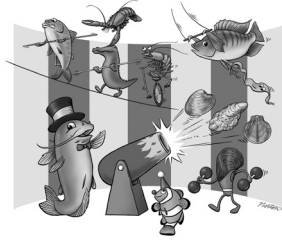


Aquaculture 2022



TUESDAY, March 1

PLENARY

Tuesday, March 1 8:30 AM - 10:00 AM Pacific Ballroom
Chair: Michelle (Mick) Walsh

8:30 Opening and Associations

9:15 Roz Naylor
HOW SUSTAINABLE IS AQUACULTURE?

AQUATIC VETERINARY MEDICINE

Tuesday, March 1 11:00 AM - 12:30 PM Palm 8
Chair: Jessie Sanders

- 11:00 Juliane Baquiran**, Paul Krause
IMPORTANT CONSIDERATIONS FOR PHARMACEUTICAL DEVELOPMENT AND USE IN AQUACULTURE
- 11:15 Myron Kebus**, Catherine Alexander, Rosemary Marusak, Kaitlyn St. Charles, Marie Culhane, Carol Cardona
FISH DISEASE RISK ASSESSMENTS AND REGULATIONS
- 11:30 Robert Durborow**, Tyler McKay, Stephen Atkinson, John Kelso, Tifani Watson McKay
MOBILE RESPONSIVE CLINICAL FISH HEALTH DATABASE
- 11:45 Ezra Byakora**
IMMUNOPROTECTION OF NILE TILAPIA *Oreochromis niloticus* AGAINST *Edwardsiella tarda* INFECTION, UGANDA
- 12:00 Nilima Renukdas**, Andrew Mitchell, Russ Summers
FISH HEