- 9:00** **Benjamin Reading**, Linnea Andersen, Justin Schilling, Yuji Mushiobira, Takashi Todo, Naoshi Hiramatsu  
VITELLOGENESIS IN FISHES
- 9:15** **Christopher Monson**, Giles Goetz, Penny Swanson, Graham Young  
THE TELEOST ANDROGEN, 11-KETOTESTOSTERONE, CAUSES DRAMATIC ALTERATIONS IN THE OVARIAN FOLLICLE TRANSCRIPTOME OF COHO SALMON DURING LATE PRIMARY AND EARLY SECONDARY GROWTH
- 9:30** **Peter Thomas**, Yefei Pang, Wenxian Tan  
RAPID PROGESTIN INDUCTION OF SOUTHERN FLOUNDER SPERM HYPERMOTILITY THROUGH A NONGENOMIC MECHANISM
- 9:45** **Shafaq Fatima**, Fiza Mahmood, Hamna Afzal  
EFFECT OF LIGHT POLLUTION ON DIURNAL RHYTHM OF MELATONIN IN *Catla catla* AND *Labeo rohita*; COMPARATIVE STUDY AT FARM AND INDOOR FACILITY ILLUMINATION CONDITIONS
- 10:00** **BREAK**
- 10:30** **J. Adam Luckenbach**, Thao B. Huynh, Edward S. Hayman, Jonathan S.F. Lee, William T. Fairgrieve  
EFFECTS OF HIGH TEMPERATURE EXPOSURE ON EARLY REPRODUCTIVE DEVELOPMENT OF MONOSEX FEMALE SABLEFISH *Anoplopoma fimbria*
- 10:45** **Andrew L. Pierce**, Douglas R. Hatch, Lea R. Medeiros, Laura E. Jenkins, Neil D. Graham, James J. Nagler  
REPRODUCTIVE DEVELOPMENT IN RECONDITIONED FEMALE STEELHEAD KELTS: INSIGHTS INTO CONSECUTIVE AND SKIP SPAWNING
- 11:00** **Laura E. Jenkins**, Andrew L. Pierce, Neil D. Graham, Lea R. Medeiros, Ryan Brantstetter, Doug R. Hatch, James J. Nagler  
RECOVERY, REMATURATION, AND REPRODUCTIVE PERFORMANCE IN REPEAT SPAWNING RECONDITIONED FEMALE STEELHEAD TROUT *Oncorhynchus mykiss*



- 11:15 Don A. Larsen**, Deborah L. Harstad, Dina K. Spangenberg, Lance Clarke, Brian R. Beckman  
THE EFFECT OF MODULATING RATION AND DIETARY LIPID ON GROWTH, SMOLTING, AND EARLY MALE MATURATION IN YEARLING UMATILLA RIVER FALL CHINOOK SALMON
- 11:30 Eugene Cheung**, Benjamin J. Reading, Russell J. Borski  
LEPTIN AND THE INTEGRATION OF REPRODUCTION AND GROWTH IN THE MOZAMBIQUE TILAPIA *Oreochromis mossambicus*
- 11:45 A.E. Butts**, Jonna Tomkiewicz, Sune R. Sørensen, Sebastian N. Politis  
RECENT PROGRESS TOWARDS CLOSING THE LIFE CYCLE OF EUROPEAN EEL *Anguilla anguilla* IN CAPTIVITY: PHYSIOLOGY OF EMBRYOS AND LARVAE
- 12:00 Gregory M. Weber**, Hao Ma, Kyle Martin, Doug Dixon III  
TRANSCRIPTOME ANALYSIS OF EGG VIABILITY IN RAINBOW TROUT *Oncorhynchus mykiss*
- 12:15 Nagaraj G. Chatakondi**  
SEX RATIOS IN BROODFISH PONDS: A STRATEGY TO DEVELOP GRAVID FEMALES FOR HYBRID CATFISH FRY PRODUCTION
- 12:30 LUNCH**
- 1:30 Konrad Dabrowski**, Mackenzie Miller, John Grayson  
PRODUCTION OF THE FIRST GYNOGENETIC WALLEYE *Sander vitreus*
- 1:45 Rex Dunham**, Veronica Alston, Darshika Hettiarachchi, Khoi Vo, Muyassar Abualreesh, Jeremy Gurbatow, Max Bangs, Chia Chen Weng Chen, Ian A.E. Butts  
EFFECTS OF DONOR-RECIPIENT DEVELOPMENTAL STAGE AND STEM CELL PREPARATION ON TRANSPLANTATION AND XENOGENESIS SUCCESS IN CATFISH
- 2:00 Guyu Qin**, Zhenkui Qin, Zhi Ye, Cuiyu Lu, Ahmed Elasad, Max Bangs, Rex Dunham  
GENE EDITING AND HORMONE THERAPY TO CONTROL REPRODUCTION IN CHANNEL CATFISH *Ictalurus punctatus*
- 2:15 Nicholas C. Wegner**, Laura N. Schwebel, Kevin Stuart, Mark Drawbridge, Mary Sue Lowery, John R. Hyde  
USING PHYSIOLOGICAL TOOLS TO ASSESS AND OPTIMIZE AQUACULTURE OF CALIFORNIA YELLOWTAIL *Seriola dorsalis*
- 2:30 Jyotsna Shrivastava**, Warren Caneos, Moses Ndugwa, Ronny Blust, Gudrun De Boeck  
ECOPHYSIOLOGICAL RESPONSES OF EUROPEAN SEA BASS *Dicentrarchus labrax* TO ELEVATED CARBON DIOXIDE AT DIFFERENT SALINITY GRADIENTS
- 2:45 Alvin N. Setiawan**, Hsiao-Heng (Tony) Pan, David McQueen, Steve Pether, Neil Herbert  
ELEVATED CO<sub>2</sub> IMPACTS GROWTH AND RESPIRATORY PERFORMANCE IN YELLOWTAIL KINGFISH *Seriola lalandi* AQUACULTURE
- 3:00 Fábio S. Zanuzzo**, Anne Beemelmans, Rebecca M. Sandrelli, Jennifer R. Hall, Matthew L. Rise, A. Kurt Gamperl  
IMPACTS OF HIGH TEMPERATURE AND HYPOXIA ON THE INNATE IMMUNE RESPONSE OF ATLANTIC SALMON *Salmo salar*

- 3:30 Anne Beemelmans**, Fabio Zanuzzo, Xi Xue, Rebecca Sandrelli, Matthew Rise, Kurt Gamperl  
UNRAVELING THE TRANSCRIPTIONAL RESPONSE OF CULTURED ATLANTIC SALMON *Salmo salar* TO HIGH TEMPERATURE STRESS ALONE, OR IN COMBINATION WITH HYPOXIA
- 3:45 Brian Ott**, Les Torrans, Peter Allen  
EFFECT OF HYPOXIA DURATION ON BLOOD CHEMISTRY OF CHANNEL CATFISH
- 4:00 Peter J. Allen**, Shay Allred, Michael Ciaramella, M. Wes Schilling, Lora Petrie-Hanson  
CATFISH RESPONSES TO POND AND HARVEST STRESSORS, AND CONSEQUENCES FOR MUSCLE QUALITY
- 4:15 Nihar Chattopadhyay**, Santoshkumar Abujam  
PHYSIOLOGICAL EVENTS OF HYPOPHYSATION IN FISH
- 4:30 Russell Borski**, Jamie Honeycutt, Courtney Deck, Madeline Severance  
ROLE FOR LEPTIN IN THE ENDOCRINE STRESS RESPONSE AND REGULATION OF GLUCOSE METABOLISM IN TILAPIA
- 4:45 Rui Miranda Rocha**, Ana Costa, Andreia Rodrigues, Carlos Gravato, José Calheiros, Manuela Castro-Cunha, Amadeu Soares  
OXIDATIVE STRESS RESPONSES AND ENERGY BUDGET IN DIPLOID AND TRIPLOID *Oncorhynchus mykiss* CULTURED IN TEMPERATE REGIONS

## THE SHRIMP EPIGENOME (SHRIMPENCODE) PROJECT

Saturday, March 9 8:30 AM - 5:00 PM Salon C

Chair: Acacia Warren

**FOCUS:** The 'ShrimpENCODE' session focus on the application of the holistic concept of 'ONE HEALTH' to conserve healthy ecosystems (agricultural soil, mangrove sediment), to maintain healthy animals (shrimp/shellfish, fish), to protect human health long-term (antibiotic resistance, diabetes, obesity, allergies, microcephaly and other neural tube defects, among others). Five researchers will receive recognition as 'Outstanding Scientist in Shrimp Aquaculture' by the Foundation for Conservation of Biodiversity (FUCOBI) of Ecuador: 1. Tim Flegel (Thailand) for 30 years of research to control shrimp diseases and the paramount danger of translocating pathogens with living aquaculture stocks; 2. Jianhai Xiang (China) for studies on Penaeid chromosomes and the first reference genome sequence for *Penaeus* (*Litopenaeus*) *vannamei* farmed in China; 3. Ximing Guo (USA): first to localize the pentameric microsatellite (GGTTA)<sub>n</sub> to telomeres of *P. vannamei* chromosomes by FISH; 4. Weidong Bao (USA): first to characterize more than 330 diverse repetitive families including a fossilized WSSV-like element (DNAV-1\_LVa of ~270-Kb), flanked by (GGTTA)<sub>n</sub>, in the genome of the original SPF *P. vannamei* domesticated by the breeding program of the USMSFP maintained in Hawaii, USA, and 5. Carmen Paniagua-Chavez (Mexico): first to develop the technology to freeze male germ cells of shrimp that may help save the wild Penaeid in their natural range from northern Peru to northern Mexico. At least 10 students/postdocs will be recognized as winners of the 2019 'Johnnie Castro Montealegre Travel Awards': Wisarut Junprung (Thailand), Marcelo Victorio-De Los Santos (Mexico), Oscar Jaen (Ecuador), Natalie Lowell (USA), Yiping Chen (China), Andrea Alejandro (Ecuador), Chinniah Amutha (India), Sarah Zuidema (USA), Marcos Vinicio Canario Viana

(Brazil), Augustine Glory Adaeze (Nigeria). Speakers will address topics like: the genome of *P. vannamei* provides insights into benthic adaptation, frequent molting and breeding impacts (Xiang); telomere sequences in shrimp and bivalves (Guo); experiences with AHPND and WSD experimental challenges for *P. vannamei* breeding in Mexico (Montaldo); transposable elements, horizontal transfer and epigenetics in non-model aquatic invertebrates (Arkhipova), preliminary survey of 116 transposable elements, repeats and integrated viruses (WSSV-like, DNAV-1\_LVa) and *P. monodon* endogenous IHHNV in the original SPF *P. vannamei* from the USA (Alcivar-Warren); Gypsy: the most abundant long terminal repeat (LTR) retrotransposon in SPF *P. vannamei* (Alcivar-Warren); the NonLTR-1\_LVa non-LTR retrotransposon of SPF *P. vannamei* from the USA is similar to the NLRs non-LTR retrotransposons associated with ASDD of cultured shrimp from Thailand – differential expression in eyestalk-ablated females? – shrimp welfare issues (Alcivar-Warren); health assessments of white shrimp *L. setiferus* from coastal South Carolina USA (Zuiderma); gene editing with CRISPR/CAS9 in the eastern oyster *Crassostrea virginica* (Wang); the Wnt pathway in shrimp embryogenesis: a candidate for mesendoblast specification and signaling (Hertzler); research progress on the sex determination and sexual differentiation in penaeid shrimp (Li); expression of sex-lethal during the life cycle of *P. vannamei* (Lopez-Cuadros); heat shock protein enhances resistance to a strain of *Vibrio parahaemolyticus* which can cause AHPND by activating shrimp immunity (Junprung); integrated miRNA and mRNA transcriptome analyses of *P. vannamei* hemocyte reveals the effect of non-lethal heat stress on shrimp antibacterial immunity (Somboonwiwat); national subsystem for aquatic genetic resource of Mexico advances and perspectives (Paniagua-Chavez), conservation of shrimp genetic resources in Mexico (Paniagua-Chavez); population genetics of two emergent shellfish aquaculture species and implications for genetic risk assessments (Lowell); gene editing: the future of mutant food? (Latham). The session will end with an Open Forum about 'Gene editing in aquatic species - can we use CRISPR/CAS9 to produce shrimp free of a fossilized ~270kb WSSV-like element present in the genome of the original SPF shrimp domesticated in the United States?'

**8:30 Acacia Alcivar-Warren**

THE SHRIMP EPIGENOME (ShrimpENCODE) PROJECT SESSION: RECOGNITION TO OUTSTANDING SHRIMP RESEARCHERS AND STUDENTS, AND COMMENTS ABOUT SUSTAINABLE SHRIMP AQUACULTURE IN LIGHT OF CLIMATE CHANGE

**8:45 Jianhai Xiang**

DECODING THE PENAEID SHRIMP GENOME PROVIDES INSIGHTS INTO BENTHIC ADAPTATION, FREQUENT MOLTING AND BREEDING IMPACTS

**9:15 Ximing Guo**

TELOMERE SEQUENCES IN SHRIMP AND BIVALVES

**9:30 Hugo H. Montaldo, Héctor Castillo-Juárez, Gabriel R. Campos-Montes, Juan C. Quintana-Casares, Sonia A. Soto-Rodríguez, Leobardo Montoya-Rodríguez, Miguel Betancourt-Lozano, Alfonso Martínez-Ortega, Rodolfo Lozano-Olvera, Bruno Gómez-Gil**  
EXPERIENCES WITH ACUTE HEPATOPANCREATIC NECROSIS DISEASE (AHPND) AND WHITE SPOT DISEASE (WSD) EXPERIMENTAL CHALLENGES FOR *Litopenaeus vannamei*

**10:00 BREAK**

- 10:30 Tim Flegel**  
THIRTY YEARS OF RESEARCH ON SHRIMP DISEASE CONTROL
- 10:45 Irina R. Arkhipova**, Fernando Rodriguez, Irina A. Yushenova  
TRANSPOSABLE ELEMENTS, HORIZONTAL TRANSFER, AND EPIGENETICS IN NON-MODEL AQUATIC INVERTEBRATES
- 11:15 Acacia Alcivar-Warren**  
PRELIMINARY SURVEY OF TRANSPOSABLE ELEMENTS, REPEATS AND VIRUSES IN THE ORIGINAL SPECIFIC PATHOGEN-FREE (SPF) SHRIMP *Penaeus (Litopenaeus) vannamei* DOMESTICATED BY THE BREEDING PROGRAM OF THE U.S. MARINE SHRIMP FARMING PROGRAM (USMSFP), MAINTAINED AT THE OCEANIC INSTITUTE, HAWAII, USA
- 11:30 Acacia Alcivar-Warren**  
GYPSY: THE MOST ABUNDANT LONG TERMINAL REPEAT (LTR) RETROTRANSPOSON IN THE GENOME OF THE FIRST SPF SHRIMP *Penaeus (Litopenaeus) vannamei* PRODUCED IN THE UNITED STATES – POLYMORPHISMS IN A UNIQUE MICROSATELLITE SEQUENCE SIMILAR TO *Gypsy-16\_LVa*, AND POTENTIAL HORIZONTAL TRANSFER OF LTR RETROTRANSPOSONS
- 11:45 Acacia Alcivar-Warren**  
THE *NonLTR-1\_LVa* NON-LTR RETROTRANSPOSON OF SPF *Penaeus (Litopenaeus) vannamei* FROM THE UNITED STATES IS SIMILAR TO THE NLRS NON-LTR RETROTRANSPOSON ASSOCIATED WITH ABDOMINAL SEGMENT DEFORMITY DISEASE (ASDD) OF CULTURED SHRIMP FROM THAILAND - DIFFERENTIAL EXPRESSION IN EYESTALK-ABLATED FEMALES?
- 12:00 Sarah R. Zuidema**, Michael R. Kendrick, Isaure de Buron, Peter R. Kingsley-Smith  
HEALTH ASSESSMENTS OF WHITE SHRIMP *Penaeus setiferus* FROM COASTAL SOUTH CAROLINA, USA
- 12:15 Zhenwei Wang**, Ximing Guo  
GENE EDITING WITH CRISPR/CAS9 IN THE EASTERN OYSTER *Crassostrea virginica*
- 12:30 LUNCH**
- 1:30 Philip L. Hertzler**, Nusrat Jahan  
THE WNT PATHWAY IN SHRIMP EMBRYOGENESIS: A CANDIDATE FOR MESENDOBLAST SPECIFICATION AND SIGNALING
- 2:00 Fuhua Li**, Shihao Li, Yang Yu, Jianhai Xiang  
RESEARCH PROGRESS ON THE SEX DETERMINATION AND SEXUAL DIFFERENTIATION IN PENAEID SHRIMP
- 2:15 Wisarut Junprung**, Premruethai Supungul, Anchalee Tassanakajon  
HEAT SHOCK PROTEIN ENHANCES RESISTANCE TO A STRAIN OF *Vibrio parahaemolyticus* WHICH CAN CAUSE ACUTE HEPATOPANCREATIC NECROSIS DISEASE (AHPND) BY ACTIVATING SHRIMP IMMUNITY

- 2:30 Kunlaya Somboonwiwat**, Pakpoom Boonchuen, Benedict A. Maralit, Anchalee Tassanakajon  
INTEGRATED miRNA AND mRNA TRANSCRIPTOME ANALYSES OF *Penaeus vannamei* HEMOCYTE REVEALS THE EFFECT OF NON-LETHAL HEAT STRESS ON SHRIMP ANTIBACTERIAL IMMUNITY
- 2:45 Carmen G. Paniagua-Chávez**, Miguel A. Del Río-Portilla, Fabiola Lafarga de la Cruz, Francisco García de Leon, Ulises Hernández-Vidal, Irene Barriga-Sosa, Marisela Aguilar-Juarez, Gorgonio Ruiz-Campos  
NATIONAL SUBSYSTEM FOR AQUATIC GENETIC RESOURCES OF MEXICO: ADVANCES AND PERSPECTIVES
- 3:00 Carmen G. Paniagua-Chávez**, Karina Morales-Ueno, Claudia Hernández-Merlo, Constanza del Mar Ochoa-Saloma  
CONSERVATION OF GENETIC RESOURCES OF PENAEID SHRIMP IN MEXICO
- 3:15 Natalie Lowell**, Brent Vadopalas, Lorenz Hauser, Molly Jackson, Andy Suhrbier  
POPULATION GENETICS OF TWO EMERGENT SHELLFISH AQUACULTURE SPECIES AND IMPLICATIONS FOR GENETIC RISK ASSESSMENTS
- 3:30 Jonathan R. Latham**  
GENE EDITING: THE FUTURE OF MUTANT FOOD?

## LARVAL FINFISH CULTURE

Saturday, March 9 10:30 AM - 12:30 PM Galleries 4

Chair: Juan Pablo Lazo

- 10:30 R. Christopher Chambers**, Ehren A. Habeck, Delan J. Boyce, Emily A. Olson  
EXPERIMENTAL IDENTIFICATION OF OPTIMAL ENVIRONMENTAL CONDITIONS FOR EARLY LIFE STAGE PRODUCTION OF SUMMER FLOUNDER *Paralichthys dentatus*
- 10:45 Eric M. Gigli**, Reginald Blaylock, Jeffrey Lotz, Eric Saillant  
THE EFFECTS OF INCUBATION SALINITY ON EGG QUALITY TRAITS AND EARLY DEVELOPMENT OF SPOTTED SEATROUT *Cynoscion nebulosus*
- 11:00 Genevieve Patrick**, Andrea M. Tarnecki, Nicole Rhody, Stephen Stang, Ryan Schloesser, Kevan Main  
EVALUATING EFFICACY OF SEVERAL DISINFECTANTS ON HATCHABILITY IN ALMACO JACK *Seriola rivoliana* EGGS
- 11:15 Kevin Fisher**, Mackenzie Miller, Konrad Dabrowski  
OUT WITH THE OLD AND IN WITH THE NEW: STANDARDIZATION OF A NOVEL LARVAL REARING METHOD FOR BIGHEAD CARP *Hypophthalmichthys nobilis*

# STANDARDIZATION FOR AQUATIC NUTRITION RESEARCH METHODOLOGY

Saturday, March 9 10:30 AM - 12:30 PM Salon E

Chair: Ian Forster

- 10:30 Ian P. Forster**  
INTRODUCTION – STANDARDIZATION FOR AQUATIC NUTRITION RESEARCH  
METHODOLOGY
- 10:45 Ron Hardy**  
FISH NUTRITION RESEARCH: COMMON REASONS MANUSCRIPTS ARE REJECTED  
FOR PUBLICATION
- 11:00 Dong Fang Deng, Ian Forster**  
FOUNDATION OF FEED FORMULATION
- 11:15 D. Allen Davis**  
HOW TO FAIL IN RESEARCH: PET PEEVES AND PROBLEMS – THE BEST TALK  
YOU SHOULD MISS
- 11:30 Daniel Lemos, Rodrigo Carvalho, Fanny Yasumaru, Albert Tacon**  
NUTRIENT DIGESTIBILITY IN FARMED SHRIMP: CRITICAL EVALUATION AND  
PERSPECTIVES OF METHODS FOR DETERMINATION *IN VIVO* AND *IN VITRO*
- 11:45 DISCUSSION**

## U.S. TROUT FARMERS ASSOCIATION TROUT FORUM

Saturday, March 9 10:30 AM - 12:30 PM Salon H

Chair: Jeremy Liley, Charlie Conklin

- 10:30 Myron Kebus**  
HOW WISCONSIN TROUT HEALTH REGULATIONS EVOLVED
- 10:45 Charlie Conklin**  
TROUT AQUACULTURE FISH HEALTH SUBCOMMITTEE UPDATE
- 11:00 Carole Engle, Jonathan van Senten**  
COST OF TROUT REGULATIONS UPDATE
- 11:15 Jesse T. Trushenski, Heather Almgren, Brian Small**  
A RISING TIDE LIFTS ALL SHIPS: SPRING SALMON'S INTERNSHIP PROGRAM TO  
ADDRESS WORKFORCE READINESS IN AQUACULTURE
- 11:30 Bill Keleher**  
PROGRESS ON POSSIBLE CHANGES TO THE AFS-FHS BLUE BOOK
- 12:00 Jeremy Liley, Charlie Conklin**  
U.S. TROUT FARMERS MEMBERS AND BUSINESS MEETING

## DECAPOD CRUSTACEANS

Saturday, March 9 1:30 PM - 4:30 PM Galleries 4

Chair: Michael Kendrick

- 1:30 Christopher Green**, C. Greg Lutz, John P. Hawke  
PROCAMBARID CRAYFISH AQUACULTURE IN THE SOUTHERN USA
- 1:45 Mark Shirley**, C. Greg Lutz  
LOUISIANA'S FARM CRAWFISH *Procambarus clarkii* INDUSTRY OVERVIEW
- 2:00 John P. Hawke**, Christopher C. Green, C. Greg Lutz, Barclay T. Pace  
AN UPDATE ON WHITE SPOT SYNDROME VIRUS IN LOUISIANA RED SWAMP CRAWFISH *Procambarus clarkii*
- 2:15 Humberto Villarreal**, Humberto Villarreal, José Naranjo, Alfredo Hernández, Mayra Vargas  
INTENSIFICATION OF COMMERCIAL REDCLAW CRAYFISH *Cherax quadricarinatus* CULTURE IN BAJA CALIFORNIA SUR, MEXICO – PRODUCTION AND BIO ECONOMIC ANALYSIS
- 2:30 Michael R. Kendrick**, Elizabeth B. Underwood, Bronwyn W. Williams, Peter R. Kingsley-Smith  
EFFECTS OF NON-NATIVE *Procambarus clarkii* ON NATIVE CRAYFISH POPULATIONS IN THE CAROLINAS, USA
- 2:45 Elizabeth B. Underwood**, Michael R. Kendrick  
INVESTIGATION OF THE SALINITY TOLERANCE OF INVASIVE AND NATIVE COASTAL CRAYFISH IN SOUTH CAROLINA, USA
- 3:00 Bronwyn Williams**, Patricia G. Weaver  
INFERENCE POWER OF SYMBIONTS IN UNDERSTANDING CRAYFISH ECOLOGY AND EVOLUTION
- 3:15 Hisham Abdelrahman**, James Stoeckel, Jacob Westhoff  
ENZYMATIC THERMAL OPTIMUM OF MULTIPLE CRAYFISH SPECIES
- 3:30 Julie A. Lively**, Eric J. Schott, Hamish J. Small  
CHARACTERIZATION OF SOFT SHELL BLUE CRAB PRACTICES IN LOUISIANA, MARYLAND, AND VIRGINIA
- 3:45 Joseph C. Caracappa**, Daphne M. Munroe  
MORPHOLOGICAL AND BEHAVIORAL VARIATION AMONG BROODS OF BLUE CRAB *Callinectes sapidus* ZOEAE
- 4:00 Edward H. Allison**, Teresa Pucylowski, Stacia Dreyer, Julie Ekstrom, Terrie Klinger, Kathleen Moore, Stephanie Moore, Karma Norman, Anna Varney  
AN ASSESSMENT OF THE RESILIENCE OF THE U.S. PACIFIC COAST DUNGENESS CRAB FISHERY TO HARMFUL ALGAL BLOOMS

## AQUACULTURE IN A RESOURCE SCARCE WORLD

Saturday, March 9 1:30 PM - 5:00 PM Galleries 1

Chair: Aaron McNevin

- 1:30 Blake Harris**  
ACCOUNTABILITY FOR AQUACULTURE OPERATIONS IN A RESOURCE SCARCE WORLD: THE ROLE OF TRACEABILITY AND TRANSPARENCY
- 1:45 Robert B. Davis**, Claude E. Boyd, D. Allen Davis  
TRACE ELEMENT PROFILING AND TRACEABILITY – WHERE WE ARE AND WHAT'S NEXT
- 2:00 James Harakaly**  
THE TOR SYSTEM, A NEW SOFTWARE TOOL TO TRACK PRODUCTS THROUGH SUPPLY CHAINS
- 2:15 Phoebe Racine**, Rachel Simons, Thomas Bell, Steven D. Gaines  
EXPLORING NET PRIMARY PRODUCTION THRESHOLDS FOR OFFSHORE MUSSEL FARMING IN CALIFORNIA
- 2:30 Dane H. Klinger**, James R. Watson  
FINANCIAL TOOLS FOR IMPROVED ECONOMIC, RESOURCE, AND ENVIRONMENTAL PERFORMANCE OF THE AQUACULTURE SECTOR
- 2:45 Claude E. Boyd**  
EMBODIED RESOURCES IN AQUACULTURE PRODUCTION: EXAMPLES FROM SHRIMP AQUACULTURE
- 3:00 C. Greg Lutz**  
RESEARCH <-> INDUSTRY INFORMATION EXCHANGE... CAN OUTREACH ALTERNATIVES FILL THE ROLE OF EXTENSION?
- 3:15 Madeline Craig**  
NATURAL RESOURCE WASTE THROUGH IMPORT REFUSALS

## AQUAPONICS

Saturday, March 9 1:30 PM - 5:00 PM Salon D

Chairs: Huy Tran, Bradley Todd

- 1:30 D. Allen Pattillo**  
AQUAPONICS IN JAMAICA: SUCCESSES, CHALLENGES, AND LESSONS LEARNED
- 1:45 Timothy A. Hovanec**  
HETEROTROPHIC MINERALIZATION OF ORGANIC MATERIAL PRODUCED IN AQUAPONIC SYSTEMS – A REVIEW
- 2:00 George Brooks, Jr.**  
APPLYING DESIGN THINKING TO NEW AQUAPONIC SYSTEM DEVELOPMENT INCLUDING THE INTRODUCTION OF NEW PRINCIPLES SIMILAR TO PAS/IPRS (PARTITIONED AQUACULTURE SYSTEMS/IN POND RACEWAY SYSTEMS)



- 2:15 Huy Tran**  
APPLYING AUTOPOT SYSTEM IN DE-COUPLED AQUAPONICS TO UTILIZE RAS DISCHARGED WATER
- 2:30 Timothy A. Hovanec**  
START-UP OF BIOLOGICAL FILTERS IN AQUAPONIC SYSTEMS: MAJOR FACTORS AFFECTING THE NITRIFYING BACTERIA AND THEIR SUCCESS
- 2:45 Aparna Biswas, Destin Furnas, Kenneth Saillant, Ashley Baum, Asif Mortuza, Ahmed Mustafa**  
PHYSIOLOGICAL AND IMMUNOLOGICAL RESPONSES IN TILAPIA, REARED UNDER STRESS IN AQUAPONICS AND TREATED WITH BASIL-SUPPLEMENTED DIET AS NUTRACEUTICAL
- 3:00 Darrin Honious, Ben Sutter**  
TYPES OF PHOTOMETERS USED FOR WATER QUALITY IN AQUAPONICS
- 3:15 Peace Chemis Mnelemba, Joshua S. Valeta**  
ASSESSMENT OF TECHNICAL AND ECONOMIC FEASIBILITY OF A PORTABLE AQUAPONIC SYSTEM
- 3:30 Mollie Smith, Terrill Hanson, Brendan Higgins, Daniel Wells, David Blersch**  
DEVELOPING TECHNO-ECONOMIC ANALYSIS (TEA) AND LIFE CYCLE ANALYSIS (LCA) FRAMEWORK TO TEST THE SUSTAINABILITY OF AQUAPONIC SYSTEMS
- 3:45 Jennifer Dorick, Evelyn Willmon, Sondra Weese, Tung-Shi Huang, Terrill Hanson**  
MICROBIAL ASSESSMENT OF IRRIGATION WATER AND VINE PRODUCE IN AN AQUAPONIC SYSTEM
- 4:00 Caroline Blanchard, Daniel Wells, Jeremy Pickens, David Blersch**  
OPTIMUM PRODUCTION CYCLE LENGTH FOR DELTASTAR CUCUMBERS GROWN IN AN AQUAPONIC SYSTEM
- 4:15 Todd Guerdat, Anna DeVitto, Peter Konjoian, Neil Mattson, Michael Timmons**  
INTEGRATING AQUACULTURE WITH YEAR-ROUND ORGANIC STRAWBERRY PRODUCTION IN THE NORTHEAST

## FISH NUTRITION – PART 3

Saturday, March 9 1:30 PM - 5:00 PM Salon E

Chair: Gibson Gaylord

- 1:30 Emmanuel Villanueva-Gutiérrez, Martin Perez-Velazquez, Mayra Lizett González-Félix, Delbert M. Gatlin III**  
FISHMEAL REPLACEMENT BY PLANT AND ANIMAL FEEDSTUFFS IN DIETS FOR JUVENILE TOTOABA *Totoaba macdonaldi*
- 1:45 Min-Gi Kim, Bong-Joo Lee, Kang-Woong Kim, Jaehyeong Shin, Chorong Lee, Kyeong-Jun Lee**  
A LONG-TERM STUDY ON FISH MEAL REPLACEMENT IN EXTRUDED PELLET DIETS FOR OLIVE FLOUNDER *Paralichthys olivaceus*

- 2:00 Casey A. Murray**, Joseph T. Szczebak, Bradford D. Bourque, Catherine Pujol-Baxley, Lawrence Feinberg, Andrew L. Rhyne  
DETERMINING THE EFFICACY OF SINGLE CELL PROTEIN MEAL AS AN ALTERNATIVE PROTEIN SOURCE IN AQUAFEEDS USING RAINBOW TROUT *Oncorhynchus mykiss*
- 2:15 Lisa Vollbrecht**, Neil A Sims, Frederic Barrows, Mark Portman, Cory Hungate, Gavin Key, Helen Meigs  
ALTERNATIVE FEED INGREDIENT TESTING FOR HIGH-VALUE MARINE FINFISH
- 2:30 Jessica Couture**, Margareth Overland, Jon Ovrum Hansen, Christian Sahlmann, Joseph Palazzo, Hunter Lenihan, Roland Geyer  
ENVIRONMENTAL BENEFITS OF NOVEL NON-HUMAN FOOD INPUTS TO AQUACULTURE FEEDS
- 2:45 Ricardo Ekmay**, Emily Glenn  
INITIAL ASSESSMENT OF THE PHYSICOCHEMICAL PROPERTIES OF A NOVEL YEAST PROTEIN INGREDIENT FOR AQUACULTURE FEED
- 3:00 Fernando Yamamoto**, Clement de Cruz, Waldemar Rossi Jr., Delbert Gatlin III  
EVALUATING THE NUTRITIONAL VALUE OF DRY EXTRUDED SEAFOOD WASTE BLENDED WITH PLANT PROTEIN CO-PRODUCTS IN DIETS FOR JUVENILE RED DRUM *Sciaenops ocellatus*
- 3:15 Leigh P. Gaffney**, Katarina H. Doughty, Wendy E. Vandersteen, Brad Hicks, Robert H. Devlin, Ian R. Forster  
POTENTIAL OF BLACK SOLDIER FLY LARVAE *Hermetia illucens* FOR ARCTIC CHAR *Salvelinus alpinus* DIETS IN AQUACULTURE
- 3:30 Oluwagbenga Olude**, Narottam Sahu, Ikram Khandakar  
GROWTH AND HAEMATO-BIOCHEMICAL RESPONSES OF *Labeo rohita* FINGERLINGS FED CASSAVA LEAF MEAL
- 3:45 Francisca Oparaku**  
EFFECT OF DIETARY SUPPLEMENTATION WITH JATROPHA SEED MEAL IN THE GROWTH PERFORMANCE OF HETEROCLARIAS
- 4:00 Amit K. Yadav**, Seunghan Lee, Beth Cleveland, Goutham Vemuri, Ronald Hardy, Vikas Kumar  
SASYA'S FISHMEAL ALTERNATIVE FOR RAINBOW TROUT FEED
- 4:15 Joy Campbell**, Pablo Ibieta, Gloria Valderrama, Humberto Mena, Javier Polo  
EVALUATION OF SPRAY-DRIED PORCINE PLASMA AS FEED INGREDIENT ON GROWTH PERFORMANCE IN POST-SMOLTS ATLANTIC SALMON
- 4:30 Gary Burr**, Brian Peterson, John Bowzer, Stephanie Block  
GROWTH PERFORMANCE OF ATLANTIC SALMON *Salmo salar* FED DIETS CONTAINING SINGLE CELL PROTEIN INGREDIENTS
- 4:45 Mildred Capiña**, Luisito Yolango, Cristina C. Salibay  
EFFECT OF GOLDEN APPLE SNAIL *Pomacea canaliculata* MEAT AS FEEDS ON THE GROWTH AND SURVIVAL RATES AND BIOCHEMICAL COMPOSITION OF MUD CRAB *Scylla serrata*

## HARMFUL ALGAE

Saturday, March 9 1:30 PM - 5:00 PM Salon H

Chairs: Steve Morton, Sandra Shumway

- 1:30 Angela Collins**, Chuck Adams, Alan Hodges, Barry Hurt  
RED TIDE STINKS: THE ECONOMIC IMPACTS OF SHELLFISH INDUSTRY CLOSURES DURING FLORIDA RED TIDE *Karenia brevis* BLOOMS
- 1:45 Clara L. Robison**, Wolfgang K. Vogelbein, William G. Reay, Ryan B. Carnegie, Juliette L. Smith, Emily Rivest, Gail P. Scott, Corey T. Corrick, Kimberly S. Reece  
IMPACTS OF TWO HARMFUL ALGAL BLOOM SPECIES ON OYSTERS CULTURED USING DIFFERENT STRATEGIES IN LOWER CHESAPEAKE BAY
- 2:00 Katie Houle**, Bobbi Hudson, Joth Davis, Sandra Shumway, Steve Morton, Jerry Borchert, Brent Vadopalas  
BIOTOXIN ACCUMULATION AND DEPURATION IN FIELD EXPOSED ROCK SCALLOPS *Crassadoma gigantea*: A PREREQUISITE FOR CULTURING THE WEST COAST NATIVE
- 2:15 Harry Nelson**, Alejandro Clement, Nicole Correa, Rhanna Tuberville, David Veilleux, Frances Buerkens  
USE OF IMAGING FLOW CYTOMETRY (FlowCam) TO MONITOR AND CHARACTERIZE HABs AND OTHER MICROORGANISMS IN AQUACULTURE
- 2:30 Tod Leighfield**, Chris Whitehead, Steve Morton  
VALIDATION OF BIOASSAYS FOR THE DETECTION OF ALGAL TOXINS
- 2:45 Steve L. Morton**, Jennifer Maucher-Fuquay, Antonio Bravo  
USE OF CITIZEN SCIENTISTS TO MONITOR HARMFUL ALGAL BLOOMS, CHANGES IN ENVIRONMENTAL CONDITIONS AND ITS UTILIZATION IN AQUACULTURE
- 3:00 Chris Whitehead**, Esther Kennedy, Kari Lanphier  
DEVELOPMENT OF A MARINE BIOTOXIN LABORATORY IN SITKA ALASKA TO SUPPORT THE SOUTHEAST ALASKA TRIBAL OCEAN RESEARCH PARTNERSHIP
- 3:15 Riley Buley**, Alan E. Wilson  
UNDERSTANDING MICROCYSTIN PATTERNS IN FRESHWATER ECOSYSTEMS: A META-ANALYSIS
- 3:30 Amit Kumar Sinha**, William R. Green, Lonnie Howe, April Surratt, John Howe  
COMBINED APPLICATION OF NUTRIENT MANIPULATION (BY PHOSLOCK) AND HYDROGEN PEROXIDE BASED ALGAECIDE TO CONTROL CYANOBACTERIAL GROWTH IN HYPEREUTROPHIC PONDS
- 3:45 Greg M. Southard**, Eli Margalit, David Prangnell, Leonard Willett  
EFFICACY OF ULTRAVIOLET LIGHT RADIATION IN REDUCTION OF GOLDEN ALGA *Prymnesium parvum* CELL DENSITY AND ICHTHYOTOXICITY

SATURDAY

## GIANT CLAM (TRIDACNA)

Saturday, March 9 3:00 PM - 5:00 PM Balcony L

Chair: Miguel Mies

- 3:00 Miguel Mies**, Philip Dor, Arthur Güth, Paulo Sumida  
PRODUCTION IN GIANT CLAM AQUACULTURE: TRENDS AND CHALLENGES
- 3:15 Andrew Rhyne**  
THE TRADE IN GIANT CLAMS *Tridacninae*
- 3:30 Elizaldy A. Maboloc**  
EFFECTS OF REDUCED SALINITY ON THE JUVENILE GIANT CLAM *Tridacna gigas*
- 3:45 Miguel Mies**  
EVOLUTION, DIVERSITY, DISTRIBUTION AND THE ENDANGERED FUTURE OF THE GIANT CLAM-SYMBIODINIUM ASSOCIATION
- 4:00 Yuen Ip**, Clarissa Koh, Kum Hiong, Mel Boo, Celine Choo, Wai Wong, Shit Chew  
THE FLUTED GIANT CLAM *Tridacna squamosa* POSSESSES A HOST CARBON CONCENTRATION MECHANISM TO DELIVER INORGANIC CARBON TO ITS SYMBIONTS
- 4:15 Rachel Gula**, Diane Adams  
EFFECTS OF *Symbiodinium* COLONIZATION ON GROWTH AND CELL PROLIFERATION IN THE GIANT CLAM *Hippopus hippopus*
- 4:30 Eric J. Armstrong**, Richard W. Hill, Jinae N. Roa, Martin Tresguerres, Jonathon H. Stillman, Kazuo Inaba, Masaya Morita  
ACID SECRETION IN GIANT CLAMS FACILITATES BURROWING INTO CORAL REEFS
- 4:45 Shit F. Chew**, Clarissa Z.Y. Koh, Kum C. Hiong, Celine Y.L. Choo, Mel V. Boo, Wai P. Wong, Yuen K. Ip  
MOLECULAR MECHANISMS OF INORGANIC CARBON UPTAKE AND ASSIMILATION IN THE FLUTED GIANT CLAM *Tridacna squamosa*

## VIBRIOISIS IN SHELLFISH HATCHERIES

Saturday, March 9 3:30 PM - 5:00 PM Balcony K

Chair: Claudia Häse

- 3:00 Christopher M. Waters**  
ROLE OF CHEMICAL SIGNALING IN THE EVOLUTION AND ADAPTATION OF *Vibrios*
- 3:15 Hanna Kehlet-Delgado**, Gary P. Richards, Blake Ushijima, Claudia Häse, Ryan S. Mueller  
GENOME SEQUENCING AND COMPARATIVE ANALYSIS OF SHELLFISH-HATCHERY ASSOCIATED *Vibrio* STRAINS
- 3:30 Blake Ushijima**, Claudia C. Häse  
PATHOGENESIS OF THE INVERTEBRATE PATHOGEN *Vibrio coralliilyticus*
- 3:45 Gary P. Richards**, Michael A. Watson, Blake Ushijima, Christopher Langdon, David Madison  
BACTERIOPHAGES TO REMEDIATE LARVAL OYSTER MORTALITIES CAUSED BY *Vibrio coralliilyticus*

# MANAGING THE GENETIC RISK OF ESCAPES FROM AQUACULTURE

Saturday, March 9 3:15 PM - 5:00 PM Galeries 3

Chair: Ingrid Burgetz

- 3:15 Lorenz Hauser**, Robin Waples  
GENETIC RISKS OF STOCK ENHANCEMENT IN A MARINE FISH SPECIES, WHITE SEA BASS *Atractoscion nobilis*
- 3:30 Greg Blair**, Kristen Gruenthal, Jason Volk, Walt Dickhoff  
APPLICATION OF AN ESCAPES SIMULATION MODEL TO ASSESS OPEN OCEAN AQUACULTURE OF ALMACO JACK, RED DRUM, AND RED SNAPPER IN THE GULF OF MEXICO
- 3:45 Ian Bradbury**, Emma Sylvester, Brendan Wringe, Steven Duffy, Lorraine Hamilton, Marco Castellani, Eric Anderson, Paul Bentzen, Ian Fleming  
ESTIMATING THE RELATIVE FITNESS OF ESCAPED FARMED SALMON OFFSPRING IN THE WILD AND MODELING THE CONSEQUENCES OF INVASION FOR WILD POPULATIONS
- 4:00 Kristin Bethany Watson**, Paul Bentzen, Robin Waples, Steven Duffy, Carole Grant, Brian Dempson, Ian G. Paterson, Ian R. Bradbury  
DETECTING CHANGES IN ATLANTIC SALMON *Salmo salar* EFFECTIVE POPULATION SIZE DUE TO GENETIC INTERACTIONS WITH FARMED ESCAPEES
- 4:15 Ian Fleming**, Shahinur Islam, Brendan Wringe, Ian Bradbury  
INTERACTIONS AND CONSEQUENCES OF HYBRIDIZATION OF NORTH AMERICAN WILD AND FARMED SALMON WITH EUROPEAN FARMED SALMON
- 4:30 Ragnar Jóhannsson**, Sigurdur Gudjonsson, Agnar Steinarsson, Jon Hlodver Fridriksson  
SUSTANABLE MANAGEMENT OF SALMON FARMING IN ICELAND TO PROTECT WILD SALMON STOCKS – RISK ASSESSMENT MODEL AND MONITORING GENETIC INTROGRESSION AND RISK ASSESSMENT
- 4:45 Kevin A. Glover**  
FARMED ESCAPEES AND GENETIC INTERACTIONS WITH WILD CONSPECIFICS: “THE BIG PICTURE FROM LITTLE NORWAY”

SATURDAY

# SUNDAY, March 10

## NAVIGATING THE LEGAL COMPLEXITY OF SHELLFISH AQUACULTURE PERMITTING

Sunday, March 10 8:30 AM - 10:00 AM Balcony M

Chair: Amanda Nichols

- 8:30 Lisa Schiavinato**  
MOLLUSCAN SHELLFISH AQUACULTURE IN FEDERAL WATERS OF THE EEZ:  
AGENCIES, INDUSTRY, AND ACADEMIA WORKING THROUGH COMPLIANCE  
REQUIREMENTS
- 8:45 Elizabeth Andrews, Angela King**  
THE LYNNHAVEN RIVER IN VIRGINIA: AN EVOLVING RESPONSE TO LOCAL  
AQUACULTURE CONFLICTS
- 9:00 Shana Jones, Danielle Goshen**  
GEORGIA CASE STUDY: THE CHALLENGE OF KEEPING LAWS AND POLICIES IN  
SYNC WITH ADVANCES IN OYSTER FARMING METHODS
- 9:15 Amanda Nichols**  
ZONING AND SHELLFISH AQUACULTURE: UNDERSTANDING THE ROLE OF LOCAL  
LAND USE PLANNING DECISIONS
- 9:30 Read Porter**  
SHELLFISH NURSERY FACILITY SITING: THE VIEW FROM RHODE ISLAND
- 9:45 QUESTION & ANSWER**

## AMERICAS TILAPIA ALLIANCE BUSINESS MEETING AND TILAPIA FARMING PANEL DISCUSSION

Sunday, March 10 8:30 AM - 10:00 AM Galleries 2

Chair: Bill Martin

- 8:30 Bill Martin**  
ATA ANNUAL MEMBER MEETING TO ELECT DIRECTORS
- 9:00 Bill Martin**  
ATA ANNUAL BOARD MEETING TO CONDUCT BUSINESS AND ELECT OFFICERS
- 9:15 Bill Martin**  
TILAPIA FARMING DISCUSSION BY INDUSTRY STAKEHOLDERS WITH Q&A  
OPEN TO ALL PERSONS INTERESTED IN THE TILAPIA INDUSTRY

## ECOLOGY AND ENVIRONMENT

Sunday, March 10 8:30 AM - 10:00 AM Galeries 6

Chair: David Bass

- 8:30 Toshiaki Jo**, Hiroaki Murakami, Satoshi Yamamoto, Reiji Masuda, Toshifumi Minamoto  
EFFECT OF WATER TEMPERATURE AND FISH SIZE ON ENVIRONMENTAL DNA SHEDDING, DEGRADATION, AND SIZE DISTRIBUTION
- 8:45 Shawn Robinson**, Benjamin Forward, Christopher McKindsey, Peter Cranford  
USING MICROBIAL eDNA TO ASSESS ORGANIC LOADING IMPACTS TO BENTHIC HABITAT IN THE VICINITY OF SALMON AQUACULTURE IN THE BAY OF FUNDY
- 9:00 David Bass**, Dominique Chaput, Charles R. Tyler, Grant D. Stentiford  
ENVIRONMENTAL DNA (eDNA) FOR DISEASE MANAGEMENT IN AQUACULTURE
- 9:15 Brent A. Law**, Paul Hill, Peter Cranford, Lindsay Brager  
SPATIAL AND TEMPORAL VARIATION IN ERODIBILITY OF SURFICIAL SEDIMENT AT AREAS OF ACTIVE SALMON AQUACULTURE
- 9:30 Joshua Patterson**, Brittany Hall-Scharf, Savanna Barry  
COUPLING ACTIVE SEAGRASS REPAIR WITH EXTENSION EFFORTS FOR A HOLISTIC APPROACH TO RESTORATION AQUACULTURE
- 9:45 Han Uwe Dahms**  
SOURCES, PATHWAYS, AND SINKS OF ANTIBIOTIC RESISTANCE GENES THROUGH LIFE FEED IN AQUACULTURE

## ECOLOGICAL AQUACULTURE: GLOBAL PROGRESS TOWARDS AN ECOSYSTEMS APPROACH TO AQUACULTURE

Sunday, March 10 8:30 AM - 12:30 PM Balcony L

Chairs: Barry A. Costa-Pierce, Kristina Snuttan Sundell

- 8:30 Barry Costa-Pierce**, Kristina Snuttan Sundell  
ACCELERATING AQUACULTURE PRODUCTION IN EUROPE/U.S. BY DEVELOPING OCEAN FOOD SOCIAL-ECOLOGICAL SYSTEMS
- 8:45 Barry A. Costa-Pierce**, Adam St. Gelais, Zachary Miller-Hope, Kristina Snuttan Sundell, Helgi Thorarensen, Ögmundur Knútsson  
OCEAN FOOD SYSTEMS: A TRANSDISCIPLINARY, ECOSYSTEMS ECOLOGY APPROACH TO MARINE AQUACULTURE
- 9:00 Simon Bush**, Miranda Meuwissen, Peter Oosterveer, Sawitree Chamsai, Mariska Bottema, Ho Hong Lien, Mohan Chadag, Pornpimon Chuaduangpui, Dang Kieu Nhan  
IMPROVED ENVIRONMENTAL PERFORMANCE OF AQUACULTURE THROUGH AREA-BASED MANAGEMENT
- 9:15 Lien Ho**, Yann de Mey, Simon Bush, Miranda Meuwissen  
SOCIO-SPATIAL INDEX FOR SHRIMP AQUACULTURE AND ITS RELATIONSHIP WITH RISK BEHAVIOR

SUNDAY

- 9:30 Leigh Howarth**, Ramon Filgueira, Thierry Chopin, Simon Costanzo, Hart Koepke, Jeff Hafting, Jon Grant  
APPLYING THE ECOSYSTEM APPROACH TO AQUACULTURE: MAPPING THE FOOTPRINT OF MULTIPLE EFFLUENT SOURCES AT A BAY-WIDE SCALE
- 9:45 Mariska Bottema**, Simon Bush, Peter Oosterveer  
STATE-LED AREA-BASED AQUACULTURE MANAGEMENT: THE CASE OF THAILAND'S PLANG YAI APPROACH
- 10:00 BREAK**
- 11:00 Carrie Byron**, Adrianus Both, Carissa Maurin, Eric Chapman  
FOOD WEB APPROACH TOWARDS ADVANCING ECOLOGICAL AQUACULTURE
- 11:15 Michael P. Acquafredda**, Daphne Munroe  
POSSIBLE NICHE PARTITIONING AMONG FOUR ECOLOGICALLY AND ECONOMICALLY IMPORTANT FILTER-FEEDING BIVALVES: A CASE STUDY OF BIVALVE POLYCULTURE
- 11:30 Adrianus C. Both**, Carrie J. Byron, Damian C. Brady, Barry Costa-Pierce, Larry M. Mayer, Christopher C. Parrish  
THE ROLE OF DETRITUS IN SUPPORTING SUSTAINABLE ECOLOGICAL AQUACULTURE
- 11:45 Daphne Munroe**, David Bushek, Lisa Calvo  
ECOLOGICAL INTERACTIONS OF HORSESHOE CRABS AND SHELLFISH AQUACULTURE: A CASE STUDY FROM THE DELAWARE BAY
- 12:00 Adam St-Gelais**, Connor Jones, Katherine Parker, Michele Condon, Aubrey Szoke, Matthew Moretti, Carrie Byron  
HISTOPATHOLOGICAL AND BIOCHEMICAL MONITORING TOOLS FOR ENHANCING AN ECOLOGICAL APPROACH TO BLUE MUSSEL *Mytilus edulis* AQUACULTURE
- 12:15 Gretchen Grebe**, Carrie J. Byron, Adam St. Gelais, Dawn M. Kotowicz, Tollef Olson  
ASSESSMENT AND RECOMMENDATIONS FOR AN ECOSYSTEM APPROACH TO KELP AQUACULTURE
- 12:30 Helgi Thorarensen**, Ólafur Sigurgeirsson, Catherine P. Chambers, Guðrún Helgadóttir  
THE DEVELOPMENT OF ATLANTIC SALMON AQUACULTURE IN ICELAND – ENTERING UNCHARTED WATERS

## SHRIMP PRODUCTION

Sunday, March 10 8:30 AM - 12:30 PM Salon D

Chair: Andrew Ray

- 8:30 Claude E. Boyd**  
ALKALINITY, PH, AND LIMING IN SHRIMP PONDS
- 8:45 João Reis**, Romi Novriadi, Anneleen Swanepoel, Melanie Rhodes, D. Allen Davis  
OPTIMIZING FEED AUTOMATION: IMPROVING TIMER-FEEDERS AND ON DEMAND SYSTEMS IN SEMI-INTENSIVE POND CULTURE OF PACIFIC WHITE SHRIMP *Litopenaeus vannamei*



- 9:00 Máximo Quispe**  
THE NEW TECHNOLOGIES AND THE LEVEL OF COMPETITIVENESS IN SHRIMP CULTIVATION
- 9:15 G.A.H.S. Chathuranga**, Luke A. Roy, D. Allen Davis  
EFFICACY OF ALTERNATIVE SALT MIXTURE TO GROW PACIFIC WHITE SHRIMPS  
*Litopenaeus vannamei*
- 9:30 Thomas W. Tierney**, Leo J. Fleckenstein, Andrew J. Ray  
EVALUATING A LOW-COST SALT MIXTURE IN BRACKISH WATER INTENSIVE SHRIMP *Litopenaeus vannamei* PRODUCTION SYSTEMS
- 9:45 Menaga Meenakshisundaram**, Sreenadh Madapati, Ranjith Kallur  
MANAGEMENT OF MINERALS USING MINSOLPLUS IN LOW SALINE CULTURE OF *Litopenaeus vannamei*
- 10:00 BREAK**
- 11:00 Luke Roy**, David Teichert-Coddington, Benjamin H. Beck, D. Allen Davis, Sunni Dahl, Jesse James  
EVALUATION OF OPTIMAL STOCKING DENSITY AND DIETARY FISH MEAL INCLUSION LEVEL FOR INTENSIVE TANK PRODUCTION OF PACIFIC WHITE SHRIMP *Litopenaeus vannamei*
- 11:15 Leo J. Fleckenstein**, Thomas W. Tierney, Jill C. Fisk, Andrew J. Ray  
THE EFFECTS OF DIFFERENT SOLIDS AND BIOLOGICAL FILTERS IN INTENSIVE PACIFIC WHITE SHRIMP *Litopenaeus vannamei* PRODUCTION SYSTEMS
- 11:30 Humberto Villarreal**, Humberto Villarreal, José Naranjo, Alfredo Hernández, Luis Daniel Moreno, Mayra Vargas, José Andrés Hernández  
BIO ECONOMIC ANALYSIS OF THE USE OF DIFFERENT AERATION EQUIPMENT IN INTENSIVE PHOTO-HETEROTROPHIC SYSTEMS FOR *L. vannamei* IN BAJA CALIFORNIA SUR, MEXICO

## INTERACTIONS BETWEEN AQUATIC ANIMALS AND CONTAMINANTS OF EMERGING CONCERN

Sunday, March 10 8:30 AM - 12:30 PM Salon H  
Chairs: J. Evan Ward, Aswani Volety, John Scarpa

- 8:30 Bryan W. Brooks**, Jeremy L. Conkle  
PERSPECTIVES ON URBANIZATION, WATER REUSE, AND AQUACULTURE PRODUCT SAFETY
- 9:00 Bekah Burket**, Bryan Brooks  
AQUACULTURE IN AN URBANIZING WORLD: BIOACCUMULATION OF SELECT CONTAMINANTS OF EMERGING CONCERN IN EDIBLE BIVALVES
- 9:15 Bushra Khan**, Adeyemi Adeleye, Robert Burgess, Stephen Russo, Kay Ho  
EFFECTS OF GRAPHENE OXIDE EXPOSURES ON THE MARINE BIVALVE *Crassostrea virginica*
- 9:30 Samreen Siddiqui**, Mason Fritzwater, John Scarpa, Jeremy L. Conkle, Bryan Brooks  
BIOACCUMULATION AND DEPURATION OF DILTIAZEM BY TILAPIA

**10:00 BREAK**

**11:00 J. Evan Ward**, Shiye Zhao, Kayla Mladinich, Tyler Griffin, Bridget Holohan, Sandra E. Shumway  
EXAMINING THE USE OF BIVALVE MOLLUSCS AS INDICATORS OF MICROPLASTICS IN THE ENVIRONMENT

**11:30 Kayla M. Mladinich**, J. Evan Ward, Sandra E. Shumway  
EXAMINATION OF MICROPLASTICS IN THE COASTAL ENVIRONMENT AND AN EVALUATION OF RELEVANT POLYMERS FOUND IN THE EASTERN OYSTER *Crassostrea virginica*

**11:45 Julieta C. Martinelli**, Jacqueline L. Padilla-Gamiño  
PRESENCE OF MICROPLASTIC CONTAMINANTS IN PACIFIC OYSTERS FROM PUGET SOUND

**12:00 Catherine Tobin**, Juanita Urban Rich  
ENVIRONMENTAL IMPLICATIONS OF MICROFIBER INGESTION BY THE EASTERN OYSTER *Crassostrea virginica* IN MASSACHUSETTS

**12:15 Chinnaiah Amutha**  
IDENTIFICATION OF MOLECULAR BIOMARKERS AGAINST XENOBIOTICS IN MARINE GREEN MUSSEL *Perna viridis*

## **SHELLFISH GENETICS AND GENOMICS**

Sunday, March 10 8:30 AM - 3:00 PM Balcony K

Chair: Louis Plough

**8:30 Tim P. Bean**, Alejandro Gutierrez, Michaela Byrom, Chantelle Hooper, Ross D. Houston  
USING GENETIC MARKERS IN UK OYSTER PRODUCTION

**8:45 Robin L. Varney**, Ami E. Wilbur  
ANALYSIS OF GENETIC VARIATION AND INBREEDING AMONG LINES OF HATCHERY-REARED *Crassostrea virginica* BROODSTOCK

**9:00 Sarah E. Kingston**, Caitlin M. Cleaver, David B. Carlon  
LEVERAGING GENOMIC TOOLS IN AQUACULTURED BIVALVE SPECIES IN THE GULF OF MAINE

**9:15 Ann J. Ropp**, Jan McDowell, Kimberly Reece  
MOLECULAR GENETIC MARKERS TO TRACK AND IMPROVE HARD CLAM *Mercenaria mercenaria* AQUACULTURE STOCKS

**9:30 Maureen K. Krause**  
MRNA-SPECIFIC REGULATION OF TRANSLATION BY COLD SHOCK DOMAIN CONTAINING PROTEIN E1 IN *Argopecten irradians* AND *Crassostrea virginica*

**9:45 Bruce J. Barber**, Ryan Carnegie, Laura Whitefleet-Smith, Angela Collins  
GENETIC DIFFERENTIATION OF THE SIBLING SPECIES *Mercenaria campechiensis* AND *M. mercenaria* FOR RESTORATION PROJECTS IN FLORIDA

**10:00 BREAK**

- 11:00 Alexandra McCarty**, Standish K. Allen, Louis Plough  
BREEDING AN OYSTER FOR MARYLAND: WHAT IS THE GENETIC BASIS OF LOW SALINITY TOLERANCE IN THE EASTERN OYSTER *Crassostrea virginica*?
- 11:15 Michael Whiteside**, Ximing Guo  
IDENTIFICATION OF GENES POTENTIALLY ASSOCIATED WITH SHELL COLOR IN THE EASTERN OYSTER *Crassostrea virginica*
- 11:30 Tejashree Modak**, David Nelson, David Rowley, Marta Gomez-Chiarrri  
ANALYSIS OF THE TRANSCRIPTOME OF *Crassostrea virginica* LARVAE IN RESPONSE TO PROBIOTIC AND PATHOGENIC BACTERIA
- 11:45 Dina A. Proestou**, Tal Ben-Horin, Kathryn Markey Lundgren, Mary Sullivan, Jessica Moss Small, Standish K. Allen Jr.  
VARIATION IN TOLERANCE TO DERMAL DISEASE WITHIN AN EASTERN OYSTER BREEDING POPULATION
- 12:00 Matthew Hare**, Katherine McFarland, Kaili Gregory  
EASTERN OYSTER PERFORMANCE DEPENDS ON HABITAT QUALITY AND POPULATION SOURCE, BUT NOT NEUTRAL GENETIC DIVERSITY
- 12:15 Katherine M. Hornick**, Louis V. Plough  
GENETIC IMPACT OF A LARGE-SCALE EASTERN OYSTER RESTORATION PROGRAM USING NATIVE BROODSTOCK
- 12:30 LUNCH**
- 1:30 Katherine McFarland**, Matthew P. Hare, Matthew Gray, Michelle Nguyen, Brendan Campbell, Louis V. Plough  
PHENOTYPIC RESPONSE OF *Crassostrea virginica* LARVAE UNDER STARVATION STRESS: A COMPARISON BETWEEN WILD AND AQUACULTURE LINES TO TEST FOR UNINTENDED DOMESTICATION SELECTION
- 1:45 Patrick M. Gaffney**  
POLYMORPHISM IN *Crassostrea* GENOMES
- 2:00 Jonathan B. Puritz**, Katie E. Lotterhos  
ASSESSING THE EVOLUTIONARY RESPONSE OF EASTERN OYSTER LARVAE TO EXPOSURE COASTAL ACIDIFICATION AND SEWAGE EFFLUENT: A CASE STUDY
- 2:15 Katherine Silliman**, Natalie Lowell, Steven B. Roberts, Lorenz Hauser  
COMPARATIVE TRANSCRIPTOMICS OF OLYMPIA OYSTERS *Ostrea lurida* AND ROCK SCALLOPS *Crassadoma gigantea* IN RESPONSE TO ACIDIFICATION
- 2:30 Graham Mair**, Devin Bartley, Daniela Lucente, Matthias Halwart  
THE STATE OF THE WORLD'S AQUATIC GENETIC RESOURCES AND THE NEED FOR A GLOBAL INFORMATION SYSTEM

# AQUACULTURE EDUCATION, EXTENSION AND OUTREACH

Sunday, March 10 8:30 AM - 3:00 PM Galleries 4  
Chairs: Forrest Wynne, Ken Thompson, Kathryn Mitchell

- 8:30 Forrest Wynne**  
AQUACULTURE EDUCATION, EXTENSION AND OUTREACH: MOVING FORWARD IN A GLOBAL INDUSTRY
- 8:45 Samuel S. Chan, Forrest Wynne, Gary Fornshell, Gene Kim**  
NATIONAL AQUACULTURE EXTENSION CONFERENCE SURVEY YIELDS STRATEGIC ISSUES, NEEDS AND ACTIONS TO ADDRESS AGING EXTENSION WORKFORCE AND PERCEPTIONS ON AQUACULTURE
- 9:00 Chris Vonderweidt, Sebastian Belle, Julia Maine**  
MAINE AQUACULTURE STATEWIDE TRAINING STRATEGY
- 9:15 Barry A. Costa-Pierce, Carrie Byron, Ursula Röse, Amy Deveau, Adam St. Gelais, Zach Miller-Hope, Craig Pendleton, Tollef Olsen, Markus Frederich, Chris Feurt**  
THE SUSTAINABLE ECOLOGICAL AQUACULTURE NETWORK (SEANET) IN MAINE: IMPACTS TO THE UNIVERSITY OF NEW ENGLAND (UNE) FROM THE LARGEST AQUACULTURE GRANT EVER GIVEN BY THE NATIONAL SCIENCE FOUNDATION
- 9:30 Christos Michalopoulos, Linda Anne Chilton, Cynthia Sandoval**  
LEARNING ABOUT SEAFOOD: SUPPORTING NOAA'S AQUACULTURE EFFORTS THROUGH EDUCATION
- 9:45 Russell Grice, William Walton**  
PEER TO PIER FELLOWSHIP PROGRAM FOR OYSTER AQUACULTURE
- 10:00 BREAK**
- 11:00 Herbert E. Quintero, Anita M. Kelly**  
EXPERIENCES OF AN EXCHANGE PROGRAM IN AQUACULTURE
- 11:15 Joseph K. Buttner, Gregory Carroll, Alan Shwedel, George Weagba, Jerry Kulah, Moses Yama, Roger Domah, Zizi Kpadeh, George Weefar, Emma Metieh-Glassco, Yarpawolo Johnson**  
EVOLVING ROLE OF AQUACULTURE EXTENSION IN UPCOUNTRY LIBERIA
- 11:30 Joseph R. Sullivan**  
USAID FARMER-TO-FARMER AQUACULTURE PROJECT VOLUNTEER OPPORTUNITIES OVER THE NEXT FIVE-YEAR CYCLE
- 11:45 Michael Ciaramella, Stephen Frattini**  
FISH TO DISH COLLABORATIVE INTERNSHIP AND EDUCATION PROGRAM
- 12:00 Gregory N. Whitis**  
MARKETING BIG CATFISH: SUGGESTIONS FOR THE U.S. FARM RAISED CATFISH INDUSTRY
- 12:15 David Straus, Thomas Meinelt, Dibo Liu, Lars-Flemming Pedersen, Chris Good, John Davidson**  
EXTENSION UPDATE – A NEW AQUACULTURE DISINFECTANT – PERACETIC ACID
- 12:30 LUNCH**

- 1:30 Barry Costa-Pierce**, Kristina Snuttan Sundell, Adam St. Gelais, Zach Miller-Hope, Holly Parker, Helgi Thorarensen, Ögmundur Knútsson  
NEW, INTERNATIONAL PROFESSIONAL SCIENCE MASTERS IN OCEAN FOOD SYSTEMS AND THE SUSTAINABLE USE OF MARINE BIORESOURCES
- 1:45 Melissa L. Mullins**, John Scarpa, Jeremy L. Conkle, William Balboa, Bryan J. Brooks  
ENGAGING K-12 CLASSROOM AND INFORMAL SCIENCE EDUCATORS IN AN AQUACULTURE RESEARCH PROJECT
- 2:00 Kenneth Thompson**, Kirk Pomper, James Tidwell  
DESIGNING INQUIRY-BASED, PROJECT-ENHANCED, INTERDISCIPLINARY LEARNING ENVIRONMENTS IN THE HIGH SCHOOL CLASSROOM USING AQUAPONICS
- 2:15 Zachariah Chambers**, Brandon Hall  
INTEGRATING AQUAPONICS INTO THE COLLEGE CURRICULUM: ROUND TWO REPORT
- 2:30 Elliot Nelson**, Barbara Evans  
YOUTH EDUCATION IN AQUACULTURE: CONNECTING HIGH SCHOOLS AND PRODUCERS ACROSS THE MIDWEST TO ENSURE A FUTURE FOR AQUACULTURE
- 2:45 David Cline**  
CREATING BETTER EDUCATIONAL VIDEOS FOR EXTENSION AND OUTREACH
- 3:00 BREAK**
- 3:30 Louis Landesman**  
USEFUL TIPS FOR GROWING DUCKWEED AND OTHER FLOATING AQUATIC PLANTS
- 3:45 Ngalya Nathalie Bengé**, Mibiruki Franco Monsengo, Busanga Alidor Kandonda, Petronella Saidi, Tamuka Nhiwatiwa  
THE CURRENT STATUS OF AQUACULTURE IN KISANGANI REGION, DEMOCRATIC REPUBLIC OF THE CONGO: CONSTRAINTS AND OPPORTUNITIES

## PLANNING INITIATIVES TO GROW AQUACULTURE

Sunday, March 10 8:30 AM - 5:30 PM Balcony I

Chairs: Tessa Getchis, Beth Walton

- 8:30 Michael Rubino**, Mike Rust or assigned staff  
NOAA
- 8:45 LaDon Swann**  
SEA GRANT 10-YEAR AQUACULTURE VISION
- 9:00 Laura Hoberecht**, Diane Windham, Gil Sylvia, Steve Rumrill  
WEST COAST SHELLFISH INITIATIVES
- 9:15 John Scarpa**, Joe Fox, William Balboa, Rhonda Cummins  
IS THERE A CHANCE FOR OFF-BOTTOM OYSTER AQUACULTURE IN TEXAS?

- 9:30 Laura Gray**, Garrett Goto, Randy Lovell, Cassidy Teufel, Susan Ashcraft, Kirsten Ramey  
RECONCILING REGULATORY LANGUAGE WITH CULTIVATION METHODS TO ALLOW FOR FLEXIBILITY AND EXPANSION IN SHELLFISH AQUACULTURE IN CALIFORNIA STATE WATERS
- 9:45 Bethany A. Walton**, D. LaDon Swann, William C. Walton  
THE GULF OF MEXICO SHELLFISH INITIATIVE: USING STAKEHOLDER FEEDBACK AS A STEPPING STONE TO IMPLEMENT NEXT STEPS
- 10:00 BREAK**
- 11:00 Bethany A. Walton**, William C. Walton, Bryan T. Rackley  
OYSTER SOUTH: GROWING THE SOUTHERN FARM-RAISED OYSTER COMMUNITY
- 11:15 Bruce J. Barber**, Curtis Hemmel  
THE GULF SHELLFISH INSTITUTE: WORKING TO INCREASE SHELLFISH PRODUCTION IN FLORIDA AND THROUGHOUT THE GULF OF MEXICO
- 11:30 Thomas H. Bliss**, Mark Risse  
STATUS ON EASTERN OYSTER *Crassostrea virginica* AQUACULTURE IN GEORGIA
- 11:45 Charles Weirich**, Erin Fleckenstein, Todd Miller, Jacob Boyd, Steven Murphey, Kenneth Riley  
DEVELOPMENT AND IMPLEMENTATION OF THE NORTH CAROLINA SHELLFISH INITIATIVE
- 12:00 Jacob Boyd**, Charles R. Weirich, Erin Fleckenstein, Todd Miller, Stephen Murphey, Kenneth Riley  
THE NORTH CAROLINA SHELLFISH INITIATIVE – RESTORATION, PROTECTION, AND MANAGEMENT
- 12:15 Jesse M. Lepak**  
BARRIERS TO NEW YORK AQUACULTURE WITH A FOCUS ON THE GREAT LAKES BASIN: CAN WE PLAN INITIATIVES AND GROW THE INDUSTRY?
- 12:30 LUNCH**
- 1:30 Tessa Getchis**, Julie Rose, Nancy Balcom, Anoushka Concepcion, Sylvain De Guise  
FACILITATING A PLAN TO EXPAND ECONOMIC, ENVIRONMENTAL AND CULTURAL BENEFITS OF CONNECTICUT SHELLFISH
- 1:45 Stephen Kirk**, Melissa Sanderson, Chris Sherman, Christopher Schillaci, Sean McNally, Scott Soares  
THE MASSACHUSETTS SHELLFISH INITIATIVE (MSI): DEVELOPING A STATE-WIDE PLAN FOR MAXIMIZING ECONOMIC, ENVIRONMENTAL, AND SOCIAL BENEFITS OF SHELLFISH RESOURCES IN MASSACHUSETTS
- 2:00 Read Porter**, Rebecca Kihslinger, Brooke Hodge, Michael Tlusty, Diane Murphy  
*MA-ShellfAST*: A GIS-BASED TOOL FOR SHELLFISH AQUACULTURE SITING AND PERMITTING
- 2:15 Chris Vonderweidt**, Sebastian Belle  
FOCUSMAINE AQUACULTURE INDUSTRY GROWTH INITIATIVE

- 2:30 Sebastian Belle**, Michael Pietrak, Dana Morse, Christopher Bartlett  
THE USE OF A FORESIGHT VISIONING PROCESS TO DEVELOP COMPREHENSIVE ECONOMIC DEVELOPMENT PLANS FOR THE AQUACULTURE SECTOR: MAINE A CASE STUDY
- 2:45 Chris Vonderweidt**, David Hunter, Jeff Auger, Julia Maine, Nicole Twohig  
MAINE COMMERCIAL DEMONSTRATION OYSTER FARM

## ECONOMICS AND MARKETING – PART 1

Sunday, March 10 8:30 AM - 5:30 PM Galeries 1

Chair: Frank Asche

- 8:30 Frank Asche**, James Anderson, Taryn Garlock, Gina Shamshak  
CONSUMPTION PATTERNS FOR SEAFOOD IN THE U.S.
- 8:45 Carole Engle**, Terrill Hanson, Ganesh Kumar  
ECONOMIC HISTORY OF THE U.S. CATFISH INDUSTRY
- 9:00 Atle Øglend**, Hans-Martin Straume  
PRICING EFFICIENCY ACROSS DESTINATION MARKETS FOR NORWEGIAN SALMON EXPORTS
- 9:15 Madan Dey**, Prasanna Surathkal, Trond Bjørndal  
SUPPLY FUNCTION IN AQUACULTURE AND FISHERIES: A REVIEW AND DESCRIPTIVE META ANALYSIS
- 9:30 Taryn Garlock**, Mark Musumba, James Anderson, Frank Asche  
MARKET POTENTIAL FOR FINFISH AQUACULTURE IN THE GULF OF MEXICO
- 9:45 Zifei Liu**  
RESEARCH ON COMPLEMENTARITY IN AQUATIC PRODUCTS BETWEEN CHINA AND U.S.
- 10:00 Roy Endré Dahl**  
THE VALUE OF STABILITY – SETTING THE PRICE ON AQUACULTURE COMPANIES
- 10:15 BREAK**
- 11:00 Hans-Martin Straume**, Erling Vårdal  
CONNECTING THE DOTS: NETWORKS IN NORWEGIAN SALMON EXPORTS
- 11:15 Ivar Gaasland**, Hans-Martin Straume, Erling Vårdal  
NORWEGIAN SALMON EXPORTS – MARKET CONCENTRATION IN EXPORTER-BUYER RELATIONS
- 11:30 Madan Dey**, Prasanna Surathkal, A.B.M. Mahfuzul Haque  
INTEGRATION OF INLAND FISH MARKETS IN BANGLADESH: ANALYSIS USING PRINCIPAL COMPONENTS
- 11:45 Vinícius Souza Ribeiro**, Manoel Xavier Pedroza Filho  
GLOBAL VALUE CHAINS OF TILAPIA IN BRAZIL: A PERFORMANCE ANALYSIS

**12:00 Erling Vardal**, Ivar Gaasland, Hans-Martin Straume  
DIFFERENCES IN PRICES OF NORWEGIAN SALMON EXPORTS: FROM COUNTIES TO CITIES

**12:15 Bixuan Yang**, Frank Asche, James L. Anderson  
DETERMINANTS OF CHINA'S SEAFOOD TRADE PATTERNS

**12:30 LUNCH**

**1:30 Fabian Rocha Aponte**  
FIRM DISPERSION AND TOTAL FACTOR PRODUCTIVITY: ARE NORWEGIAN SALMON PRODUCERS LESS EFFICIENT OVER TIME?

**1:45 Laura Bailey**, Brian Vinci  
ECONOMIES OF SCALE FOR RECIRCULATING AQUACULTURE SYSTEMS

**2:00 Ruth Pincinato**, Frank Asche, Kristin Helen Roll  
THE ECONOMICS OF ESCAPED FARMED SALMON

**2:15 Carlos Batista**, Maria João Faleiro, Carlos Andrade  
THE COSTS OF SPECIES DIVERSIFICATION IN MARINE FISH FARMING: THE HATCHERY

**2:30 Oludare Akanni Adeogun**, Adekunle Oresegun, Bernard Edah, Omolola T. Olajide, Faustina A. Bakare, Mercy O. Adeogun, Titocan Imhansoloeva  
DERIVATION OF OPTIMAL FISH FEED RATIOS FOR ESTIMATING FISH PRODUCTION FUNCTION

**2:45 Prasanna Surathkal**, Madan Dey  
IMPACTS OF TRADE VOLUME ON PRICE RELATIONSHIPS: AN EMPIRICAL ANALYSIS OF THE U.S. CATFISH MARKET

**3:00 BREAK**

**3:30 Michael Tlusty**, Kevin Fitzsimmons, Rick Barrows  
FROM BENCH TO BELLY: CREATING A NETWORK TO DRIVE SUPPLY SIDE SOLUTIONS FOR THE FUTURE OF FISH FEED

**3:45 Melissa Southworth**, James Wesson, Marcia Berman, Tamia Rudnicki, Roger Mann  
BUILDING TOOLS TO MINIMIZE USER CONFLICT WHILE PROMOTING BOTH AQUACULTURE AND TRADITIONAL FISHERIES

**4:00 Albert "Rusty" Gaudé**  
PERMITTED SURFACE-WATER AQUACULTURE IN LOUISIANA RIVER DIVERSION DISCHARGE

**4:15 Myron Kebus**  
HOW WISCONSIN TROUT HEALTH REGULATIONS EVOLVED

**4:30 Nicolas Patt**, Alexander M. Kaminski, Mara Gellner, Dominik Giese, Sharif Jabborov, Mario Lootz, Mary Lundeba, Boniface Nyika, Azin Sadeghi, Muzamba M. Siachinga  
TOWARDS A CHARACTERIZATION OF SMALL-SCALE AQUACULTURE IN SUB-SAHARAN AFRICA: A LIVELIHOOD ANALYSIS OF SMALLHOLDER FISH FARMING HOUSEHOLDS IN ZAMBIA

SUNDAY



- 4:45 Rune Nygård**  
TRENDS IN CORPORATE SOCIAL RESPONSIBILITY ACTIVITIES IN PUBLIC SALMON FARMING COMPANIES
- 5:00 Brennan Goreham**  
CREATION OF A MODERN REGULATORY FRAMEWORK FOR SUSTAINABLE AQUACULTURE DEVELOPMENT IN NOVA SCOTIA, CANADA

## STATUS OF MARINE FINFISH SPECIES FOR U.S. AQUACULTURE

Sunday, March 10 8:30 AM - 5:30 PM Galerías 3

Chairs: Megan Davis, Paul Wills, Caird Rexroad, Gene Kim, Mike Rust

- 8:30 Megan Davis**  
WELCOME AND INTRODUCTION
- 8:45 Reginald B. Blaylock**, Eric A. Saillant, Angelos Apeitos, Jason Lemus, Robert Vega  
THE STATUS OF SPOTTED SEATROUT *Cynoscion nebulosus* AS A TECHNOLOGICALLY FEASIBLE SPECIES FOR U.S. MARINE AQUACULTURE
- 9:00 Elizabeth A. Fairchild**, Nathalie Le Francois  
THE STATUS OF SPOTTED WOLFFISH *Anarhichas minor* AS AN EXPERIMENTAL SPECIES FOR MARINE U.S. AQUACULTURE
- 9:15 Kevin Stuart**, Constance Silbernagel, Mark Drawbridge  
THE STATUS OF CALIFORNIA HALIBUT *Paralichthys californicus* AS A TECHNOLOGICALLY FEASIBLE SPECIES FOR MARINE U.S. AQUACULTURE
- 9:30 Harry V. Daniels**  
THE STATUS OF SOUTHERN FLOUNDER *Paralichthys lethostigma* AND SUMMER FLOUNDER *Paralichthys dentatus* AS EXPERIMENTAL SPECIES FOR U.S. MARINE AQUACULTURE
- 10:00 BREAK**
- 11:00 Eric A. Saillant**, Jason Lemus, James Franks, Kelly Lucas, Yonathan Zohar, John Stubblefield, Christopher Manley  
TRIPLETAIL *Loboted surinamensis*: A PROMISING CANDIDATE SPECIES FOR U.S. MARINE AQUACULTURE
- 11:15 Kevan Main**, Matthew Resley, Nicole Rhody, Neil Sims, John Stubblefield, Constantinos Mylonas, Yonathan Zohar  
THE STATUS OF GREATER AMBERJACK *Seriola dumerili* AS AN EXPERIMENTAL SPECIES FOR MARINE U.S. AQUACULTURE
- 11:30 TBA**
- 12:30 LUNCH**
- 1:30 Neil Sims**, Lisa Vollbrecht  
THE STATUS OF KAMPACHI *Seriola rivoliana* CULTURE IN THE UNITED STATES
- 1:45 Federico Rotman**, Constance Silbernagel, Kevin Stuart, Mark Drawbridge  
THE STATUS OF CALIFORNIA YELLOWTAIL *Seriola dorsalis* A COMMERCIALY READY SPECIES FOR MARINE U.S. AQUACULTURE

- 2:00 Wade O. Watanabe**, Patrick M. Carroll, Md Shah Alam, Christopher D. Bentley, Ted M. Davis, Clarke J. Morton, John C. Graham  
THE STATUS OF BLACK SEA BASS *Centropristis striata* AS A COMMERCIALY READY SPECIES FOR U.S. MARINE AQUACULTURE
- 2:15 Daniel Benetti**, Ronald Hoenig, Jorge Suarez, Carlos Tudela, John Stieglitz  
THE STATUS OF COBIA *Rachycentron canadum* AQUACULTURE IN THE UNITED STATES AND ABROAD
- 2:30 George Nardi**  
THE STATUS OF ATLANTIC COD *Gadus morhua* AS A COMMERCIALY READY SPECIES FOR U.S. MARINE AQUACULTURE
- 2:45 Benjamin Reading**, David L. Berlinsky, L. Curry Woods III, Ronald G. Hodson, S. Adam Fuller, Carl Webster, Andrew S. McGinty  
THE STATUS OF STRIPED BASS *Morone saxatilis* AS A COMMERCIALY READY SPECIES FOR MARINE U.S. AQUACULTURE
- 3:00 BREAK**
- 3:30 Mark Drawbridge**, Michael Shane, Eric McIntire, Connie Silbernagel  
THE STATUS OF WHITE SEABASS *Atractoscion nobilis* AS A COMMERCIALY READY SPECIES FOR MARINE U.S. AQUACULTURE
- 3:45 Todd Sink**, Robert Vega, David Abrego, Jennifer Butler  
THE STATUS OF RED DRUM *Sciaenops ocellatus* AS A COMMERCIALY READY SPECIES FOR MARINE U.S. AQUACULTURE
- 4:00 Charles Weirich**, M.L. Anderson, R.M. Baptiste, F.T. Bueno, J. Cardenas, F.G. Cavalin, D.S. Cerino, M.D. Chambers, D.A. Davis, D.P. Farkas, B.A. Garr, C.T. Gothreaux, D.R. Groat, K.L. Main, J.M. Milchman, D.E. Mowry, T.J. Pfeiffer, M.J. Resley, N.L. Rhody, M.A. Rhodes, M.A. Riche, K.L. Riley, E.S. Wagner, P.S. Wills, P.N. Woodward  
THE STATUS OF FLORIDA POMPANO *Trachinotus carolinus* AS A COMMERCIALY READY SPECIES FOR MARINE U.S. AQUACULTURE
- 4:15 Frederick Goetz**, Jim Parsons  
THE STATUS OF SABLEFISH *Anoplopoma fimbria* AS A COMMERCIALY READY SPECIES FOR U.S. MARINE AQUACULTURE
- 4:30 John Stieglitz**, Ronald Hoenig, Carlos Tudela, Jia Geng, Daniel Benetti  
THE STATUS OF OLIVE FLOUNDER *Paralichthys olivaceus* AS A COMMERCIALY READY SPECIES FOR U.S. MARINE AQUACULTURE
- 4:45 Pedro Pousão-Ferreira**, Marisa Barata, Sara Castanho, Anaísa Cordeiro-Silva, Florbela Soares, João Araújo, Narcisca M. Bandarra, Ana Candeias-Mendes  
SARDINE *Sardina pilchardus* AQUACULTURE PRODUCTION: ADAPTATION TO CAPTIVITY, NUTRITION AND SPAWNING
- 5:00 DISCUSSION**

# CATFISH AND CATFISH HYBRIDS – PART 1

Sunday, March 10 8:30 AM - 5:30 PM Galeries 5

Chairs: Jimmy Avery, Luke Roy, Nagaraj Chatakondi

- 8:30 Jimmy L. Avery**  
STATUS OF THE U.S. FARM-RAISED CATFISH INDUSTRY – 2018
- 8:45 Gulnihal Ozbay**, Balaji Kubandra Babu  
MONITORING DRUG RESIDUES AND HEAVY METALS CONTAMINANTS IN RETAIL CATFISH FILLETS
- 9:00 Leticia E. Fantini**, Jesse Chappell, Terry Hanson  
IN-POND RACEWAY PRODUCTION OF STOCKER AND FOODSIZE HYBRID CATFISH
- 9:15 Ganesh Kumar**, Carole Engle, Terry Hanson, Craig Tucker, Travis Brown, Lisa Bott, Luke Roy, Claude Boyd, Matthew Recsetar, Jeonghwan Park, Eugene Torrans  
ECONOMICS OF ALTERNATIVE CATFISH PRODUCTION TECHNOLOGIES
- 9:30 Ganesh Kumar**, Menghe Li, Charles Mischke, Les Torrans, Craig Tucker, Suja Aarattuthodiyil, David Wise  
PERFORMANCE OF CHANNEL CATFISH IN INTENSIVELY AERATED PONDS
- 9:45 Siddhartha Dasgupta**, Richard Bryant, Victoria Odesanmi  
PROFITABLE CATFISH FARMING USING AN URBAN MODEL
- 10:00 BREAK**
- 11:00 Mackenzie Gunn**, Matt Griffin, Brian Ott, T. Graham Rosser, Peter Allen  
COMPARATIVE MORTALITY AND PARASITE-INDUCED ANEMIA IN CHANNEL *Ictalurus punctatus* AND HYBRID CATFISH *I. punctatus* × *I. furcatus* EXPOSED TO *Bolbophorus damnificus* CERCARIAE
- 11:15 Ramjie Y. Odin**, Nathan Backenstose, Ahmed Elasad, Karim Khalil, Zach Taylor, Dominique Olesen, Alexander Kiser, Yiliu Zhang, Max Bangs, Rex A. Dunham  
GENERAL AND SPECIFIC COMBINING ABILITY OF CHANNEL CATFISH *Ictalurus punctatus* FEMALE × BLUE CATFISH *Ictalurus furcatus* MALE FOR IMPROVED RESISTANCE TO ENTERIC SEPTICEMIA OF CATFISH ESC INFECTION OF THEIR F1 HYBRID PROGENY
- 11:30 Guillaume Salze**, Shimaa Salem, Ash Abebe, Kevin Touchette, D. Allen Davis  
OPTIMIZING AMINO ACID BALANCE FOR PROTEIN UTILIZATION IN LOW-PROTEIN CATFISH FEEDS
- 11:45 Shaimaa Salem**, Iman Ibrahim, Attila Karsi, Hisham A. Abdelrahman, D. Allen Davis  
THE EFFECT OF CRYSTALLINE AMINO ACIDS SUPPLEMENTATION IN THE REDUCED INTACT PROTEIN DIETS ON MUSCLE GROWTH AND INTESTINAL MORPHOLOGY OF CHANNEL CATFISH *Ictalurus punctatus*
- 12:00 Charles W. Starkey**, Kari Estes, Barbara Barton, Tom Powell, A. Jake Keel, Kathryn Robinson, Jessica Starkey  
EFFECT OF FEEDING SUPPLEMENTAL CHOLINE CHLORIDE ON HYBRID CHANNEL *Ictalurus punctatus* × BLUE *Ictalurus furcatus* CATFISH GROWTH PERFORMANCE
- 12:15 Les Torrans**, Brian Ott  
IT STARTS WITH THE BROODER

**12:30 LUNCH**

**1:30 James Creel**, Terrill R. Hanson, Luke A. Roy, Steve Sammons, Lisa B. Bott  
DETERMINATION OF AGE OF HYBRID CATFISH *Ictalurus punctatus* × *Ictalurus furcatus* AND CHANNEL CATFISH *Ictalurus punctatus* FROM COMMERCIAL FISH FARMS TO BETTER UNDERSTAND THE “BIG FISH” PROBLEM IN WEST ALABAMA

**1:45 Nagaraj G. Chatakondi**  
PROPAGATION AND PERFORMANCE EVALUATION OF CALIFORNIA STRAIN OF CHANNEL CATFISH

**2:00 A.E. Butts**, Jaelen N. Myers, Nagaraj Chatakondi  
GENETIC ARCHITECTURE OF EARLY LIFE HISTORY TRAITS FOR CHANNEL CATFISH *Ictalurus punctatus* ♀ × BLUE CATFISH *I. furcatus* ♂ HYBRID PRODUCTION

**2:15 Rex Dunham**, Zachary Taylor, Dalton Robinson, Michael Coogan, James North, Jeremy Gurbatow, Nour El Husseini, Abdallah Salah, Ramjie Odin, Dominique Olesen, Nagaraj Chatakondi, Brian Bosworth, Peter Allen  
REPEATABILITY OF INCIDENCE AND TIME OF OVULATION, FECUNDITY AND FERTILITY IN CHANNEL CATFISH FEMALES INDUCED TO OVULATE FOR PRODUCTION OF HYBRID CATFISH FRY

**2:30 Guyu Qin**, Zhenkui Qin, Zhi Ye, Cuiyu Lu, Ahmed Elawwad, Max Bangs, Rex Dunham  
PLEIOTROPIC EFFECT AND OFF-TARGET EFFECT OF GONADOTROPIN RELEASING HORMONE GENE EDITED CHANNEL CATFISH *Ictalurus punctatus* VIA ELECTROPORATION OF TALEN AND CRISPR/CAS9 SYSTEMS

**2:45 Michael Coogan**, Tracy Qin, Baofeng Su, Veronica Alston, Karim Khalil, Ahmed Elawwad, Mohd Golam Quader Khan, Rex Dunham  
GROWTH AND SURVIVAL OF MYOSTATIN GENE-EDITED CHANNEL CATFISH *Ictalurus punctatus*

**WAVMA AQUATIC VETERINARY MEDICINE**

Sunday, March 10 8:30 AM - 5:30 PM Salon A

Chair: Dave Scarfe, Jessie Sanders

**ASSISTING VETERINARIANS & AQUACULTURE PRODUCERS**

**8:30 John P. Shelley**, Roy P.E. Yanong  
CURRENT EMERGING DISEASES AFFLICTING THE ORNAMENTAL FISH INDUSTRY

**9:00 Galit Sharon**, Rosa Ines Strem  
NEUROLOGICAL SIGNS IN GREY MULLET *Mugil cephalus* CAUSED BY *Vibrio harveyi*

**9:30 Renate Reimschuessel**, Olgica Ceric, Sarah Nemser  
VET-LIRN'S VETERINARY PATHOGEN ANTIMICROBIAL SUSCEPTIBILITY PROJECT – FISH TOO?

**10:00 BREAK**

**10:30 Betsy Bamberger**  
USE OF DIQUAT DIBROMIDE (Reward®) FOR TREATMENT OF COLUMNARIS DISEASE IN SALMONIDS: A CASE REVIEW

- 11:00 Jessie Sanders**  
WATER QUALITY AND OSMOTIC HOMEOSTASIS IN FRESHWATER FISH SYSTEMS
- 11:30 Jessie Sanders**  
BIOSECURITY AND QUARANTINE IN AQUACULTURE SYSTEMS
- 12:00 Jessie Sanders**  
COMMON PARASITES OF FRESHWATER AQUACULTURE SYSTEMS
- 12:30 LUNCH**
- 1:30 Jessie Sanders**  
INFECTIOUS DISEASES IN CYPRINIDS
- 2:00 Kathleen Hartman, Lynn Creekmore, Lori Gustafson, Christa Speekmann, Katharin Starzel**  
NATIONAL VETERINARY ACCREDITATION PROGRAM MODULE 28: SIGNIFICANT AND EMERGING VIRAL DISEASES OF CARP, KOI AND GOLDFISH
- 2:45 Kathleen Hartman, Lynn Creekmore, Lori Gustafson, Christa Speekmann, Katharine Starzel**  
NATIONAL VETERINARY ACCREDITATION PROGRAM MODULE 13: AQUATIC ANIMAL HEALTH REGULATIONS AND HEALTH CERTIFICATION
- 3:30 BREAK**
- 3:45 David C. Love, Jillian P. Fry, Felipe Cabello, Christopher M. Good, Bjørn T. Lunestad**  
VETERINARY DRUG USE IN UNITED STATES NET PEN SALMON AQUACULTURE
- 4:15 A. David Scarfe, Timothy Miller-Morgan, Dušan Pali, Howard Wong, Gillian Taylor, Aimee Reed, Sophie St. Hilaire**  
INTERNATIONAL EFFORTS TO ENSURE A WELL-TRAINED AQUATIC VETERINARY WORKFORCE TO SERVICE AQUACULTURE INDUSTRIES

## ONE HEALTH EPIGENOMICS AND MICROBIOMES: FROM SOIL TO PEOPLE WORKSHOP

Sunday, March 10 8:30 AM - 5:30 PM Salon C

Chair: Acacia Warren

**FOCUS:** The “ONE HEALTH Epigenomics and Microbiomes: From soil to People” workshop focus on the holistic theme of Conserving Healthy Ecosystems, to Maintain Healthy Animals, to Protect Human Health long-term’. Two **Outstanding Women in Aquaculture: Pioneers Addressing Ecosystem, Animal and Public Health**”, Drs. Jurgenne Primavera and Sandra Shumway, will be recognized by the FUCOBI Foundation of Ecuador for their long time efforts applying the holistic concept of ONE HEALTH. Speakers will address **Ecosystem Health** topics: The Mangrove Epigenome (mangroveENCODE) Project; genome sizes, transposable elements (TEs) and epigenetics of adapted mangrove trees; microbial communities of soil from mangrove and their global prevalence of heavy metals and antibiotic resistome across different ecosystems from India, Brazil, Mexico, and other countries; characterization of endocrine disrupting chemicals (EDCs) such as metals, persistent organic pollutants (POPs: PCBs, PAHs, diesel, oil), pesticides (Glyphosate, organophosphates) and plastics (Bisphenol A, BPA) in

water, agricultural soil, mangrove sediment and shrimp ponds, estuarine shrimp/shellfish; emerging pathogens (*Vibrio* spp., viruses); greenhouse gases (CO<sub>2</sub>) of mangrove and shrimp pond sediment. **Animal Health** topics include: The Shrimp Epigenome (ShrimpENCODE) Project; genome sequences assembled for 3 penaeid species; genetic pollution caused by unregulated international trade, transgenerational epigenetic inheritance (TGEI), heritability, crossbreeding and inbreeding effects for growth and disease resistance in *P. vannamei*; genome rearrangements after introgression of Mexican shrimp resistant to WSSV into SPF shrimp from the USA; the microbiome and resistome of shrimp gut/hepatopancreas; genetic diversity of AHPND-causing *Vibrio* parahaemolyticus (Vp) containing plasmids with *Photobacterium* insect-related pirAB insecticidal toxins; glycosylation-dependent PirBvp-receptor interactions: PirBvp lectin AND PirAvp toxin of Vp to promote AHPND; the PirAB toxin-producing genes are similar in function to *Bacillus thuringiensis* (Bt) Cry proteins; TEs and satellite sequences of first SPF shrimp domesticated in the USA; transposases of shrimp, vibrios, Bt, WSSV, *Agrobacterium* spp.; antimicrobials and EDCs in aquatic species, horizontal gene transfer (HGT) and horizontal transfer of transposons (HTT); inbreeding, crossbreeding and growth performance; disease susceptibility and HTT; antimicrobial resistance and antimicrobial peptides; genetic diversity of wild shrimp populations; proteomic profiling of *P. vannamei* hemocytes infected with WSSV reveals the induction of allergy-related proteins; hemocyanin and other novel shrimp allergens; DNA methylation of vibrios and shrimp; genetically engineered (GE-), genetically modified (GM)- or gene edited (CRISPR)-based crops such as soybeans used in aqua feeds; BPA in liners and geomembranes used in shrimp farming and packing; the 'Shrimp Scampi' Citizens Science Project addressing contamination of imported and local shrimp sold in supermarkets; genomic and epigenomic selection; Applied Hologenomics: feasibility and potential in aquaculture, metal bioaccumulation in shrimp produced in RAS / Bioflocs; risk assessments for EDCs like metals, glyphosate and BPA, basic research needed to produce healthy shrimp. **Public Health** topics include: The Coastal People Epigenome (ChildrenENCODE) Project; health considerations of HGT of microbial transgenes (Bt)-based insecticides, risk assessments needed for Bt-based products to control Zika virus associated with microcephaly; reviews of herbicide and antimicrobial Glyphosate associated with microcephaly, anencephaly and other neural tube defects; the need for long-term transgenerational assessments of health effects to shrimp, fish and people caused by the consumption of GE-, GM-, CRISPR-based food containing low levels of allergen Bt Cry toxin proteins, Glyphosate and metals (arsenic, cadmium, others) associated with chronic diseases (obesity, type 2 diabetes, allergies); and the distinct properties of natural and GM Cry proteins. The session will end with an Open Forum about 'The need for risk assessments to address microbial transgenes-based crops used in aqua feeds, and resistance to both antimicrobial Glyphosate and Bt-based larvicides used for pest management'.

**8:30 Acacia Alcivar-Warren**

ONE HEALTH EPIGENOMICS AND MICROBIOMES: FROM SOIL TO PEOPLE  
WORKSHOP: RECOGNITION TO 'OUTSTANDING WOMEN IN AQUACULTURE –  
PIONEERS ADDRESSING ECOSYSTEM, ANIMAL AND PUBLIC HEALTH

**8:45 Jurgenne Primavera**

ECOSYSTEM SERVICES, THE PHILIPPINE SETTING: MY JOURNEY FROM FOOD  
PRODUCTION (POND AQUACULTURE) TO COASTAL PROTECTION (MANGROVES)

**9:00 Sandra Shumway**

EVERYTHING PUBLISHED IS NOT REPUTABLE SCIENCE! HOW TO AVOID THE

## PITFALLS OF OPEN ACCESS PUBLICATION

- 9:15 Acacia Alcivar-Warren**, Oscar Jean, Miriam Alcivar-Arteaga,  
The Mangrove Epigenome Project  
THE MANGROVE EPIGENOME (MangroveENCODE) PROJECT: GENOME SIZES,  
GENETIC VARIATION, AND STRESS ADAPTATION OF MANGROVES TO GLOBAL  
CHANGE THROUGH INTERACTIONS OF TRANSPOSABLE ELEMENTS AND  
EPIGENETIC COMPONENTS – A REVIEW
- 9:30 Ben Brisbois**  
PESTICIDES, BANANAS AND SHRIMP ON THE SOUTHERN ECUADORIAN COAST:  
SCIENCE AND THE DEFENSE OF ECOSYSTEMS AND HEALTH
- 9:45 Yiping Chen**, Yushuai Wang, Aimei Dai, Tian Tang  
THE ROLE OF GENE BODY METHYLATION IN MANGROVE STRESS ADAPTATION
- 10:00 BREAK**
- 10:30 Acacia Alcivar-Warren**  
A LINE-1 (L1)-LIKE NON-LTR RETROTRANSPOSON TRANSCRIPT WITH A  
TRANSPOSASE\_22 DOMAIN AT 3'-END IS PRESENT IN THE GENOME OF PACIFIC  
WHITELEG SHRIMP *Penaeus (Litopenaeus) vannamei* FARMED IN BRAZIL,  
WITH PARTIAL HOMOLOGY TO L1 AND L1HS CLASSES IN HUMAN, *Bacillus*  
*thuringiensis*, *Enterococcus hirae* AND *Vibrio* spp., BUT IS NOT IN THE GENOME  
OR TRANSCRIPTOMES OF *P. vannamei* FARMED IN CHINA
- 10:45 Marcus Vinicius Canário Viana**, Ranjith Kumavath, Madangchanok Imchen,  
Vasco Azevedo, Alice R. Wattam  
MICROBIAL COMMUNITIES OF SOIL FROM MANGROVE AND THEIR GLOBAL  
PREVALENCE OF HEAVY METALS AND ANTIBIOTIC RESISTANCE ACROSS  
DIFFERENT ECOSYSTEMS
- 11:00 Cynthia P. Palmes-Saloma**, Sarah Penir, Edgar Amar, Leobert de la Pena  
COMPARATIVE GENOMICS OF ACUTE HEPATOPANCREATIC NECROSIS DISEASE-  
CAUSING *Vibrio parahaemolyticus* ISOLATES FROM THE PHILIPPINES
- 11:30 Ana M. Soto**  
DEVELOPMENTAL ORIGINS OF ADULT DISEASE: THE BISPHENOL A (BPA)  
SYNDROME
- 12:00 Anthony Hay**  
DETECTION OF GLYPHOSATE RESIDUES IN COMPANION ANIMAL FEEDS
- 12:30 LUNCH**
- 1:30 Kathy Tang**, Xuan Dong, Jipeng Song, Jiayuan Chen, Dexi Bi, Hailiang Wang,  
Wenchao Wang, Yanbei Ren, Chengcheng Guo, Xuepeng Wang, Jie Huang  
HORIZONTAL TRANSFER OF THE pVA1 PLASMID FROM AHPND-CAUSING TO  
NON-AHPND VIBRIO BACTERIA
- 1:45 Hugo H. Montaldo**, Héctor Castillo-Juárez, Gabriel R. Campos-Montes,  
Juan C. Quintana-Casares, Sonia A. Soto-Rodríguez, Leobardo Montoya-Rodríguez,  
Miguel Betancourt-Lozano, Alfonso Martínez-Ortega, Rodolfo Lozano-Olvera,  
Bruno Gómez-Gil, Erika P. Gallaga-Maldonado  
HERITABILITY, CROSSBREEDING AND INBREEDING EFFECTS FOR GROWTH AND  
DISEASE RESISTANCE IN *Litopenaeus vannamei*

- 2:15 Marcelo Victorio-De Los Santos**, Norberto Vibanco-Pérez, Ma. de Jesús Duran-Avelar, Edgar Zenteno, Sonia Soto-Rodríguez  
 GLYCOSYLATION-DEPENDENT PirBvp-RECEPTOR INTERACTIONS: ROLE OF PirBvp LECTIN AND PirAvp TOXIN OF *Vibrio parahaemolyticus* TO PROMOTE THE ACUTE HEPATOPANCREATIC NECROSIS DISEASE (AHPND) IN SHRIMP
- 2:30 Acacia Alcivar-Warren**, Kathy Tang, Cynthia Saloma, The Mangrove Epigenome Project  
 TRANSPOSASE DDE DOMAINS AND N-6 DNA METHYLASE FAMILY PROTEINS AS POTENTIAL EPIGENETIC MARKS FLANKING THE PirAB TOXIN-PRODUCING GENES OF PATHOGENIC *Vibrio* spp. THAT CAUSE AHPND IN SHRIMP FROM ASIA AND LATIN AMERICA
- 2:45 Kathy Tang**, Acacia Alcivar-Warren, The Shrimp Epigenome Project  
 INTEGRATED DNA VIRUSES IN THE ORIGINAL SPF SHRIMP *Penaeus (Litopenaeus) vannamei* DOMESTICATED IN THE UNITED STATES - FOCUS ON IHNV AND RTE-3\_LVa NON-LTR RETROTRANSPOSON
- 3:00 BREAK**
- 3:30 Kevin Hopkins**  
 POTENTIAL BIOACCUMULATION OF METALS IN RAS SYSTEMS – A PRELIMINARY REVIEW
- 3:45 Andrea Alejandro Rosales**, Miriam Alcivar-Arteaga, Diego Alejandro Tigrero, Karina Alejandro Rosales, Caroline A. Warren, Martha Reyes, Sruthi Tanikella, Ryan Hutchins, Jennifer N. Warren, Mulan Yang, Oscar Jaen, Gober Asuncion, Mayra Galindo, Christian Saltos, Diana Calvache, Diana Villota, Pedro Andrade, Freddy Aveiga, Jaime Torres, Shirley Alcivar Parrales, Karol Alarcon, Andres Aveiga, Acacia Alcivar-Warren, We are what we eat Program  
 A ONE HEALTH APPROACH TO AGROECOLOGY AND SUSTAINABLE SHRIMP AQUACULTURE TO ADDRESS PUBLIC HEALTH CONCERNS ABOUT ENDOCRINE DISRUPTING CHEMICALS (METALS, GLYPHOSATE) IN AGRICULTURAL SOIL, FRESH COW CHEESE, MANGROVE SEDIMENT, SEAWATER, RESIDUAL WATER, WILD SHRIMP AND CONCH TISSUES, AND HAIR OF MOTHERS OF CHILDREN WITH CONGENITAL MALFORMATIONS FROM THE ECUADORIAN COAST – REVIEW OF EPIGENETIC EFFECTS DETECTED AS A RESULT OF EXPOSURE TO METALS, AND METHYLATION [N(6)-METHYLADENINE] OF LINE-1 RETROTRANSPOSONS IN HEALTHY AND DISEASED MAMMALIAN BRAIN
- 4:00 Jonathan R. Latham**, Madeleine Love, Angelika Hilbeck  
 THE DISTINCT PROPERTIES OF NATURAL AND GENETICALLY MODIFIED (GM) Cry INSECTICIDAL PROTEINS
- 4:30 Jonathan R. Latham**, Jaime Torres  
 OPEN FORUM: THE NEED FOR RISK ASSESSMENTS TO ADDRESS MICROBIAL TRANSGENES-BASED CROPS USED IN AQUA FEEDS, AND RESISTANCE TO ANTIMICROBIAL GLYPHOSATE AND *Bacillus thuringiensis*-BASED LARVICIDES USED FOR PEST MANAGEMENT



## FISH NUTRITION PART 4

Sunday, March 10 8:30 AM - 5:30 PM Salon E

Chair: Guillaume Salze

- 8:30 Fernando Yamamoto**, Kequan Chen, Sergio Castillo, Joseph Tomasso, Delbert Gatlin III  
GROWTH AND PHYSIOLOGICAL EFFECTS OF REPLACING FISH MEAL BY DRY EXTRUDED SEAFOOD WASTE BLENDED WITH PLANT PROTEIN CO-PRODUCTS IN DIETS FOR ADVANCED RED DRUM *Sciaenops ocellatus* JUVENILES
- 8:45 Noor Khan**, Daniel Masood  
EFFECT OF SUBSTITUTING SOYBEAN MEAL WITH *Moringa oleifera* MEAL ON THE GROWTH, BODY COMPOSITION, GUT AND LIVER HEALTH OF *Labeo rohita* FINGERLINGS
- 9:00 Aaron M. Watson**, Fabio Casu, Justin Yost, T. Gibson Gaylord, Daniel W. Bearden, Michael R. Denson  
INVESTIGATING THE FATE OF SUPPLEMENTED METABOLITES AND THEIR EFFECTS ON PERFORMANCE IN JUVENILE RED DRUM
- 9:15 Abigail B. Bockus**, Madison S. Powell, Wendy M. Sealey, Gibson T. Gaylord  
EXPLORING THE USE OF TRIMETHYLAMINE OXIDE AS A FEED ADDITIVE TO COMBAT SOY-INDUCED ENTERITIS IN FARMED RAINBOW TROUT
- 9:30 Heba M. Abdel-Ghany**, Mohamed El.-S. Salem, Ahmed E. Sallam, Mohamed M. Al-Feky, Heba M. Al-Mesheri  
EFFECTS OF DIETARY ORANGE PEEL ON GROWTH PERFORMANCE, ANTIOXIDANT STATUS, INTESTINAL MICROBIOTA AND LIVER HISTOLOGY OF GILT HEAD SEA BREAM *Sparus aurata*
- 9:45 Fabio Casu**, Aaron Watson, Justin Yost, T. Gibson Gaylord, Daniel W. Bearden, Michael R. Denson  
EVALUATION OF A PUTATIVE BIOMARKER OF NUTRITIONAL STRESS IN RED DRUM *Sciaenops ocellatus* FED 60% SOYBEAN MEAL-BASED DIETS USING NMR-BASED METABOLOMICS
- 10:00 BREAK**
- 11:00 Tibiabin Benítez-Santana**, Thomas Larsson, Aleksei Krasnov, Carlo Lazado, Bjarne Hatlen, Turid Mørkøre  
HEALTH AND FLESH QUALITY OF ATLANTIC SALMON *Salmo salar* FED A MODERN LOW FISHMEAL DIET SUPPLEMENTED WITH ANTARCTIC KRILL *Euphausia superba*
- 11:15 Silvia Torrecillas**, Antonio Serradell, Alejandro Makol, Genciana Terova, Elisabetha Gini, Victoria Valdenegro, Tatiana Kalinowski, Marisol Izquierdo, Felix Acosta, Daniel Montero  
DIETARY PREBIOTICS AND PHYTOGENICS IN LOW FISH MEAL AND FISH OIL BASED DIETS FOR EUROPEAN SEABASS *Dicentrarchus labrax*: AN EFFECTIVE TOOL TO BOOST MUCOSAL TISSUES HEALTH AND DISEASE RESISTANCE
- 11:30 Seunghan Lee**, Karthik Masagounder, Brian C. Small, Ronald W. Hardy  
EFFECTS OF LOWERING DIETARY FISHMEAL AND CRUDE PROTEIN LEVELS ON GROWTH PERFORMANCE, BODY COMPOSITION, PLASMA BIOCHEMISTRY AND MUSCLE METABOLIC GENE EXPRESSION OF RAINBOW TROUT *Oncorhynchus mykiss* WITH AND WITHOUT HANDLING STRESS

SUNDAY

- 11:45 Vikas Kumar**, Seunghan Lee, Beth Cleveland, Ronald Hardy, Ramanathan Lalgudi, Barry McGraw  
GROWTH PERFORMANCE AND HEPATIC GENES EXPRESSION PROFILE IN RAINBOW TROUT IN RESPONSE TO SOY PROTEIN AS FISH MEAL REPLACER
- 12:00 Kimia Kajbaf**, Jake Bledsoe, Seunghan Lee, Brian Small, Ramanathan Lalgudi, Barry McGraw, Vikas Kumar  
DIETARY EFFECTS OF SOY PROTEIN ON GUT MICROBIOTA, SHORT CHAIN FATTY ACIDS OF DIGESTA AND INTESTINAL MORPHOLOGY IN RAINBOW TROUT
- 12:15 Kristen Meiler**, Seunghan Lee, Marina Benito, Beth Cleveland, Robert Walberg, Vikas Kumar  
ESTABLISHING A NOVEL NATURAL GUT HEALTH PROTOCOLS IN AQUATIC ANIMALS (NILE TILAPIA AND RAINBOW TROUT)
- 12:30 LUNCH**
- 1:30 Anusha K.S. Dhanasiri**, Xianquan Chen, Gerd M. Berge, Andre S. Bogevik, Christinae K. Fæste, Jorge M.O. Fernandes  
NUTRIEPIGENOMIC EFFECTS OF WHEAT GLUTEN-BASED DIET ON LIVER OF ATLANTIC SALMON
- 1:45 Abdolsamad Keramatamirkolaei**, Brian Small, Vikas Kumar  
EMULSIFIERS IN FISH NUTRITION AND THEIR IMPLICATIONS FOR PLANT-BASED DIETS
- 2:00 Carlos Alberto Maldonado-Othón**, Mayra Lizett González-Félix, Martin Perez-Velazquez, Delbert Gatlin III  
REPLACEMENT OF FISH OIL BY SOYBEAN OIL AND MICROALGAL MEALS IN DIETS FOR TOTOABA *Totoaba macdonaldi*
- 2:15 Ian P. Forster**, Barb Cannon, Tim Rundle, Jack Grushcow, Brad Hicks, Marije Booman, Simon R.M. Jones, Mahmoud Rowshandeli, Debbie Puttick  
CAMELINA AND CANOLA OILS AS REPLACEMENT OF FISH OIL IN DIETS FOR CHINOOK SALMON *Oncorhynchus tshawytscha* IN SEAWATER
- 2:30 Garrett Goto**, Miguel Castellanos-Rico, Adam Sachs, Laura Gray, Steve Gaines, Ronald Johnson, Pete Nicklason, David Marancik, Martin Perez-Velazquez, Mayra L. Gonzalez-Felix  
EVALUATING THE EFFECTS OF A COMMERCIAL BLEND OF FUNCTIONAL OILS ON GROWTH, NUTRIENT RETENTION, AND INTESTINAL AND HEPATIC HISTOLOGY OF JUVENILE SABLEFISH *Anoplopoma fimbria* AND JUVENILE TOTOABA *Totoaba macdonaldi*
- 2:45 Ronald Twibell**, Ronald Johnson, Nathan Hyde, Ann Gannam  
EFFECTS OF DIETARY SPIRULINA AND PLANT OIL ON GROWTH AND BODY COMPOSITION OF STEELHEAD *Oncorhynchus mykiss*
- 3:00 BREAK**
- 3:30 Caroline C. Barry**, Jake M. Olson, Mark E. Cook, Terence P. Barry  
CHICKEN PREEN OIL MITIGATES STRESS IN RAINBOW TROUT
- 3:45 Volkmar Passoth**, Johanna Blomqvist, Sabine Sampels, Jana Pickova  
LIPIDS FROM OLEAGINOUS YEASTS FOR USE IN FISH FEEDS

- 4:00 Zhenxin Hou**, Lee Fuiman  
TRANSFER OF FATTY ACIDS FROM DIET TO EGGS IN RED DRUM *Sciaenops ocellatus*, A BATCH SPAWNER
- 4:15 Kevin Stuart**, Lisa Armbruster, Allen Davis, Ron Johnson, Guillaume Salze, Mark Drawbridge  
BROODSTOCK NUTRITION RESEARCH FOR CALIFORNIA YELLOWTAIL *Seriola dorsalis*
- 4:30 Gabriela Gaxiola**, Ana Castillo, Adriana Da Silva, Martin Arenas, Mirna Enriquez, Akvaro Barreto, Iratzio Lemus, Gerard Cuzon  
SOME REQUIREMENTS OF THREE SPECIES CANDIDATE FISH TO AQUACULTURE IN YUCATAN
- 4:45 Sungchul C. Bai**, Ali Hamidoghli, Seonghun Won, Jinho Bae, Wonsuk Choi, Jin-Hyung Yoo  
A REVIEW ON NUTRITIONAL RESEARCHES OF OLIVE FLOUNDER *Paralichthys olivaceus*
- 5:00 Jasmine Iñiguez**, Malinovskyi Oleksandr  
TEMPERATURE DEPENDENT FORAGING BEHAVIORS OF PIKEPERCH *Sander lucioperca* AND THE EFFECTS OF PREY DENSITY
- 5:15 Ann Gannam**, R. Headley, A. Carr, J. Barron, R. Twibell  
EFFECTS OF ENVIRONMENTAL TEMPERATURE AND FEED COMPOSITION ON STEELHEAD *Oncorhynchus mykiss* GROWTH, BODY COMPOSITION AND BLOOD PARAMETERS

## STATE SHELLFISH LEASING PROGRAMS AND PERMITTING

Sunday, March 10 11:00 AM - 3:00 PM Balcony M

Chairs: Portia Sapp, Charlie Culpepper

- 11:00 Russell Grice**  
ALABAMA
- 11:15 Amanda Wenczel, Jeff Normant**  
NEW JERSEY
- 11:30 Chris Schillaci**  
MASSACHUSETTS
- 11:45 Jason Rider**  
MISSISSIPPI
- 12:00 Portia Sapp**  
FLORIDA
- 12:30 LUNCH**
- 1:30 Susan Bunsick**  
EVALUATION OF U.S. SHELLFISH AQUACULTURE PERMITTING SYSTEMS: RECOMMENDATIONS TO IMPROVE PERMITTING EFFICIENCIES AND INDUSTRY DEVELOPMENT
- 2:00 Panel Discussion on Challenges and Opportunities**

## ORNAMENTALS

Sunday, March 10 11:00 AM - 5:30 PM Galleries 2  
Chairs: Michael Schwarz, Matt DiMaggio, Michelle Walsh

- 11:00 Travis Knorr**, Michelle L. Walsh  
BENTHIC COPEPODS AS A REPLACEMENT FOR *Artemia* NAUPLII: ADVANTAGES FOR SMALL-SCALE AQUACULTURE PRODUCTION
- 11:15 Raul Marrero-Ramirez**, Travis G. Knorr, Michelle L. Walsh  
LET'S DO THIS! PREPARATION AND RECOVERY AFTER HURRICANE DISASTER
- 11:30 Nolan R. Schott**, Matthew Rowe, Travis G. Knorr, Steve Baareman, Genya Yerkes, Michelle L. Walsh  
DESIGN OF AN EGG COLLECTION SYSTEM FOR A PUBLIC AQUARIUM: A RESOURCE FOR FISH CULTURE
- 11:45 Hunter Ledbetter**, Michelle L. Walsh, Lucja Rice, Lana C. Sielski  
CARIBBEAN REEF OCTOPUS EGG DEVELOPMENT AND HATCH *IN SITU*: AN ANNOTATED PHOTO-TECHNICAL REPORT
- 12:00 Shane W. Ramee**, Taylor N. Lipscomb, Matthew A. DiMaggio  
THE INFLUENCE OF THE LARVAL ENVIRONMENT ON MASCULINIZATION AND ENDOGENOUS CORTISOL IN TWO ORNAMENTAL FISHES
- 12:15 Taylor N. Lipscomb**, Amy L. Wood, Shane W. Ramee, Matthew A. DiMaggio  
CHARACTERIZATION OF DIGESTIVE ENZYME ONTOGENY AND GASTROINTESTINAL DEVELOPMENT IN *Gymnocorymbus ternetzi* FOR WEANING OPTIMIZATION
- 12:30 LUNCH**
- 1:30 Matthew DiMaggio**, Michael Sipos, Taylor Lipscomb, Amy Wood, Shane Ramee, Elizabeth Groover, Craig Watson  
EVALUATION OF cGnRH IIa FOR INDUCED SPAWNING OF FOUR ORNAMENTAL FISH SPECIES
- 1:45 Konrad Dabrowski**, Thomas Delomas, Kevin Fisher  
REPRODUCTION, DEVELOPMENT, AND GROWTH OF CICHLID HYBRID BACKCROSSES OF RED PARROT FEMALE AND MALES OF *Vieja melanura*, *Cichlasoma urophthalmus* AND *Amphilophus citrinellum*
- 2:00 Richard Masse**  
ADDRESSING THE CHALLENGES POSED BY OBTAINING, HOLDING, AND SPAWNING MARINE ORNAMENTAL BROODSTOCK
- 2:15 Allison Durland Donahou**, Quenton M. Tuckett, Joseph Laich, Jeffrey E. Hill  
DIFFERENCES IN REPRODUCTIVE OUTPUT AND GROWTH BETWEEN WILD AND DOMESTICATED AFRICAN CLAWED FROGS *Xenopus laevis*
- 2:30 Lillian Even**, Jakub Rys, Brady Meyer, Lance Evans, Jose Reyes-Tomassini  
SEDATION OF CLOWNFISH *Amphiprion ocellaris* USING AQUIS-S 20E
- 2:45 Taylor N. Lipscomb**, Quenton M. Tuckett, Amy L. Wood, Shane W. Ramee, Joshua T. Patterson, Craig A. Watson, Matthew A. DiMaggio  
DEVELOPMENT OF AQUACULTURE TECHNIQUES FOR TWO FLORIDA NATIVE ORNAMENTAL FISHES: *Elassoma gilberti* AND *Pteronotropis metallicus*

**3:00 BREAK**

**3:30 Sydney Gamiao**

CHALLENGES IN PRODUCING LIVE FEEDS FOR MARINE ORNAMENTAL AQUACULTURE

**3:45 Jacob Fetterman**, Christopher Green

WEIGHT DEPENDENT INTRASPECIFIC VARIATION IN FEMALE GOLDEN TOPMINNOW *Fundulus chrysotus* REPRODUCTION

**4:00 Jeffrey Hill**, Quenton Tuckett, Craig Watson

THE COURTS RULE ON THE LACEY ACT: WHAT DOES THIS MEAN FOR NON-NATIVE SPECIES MANAGEMENT?

**4:15 Andrew Rhyne**, J. Alexander Bonanno, Nancy Breen

50 YEARS OF CYANIDE FISHING: A NOVEL METHOD FOR DETECTION OF CYANIDE FISHING

**4:30 Matthew DiMaggio**, Elizabeth Groover, Micah Alo, Shane Ramee, Taylor Lipscomb

EVALUATION OF CULTURE TECHNIQUES FOR TWO *Halichoeres* WRASSES *H. melanurus* AND *H. chrysus*

**4:45 Uttam Deb**, Kamal Gosh

REVEALED COMPARATIVE ADVANTAGE IN ORNAMENTAL FISH EXPORT BY THE UNITED STATES

**5:00 Susan Laramore**, Erica Albright, Caitlyn Courtemache, Dana Katz, Alfred Munoz

PRODUCTION OF THE AMPHIPOD *Parhyale hawaiiensis*: EFFECTS OF TEMPERATURE AND DIET

## WATER QUALITY AND EFFLUENTS

Sunday, March 10 11:00 AM - 3:00 PM Galeries 6

Chairs: Alan Wilson, Riley Buley

**11:00 Abdolsamad K. Amirkolaie**, Sayed M. Taherynasab, Housi Ouraji

PRODUCTION LEVEL AND WATER QUALITY AFFECTED BY CARBON/NITROGEN RATIO IN HIGH DENSITY CHINESE CARP PONDS

**11:15 Alan E. Wilson**, Zhen Yang, Riley P. Buley, Edna G. Fernandez-Figueroa,

Mario U.G. Barros, Soorya Rajendran  
HYDROGEN PEROXIDE TREATMENT PROMOTES CHLOROPHYTES OVER TOXIC CYANOBACTERIA IN A HYPER-EUTROPHIC AQUACULTURE POND

**11:30 Bolaji Edward**, Olusola Agunbiade, Ayowole Ayodele

IMPACT OF PALM OIL MILL EFFLUENT ON RIVER AWEMU IN IJERO- EKITI, EKITI STATE, NIGERIA

**11:45 Tayyaba Sultana**, Sarfraz Hussain, Salma Sultana, Shahid Mahboob Rana

HEAVY METAL BIOACCUMULATION AND HISTOPATHOLOGY INTERRELATIONSHIP FOR SEASONAL ENVIRONMENTAL ASSESSMENT OF *Cirrhina mrigala* INHABITING RIVER CHENAB

**12:00 Salma Sultana**, Waqas Bashir, Tayyaba Sultana, Shahid Mahboob Rana

TEXTILE INDUSTRY EFFLUENT TOXICITY ON DNA INTEGRITY AND HISTOLOGY OF REPRODUCTIVE SYSTEM OF *Labeo rohita*

- 12:15 Ingrid Naterstad Haugen, Øyvind Mikkelsen**  
CONTINUOUS HEAVY METAL MONITORING IN WATER FOR CLOSED CONTAINMENT SYSTEMS IN AQUACULTURE
- 12:30 Hisham A. Abdelrahman, Claude E. Boyd**  
EFFECTS OF TURBIDITY AND MECHANICAL AERATION ON WATER TEMPERATURE AND POND EVAPORATION

## IMTA

Sunday, March 10 1:30 PM - 4:15 PM Balcony L  
Chair: Thierry Chopin

- 1:30 Thierry Chopin**  
INTEGRATED MULTI-TROPHIC AQUACULTURE (IMTA) IS A CONCEPT, NOT A FORMULA
- 2:00 Samuel Rastrick, Z.J. Jiang, X.Q. Wang, H.E. Graham, V. Collier, N.M. Whiteley, T. Strohmeier, J.G. Fang, Ø. Strand**  
CAN INTEGRATED MULTI-TROPHIC AQUICULTURE HELP MITIGATE THE EFFECTS OF CLIMATE CHANGE ON ECONOMICALLY IMPORTANT FILTER FEEDERS
- 2:15 Taylor Zenobia, Frank D. Mele, Rafael Cuevas Uribe**  
THE INTEGRATED CULTURE OF PACIFIC DULSE *Palmaria mollis* AND SABLEFISH *Anoplopoma fimbria* IN A RECIRCULATING LAND-BASED SYSTEM
- 2:30 Megan Davis, Jennifer Conway, M. Dennis Hanisak, Paul S. Wills**  
DETERMINING THE NUTRITIONAL VALUE FOR SEA VEGETABLES GROWN IN AN IMTA AQUACULTURE SYSTEM
- 2:45 Candace Loy, Jim Dollimore, Craig Radford, Andrew Jeffs**  
ASSESSING CROP AND BIOFOULING CONTROL POTENTIAL FOR CO-CULTURING CATSEYE SNAILS *Lunella smaragdus* WITH PACIFIC OYSTERS *Crassostrea gigas*
- 3:00 BREAK**
- 3:30 Andrew Suhrbier, Ryan Crim, Lorenz Hauser, Natalie Lowell, Ralph Elston, Dan Cheney**  
SEA CUCUMBER *Pastichopus californicus* POLY CULTURE TRIALS AND HURDLES IN WASHINGTON STATE
- 3:45 Jiamin Sun, Jean-François Hamel, Annie Mercier**  
CONDITION OF SEA CUCUMBERS *Cucumaria frondosa* AFTER MULTI-YEAR HOLDING IN EFFLUENT WATERS OF LAND-BASED SALMON CULTURES
- 4:00 Frank D. Mele, Andre Buchheister, Rafael Cuevas Uribe**  
EVALUATION OF WASTE CONSUMPTION BY THE POLYCHAETE *Alitta brandti* IN A RECIRCULATING INTEGRATED MULTI-TROPHIC AQUACULTURE SYSTEM
- 4:15 Feng Yang, Fangfang Shen**  
CURRENT SITUATION AND TREND OF COMPREHENSIVE RICE-FISHERY CULTURE MODEL IN CHINA

# SHRIMP HEALTH AND DISEASE

Sunday, March 10 1:30 PM - 5:30 PM Salon D

Chair: Arun Dhar

- 1:30 Elena Sineva**, Tatiana Vinogradova-Shah, Diana Ballesteros, Suzan Laramore, Richard Sayre  
QUORUM QUENCHING *Enterobacter* STRAINS IMPROVE SHRIMP SURVIVAL DURING *Vibrio* INFECTION
- 1:45 Tatiana Vinogradova-Shah**, Elena Sineva, Susan Laramore, Richard Sayre  
ENTERIC BACTERIA EXPRESSING asRNA TARGETING ESSENTIAL GENE OF *Vibrio parahaemolyticus* SUBSTANTIALLY REDUCES MORTALITY DUE TO EARLY MORTALITY SYNDROME IN SHRIMP *Litopenaeus vannamei*
- 2:00 Paul J. Schofield**, Brenda L. Noble, Hung N. Mai, L. Fernando Aranguren Caro, Tanner J. Padilla, Jasmine Millabas, Arun K. Dhar  
AN INVESTIGATION INTO THE IMPACT OF ACUTE HEPATOPANCREATIC NECROSIS DISEASE (AHPND) ON *Macrobrachium rosenbergii* AT VARIOUS SALINITIES
- 2:15 Suvra Roy**, Parisa Norouzitalab, Peter Bossier, Daisy Vanrompay  
PROBING THE EPIGENETIC INHERITANCE EFFECT OF A PLANT-DERIVED COMPOUND EXPOSURE AGAINST *Vibrio parahaemolyticus* AHPND STRAIN USING BRINE SHRIMP *Artemia franciscana* MODEL SYSTEM
- 2:30 Vikash Kumar**, Dung Viet Nguyen, Kartik Baruah, Peter Bossier  
PROBING THE MECHANISM OF VPAHPND EXTRACELLULAR PROTEINS TOXICITY PURIFIED FROM *Vibrio parahaemolyticus* AHPND STRAIN IN GERM-FREE *Artemia* TEST SYSTEM
- 2:45 Diana Minardi**, David Bass, Natthinee Munkongwongsiri, Arpinyan Boonprakobkul, Kallaya Sritunyalucksana, Ornchuma Itsathitphisarn, Grant J. Stentiford  
FROM SEEDING TO EMERGENCY HARVEST: TEMPORAL MICROBIOME ANALYSIS OF WHITELEG SHRIMPS *Litopenaeus vannamei* IN A THAILAND SHRIMP FARM
- 3:00 BREAK**
- 3:30 Chorong Lee**, Jee Eun Han, Ji Eun Kim, Sung Hun Kim, Jae Won Kim, Jong Su Eun, Kyeong-Jun Lee  
DIETARY SUPPLEMENTATIONS OF *Bacillus* spp. IMPROVE GROWTH PERFORMANCE AND RESISTANCE OF PACIFIC WHITE SHRIMP *Litopenaeus vannamei* AGAINST ACUTE HEPATOPANCREATIC NECROSIS DISEASE
- 3:45 Maarten Jay van Schoonhoven**  
SULPHATED POLYSACCHARIDES EXTRACTED FROM SEAWEED TO STRENGTHEN SHRIMP HEALTH
- 4:00 Hung Mai**, Brenda Noble, Roberto Flores, Joshua Lin, Luis Aranguren, Arun Dhar  
COMPARATIVE STUDY OF *Enterocytozoon hepatopenaeid* (EHP) CHALLENGE METHODS IN *Penaeus vannamei*
- 4:15 Roberto Cruz-Flores**, Hung Mai, Arun K. Dhar  
HEPATOPANCREAS TISSUE BIOPSY: AN INVASIVE BUT NON-LETHAL SAMPLING METHOD FOR THE DETECTION OF *Enterocytozoon hepatopenaei* IN SHRIMP

SUNDAY

- 4:30 Luis Fernando Aranguren Caro**, Arun K. Dhar, Orlando R. Pichardo  
WHITE FECES SYNDROME (WFS) IN SE-ASIA VS. LATIN-AMERICA SHRIMP FARMING
- 4:45 Roberto Cruz-Flores**, Jasmine Millabas, Sukanniya Kaneshamoorthy, Arun K Dhar  
PATHOGEN DETECTION FROM DAVIDSON'S FIXED PARAFFIN EMBEDDED SHRIMP TISSUE
- 5:00 Teerapong Ho**, Apinunt Udomkit  
A GONAD-SPECIFIC ARGONAUTE4 MEDIATES SPERMATOGENIC PROCESS IN BLACK TIGER SHRIMP *Penaeus monodon*

## ALGAE FOR AQUAFEED

Sunday, March 10 1:30 PM - 5:30 PM Salon H

Chairs: Matt Carr, John Benemann, Devinn Lambert, Patricia Abelin

### INTRODUCTION AND INDUSTRY OVERVIEW – Moderator: John Benemann

- 1:30 John Benemann**  
MICROALGAE AQUACULTURE FEEDS
- 1:45 Robins McIntosh**  
MICROALGAE AND SHRIMP AQUACULTURE
- 2:00 Victor Chepurinov**  
CONVERTING ALGAE HATCHERY ART INTO TECHNOLOGY
- 2:15 Tim Reed**  
MICROALGAE AQUAFEEDS IN HATCHERIES
- 2:30 DISCUSSION**
- COMMERCIAL DEVELOPMENTS – Moderator: Matt Carr**
- 2:45 Ross Zirkle**  
MICROALGAE IN AQUAFEED: HISTORICAL PERSPECTIVE, CURRENT STATUS AND THE FUTURE
- 3:00 BREAK**
- 3:30 John Bowzer**, Peter Bergstrom, Stephanie S. Block  
AN OVERVIEW OF DHA NATUR IN AQUAFEEDS: A HIGHLY CONCENTRATED SOURCE OF DHA FROM DRIED MICRO ALGAE BIOMASS
- 3:45 David E. Brune**  
ALGAL-DERIVED FEED AND RENEWABLE FUEL FROM INTEGRATED AQUACULTURE PROCESSES
- 4:00 Nuno Coelho**  
INDUSTRIAL-SCALE PRODUCTION OF MICROALGAE BIOMASS AND HIGH ADDED-VALUE PRODUCTS FOR FEEDING APPLICATIONS
- 4:15 DISCUSSION**



## RESEARCH AND FEED TRIAL DEVELOPMENTS – Moderator: Devinn Lambert

- 4:30 Amha Belay**  
MICROALGAE AS ALTERNATIVE AQUAFEED: OPPORTUNITIES AND CHALLENGES
- 4:45 Dave Hazlebeck**  
LARGE-SCALE ALGAE PRODUCTION FOR AQUACULTURE FEED INGREDIENT
- 5:00 Aubrey Davis**  
DOMESTICATION OF MICROALGAE FOR AQUACULTURE FEED APPLICATIONS
- 5:15 DISCUSSION**

## OYSTERS – PART 1

Sunday, March 10 3:30 PM - 5:30 PM Balcony K

Chair: Remi Sonier

- 3:30 Brianna Group, Alix Laferriere**  
KEY RESULTS AND FINDINGS FROM THE OYSTER CONSERVATIONIST PROGRAM (2006-2018), A CITIZEN SCIENCE OYSTER GARDENING PROGRAM, IN GREAT BAY ESTUARY, NEW HAMPSHIRE
- 3:45 Emmanuelle Pales Espinosa, Bassem Allam**  
REVERSE GENETICS REVEAL THE ROLE OF MUCOSAL C-TYPE LECTINS IN FOOD PARTICLE SELECTION IN THE OYSTER *Crassostrea virginica*
- 4:00 Sara M. Pace, Eric N. Powell, Kelsey M. Kuykendall, Jeremy R. Timbs**  
EVALUATING THE CARBONATE PRODUCTION OF *Crassostrea virginica* IN THE MISSISSIPPI SOUND
- 4:15 Rose Denney, Rose A. Denney, Cara J. Christensen, Sarah M. Colosimo, Katelyn E. Cramer, Allison C. Deckerlegand, Ryan H. Kittle, Karrin N. Leazer, Tararin T. Nikomborirak, Abigail I. Moosmiller, Wesley R. Rostomily, Alexandra C. Sawyer, Renz Torres, Marina Watowich, Megan Hintz, Christian E. Grue**  
I’LL TAKE A SLICE AND PLEASE PASS THE SALT: CHEMICAL CONTROL OF BURROWING SHRIMP ON SHELLFISH BEDS IN WASHINGTON STATE
- 4:30 Huiping Yang**  
TRIPLOID PERFORMANCE AND FEMALE OCCURRENCE IN EASTERN OYSTERS FOR TETRAPLOID PRODUCTION

## LAND-BASED SALMON PRODUCTION

Sunday, March 10 3:30 PM - 5:30 PM Balcony M

Chair: Steven Summerfelt

- 3:30 Brittany Peachey, John Ng, Ed Tribe**  
LAND-BASED STEELHEAD *Oncorhynchus mykiss* PRODUCTION IN THE HUDSON VALLEY
- 3:45 Steven Summerfelt, Brandon Gottsacker**  
ATLANTIC SALMON *Salmo salar*, STEELHEAD *Oncorhynchus mykiss*, AND LETTUCE PRODUCTION AT SUPERIOR FRESH LLC

- 4:00 Ben Briese**, KC Hosler  
PROGRESSIVE IMPROVEMENTS IN SALMON RAS DESIGN
- 4:15 John Davidson**, Steven Summerfelt, Christopher Good  
POST-SMOLT ATLANTIC SALMON *Salmo salar* MATURATION AND GROWTH  
IN OZONATED VERSUS NON-OZONATED FRESHWATER RECIRCULATION  
AQUACULTURE SYSTEMS
- 4:30 Sean Nepper**, Jesse Trushenski  
BREEDING FOR VIGOR: THOUGHTS FOR THE FUTURE OF GENETIC  
IMPROVEMENT IN AQUACULTURE
- 4:45 Christopher Good**, Steven Summerfelt, Travis May, Curtis Crouse, John Davidson,  
Lars Ebbesson, Sigurd Handeland, Sigurd Stefansson, Tom Ole Nielsen,  
Bendik Terjesen, Frode Mathisen  
ASSESSING PHOTOPERIOD, FEEDING REGIME, AND PLOIDY ON ATLANTIC  
SALMON *Salmo salar* POST-SMOLT HEALTH, GROWTH PERFORMANCE, AND  
MATURATION IN LAND-BASED FRESHWATER SYSTEMS
- 5:00 Jennifer Fortier**, Jason Mitchell  
WHOLE OCEANS: FROM PAPER MILL TO LAND-BASED AQUACULTURE
- 5:15 Jesse T. Trushenski**  
PLAN YOUR WORK, THEN WORK YOUR PLAN: OPERATIONAL VALUE OF FISH  
HEALTH MANAGEMENT PLANNING

## TEMPERATE BASSES: STRIPED BASS, WHITE BASS, AND HYBRID STRIPED BASS

Sunday, March 10 3:30 PM - 5:30 PM Galleries 6

Chair: Ben Reading

- 3:30 Jason Abernathy**, Linnea K. Andersen, Steve Rawles, Justin Schilling, Adam Fuller,  
Matt McEntire, Benjamin Reading, Benjamin H. Beck, Eric Peatman  
DEVELOPMENT AND ENHANCEMENT OF WHITE BASS *Morone chrysops*  
RESOURCES FOR GENETIC IMPROVEMENT OF HYBRID STRIPED BASS
- 3:45 Linnea K. Andersen**, David A. Baltzegar, Adam Fuller, Jason Abernathy,  
Benjamin J. Reading  
THE STRIPED BASS *Morone saxatilis* GENOME SEQUENCE ASSEMBLY
- 4:00 Shawn Burke**, Brian Catanzaro  
PERFORMANCE AND FEEDING REGIMEN OF HYBRID STRIPED BASS *Monroe*  
*chrysops* × *Monroe saxatilis* IN A RECIRCULATING AQUACULTURE SYSTEM
- 4:15 Sarah A. Rajab**, Erin Ducharme, Linnea Andersen, Andrew McGinty,  
Michael Hopper, Harry V. Daniels, Benjamin J. Reading  
AN IN-DEPTH VIEW OF SUNSHINE HYBRID STRIPED BASS (MALE *Morone*  
*saxatilis* × FEMALE *M. chrysops*) GROWTH PERFORMANCE USING  
TRANSCRIPTOMICS ANALYSIS OF MUSCLE TISSUE

- 4:30 Erin E. Ducharme**, Sarah A. Rajab, Linnea K. Anderson, Andrew S. McGinty, Michael Hopper, Russell J. Borski, Curry Woods III, David L. Berlinsky, Linas Kenter, Benjamin J. Reading  
 UNDERSTANDING SUNSHINE HYBRID STRIPED BASS (FEMALE *Morone chrysops* × MALE *M. saxatilis*) GROWTH USING METABOLOMIC ANALYSIS OF LIVER TISSUES
- 4:45 Clement R. de Cruz**, Fernando Y. Yamamoto, Sergio Castillo, Delbert M. Gatlin III  
 EFFICACY OF DIETARY NUCLEOTIDE SUPPLEMENTS AS GROWTH PROMOTER AND IMMUNE-MODULATING NUTRIENT FOR HYBRID STRIPED BASS *Morone chrysops* × *Morone saxatilis*
- 5:00 Katie McCann**, Steven D. Rawles, Rebecca Lochmann, Gibson Gaylord, Wendy Sealey, Jason Abernathy  
 MINIMIZING FISHMEAL USE IN HYBRID STRIPED BASS *Morone chrysops* × *Morone saxatilis* DIETS USING COMMERCIAL PROTEIN CONCENTRATES DESIGNED FOR AQUAFEEDS

## BIVALVE ECOSYSTEM SERVICES

Sunday, March 10 4:15 PM - 5:30 PM Balcony L

Chairs: Aad Smaal, Carter Newell

- 3:30 Tore Strohmeier**, Øivind Strand, Cathinka Krogness  
 CAN BOMB CALORIMETRY BE USED TO DETERMINE THE ENERGY CONTENT OF SESTON?
- 3:45 Carter Newell**, Damian Brady, John Richardson  
 FARM SCALE PRODUCTION MODELS
- 4:00 Joao G. Ferreira**, Nick Taylor, Alhambra Cubillo, Joao Lencart e Silva, Roberto Pastres, Øivind Bergh, Nicola McPherson, James Guildler  
 INTEGRATED CARRYING CAPACITY MODELLING OF PRODUCTION, DISEASE, AND ENVIRONMENTAL EFFECTS
- 4:15 Molly Bogeberg**, Bridget Ferriss, Beth Sanderson, Jodie Toft  
 COLLABORATIVE RESEARCH TO UNDERSTAND THE ECOLOGICAL ROLE OF SHELLFISH AQUACULTURE USING UNDERWATER VIDEO IN WASHINGTON STATE, USA
- 4:30 Erynn Mills**, Carrie Byron, Adrianus Both  
 ENERGETIC PATHWAYS IN BIVALVE AQUACULTURE: USING BIOMARKERS TO TRACE ORGANIC MATTER

# MONDAY, March 11

## ABALONE AND SCALLOPS

Monday, March 11 8:30 AM - 10:00 AM Balcony L

Chair: Theresa Redmond

- 8:30 Nathan Danckert**, Kim-Yen Phan-Thien, Neil Wilson, David Stone  
DIVERSITY, STABILITY AND RESILIENCE: THE MICROBIOME OF AUSTRALIAN ABALONE *Haliotis laevigata* AND *Haliotis laevigata* × *Haliotis rubra* FROM AQUACULTURE
- 8:45 Alix Laferriere**, Jonathan Gardner  
HABITAT RELATED DIFFERENCES IN THE SIZE STRUCTURE AND GROWTH RESPONSE OF THE NEW ZEALAND ABALONE *Haliotis iris*: IMPLICATIONS FOR CONSERVATION AND FISHERIES
- 9:00 Catherine Purcell**, Rick Masonbrink, Andrew Severin, John Hyde  
GENOMIC APPROACHES TO ASSIST CONSERVATION AND RESTORATION EFFORTS FOR THE ENDANGERED WHITE ABALONE *Haliotis sorenseni*
- 9:15 Theresa Redmond**, Matthew Long, Sara Thomas, Sally Roman, David Rudders, Roger Mann  
AGE AND GROWTH RATE MEASUREMENT IN SCALLOPS FROM THE MID ATLANTIC: A COMPARISON OF SHELL SIGNATURES, HINGE RESILIA AND ISOTOPE BASED METHODS
- 9:30 R. Patrick Lyon**, David B. Eggleston, Gabriel J. Hopkins, Charles R. Weirich, Ami Wilbur, David Cerino  
MORTALITY AND MIGRATION OF HATCHERY-REARED BAY SCALLOPS *Argopecten irradians* IN NORTH CAROLINA SEAGRASS BEDS

## FISHERIES CONSERVATION AND ENHANCEMENTS

Monday, March 11 8:30 AM - 10:00 AM Galleries 3

Chair: Mike Denson

- 8:30 Michael R. Denson**, Tim O'Donnell, Tanya L. Darden, Matt Perkinson, Justin Yost  
SPOTTED SEATROUT STOCK ENHANCEMENT IN SOUTH CAROLINA
- 8:45 Douglas Hatch**, Andrew Pierce, Ryan Branstetter, Dave Fast, Bill Bosch, Joe Blodgett, Scott Everett, Neil Graham  
STEELHEAD KELT RECONDITIONING AND REPRODUCTIVE SUCCESS STUDIES IN THE COLUMBIA RIVER BASIN
- 9:00 Shawn P. Young**  
HISTORY AND STATUS OF THE KOOTENAI RIVER WHITE STURGEON CONSERVATION AQUACULTURE PROGRAM
- 9:15 Nathan R. Jensen**, Shawn P. Young  
STATUS AND EARLY SUCCESS OF LARGE-SCALE CONSERVATION AQUACULTURE TO RESTORE KOOTENAI RIVER BURBOT *Lota lota maculosa*

- 9:30** **Yue Liu**, Terrence Tiersch  
PRODUCTION OF LIVE YOUNG WITH CRYOPRESERVED SPERM FROM AN  
ENDANGERED LIVE-BEARING FISH
- 9:45** **Tiffany Waters**, Robert Jones  
QUANTIFYING ECOSYSTEM SERVICES OF RESTORATIVE AQUACULTURE IN THE  
U.S., INDONESIA, AND BELIZE
- 10:00** **Ryan W. Schloesser**, Paula Caldentey, Nathan P. Brennan, Charles H. Peterson,  
Kenneth M. Leber  
POST-RELEASE SURVIVAL OF HATCHERY-REARED JUVENILE SNOOK  
*Centropomus undecimalis*: THE INFLUENCE OF HABITAT QUALITY

## ADVANCING AQUATIC ANIMAL CARE

Monday, March 11 8:30 AM - 10:00 AM Salon A

Chair: Paul Zajicek

- 8:30** **Craig Watson**  
WELFARE OF AQUATIC ANIMALS: WHERE THINGS ARE, WHERE THEY ARE  
GOING, AND WHAT IT MEANS FOR RESEARCH, AQUACULTURE, RECREATIONAL  
ANGLING, AND COMMERCIAL FISHING
- 8:45** **Constance Silbernagel**  
ANIMAL WELFARE OF MARINE FINFISH IN PRODUCTION AND RESEARCH
- 9:00** **Tim Kniffen**, Kasha Cox  
AQUA CARE 365™: A PRACTICAL APPROACH TO ADVANCING FISH WELFARE
- 9:30** **Timothy Kurt**  
ADVANCING INNOVATION – OPPORTUNITIES AT THE FOUNDATION FOR FOOD  
AND AGRICULTURAL RESEARCH (FFAR)
- 9:45** **QUESTION & ANSWER**

## SEAFOOD: ENHANCING POST-HARVEST PRACTICES, THE WORKFORCE, AND OUR CONSUMER BASE

Monday, March 11 8:30 AM - 10:00 AM Salon H

Chair: Anoushka Concepcion

- 8:30** **William Walton**, Bethany Walton  
SEAFOOD SERVERS, KNOW THY SEAFOOD: PILOT EFFORTS TO DEVELOP A  
TRAINING PROGRAM FOR THE SEAFOOD RESTAURANT INDUSTRY
- 8:45** **Chengchu Liu**, Guoling Zhao  
ANTIOXIDANT CAPABILITIES OF EXTRACTS PREPARED FROM RED ALGAE  
*Porphyra haitanensis* AND THEIR POTENTIAL APPLICATION AS NATURAL FOOD  
ADDITIVES
- 9:00** **Nicholas A. Haddad**, Julie A. Lively  
EVALUATION AND DETERMINATION OF A STANDARD OPERATING PROCEDURE  
FOR QUALITY ENHANCEMENT: LOUISIANA LIMITED WILD PLATE FROZEN  
SHRIMP

- 9:15 Michael Ciaramella**, Jack Novak  
SEAFOOD SCIENCE AND AQUACULTURE: CURRICULUM DEVELOPMENT AND DISSEMINATION
- 9:30 Dennis McIntosh**, Grant Blank, Daniel Grosse, Robert Lane, Dorothy Leonard, Paul Snyder  
PRELIMINARY ASSESSMENT OF NEW TECHNOLOGY FOR POST-HARVEST PURIFICATION OF OYSTERS
- 9:45 Reza Ovissipour**, Setareh Shiroodi, Barbara Rasco, Gleyen Bledsoe  
ELECTROLYZED WATER APPLICATION FOR AQUACULTURE AND SEAFOOD POST-HARVEST SANITATION

## **OSTREA SPP. BIOLOGY, ECOLOGY AND PHYSIOLOGY: IS THIS GENUS A TRACTABLE PROSPECT FOR RESTORATION?**

Monday, March 11 8:30 AM - 12:30 PM Balcony I

Chair: Zoë Holbrook

- 8:30 Janet H. Brown**, Bernadette Pogoda  
RESTORATION OF THE EUROPEAN FLAT OYSTER *Ostrea edulis* – ARE WE AIMING FOR RESTORATION OF REEFS?
- 9:00 Bernadette Pogoda**, Verena Merk, Berenger Colsoul  
NATIVE OYSTER RESTORATION IN EUROPE: IMPLEMENTATION OF THE BERLIN OYSTER RECOMMENDATION
- 9:15 Aad Smaal**, Pauline Kamermans, Luca van Duren, Frank Kleissen, Tom van der Have, Wouter Lengkeek, Hein J.W. Sas, Karel van den Wijngaard, Emilie Reuchlin  
FLAT OYSTER *Ostrea edulis* RESTORATION PILOTS IN THE DUTCH NORTH SEA
- 9:30 Åsa Strand**, Linnea Thorngren, Thomas Holthuis, Mats Lindegarth, Ane T. Laugen  
STATUS AND MANAGEMENT OF THE FLAT OYSTER *Ostrea edulis* POPULATION IN SWEDEN
- 9:45 Zoë Hilton**, Steven C Webb, Nick King, Jane E Symonds, Jonathan Banks, Konstanze Steiner, Suong Thao Nguyen, Julien Vignier, Serean Adams  
POTENTIAL FOR AQUACULTURE AND RESTORATION OF THE NATIVE FLAT OYSTER *Ostrea chilensis* IN NEW ZEALAND – CURRENT RESEARCH EFFORTS AND FUTURE CHALLENGES
- 10:00 BREAK**
- 10:30 Sarah Culloty**, Sharon Lynch  
RESISTANCE VERSUS RESILIENCE: CONSERVATION OF THE EUROPEAN OYSTER IN THE PRESENCE OF DISEASE
- 10:45 Zoë Holbrook**, Malcolm Hudson, Antony Jensen, Tim Glover, Morven Robertson, Chris Hauton  
ELEVATED OYSTER CULTURE: A STRATEGIC APPROACH TO *Ostrea edulis* RESTORATION IN THE UK AND EUROPE?

- 11:00 Luke Helmer**, Ian Hendy, Morven Robertson, Paul Farrell, Joanne Preston  
SUSPENDED BROODSTOCK CAGES AS A RESTORATION STRATEGY FOR THE EUROPEAN FLAT OYSTER *Ostrea edulis*? A CASE STUDY IN THE SOLENT, UK
- 11:15 Luca van Duren**, Pauline Kamermans, Tim Raaijmakers, Natalia Aleksandrova, Frank Kleissen, Tom van der Have, Aad Smaal  
OYSTER RESTORATION IN OFFSHORE WIND FARMS – TEAMING UP WITH THE OFFSHORE WIND INDUSTRY CAN HAVE MANY BENEFITS
- 11:30 Alison J. Debney**, Graham Baker, William Baker, Dominic Bailey, Allan Bird, Thomas Cameron, Rob Dyer, Philine zu Ermgassen, Tim Glover, Richard Haward, Lisa Jenner, Rebecca Korda, Rachel Langtree, Michael Neale, Graham Larkin  
REWILDING OYSTERS – THE RESTORATION AND SUSTAINABLE MANAGEMENT OF THE EUROPEAN FLAT OYSTER *Ostrea edulis* IN ESSEX, UK

## AQUACULTURE DRUG NEEDS SURVEYS AND RESEARCH UPDATES

Monday, March 11 8:30 AM - 12:30 PM Balcony M

Chair: Julie Schroeter, Alan Johnson

- 8:30 Julie Schroeter**, Niccole Wandelaar, Bonnie Johnson, Molly Bowman, Marilyn Blair  
THE USFWS AQUATIC ANIMAL DRUG APPROVAL PARTNERSHIP PROGRAM: WHAT WE DO AND HOW WE DO IT
- 8:45 Bonnie Johnson**  
NATIONAL INAD PROGRAM'S NON-LABELED DRUG USE NEEDS FROM 1999 - 2017
- 9:00 Niccole Wandelaar**  
THE UNMET FISH DRUG NEEDS SURVEY – A LOOK AT FEDERAL, STATE AND PRIVATE RESPONSES
- 9:30 Janet Whaley**  
A SURVEY OF THERAPEUTIC NEEDS IN U.S. MARINE AQUACULTURE
- 9:45 Jenn King**  
OVERVIEW OF THE ANIMAL DRUG APPROVAL PROCESS AND FIRST STEPS AS A NEW SPONSOR
- 10:00 BREAK**
- 10:30 Grace Karreman**  
RELOOKING AT AQUACULTURE DRUG APPROVALS
- 10:45 Kevin Kwak**  
TREATING COLDWATER DISEASE AT CALIFORNIA STATE HATCHERIES: LAST DRUG STANDING
- 11:00 David Straus**  
STATUS OF COPPER SULFATE RESEARCH AT SNARC – REVISITED

MONDAY

- 11:15 Cynthia K. Ledbetter**, David L. Straus, David L. Heikes  
INHIBITING FUNGUS ON LARGEMOUTH BASS EGGS WITH COPPER SULFATE
- 11:30 David Straus**, Thomas Meinelt, Dibo Liu, Lars-Flemming Pedersen, Chris Good, John Davidson  
A NEW DISINFECTANT FOR THE TOOL CHEST – PERACETIC ACID

## PERCID CULTURE

Monday, March 11 8:30 AM - 12:30 PM Galeries 2  
Chairs: Alan Johnson, Greg Fischer

- 8:30 Gregory J. Fischer**  
OPTIMIZING WALLEYE *Sander vitreus* AND HYBRID WALLEYE *Sander canadense* TANK STOCKING DENSITY AND PERFORMANCE IN A TRADITIONAL RECIRCULATING AQUACULTURE SYSTEM (RAS) FOR COMMERCIAL FOOD FISH PRODUCTION
- 8:45 Kevin Kelsey**  
LARGE SCALE INTENSIVE CULTURE PRODUCTION OF WALLEYE *Sander vitreus* FINGERLINGS IN A RECIRCULATING AQUACULTURE SYSTEM (RAS)
- 9:00 John Davidson**, Frederic Barrows, Brandon Gottsacker, Robert Summerfelt, Christopher Good, Gregory Fischer, Steven Summerfelt  
COMPARISON OF FISHMEAL-FREE AND FISHMEAL-BASED DIETS FED TO WALLEYE *Sander vitreus* IN REPLICATE RAS
- 9:15 Emma Wiermaa**, Greg Fischer, Chris Hartleb, Kendall Holmes  
TECHNICAL TRAINING VIDEOS ON INTENSIVE REARING OF WALLEYE *Sander vitreus* AND SAUGEYE *Sander vitreus* × *Sander canadensis*
- 9:30 Daniel Schill**, Elizabeth Mamer, Alan Johnson, Jay Rudacille, Aaron Andrews, Jason Vajnar, Daric Schneidewind  
SEX REVERSAL TRIALS ON WALLEYE *Sander vitreus*: AN EXAMPLE OF INTERAGENCY AQUACULTURE COOPERATION
- 9:45 J. Alan Johnson**  
WALLEYE *Sander vitreus* CULTURE FOR SPORT FISH ENHANCEMENT STOCKINGS IN IOWA USING RECIRCULATION AQUACULTURE SYSTEMS AND CAPTIVE BROODSTOCK
- 10:00 BREAK**
- 10:30 Osvaldo J. Sepulveda Villet**, Christopher R. Suchocki  
THE ROLE OF PHOTOTAXIS IN THE INITIAL SWIM BLADDER INFLATION OF LARVAL YELLOW PERCH *Perca flavescens*
- 10:45 Paul Hoppe**, Gavin Dehnert, Peter Sorensen, Terence Barry  
CHEMICALS RELEASED BY PREDATION INCREASE THE GROWTH RATE OF YELLOW PERCH *Perca flavescens*
- 11:00 Mackenzie E. Miller**, Konrad Dabrowski  
TOO HOT TO BE FEMALE? DETERMINATION OF THE EFFECT OF TEMPERATURE ON GONADAL DIFFERENTIATION IN YELLOW PERCH *Perca flavescens*



- 11:15 John D. Grayson**, Zoe Almeida, Stuart Ludsins, Elizabeth Marschall,  
Konrad Dabrowski  
THE EFFECT OF ARTEMIA ENRICHMENT WITH PUFA AND  $\alpha$ -TOCOPHEROL ON THE  
PERFORMANCE OF WALLEYE *Sander vitreus* LARVAE
- 11:30 Matthew Smith**, William Lynch, Matt Brehm  
EVALUATION OF ALTERNATIVE MANAGEMENT TECHNIQUES AND SYSTEMS TO  
IMPROVE PRODUCTION OF POND-REARED YELLOW PERCH

## AQUACULTURE 101

Monday, March 11 8:30 AM - 12:30 PM Galleries 6

Chair: Kathleen Hartman

- 8:30 Leslie Sturmer**  
SO, YOU ARE THINKING OF GROWING SHELLFISH?
- 9:00 Benjamin Renquist**, Kyle Kentch, Yao Xiao, Jason Kronenfeld  
MEASURING METABOLIC RATE TO IMPROVE GENETICS FOR GROWTH AND FEED  
EFFICIENCY
- 9:30 Taylor N. Lipscomb**  
FEEDING LARVAL FISH
- 10:00 BREAK**
- 10:30 Bill Keleher**  
TILV – A PRIMER
- 11:00 Craig Watson**  
THE ROMANCE OF AQUACULTURE
- 11:30 Robins McIntosh**  
SHRIMP 101
- 12:00 Alicia Marston**  
SHIPPING AQUATIC ANIMALS INTERNATIONALLY – WHAT I NEED TO KNOW

MONDAY

## SHRIMP NUTRITION

Monday, March 11 8:30 AM - 12:30 PM Salon D

Chair: Allen Davis

- 8:30 Laurence Mercier**, Laurent Seychelles, Julio Ayala, Mriya López, Norma Estrada, Maurilia Rojas  
OPTIMAL SIZE, DENSITY AND FEEDING FREQUENCY OF THE NEMATODE *Panagrolaimus* sp. FOR REARING *Litopenaeus vannamei* LARVAE
- 8:45 Guillermo Bardera**, Matthew A.G. Owen, Daniel Pountney, Katherine A. Sloman, Mhairi E. Alexander  
UNDERSTANDING FEEDING BEHAVIOUR IN THE PACIFIC WHITE-LEG SHRIMP *Litopenaeus vannamei* USING STARVATION AND MOULT STATUS
- 9:00 Yuan Yuan**, Sophie P. Bru, Karen E. Jensen, Robert J. Barry, Adele Fowler, Robert Makowsky, Mickie L. Powell, Addison L. Lawrence, Stephen A. Watts  
FEED INTAKE USED TO ESTIMATE ATTRACTABILITY OF FISH MEAL, FISH MEAL PROTEIN HYDROLYSATE, CASEIN, SQUID MEAL, AND YEAST AND BACTERIAL BASED SINGLE CELL PROTEINS TO SHRIMP *Litopenaeus vannamei*
- 9:15 Silvio Peixoto**, José Filipe Silva, Santiago Hamilton, João Albuquerque Rocha, Paulo Travassos, Roberta Soares  
ACOUSTIC CHARACTERIZATION OF FEEDING ACTIVITY OF *Litopenaeus vannamei*
- 9:30 Jingping Guo**, Melanie Rhodes, Scott Tilton, D. Allen Davis  
USING HIGH-PROTEIN DISTILLER'S DRIED GRAINS PRODUCT TO REPLACE FISHMEAL AND CORN PROTEIN CONCENTRATE IN PRACTICAL DIETS FOR THE PACIFIC WHITE SHRIMP *Litopenaeus vannamei*
- 10:00 BREAK**
- 10:30 Jingping Guo**, Ying Huang, Harsha Galkanda Arachchige, D. Allen Davis  
USE OF SOY AND CORN PROTEIN CONCENTRATE AS REPLACEMENT FOR FISHMEAL IN PRACTICAL DIETS FOR THE PACIFIC WHITE SHRIMP *Litopenaeus vannamei*
- 10:45 Sophie Bru**, Yuan Yuan, Karen Jensen, R.J. Barry, M.L. Powell, A.L. Lawrence, S.A. Watts  
SINGLE CELL PROTEINS CAN PARTIALLY REPLACE FISH MEAL PROTEIN IN THE PACIFIC WHITE SHRIMP *Litopenaeus vannamei*
- 11:00 Janice Alano Ragaza**, Waldemar Rossi Jr., Habte-Michael Habte-Tsion, Gagan Devaiah Kolimadu, Amit Kumar Yadav, Andrew J. Ray  
USE OF RECOVERED BIOFLOC MATERIAL FROM PRODUCTION TANKS AS FEED INGREDIENT IN DIETS OF PACIFIC WHITE SHRIMP *Litopenaeus vannamei*
- 11:15 Ha Truong**, Cedric Simon  
MARINE MEALS ENHANCE GROWTH AND NUTRIENT UTILISATION WHILE HAVING VARIABLE EFFECTS ON FEED INTAKE IN JUVENILE TIGER PRAWNS *Penaeus monodon*
- 11:30 Wonsuk Choi**, Seonghun Won, Ali Hamidoghli, Jinho Bae, Hyon-Sob Han, Sungchul C. Bai  
THE EFFECT OF DIETARY SUPPLEMENTATION OF PROBIOTICS ON GROWTH AND NON-SPECIFIC IMMUNE RESPONSES IN JUVENILE WHITELEG SHRIMP *Litopenaeus vannamei*

MONDAY

## LIVE FEEDS

Monday, March 11 8:30 AM - 12:30 PM Salon E

Chairs: Mike Frinsko, Del Gatlin

- 8:30 Michael H. Schwarz**, Jerome Bosmans, Reza Ovissipour, Nasser Bayoumy, Eric Henry, Chad Clayton, Stephen Urick  
INDUSTRIAL PERSPECTIVES IN MARINE HATCHERIES, FOCUSING ON LIVE FEEDS QUALITY, SAFETY, BIOSECURITY, AND OPTIMIZATION OF LARVAL PRODUCTION PROTOCOLS
- 8:45 Silvie Dumas**, Ulises Amador-Marrero, Mauricio ContrerasOlguín, Laura G. Flores-Montijo, Renato Peña, Fernando Cavalin, Gerardo García  
IMPROVING LARVAL CULTURE OF PACIFIC RED SNAPPER: COPEPODS, ROTIFERS AND GREEN WATER
- 9:15 Matthew Hawkyard**, Kevin Stuart, Mark Drawbridge, Constance Silbernagel, Chris J. Langdon  
LIVE FEEDS, ENRICHED WITH TAURINE AND VITAMIN C, FED TO FISH LARVAE AFFECT SUBSEQUENT JUVENILE MALFORMATION RATES
- 9:30 Michael Frinsko**  
LARVACULTURE OF DOMESTICATED STRIPED BASS: CURRENT INVESTIGATIONS WITH PROBIOTICS
- 9:45 Terry W. Snell**, Rachel K. Johnston, Amelia B. Matthews, Matthew Carberry  
UTILIZING *Brachionus* ROTIFER BIODIVERSITY IN MARINE FINFISH LARVACULTURE
- 10:00 BREAK**
- 10:30 Carlos Yanes-Roca**, Jan Mráz, Ana Born-Torrijos, Tomas Policar, Aiman Imentai, Astrid Holzer  
INTRODUCTION OF ROTIFERS *Brachionus plicatilis* DURING PIKEPERCH *Sander lucioperca* FIRST FEEDING
- 10:45 Matthew DiMaggio**, Sarah Woolley, Marion Hauville  
CULTURE OF THE CYCLOPOID COPEPOD *Oithona colcarva*
- 11:00 Reza Ovissipour**, Michael H. Schwarz, Setareh Shiroodi, Helen Crocker, Nasser Bayoumy, Stephen Urick  
MICROBIAL COMMUNITY DYNAMICS OF COPEPOD *Apocyclops panamensis* IN MASS PRODUCTION CONDITIONS
- 11:15 Adam Daw**, Reginald Blaylock, Eric Saillant  
BUILDING A DIGITAL COPEPOD: AN INDIVIDUAL-BASED MODEL (IBM) TO OPTIMIZE THE CULTURE AND USE OF THE COPEPODS *Parvocalanus crassirostris* AND *Acartia tonsa*
- 11:30 Silvie Dumas**, Itzi Guzmán de las Nieves, Laurence Mercier, Renato Peña-Martínez, Mauricio Contreras, Laurent Seychelles, Laura Flores-Montijo  
USE OF THE NEMATODE *Panagrolaimus* sp. AS A SUBSTITUTE FOR BRINE SHRIMP IN THE LARVAL CULTURE OF *Seriola rivoliana*

MONDAY

## CATFISH AND CATFISH HYBRIDS – PART 2

Monday, March 11 8:30 AM - 3:00 PM Galleries 5

Chair: Jimmy Avery

- 8:30 Nabin Babu Khanal**, Uttam Deb, Madhav K Shrestha  
AN OVERVIEW OF PANGASIUS *Pangasius hypopthalmus* AQUACULTURE IN NEPAL
- 8:45 Baba Usman Ibrahim**  
LENGTH-WEIGHT RELATIONSHIP OF *Clarias gariepinus* (AFRICAN MUD FISH) IN LAPAI – AGAIE RESERVOIR, NIGER STATE, NIGERIA
- 9:00 Gabriel Bake**, D.O. Ajibade, A.B. Gana, A. Adam, D.M. Gatlin III  
GROWTH RESPONSE AND CARCASS COMPOSITION OF HYBRID (HETERO-CLARIAS) CATFISH FINGERLINGS FED BLENDED INSECT MEALS
- 9:15 Olarinke Victoria Adeniyi**, Omowumi Faith Dosunmu  
GROWTH RESPONSE AND NUTRIENT UTILIZATION OF AFRICAN SHARPTOOTH CATFISH *Clarias gariepinus* FED DIETS FORTIFIED WITH WILD LETTUCE *Latuca virosa*
- 9:30 Simeon Ayoola**, Adekunle Idowu, D.C. Ogundele  
GROWTH PERFORMANCE AND GENOTOXICITY EFFECTS OF *Clarias gariepinus* AT VARYING LEVELS OF INCLUSION OF WALNUT SHELL *Tetracarpidium conophorum*
- 10:00 BREAK**
- 10:30 John B. Olasunkanmi**, Bamidele O. Omitoyin, Theophilus O. Babalola, Joshua B. Ogunremi  
EFFECTS OF SOYBEAN REPLACEMENT WITH COOKED VELVET BEAN MEAL IN A PRACTICAL DIET FOR THE AFRICAN CATFISH *Clarias gariepinus*
- 10:45 Emmanuel F. Ude**, Uchechukwu P. Emeh  
EFFECT OF TOASTED *Citrillus vulgaris* SEED SHELL MEAL ON THE GROWTH OF *Clarias gariepinus* FINGERLINGS
- 11:00 Francisca George**, Akinwale Akinleye, Adeolu Akinyemi, Oluwatoyin Afolabi  
GROWTH PROMOTING EFFECTS OF PROBIOTICS IN THE AFRICAN CATFISH *Clarias gariepinus*
- 11:15 Bolade Thomas Adeyemo**, Ndidi Enefe, Oloyede Lateef Tiamiyu, Shola Gabriel Solomon, Augustina Ezekwesili, Babatunde Tanimomo  
IMMUNE RESPONSE, HAEMATOLOGY AND GROWTH PERFORMANCE OF *Heterobranchus longifili* CATFISH JUVENILES FOLLOWING DIETARY AFLATOXIN B1
- 11:30 Adekunle Idowu**, Simeon O Ayoola, Olamilekan Egunjobi  
TOXICITY EFFECTS OF *Erythrophleum suaveolens* EXTRACTS ON SUB-ADULT *Clarias gariepinus* (BURCHELL, 1822)
- 11:45 Esau M. Mbokane**, Ngonidzashé A.G. Moyo  
EFFECT OF DIETARY INCLUSION LEVELS OF *Artemisia afra* ON GROWTH, SERUM CHEMISTRY AND RESISTANCE IN *Clarias gariepinus* SUBJECTED TO *Aeromonas hydrophila*

MONDAY

- 12:00 Segun Adeyemi**, Oluwakemi Kayode  
ANTIBACTERIAL AND ANTIFUNGAL PROPERTIES OF GINGER AND GARLIC ON THE SHELF LIFE OF SMOKED AFRICAN CATFISH *Clarias gariepinus*
- 12:15 Jessica D. Starkey**, Kari Estes, Barbara Barton, Tom Powell, A. Jake Keel, Kathryn Robinson, Charles W. Starkey  
EFFECT OF FEEDING SUPPLEMENTAL CHOLINE CHLORIDE ON HYBRID CHANNEL *Ictalurus punctatus* × BLUE *Ictalurus furcatus* CATFISH SKELETAL MUSCLE FIBER MORPHOMETRICS AND MYOGENIC STEM CELL CHARACTERISTICS
- 12:30 LUNCH**
- 1:30 Bolade Adeyemo**, Clement Alawa, Babatunde Tanimomo, Ezekwesili Augustina, Ndidi Enefe  
EFFECTS OF DIETARY TURMERIC *Curcuma longa* ON GROWTH PERFORMANCE, HAEMATOLOGY, SERUM BIOCHEMISTRY AND INTESTINAL HISTOLOGY OF *Heterobranchus longifilis* CATFISH
- 1:45 Vandana Dharan**, Ganesh Kumar, Lester Khoo, Suja Aarattuthodiyil  
INVESTIGATION OF SEAFOOD FRAUD AMONG CATFISH PRODUCTS IN THE SOUTHERN U.S. MARKETS
- 2:00 Anita Kelly**, Nagaraj Chatakondi, Jeff Baxter  
TRIPLOID INDUCTION OF HYBRID CATFISH FERTILIZED EGGS INCREASES FRY PRODUCTION
- 2:15 Brian Bosworth**  
EFFECTS OF THREE GENERATIONS OF SELECTION ON GROWTH AND CARCASS YIELD OF THE DELTA SELECT STRAIN OF CHANNEL CATFISH *Ictalurus punctatus*

## SEAWEED AQUACULTURE AND BIOMASS UTILIZATION

Monday, March 11 8:30 AM - 3:00 PM Salon C

Chairs: Alejandro Buschmann, Carolina Camus

- 8:30 Alejandro H. Buschmann**, Carolina Camus, Sandra V. Pereda, María del Carmen Hernández-González  
A CONCEPTUAL INTRODUCTION INTO SEAWEED PRODUCTION
- 8:45 Marc von Keitz**, Chad Haynes, Krishna Doraiswamy  
TOOLS AND APPROACHES FOR SCALING OFF-SHORE CULTIVATION OF MACROALGAE
- 9:00 Marin Hawk**  
THE MARINE STEWARDSHIP COUNCIL (MSC) AND THE AQUACULTURE STEWARDSHIP COUNCIL (ASC) JOINT SUSTAINABLE SEAWEED STANDARD
- 9:15 Jang Kyun Kim**, Sook Kyung Shin, Sojin Jang, Young-Seok Han, Yeon-Jung Kim, Jae-Sung Rhee, Eun Kyoung Hwang, Young Dae Kim, Charles Yarish  
SEAWEED AQUACULTURE TECHNOLOGIES, AND BIOMASS APPLICATIONS IN KOREA

- 9:30 Kelly Lucas**, Mark E. Capron, Reginald Blaylock, Michael Chambers, Jim R. Stewart, Steven F. DiMarco, Kerri Whilden, M.H. Kim, Zach Moscicki, Corey Sullivan, Igor Tsukrov, M. Robinson Swift, Scott C. James, Maureen Brooks, Stephan Howden, Suzanne Fredericq, Stacy A. Krueger-Hadfield, Antoine De Ramon N'Yeurt, Chris Webb, Don Piper  
OCEAN FORESTS: FEEDING THE WORLD WITH FLOATING ARTIFICIAL REEFS
- 9:45 Simona Augyte**, Michael Marty-Rivera, Schery Umanzor, Scott Lindell, Dave Bailey, Mike Stekoll, Jang K. Kim, Christina Zendman, Jonathan Gilbert, Hauke Kite-Powell, Charles Yarish  
ALTERNATIVE METHODS OF SEEDING AND PLANTING KELP FOR AQUACULTURE IN THE USA
- 10:00 Judy Li**, Kendall Barbery, Paul Clark, Melissa Krisak, Yuan Liu, Mark Dixon, Steven Pitchford, Bren Smith, Gary Wikfors  
EPIBIOTIC COMMUNITIES ON THE AQUACULTURED SUGAR KELP *SACCHARINA LATISSIMA* IN LONG ISLAND SOUND, USA
- 10:15 BREAK**
- 10:30 Olavur Gregersen**, Urd Bak  
OFFSHORE SEAWEED CULTIVATION – PROVEN AND SCALABLE METHODS
- 10:45 Schery Umanzor**, Simona Augyte, Michael Marty-Rivera, Dave Bailey, Jang K. Kim, Steve Pitchford, Gary Wikfors, Scott Lindell, Charles Yarish  
OPTIMIZING THE DEVELOPMENT OF MICROSCOPIC LIFE STAGES OF *Saccharina* spp. FOR SELECTIVE BREEDING
- 11:00 Carolina Camus**, Javier Infante, Alejandro H. Buschmann  
*Marocystis pyrifera* AQUACULTURE IN CHILE
- 11:15 Scott Lindell**, David Bailey, Simona Augyte, Schery Umanzor, Michael Marty-Rivera, Jean-Luc Jannink, Xiaowei Mao, Kelly Robbins, Jeremy Schmutz, Bren Smith, Gary H. Wickfors, Steve Pitchford, Erin Fischell, Charles Yarish  
NEW TOOLS FOR SELECTIVELY IMPROVING STRAINS OF SUGAR KELP *Saccharina latissima* FOR FOOD AND FUEL
- 11:30 Xiaowei Mao**, Jean-Luc Jannink, Kelly Robbins, Charles Yarish, Simona Augyte, Schery Umanzor, David Bailey, Michael Marty-Rivera, Jeremy Schmutz, Bren Smith, G.H. Wikfors, S. Pitchford, E. Fischell, Scott Lindell  
POPULATION GENETICS OF FOUNDING STOCKS OF *Saccharina latissima* FROM NORTHEAST AMERICA
- 11:45 Charles Yarish**, Jang Kim, Scott Lindell, Michael Stekoll, Simona Augyte, David Bailey, Michael Marty-Rivera, Jean-Luc Jannink, Xiaowei Mao, Kelly Robbins, Bren Smith, Loretta Roberson, Cliff Goudey  
OPPORTUNITIES, CHALLENGES AND FUTURE DIRECTIONS OF OPEN WATER KELP AQUACULTURE IN NORTHEAST AMERICA
- 12:00 Anoushka Concepcion**, Kristin DeRosia-Banick, Tessa Getchis, Nancy Balcom  
INVESTIGATING THE VIABILITY OF *Gracilaria tikvahiae* AS A CANDIDATE SPECIES FOR COMMERCIAL AQUACULTURE IN CONNECTICUT
- 12:30 LUNCH**

- 1:30 Candace Loy**, Jim Dollimore, Craig Radford, Andrew Jeffs  
GROWOUT AND FUCOIDAN YIELD OF NEW ZEALAND NATIVE FUCOID BROWN SEAWEED *Hormosira banksii* USING PACIFIC OYSTER FARM INFRASTRUCTURE
- 1:45 Olivia Barberi**, Carrie Byron, Kristin Burkholder, Adam St. Gelais, Alicia Williams  
ASSESSMENT OF MICROBIOLOGICAL PATHOGENS ON SUGAR KELP *Saccharina latissima* FARMED IN COASTAL WATERS OF MAINE
- 2:00 José A. Zertuche-González**, Jose Miguel Sandoval-Gil, Laura K. Rangel-Mendoza, Alberto I. Gálvez-Palacios, José M. Guzmán-Calderón  
ANNUAL PRODUCTION VARIABILITY WITH TEMPERATURE OF SEA LETTUCE *Ulva* sp. CULTURES IN COMMERCIAL SIZE PONDS
- 2:15 Allison Leyton**, Maria-Elena Lienqueo, Carolina Shene  
BROWN MACROALGAE SOURCE OF ANTIOXIDANT, ANTIMICROBIAL AND CAROTENOIDS COMPOUNDS: GREEN EXTRACTION AND FERMENTATIVE PROCESS
- 2:30 Julio A. Vasquez**, Johanne Dobringer  
PRODUCTION MODEL FOR UHV ALGINATES FROM CHILEAN BROWN SEAWEEDES FOR BIOMEDICAL USE
- 2:45 Kristen Davis**, Marcelo Chamecki, Jim McWilliams, Martha Sutula, Raphael Kudela, Javier Infante, Christina Frieder, Yan Chao, Daniel Duahajre  
TOOLS FOR OFFSHORE AQUACULTURE: THE MACROALGAE CULTIVATION MODELING SYSTEM (MACMODS)

## ECONOMICS AND MARKETING – PART 2

Monday, March 11 8:30 AM - 4:00 PM Galeries 1

Chair: Frank Asche

- 8:30 Saroj Adhikari**, Uttam Deb, Madan Dey, Lin Xie, Nabin Babu Khanal, Peter Bechtel, John Bland, Suzanne Brashear, Kamal Gosh, Brenda Martin  
CONSUMERS' WILLINGNESS TO PAY FOR NEWLY DEVELOPED CATFISH PRODUCTS WITH VARYING LEVEL OF CONVENIENCE: EVIDENCE FROM AN EXPERIMENTAL AUCTIONS
- 8:45 Nabin B. Khanal**, Uttam Deb, Madan M. Dey, Lin Xie, Saroj Adhikari, Peter J. Bechtel, John Bland, Suzanne Brashear, Kamal Gosh, Brenda Martin  
DO SENSORY ATTRIBUTES AFFECT CONSUMER PREFERENCES? EVIDENCE FROM THE SECOND PRICE AUCTION OF NEWLY DEVELOPED CONVENIENT CATFISH PRODUCTS
- 8:45 José Fernández Polanco**, Ignacio Llorente, Trond Bjørndal, José Luis Fernández Sanchez, Lamprakis Avdelas, María Cozzolino  
DEMAND AND PRICE DYNAMICS IN THE SEABASS AND SEABREAM INTERNATIONAL MARKET
- 9:00 Linda ODierno**, Michael Ciaramella, Paul Zajicek  
INCREASING DEMAND FOR U.S. FARM-RAISED SEAFOOD THROUGH THE FOODSERVICE SECTOR

- 9:15 Sawitree Chamsai**, Simon R. Bush, Peter Oosterveer, Miranda P.M. Meuwissen  
RISKS TO WHOM: MANAGING AQUACULTURE PRODUCTS IN SOUTHEAST SUPERMARKET CHAINS
- 9:30 Jonathan van Senten**, Carole R. Engle  
REGULATORY COMPLIANCE COSTS ON WEST COAST SHELLFISH FARMS
- 10:00 BREAK**
- 10:30 Babatunde Adeleke**, Deborah Robertson-Andersson, Gan Moodley  
COMPARATIVE SWOT ANALYSIS OF KEY AQUACULTURE PLAYERS IN AFRICA (EGYPT, NIGERIA AND UGANDA) VIS-À-VIS SOUTH AFRICA
- 10:45 Ganesh Kumar**, Todd Byars, Terrence Greenway, Suja Aarattuthodiyil, Lester Khoo, Matt Griffin, David Wise  
ECONOMIC ASSESSMENT OF COMMERCIAL-SCALE *Edwardsiella ictaluri* VACCINE TRIALS IN U.S. CATFISH INDUSTRY
- 11:00 Kamal Gosh**, Terry Hanson, Rex Dunham, Nagaraj Chatakondi  
IDENTIFYING THE ECONOMICALLY FEASIBLE BEST MANAGEMENT PRACTICES TO REDUCE GROWTH VARIABILITY IN CHANNEL-BLUE HYBRID CATFISH PRODUCTION
- 11:15 Bertrand Le Gallic**, Magdalena Raftowicz  
THE DEPREDATION OF FARMED SEAFOOD PRODUCTS: OVERVIEW AND ISSUES AT STAKE
- 11:30 Sadiat Motunrayo Famurewa**, Olanrewaju Badmus, Micheal Oluwaseun Lanre Badmus  
FISH SMOKING MARKETING: A SUSTAINABLE LIVELIHOOD AND POVERTY ALLVIATION FOR WOMEN EMPOWERMENT AT IBADAN METROPOLIS, OYO STATE
- 11:45 Rui Miranda Rocha**, Ana Costa, Jeremy Huet, Pedro Bem-Haja, Isabel Silva, Hugo Almeida, Saide Amada, Andreia Rodrigues, Amadeu Soares  
FEASIBILITY ASSESSMENT OF COMMUNITY-BASED *Pinctada cf. margaritifera* FARMING IN QUIWIA, NORTHERN MOZAMBIQUE
- 12:00 Chris Vonderweidt**, Julia Maine  
SOUTH PORTLAND PIER AQUACULTURE AND FISHING INDUSTRY NEEDS ASSESSMENT
- 12:15 Matt Parker**, Carole Engle, Jonathan van Senten, Donald Webster  
MARYLAND OYSTER BUDGETS: CRITICAL INFORMATION FOR SHELLFISH PRODUCERS
- 12:30 LUNCH**
- 1:30 Russel Dame**, Kelly Grogan, Charles Adams, Richard Weldon, Leslie Sturmer  
FINANCIAL RISK ANALYSIS OF OFF-BOTTOM OYSTER AQUACULTURE ALONG THE WEST COAST OF FLORIDA
- 1:45 Jonah Greene**, Jason C. Quinn, Michael Huesemann, Jascha Gulden, Geoffrey Wood, Thomas Mumford  
EVALUATING THE ECONOMIC VIABILITY OF OFF SHORE MACROALGAE PRODUCTION AND THE IMPACTS OF EMERGING TECHNOLOGIES AND DOWNSTREAM PROCESSING INTO BIOPRODUCTS



- 2:00 Robert Waldron**  
IS *Crassostrea virginica* GULF OYSTER REEF A SUSTAINABLE RESOURCE SUBJECT TO EQUIVALENT CARBON CREDIT TRADING ON THE WORLD CAP AND TRADE MARKET?
- 2:15 Matt Parker**  
EFFECTS OF DIFFERENT FINANCING SCENARIOS ON MARYLAND OYSTER FARM PROFITABILITY AND SUCCESS
- 2:30 José Luis Fernández Sanchez, José M. Fernández Polanco, Ignacio Llorente García, Manuel Luna García, Elisa Baraibar, María D. Odriozola Zamanillo, Ladislao Luna Sotorrio**  
TECHNICAL EFFICIENCY OF SEA BASS AND SEA BREAM PRODUCTION OF EUROPEAN AQUACULTURE FIRMS
- 2:45 Pratheesh Sudhakaran, Gavino Puggioni, Hiro Uchida**  
THE EFFECT OF OYSTER FARM ON THE NEIGHBORING HOUSING VALUE IN RHODE ISLAND

## OYSTERS – PART 2

Monday, March 11 8:30 AM - 5:00 PM Balcony K

Chair: Remi Sonier

- 8:30 Kate Ritter, Stan Allen**  
FECUNDITY OF TRIPLOID EASTERN OYSTER *Crassostrea virginica* AS A FUNCTION OF TETRAPLOID LINEAGE
- 8:45 Brian R. Callam, John Supan**  
VARIATION IN SURVIVAL AND GROWTH RATES AMONG TRIPLOID EASTERN OYSTER *Crassostrea virginica* LARVAE OBTAINED FROM DIFFERENT TETRAPLOID LINES
- 9:00 Jessica D. Kinsella, Elizabeth D. Darrow, Suzanne B. Bricker, Joao G. Ferreira, Alhambra Cubillo, Martin H. Posey, Troy D. Alphin, Susanne M. Brander, Brandon J. Puckett, Aswani K. Volety**  
EFFECTS OF TEMPERATURE AND SALINITY ON PHYSIOLOGICAL PARAMETERS OF EASTERN OYSTER *Crassostrea virginica*: IMPLICATIONS FOR AQUACULTURE PRODUCTION AND FILTRATION CAPACITY
- 9:15 Nathanaël Sangare, Alain Lo-Yat, Gilles Le Moullac, Laure Pecquerie, Romain Legendre, Yoann Thomas, Benoit Beliaeff, Serge Andréfouët**  
A FIELD, LABORATORY AND MODELING APPROACH TO INVESTIGATE SENSITIVITY OF THE PEARL OYSTER *Pinctada margaritifera* TO ENVIRONMENTAL CONDITIONS IN THE CONTEXT OF BLACK PEARL FARMING
- 9:30 Philippe Soudant, Ludovic Hermabessiere, Fabienne Le Grand, Patricia Goodman, Aswani Volety, Ai Ning Loh**  
INFLUENCE OF FRESHWATER INFLOW ON THE FATTY ACID COMPOSITION OF *C. virginica*
- 9:45 Rémi Sonier, Luke A. Poirier, Léon Lanteigne, Luc A. Comeau**  
PRODUCING PREDATOR-RESISTANT OYSTERS FOR SEA RANCHING
- 10:00 BREAK**

MONDAY

- 10:30 Brett Dumbauld**, Evan Durland, Konstantin Divilov, Kelly Muething, Ylva Durland, Erin Graham, Dan Sund, Dacey Mercer, Chris Langdon  
GROWTH AND SURVIVAL OF PACIFIC OYSTER SEED IN U.S. WEST COAST ESTUARIES: BEYOND THE HATCHERY – HOW IMPORTANT IS SEED SOURCE AND ESTUARY PLANTOUT LOCATION?
- 10:45 David Bushek**, Lisa Calvo, Eleanor Bochenek, Kevin Sullivan, Brian Harman, Barney Hollinger  
EVALUATING SUBTIDAL OYSTER CAGE CULTURE SYSTEMS TO SOLVE UNIQUE AQUACULTURE ISSUES HAMPERING DEVELOPMENT OF OYSTER AQUACULTURE IN DELAWARE BAY
- 11:00 Bobbi Hudson**, Carter Newell, Gary Freitag  
NEW OYSTER GEAR TRIALS AND LESSONS LEARNED IN ALASKA
- 11:15 Matthew Campbell**, Steven Hall  
HYDRODYNAMIC EFFECTS ON OYSTER AQUACULTURE SYSTEMS
- 11:30 Wahyudin P. Sasmita**, Yamamoto Tamiji  
AN ESTIMATION OF NUTRIENT LOAD TO ENHANCE THE OYSTER LARVAE RECRUITMENT IN HIROSHIMA BAY, JAPAN
- 11:45 Matt Parker**, Suzanne B. Bricker, Joao G. Ferreira, Alhambra M. Cubillo  
MODELED ESTIMATES OF NUTRIENT REDUCTION FROM OYSTER FARMS IN MARYLAND'S CHESAPEAKE BAY
- 12:00 Dave C. Love**, Lillian Kuehl, Robert M. Lane, Jillian P. Fry, Bobbi Hudson, Jamie Harding, Benjamin J.K. Davis, Kate Clancy  
COLD CHAINS FOR FARMED OYSTERS PRODUCED IN WASHINGTON AND CHESAPEAKE BAY, AND MODELED *Vibrio parahaemolyticus* GROWTH
- 12:30 LUNCH**
- 1:30 Zach Forster**, Bruce Kauffman, Brett Brett Dumbauld  
WILLAPA BAY OYSTER RESERVES – 1890 TO NOW – UPDATED LEGISLATION FUNDS RESEARCH THROUGH STATE OYSTER SALES
- 1:45 Ben Dyar**, Trent Austin, Michael Hodges  
SOUTH CAROLINA OYSTER SHELL RECYCLING PROGRAM: PAST, PRESENT, AND FUTURE
- 2:00 Robert Botta**, Frank Asche, Edward Camp  
A REVIEW OF GLOBAL OYSTER AQUACULTURE PRODUCTION AND CONSUMPTION

# AQUATOOLS: SMART SITING AND ENVIRONMENTAL MANAGEMENT TOOLS FOR A GROWING AQUACULTURE INDUSTRY

Monday, March 11 8:30 AM - 5:00 PM Galleries 4

Chairs: James Morris, Robert Jones

- 8:30 Ginny Crothers**  
DEVELOPMENT OF EXCLUSIONARY BASEMAPS TO INFORM AQUACULTURE SPATIAL PLANNING
- 8:45 Lisa Wickliffe**  
ALTERNATIVE SITING ANALYSES TO INFORM OFFSHORE AQUACULTURE PERMITTING: CASE STUDIES FROM CALIFORNIA, NEW YORK, AND THE GULF OF MEXICO
- 9:00 Seth Theuerkauf**  
WHERE CAN COMMERCIAL MARINE AQUACULTURE BENEFIT NATURE AND PEOPLE? A GLOBAL SPATIAL ANALYSIS REVEALS PRIORITY MARINE ECOREGIONS FOR RESTORATIVE AQUACULTURE
- 9:15 Michael Tlusty**  
AQUACULTURE TECHNOLOGY: NEEDS AND CONSTRAINTS
- 9:30 Jon Jossart**  
SPATIAL AUTO-CORRELATION ANALYSES TO INFORM AQUACULTURE PLANNING AND SITING
- 9:45 James A. Morris**  
OCEANREPORTS: A WEB-BASED ON-DEMAND REAL-TIME AND AUTOMATED SPATIAL ANALYSIS TOOL FOR U.S. OCEAN INDUSTRIES
- 10:00 BREAK**
- 10:30 David W. Fredriksson, Adam T. St. Gelais, Tobias Dewhurst, Barry Costa-Pierce, Kathryn Johndrow, Andrew Drach**  
SPATIAL EXTRAPOLATION OF DESIGN WAVE CONDITIONS FROM A NATIONAL DATA BUOY CENTER PLATFORM TO A LOCAL AQUACULTURE SITE USING SHORT-TERM MEASUREMENTS
- 10:45 Jennica Hawkins**  
NATIONAL GUIDELINES FOR ENVIRONMENTAL MONITORING OF MARINE CAGE CULTURE
- 11:00 Matthew Thompson**  
SPATIAL PLANNING FOR MARINE AQUACULTURE AND THE CHALLENGE OF THE NORTH ATLANTIC RIGHT WHALE
- 11:15 Molly Bogeberg**  
COLLABORATIVE RESEARCH TO UNDERSTAND THE ECOLOGICAL ROLE OF SHELLFISH AQUACULTURE USING UNDERWATER VIDEO IN WASHINGTON STATE, USA

MONDAY

- 11:30 Ken Riley**  
THE NOAA WAVE EXPOSURE MODEL (WEMO): A TOOL FOR SITING  
AQUACULTURE IN COASTAL AREAS
- 11:45 Adam St. Gelais**  
THE IMPORTANCE OF OCEANOGRAPHIC AND ECOLOGICAL ASSESSMENT TOOLS  
FOR SITE EVALUATION AND SELECTION IN SMALL TO MID-SCALE AQUACULTURE
- 12:00 Robert Jones**  
A NEW TOOL FOR ASSESSING THE COUNTRY-LEVEL AQUACULTURE  
GOVERNANCE: CASE STUDY OF U.S. FEDERAL AQUACULTURE REGULATION
- 12:30 LUNCH**
- 1:30 Lars Howell**  
THE WHALE SIMULATOR: A TOOL FOR PREDICTING ENTANGLEMENT RISK FOR  
OFFSHORE AQUACULTURE
- 1:45 Tessa Getchis**  
NAVIGATING THE SITE SELECTION PROCESS: THE CONNECTICUT AQUACULTURE  
MAPPING ATLAS
- 2:00 Rodney Guajardo**  
SPATIAL ANALYSES OF HABS HOTSPOTS IN THE GULF OF MEXICO TO INFORM  
OFFSHORE AQUACULTURE PLANNING
- 2:15 Lisa Wickliffe**  
SPATIAL TECHNOLOGIES FOR DISASTER PREPAREDNESS AND RESPONSE FOR  
AQUACULTURE FAO SPATIAL ANALYSIS

## CLAMS

Monday, March 11 10:30 AM - 12:30 PM Balcony L

Chairs: Leslie Sturmer, LeRoy Creswell

- 10:30 Michael P. Acquafredda**, Daphne Munroe, Lisa Calvo, Michael De Luca  
DIVERSIFYING THE NORTHEAST'S AQUACULTURE SECTOR BY DEVELOPING  
CULTURE TECHNIQUES FOR THE ATLANTIC SURFCLAM *Spisula solidissima*
- 10:45 Eric N. Powell**, Kelsey M. Kuykendall, Roger Mann, Sara M. Pace  
THE WARMING OF THE NORTHWEST ATLANTIC AS RECORDED BY THE OCEAN  
QUAHOG *Arctica islandica* AND THE ATLANTIC SURFCLAM *Spisula solidissima*
- 11:00 M. Chase Long**, Roger Mann  
COLLECTIONS OF YOUNG OCEAN QUAHOGS: LESSONS LEARNED FROM THE  
NEWEST RECRUITS OF THE WORLD'S LONGEST-LIVING METAZOAN
- 11:15 Alexandria Marquardt**, Sara Park, Denisse Almaguer, Grant Waltz, Lisa Needles,  
Benjamin Ruttenberg  
POPULATION TRENDS AND ABUNDANCE OF PISMO CLAMS *Tivela stultorum* IN  
CALIFORNIA
- 11:30 Kristina Arranz**, Iñaki Urrutxurtu, Irrintzi Ibarrola, Miren Bego Urrutia,  
Enrique Navarro  
DIFFERENTIAL PHYSIOLOGICAL RESPONSES OF INTER- AND INTRA-FAMILIAR  
JUVENILE CLAMS *Ruditapes philippinarum* TO CHANGES IN DIETARY C/N LEVELS

- 11:45 Andreia C.M. Rodrigues**, Pedro Bem-Haja, Hugo de Almeida, Vitória Pereira, Marina Cabral, Domitília Matias, Catarina R. Marques, Mário Pacheco, Ana P.L. Costa, Luísa Inácio, Maria de Lourdes Sardinha, Joaquim Sousa Pinto, Rosa Freitas, Amadeu M.V.M. Soares, Rui J.M. Rocha  
OPTIMIZATION OF DEPURATION PROCESS OF *Ruditapes decussatus* PRODUCED IN C-GRADE AREAS TO LEGALLY COMMERCIALIZATION VALUES
- 12:00 Leonardo N. Zamora**, Kevin G. Heasman, Norman L.C. Ragg, Dung V. Le, Shaneel Sharma, Andrea C. Alfaro, Nick King  
HATCHERY AND FARMING DEVELOPMENTS FOR THE NEW ZEALAND GEODUCK *Panopea zelandica*: THE CAWTHRON INSTITUTE EXPERIENCE
- 12:15 Charles R. Weirich**, Ami E. Wilbur, David S. Cerino  
EVALUATING THE POTENTIAL FOR SUNRAY VENUS CLAM *Macrocallista nimbosa* AQUACULTURE IN NORTH CAROLINA: INITIAL PRODUCTION TRIALS

## FISH REPRODUCTION AND BREEDING

Monday, March 11 10:30 AM - 12:30 PM Galleries 3

Chairs: Matt Powell, Eric Saillant

- 10:30 Peter J. Allen**, Emmet L. Guy  
SPAWNING AND REARING SUCKERS: LESSONS FROM BLACK BUFFALO
- 10:45 Troy C. Rezek**, Jennica L. Hawkins, Kenneth L. Riley, James A. Morris  
SPAWNING AND EARLY-LARVAL REARING OF THE VERMILION SNAPPER *Rhomboplites aurorubens*
- 11:00 Brittany Chesser**, Peter J. Allen  
EFFECT OF BROODSTOCK DENSITY AND SPAWNING SUBSTRATE SURFACE AREA ON REPRODUCTIVE OUTPUT OF GULF KILLFISH IN COMMERCIAL-SCALE RECIRCULATING AQUACULTURE SYSTEMS
- 11:15 Edithrose M. Fairweather**, Terrence R. Tiersch, William M. Childress, Eric A. Saillant  
EFFECT OF SALINITY ON GAMETOGENESIS, SPAWNING AND GAMETE QUALITY IN THE ATLANTIC CROAKER *Micropogonias undulatus*
- 11:30 Minh Hoang Le**, Khuong Van Dinh  
SEASONAL CHANGES IN THE SPERM MOTILITIES OF WAIGIEU SEAPERCH *Psammoderus waigiensis*: EFFECTS OF VARIOUS DILUTIONS, PH, TEMPERATURE, OSMOLALITY AND CATIONS
- 11:45 Jason S. Broach**, Cortney L. Ohs, Isaac S. Lee, Andrew Palau, Audrey H. Beany  
EVALUATION OF REPRODUCTIVE PERFORMANCE OF PINFISH AND PIGFISH AFTER GNRH TYPE II ANALOGUE ADMINISTRATION
- 12:00 Elena N. Ponomareva**, Anzhelika V. Kovaleva, Vadim A. Grigorev, Angelina V. Firsova  
METHODS OF THE DETERMINATION OF STURGEON BREEDERS' READINESS FOR SPAWNING *IN VIVO*
- 12:15 Alexander Kramer**, Boris Gomelsky, Jeffrey Warner, Noel Novelo, Brandylyn Thomas  
REPRODUCTIVE ABILITY OF TRIPLOID KOI X GOLDFISH HYBRIDS

## PREVENTATIVE CONTROLS FOR FOOD SAFETY IN AQUACULTURE PRODUCTS

Monday, March 11 10:30 AM - 12:30 PM Salon H

Chairs: Brett Koonse, Steve Otwell, Michael Schwarz

- 10:30 Brett Koonse**  
AQUACULTURE FOOD SAFETY AND DISEASE PREVENTION PLANS
- 10:45 Steve Otwell**, Michael H. Schwarz, Michael L. Jahncke, Brett Koonse  
ESSENTIAL EVIDENCE FOR FOOD SAFETY IN AQUACULTURE PRODUCTS
- 11:00 Michael H. Schwarz**, Steve Otwell, Brett Koonse, Michael Jahncke  
A NEW PARADIGM FOR DISEASE MANAGEMENT ON THE FARM, SUPPORTING  
FOOD SAFETY CONTROLS FOR AQUACULTURE PRODUCTS
- 11:15 Stanley Serfling**  
PROGRAMS AT THE U.S. FOOD AND DRUG ADMINISTRATION TO MONITOR  
UNAPPROVED CHEMICAL AND DRUG RESIDUES IN AQUACULTURE PRODUCTS

MONDAY

## FISH HEALTH

Monday, March 11 10:30 AM - 5:00 PM Salon A

Chair: Grace Ramena

- 10:30 David Burbank**, Tyson Fehringer, Eric Pankau  
THE USE OF RT-PCR TO IDENTIFY POTENTIAL SOURCES OF *Flavobacterium psychrophilum* AND REDUCE INCIDENCE OF COLDWATER DISEASE AS PART OF AN INTEGRATED FISH HEALTH MANAGEMENT APPROACH
- 10:45 Arun Venugopalan**, Larry Hanson, Matt Griffin, David Wise, Ganesh Kumar, Andy Perkins, Suja Aarattuthodiyil  
SPATIO-TEMPORAL SCREENING FOR THE PRESENCE OF CHANNEL CATFISH VIRUS (CCV) IN CATFISH FRY
- 11:00 Hung Tran Bao**, Shih-Chu Chen, Hso-Chi Chaung, Ta-Chih Cheng  
MOLECULAR FEATURES OF COMPLEMENT REGULATORS IN COBIA *Rachycentron canadum* AND THEIR EXPRESSION IN RESPONSE TO *Photobacterium damsela* subsp. *piscicida* INFECTION
- 11:15 Miles D. Lange**, Jason Abernathy, Bradley D. Farmer  
CATFISH MUCUS CHANGES THE *Flavobacterium columnare* TRANSCRIPTOME
- 11:30 Rahul Krishnan**, Jong-Oh Kim, Jae-Ok Kim, Syed Shariq Nazir Qadiri, Soo-Jin Kim, Myung-Joo Oh  
CHARACTERIZATION OF PISCINE NECTIN-4 – A POTENTIAL NERVOUS NECROSIS VIRUS RECEPTOR IN SEVEN-BAND GROUPER
- 11:45 Susan E. Knudson**, Luke Keeton  
MOLECULAR COMPARISONS AMONG VIBRIO BELONGING TO THE HARVEYI CLADE ISOLATED FROM THE ENVIRONMENT FROM DIFFERENT GEOGRAPHICAL AREAS

- 12:00 Kenneth D. Cain**, Jia Ma, Timothy J. Bruce, Luke Oliver  
CO-INFECTION OF RAINBOW TROUT *Oncorhynchus mykiss* WITH INFECTIOUS HEMATOPOIETIC NECROSIS VIRUS (IHNV) AND *Flavobacterium psychrophilum*
- 12:30 LUNCH**
- 1:30 Dipanwita Saha**, Preeti Mangar, Joydeb Pal, Aniruddha Saha  
ANTIBIOTIC RESISTANCE AND VIRULENCE GENES IN *Aeromonas* ISOLATES FROM FISH FARMS IN SUB-HIMALAYAN WEST BENGAL, INDIA
- 1:45 Yaowu Fu**, Yao-Wu Fu, De-Jie Lin, Chun-Tao Li, Qi-Zhong Zhang, Yan-Meng Liu, Ting-Long Hou, Shu-Quan Guo  
EFFICACY AND TOXICITY OF SOPHORAFLAVANONE G ISOLATED FROM *Sophora flavescens* AGAINST *Ichthyophthirius multifiliis* IN GRASS CARP
- 2:00 Adeolu A. Akinyei**, Esther O. Akinboade, Godfrey N.O. Ezeri, Adeolu A. Akinyemi, Mobolaji O. Bankole  
SENSITIVITIES OF BACTERIAL ISOLATES OF AFRICAN MUD-CATFISH *Clarias gariepinus* TO EXTRACTS OF *Theobroma cacao*
- 2:15 Grace Ramena**, Nathan Egnew, Nitin Challa  
PROPHYLACTIC POTENTIAL OF *Syzygium aromaticum* BIOACTIVITY IN FISH AQUACULTURE AS AN ALTERNATIVE TO CHEMOTHERAPY
- 2:30 Moritz Pohl**, Tiehui Wang, John Sweetman, Chris Secombes  
THE EFFECTS OF SELENIUM SUPPLEMENTED FEED ON THE INNATE IMMUNE RESPONSE DURING INFECTION IN RAINBOW TROUT
- 2:45 Timothy J. Bruce**, Jie Ma, Luke P. Oliver, Sinem Gulen, Benjamin R. LaFrentz, Kenneth D. Cain  
DISEASE DIAGNOSTICS AND EVALUATION OF IMMUNOLOGICAL PARAMETERS IN CULTURED BURBOT *Lota lota*
- 3:00 BREAK**
- 3:30 Jim A. Keeton**, Susan Knudson  
USE OF BENEFICIAL MICROBES AND PROBIOTICS TO REDUCE PRESENCE OF COLD WATER DISEASE *Flavobacterium psychrophilum*, IMPROVE WATER QUALITY AND REDUCE OVERALL COLONIES OF PATHOGENS WITHIN HATCHERY AND GROWOUT SYSTEM
- 3:45 Michael Pietrak**, Graham Rosser, Steve Backman  
HOW DO I GET RID OF THAT WORM ON MY FISH? IDENTIFICATION AND TREATMENT OF *Gyrodactylus cyclopteri* ON LUMPFISH FROM MAINE
- 4:00 Emma Taccardi**, Carrie Byron, Heather Hamlin, Ian Bricknell  
OVERWINTERING STRATEGIES OF THE SALMON LOUSE *Lepeophtheirus salmonis*

## TUNA AQUACULTURE

Monday, March 11 1:30 PM - 5:00 PM Balcony I

Chairs: Daniel Benetti, Alex Buentello

- 1:30 Daniel Benetti**, John Stieglitz, Gavin Partridge  
ADVANCES IN TUNA AQUACULTURE
- 1:45 Alejandro Buentello Sr.**, Daniella Acevedo, Juan Sierra, Dan Bearden, Fabio Casu  
FROM BAITFISH FEEDING TO BALANCED NUTRITION: A LEAP FORWARD IN SUSTAINABLE TUNA FARMING
- 2:00 Fernando de la Gandara**, Aurelio Ortega, Fernando Méndez, Douglas R. Tocher, Mónica Betancor, Silvia Martínez-Llorens, Gabriel Mourente  
IMPORTANCE OF DIETARY TAURINE AND SELENIUM ON GROWTH AND SURVIVAL OF ATLANTIC BLUEFIN TUNA *Thunnus thynnus* LARVAE
- 2:15 Juan F. Sierra-De la Rosa**, Daniel Benetti, Vernon Scholey, Daniel Margulies  
PROBIOTICS AND 1-MONOGLYCERIDES AS FEED SUPPLEMENTS FOR YELLOWFIN TUNA *Thunnus albacares* AT EARLY DEVELOPMENTAL STAGES
- 2:30 Jorge Suarez**, Daniel Benetti  
AN OVERVIEW ON TUNA FEEDING AND NUTRITION
- 2:45 Aurelio Ortega**, Fernando de la Gandara, Fernando Mendez, Jaime Garcia  
GROWTH AND SURVIVAL OF 0+ ABFT *Thunnus thynnus* FINGERLINGS KEPT IN TANKS
- 3:00 BREAK**
- 3:30 Enrique Mauser**, Dan Margulies, Vernon Scholey, Susana Cusatti, Luis Tejada, Jeanne Wexler, Maria Stein, Tomoki Honryo, Ryo Katagiri, Michio Kurata, Yasuo Agawa, Yoshifumi Sawada  
COMPARATIVE ANALYSIS OF THE LABORATORY GROWTH OF YELLOWFIN TUNA *Thunnus albacares* AND PACIFIC BLUEFIN TUNA *Thunnus orientalis* LARVAE, AND GROWTH OF EARLY-JUVENILE YELLOWFIN REARED IN LAND BASED TANKS AND A SEA CAGE
- 3:45 M. Refik Orhun**  
U.S. IMPORTS AND DOMESTIC LANDINGS OF TUNAS WITH EMPHASIS ON YELLOWFIN TUNA, A CANDIDATE SPECIES FOR OFFSHORE AQUACULTURE IN THE U.S. SOUTHERN REGIONS AND THE CARIBBEAN

MONDAY



# MUSSELS

Monday, March 11 1:30 PM - 5:00 PM Balcony L

Chairs: Norman Ragg, Carter Newell

- 1:30 Carter Newell**  
ADVANCES IN MUSSEL AQUACULTURE: NEW INSIGHTS FROM SATELLITES, BUOYS AND WATER SAMPLES IN MAINE, USA
- 1:45 Aad Smaal**  
HOW TO IMPROVE MUSSEL CULTURE IN EUROPE?
- 2:00 Jeff Davidson, John D.P. Davidson**  
IMPACT AND RESPONSE OF THE MUSSEL INDUSTRY TO AQUATIC INVASIVE TUNICATES
- 2:15 Andrea C. Alfaro, Thao Van Nguyen, Tim Young**  
MUSSEL HEALTH ASSESSMENT: HOW TO UNDERSTAND THE LANGUAGE OF PHYSIOLOGY
- 2:30 Brendon Dunphy, Katya Ruggiero, Louis Ranjard, Jamie Powell, Leonardo Zamora, Norman Ragg**  
METABOLOMIC CHARACTERISATION OF PHYSIOLOGICAL RESILIENCE IN SELECTIVELY BRED GREENSHELL™ *Perna canaliculus* MUSSELS
- 2:45 Laura Steeves, Tore Strohmeier, Ramon Filgueira, Øivind Strand**  
ADAPTATION AND PLASTICITY OF RETENTION EFFICIENCY IN THE MUSSEL *Mytilus edulis*?
- 3:00 BREAK**
- 3:30 Norman Ragg, Samantha Gale, Mark Camara, Nick King, Brendon Dunphy, Ellie Watts, Emily Frost, Jennifer Jury, Zoë Hilton, Bridget Finnie, Caitlin Fielder, Natalí Delorme, Carol Peychers**  
MUSSEL SELECTIVE BREEDING FOR INCREASED RESILIENCE TO CLIMATE CHANGE
- 4:00 Anil M.K, Gomathi P., Surya S., Ambarish Gop P., Raju B., Mohamed K.S., Gopalakrishnan A.**  
SEED PRODUCTION OF GREEN MUSSEL *Perna viridis* USING UPWELLING AND DOWNWELLING SYSTEMS FOR INDOOR NURSERY REARING
- 4:15 Leonardo N. Zamora, Norman L.C. Ragg, Zoë Hilton, Stephen C. Webb, Nick King, Serean L. Adams**  
MUSSEL LIVE TRANSPORT AND THE POTENTIAL FOR EXTENDING SURVIVAL OUT OF WATER THROUGH A PRE-EMERSION TREATMENT
- 4:30 Carter Newell**  
COMMERCIALIZATION OF SUBMERSIBLE MUSSEL RAFT TECHNOLOGY IN SEMI-EXPOSED MAINE WATERS

MONDAY

# PERSPECTIVES ON AQUACULTURE HEALTH MANAGEMENT

Monday, March 11 1:30 PM - 5:00 PM Balcony M

Chair: Kathleen Hartman

- 11:45 Julie Schroeter**  
THE USFWS AQUATIC ANIMAL DRUG APPROVAL PARTNERSHIP (AADAP) PROGRAM: SUPPORTING FISH DRUG APPROVALS ONE STUDY AT A TIME
- 12:00 Bonnie Johnson**  
ONE FISH, TAGGED FISH, MAMMA FISH, SICK FISH...WHAT DO I DO NOW?
- 12:15 Devin DeMario**  
AFWA DRUG APPROVAL WORKING GROUP AND THE IMPORTANCE OF AQUACULTURE TO STATE FISH AND WILDLIFE AGENCIES
- 1:30 Adriane Artilles**  
MOLECULAR TECHNIQUES FOR HEALTH MANAGEMENT IN AQUACULTURE; AN UPDATE
- 2:00 Kevin Snekvik**  
UNDERSTANDING HOW A PATHOGEN DETECTION TEST IS CREATED AND SUPPORTS YOUR OPERATION
- 2:30 Janet Whaley**  
A NOAA PERSPECTIVE ON MARINE OFFSHORE AQUACULTURE HEALTH MANAGEMENT
- 3:00 BREAK**
- 3:30 Charlie Conklin**  
WHAT ARE COMMERCIAL FISH FARMERS DOING TO INFLUENCE STATES FISH CERTIFICATION REQUIREMENTS REGARDING FISH STOCKINGS?
- 4:00 Bill Keleher**  
MANAGING PATHOGEN RISKS IN AQUACULTURE OPERATIONS
- 4:30 Kathleen Hartman**  
COMMERCIAL AQUACULTURE HEALTH PROGRAM STANDARDS UPDATE

## RECENT ADVANCES IN SNOOK AQUACULTURE

Monday, March 11 1:30 PM - 5:00 PM Galleries 2

Chair: Nicole Rhody

- 1:30 Ron Hans, Ryan Schloesser, Nathan Brennan, Kevan L. Main**  
THE EFFECTS OF STOCKING DENSITY ON CANNIBALISM IN JUVENILE COMMON SNOOK *Centropomus undecimalis*
- 1:45 Andrea M. Tarnecki, Noah Levi, Nicole Rhody, Matthew Resley, Kevan Main**  
THE EFFECT OF COPPER SULFATE TREATMENT ON THE MICROBIOME OF COMMON SNOOK *Centropomus undecimalis*

MONDAY

- 2:00 Remy Phillips**, Marzi Wafapoor, Nicole Rhody, Andrea Tarnecki  
PROBIOTICS FOR THE SUSTAINABLE PRODUCTION OF COMMON SNOOK  
*Centropomus undecimalis*
- 2:15 Nicole Rhody**, Matthew Resley, Kevan L. Main  
OVERVIEW OF COMMON AND BLACK SNOOK *C. undecimalis* AND *C. nigrescens*  
BROODSTOCK MATURATION AND SPAWNING RESEARCH IN FLORIDA
- 2:30 Leonardo Ibarra-Castro**, Juan Martinez-Brown, Jaime Navarro-Flores,  
Cesareo Cabrera  
MASSIVE HATCHERY PRODUCTION AND FATTENING IN PONDS OF PACIFIC  
WHITE SNOOK *Centropomus viridis* IN MAZATLAN, MEXICO
- 2:45 Carlos Yanes-Roca**, Nicole Rhody, Juliette Delabbio, Kevan Main  
EFFECT OF LIGHT SPECTRUM ON LARVAL SURVIVAL AND FITNESS IN COMMON  
SNOOK *Centropomus undecimalis*
- 3:00 BREAK**
- 3:30 Vinicius R. Cerqueira**, Fabiano M. Silva, Bruno C. da Silva  
GROWTH OF LABORATORY-REARED COMMON SNOOK *Centropomus undecimalis*  
JUVENILES REARED IN CAGES WITH DIFFERENT STOCKING DENSITIES IN SANTA  
CATARINA, BRAZIL
- 3:45 Vinicius R. Cerqueira**, Virgínia N. Silva, Cristina V.A. de Carvalho, Manecas F. Baloi,  
Fábio C. Sterzelecki, Gabriel Passini, Evelise Nazari  
EFFECTS OF HIGH TEMPERATURES ON GROWTH PERFORMANCE, BODY  
COMPOSITION AND PHYSIOLOGICAL STRESS RESPONSES OF JUVENILE  
COMMON SNOOK *Centropomus undecimalis*

MONDAY

## FINFISH GENETICS FROM TRADITIONAL BREEDING TO GENOMIC SELECTION

Monday, March 11 1:30 PM - 5:00 PM Galleries 3  
Chairs: Eric Saillant, Matt Powell

- 1:30 Eric A. Saillant**, Pavel V. Dimens, Tami Hildahl, M. Brooke McPeak,  
Kenneth L. Jones, Susana Cusatti, Daniel Margulies, Vernon Scholey  
GENOMIC RESOURCES FOR THE YELLOWFIN TUNA *Thunnus albacares*
- 1:45 Thomas L. Welker**, Ken Overturf, Jason Abernathy, Madison Powell  
TRANSCRIPTOME PROFILING AND EXPRESSION OF SPECIFIC STRESS-AFFECTED  
GENES IN TWO RAINBOW TROUT STRAINS UNDER COMMERCIAL HATCHERY  
CONDITIONS
- 2:00 Rhoda Mae Simora**, Max Bangs, Tracy Qin, Cuiyu Lu, Veronica Alston,  
Yingqi Huang, Zachary Taylor, Michael Coogan, James North, Rex Dunham  
GENERATION OF KNOCK-IN TRANSGENIC CHANNEL CATFISH *Ictalurus punctatus*  
CARRYING CATHELICIDIN GENE BY CRISPR/CAS 9 SYSTEM
- 2:15 Rungsun Duangkaew**, Surintorn Boonanuntanasarn, Goro Yoshizaki  
CHARACTERIZATION OF A *vasa* HOMOLOG IN STRIPED CATFISH *Pangasianodon*  
*hypophthalmus* AND ITS EXPRESSION IN GONADS

- 2:30 Luke P. Oliver**, Jie Ma, Timothy J. Bruce, Joseph T. Evavold, Daniel B. Korbel, Kenneth D. Cain  
TRIPOID INDUCTION IN CULTURED BURBOT *Lota lota* USING THERMAL AND HYDROSTATIC SHOCK
- 3:00 BREAK**
- 3:30 Ken Overturf**  
USING A GENETICALLY SELECTED TROUT MODEL TO INVESTIGATE PHYSIOLOGICAL MECHANISMS FOR GROWTH AND NUTRIENT UTILIZATION
- 3:45 Khalid Abbas**, Zeenat Rubab  
GENETIC STRUCTURING IN SELECTED HATCHERY STOCKS OF *Cyprinus carpio* AS ASSESSED BY DNA MARKERS
- 4:00 Noel D. Novelo**, Boris Gomelsky, Shawn D. Coyle, Alexander G. Kramer  
EVALUATION OF GROWTH AND SEX SEGREGATION IN NILE TILAPIA CROSSES OF YY MALES WITH NORMAL XX FEMALES OF DIFFERENT ORIGIN

MONDAY

**LEVELING THE PLAYING FIELD:  
U.S. TRACEABILITY REQUIREMENTS FOR SHRIMP  
AND ABALONE SOLD IN THE U.S.**

Monday, March 11 1:30 PM - 5:00 PM Galleries 6

Chair: Celeste Leroux

- 1:30 NOAA Fisheries**  
OVERVIEW OF SHRIMP AND ABALONE U.S. PRODUCTION AND FOREIGN TRADE
- 1:45 Celeste Leroux**  
TRACEABILITY REQUIREMENTS FOR SHRIMP AND ABALONE IMPORTS: SEAFOOD IMPORT MONITORING PROGRAM (SIMP)
- 2:00 Celeste Leroux**  
TRACEABILITY REQUIREMENTS FOR U.S. SHRIMP AND ABALONE PRODUCERS: TRACEABILITY INFORMATION PROGRAM FOR SEAFOOD (TIPS)
- 2:15 NOAA Fisheries**  
DEMONSTRATION OF TIPS ONLINE REGISTRATION AND REPORTING
- 2:30 NOAA Fisheries**  
ENFORCEMENT AND INSPECTION UNDER NOAA'S TRADE MONITORING PROGRAMS
- 2:45 Celeste Leroux**  
DISCUSSION

## PERCEPTIONS AND SOCIAL ISSUES IN AQUACULTURE

Monday, March 11 1:30 PM - 5:00 PM Salon D

Chair: Kim Thompson

- 1:30** **Kimberly Thompson**, Sebastian Belle, Jennifer Bushman, Becky Holt, Tyler Korte, Cynthia Sandoval, Tiffany Waters  
STORIED SEAFOOD: BUILDING POSITIVE PERCEPTIONS THROUGH THE POWER OF STORIES AND EXPERIENCES  
Perception survey results  
Video trailers  
Panel discussion
- 3:00** **BREAK**
- 3:30** **Tessa Getchis**, Miriah Kelly, Anoushka Concepcion, John Bovay  
PUBLIC KNOWLEDGE, PERCEPTIONS, AND PREFERENCES TOWARDS CONNECTICUT WILD-CAUGHT AND FARMED SEAFOOD
- 3:45** **Chuck Anderson**, Keith Cox  
DEBUNKING MARKET MYTHS THAT WILD FISH ARE BETTER THAN FARMED
- 4:00** **Shiyu Yang**, Laura Witzling, Bret R. Shaw, Kristin K. Runge, Chris F. Hartleb, Deidre M. Peroff  
WISCONSIN CONSUMERS AND LOCAL FARM-RAISED FISH: PUBLIC OPINION, TRENDS AND MARKETING RECOMMENDATIONS
- 4:15** **Bertrand Le Gallic**, Estelle Masson, Claudio Pironne, Catherine Mariojouis, Katrin Zander  
TO KNOW OR NOT TO KNOW THE NATURE OF AQUACULTURE PRODUCTS: IMPLICATIONS FOR THE POTENTIAL DEVELOPMENT OF EUROPEAN FARMED SEAFOOD PRODUCTS

## AQUATIC ANIMAL TRADE:

### TRANSBOUNDARY HEALTH IN PRACTICE AND IN POLICY

Monday, March 11 1:30 PM - 5:00 PM Salon E

Chairs: Katharine Starzel, Kathleen Hartmann

- 1:30** **Bill Keleher**  
PATHOGEN TESTING FOR INTERSTATE MOVEMENT AND EXPORT – BLUE BOOK, OIE, BOTH?
- 1:45** **Lori Gustafson**  
OIE AND TRADE: THE ROLE AND CHALLENGE OF INTERNATIONAL STANDARDS FOR SURVEILLANCE
- 2:00** **Victoria Alday**  
LIVE SHRIMP TRADE: TRANSBOUNDARY HEALTH IMPLICATIONS
- 2:15** **Janet Whaley**  
U.S. SEAFOOD TRADE – A NOAA PERSPECTIVE
- 2:30** **Jonathan van Senten**, Carole R. Engle  
U.S. INTERSTATE TRADE REGULATIONS FOR AQUACULTURE: WHAT IS THE COST TO U.S. PRODUCERS?
- 2:45** **DISCUSSION**

MONDAY

## SPECIES DIVERSIFICATION

Monday, March 11 1:30 PM - 5:00 PM Salon H

Chair: Chris McKindsey

- 1:30 Ahmad Al Khraisat**  
AQUACULTURE IN JORDAN (REVIEW)
- 1:45 Gennady G. Matishov**  
PROSPECTS OF AQUACULTURE DEVELOPMENT IN THE SOUTH OF RUSSIA
- 2:00 Catherine Purcell, Andrew Severin, John Hyde**  
BUILDING GENOMIC RESOURCES FOR *Seriola* SPECIES TO FACILITATE  
AQUACULTURE OF THESE FISH IN THE UNITED STATES
- 2:15 Nathan Stone, Luke Roy, Eric Park**  
A REVIEW OF FATHEAD MINNOW *Pimephales promelas* REPRODUCTION AND  
COMMERCIAL CULTURE
- 2:30 Carlos A. Martínez-Palacios, Carlos A. Martínez-Palacios,  
C. Cristian Martínez-Chávez, Ma. Gisela Ríos-Durán**  
ADVANCES IN THE CULTURE OF MEXICAN PIKE SILVERSIDE *Chirostoma estor*: A  
LOW TROPHIC SPECIES WITH HIGH NUTRITIONAL VALUE
- 2:45 Mark G. Shirley**  
LOUISIANA'S FARM ALLIGATOR *Alligator mississippiensis* INDUSTRY LEADS TO  
WETLAND CONSERVATION
- 3:00 BREAK**
- 3:30 Carlos Andrade, Natacha Nogueira, João Canning-Clode, Mafalda Freitas,  
Sonia Gueron, Jamileh Javipour**  
JELLYFISH CULTURE AND THE PROMOTION OF BLUE ECONOMY
- 3:45 Helen Meigs, Dale Sarver, Neil Sims, Lisa Vollbrecht**  
HERBIVOROUS MARINE FINFISH CULTURE – THE COMPELLING CASE FOR  
KYPHOSIDS
- 4:00 Guillaume Caulier, Jean-François Hamel, Emaline M. Montgomery, Bruno Gianasi,  
Jiamin Sun, Janet M. Ferguson-Roberts, Annie Mercier**  
EXPLORING THE SEA CUCUMBER *Cucumaria frondosa* AS AN EMERGING  
AQUACULTURE CANDIDATE: THE GOOD AND THE BAD
- 4:15 Ailet Vives, María D. Herrero-Pérezrul, Bertha P. Ceballos-Vázquez, Tamara Rubilar,  
Ana I. Beltrán-Lugo**  
EVALUATION OF THE QUALITY OF THE GONADS OF THE SEA URCHIN *Tripneustes  
depressus* IN BAJA CALIFORNIA SUR, MEXICO

MONDAY

## PLANNING STRATEGICALLY FOR MARKETING AND FINANCIAL SUCCESS

Monday, March 11 3:30 PM - 5:00 PM Salon C

Chair: Ganesh Karunakaran, Jonathan van Senten

- 3:30 Ganesh Karunakaran, Jonathan van Senten**  
STRATEGIC MARKET PLANNING FOR AQUACULTURE FARMS
- 3:45 Christian Brayden**  
FOSTERING SMALL BUSINESS GROWTH IN THE MAINE AQUACULTURE  
INDUSTRY
- 4:00 Mark Ely**  
FINDING YOUR NICHE TO MARKETING
- 4:15 Richard Eager**  
FROM DESIRE TO RETIREMENT... A SYNOPSIS OF A 25 YEAR ADVENTURE
- 4:30 Robert Jones**  
IMPACT INVESTING IN AQUACULTURE: CREATING OPEN-SOURCED INVESTOR  
TOOLS TO CATALYZE THE BLUE REVOLUTION
- 4:45 Douglas Kuenz**  
A PERSPECTIVE ON CHALLENGES AND OPPORTUNITIES IN US AQUACULTURE
- 5:00 Myrtha Wroy**  
NATIONAL AQUACULTURE PROGRAM AVAILABLE TO IDENTIFY AND PROMOTE  
MINORITY-OWNED BUSINESSES IN THE WORLD'S FASTEST GROWING  
INDUSTRY

MONDAY

# NOTES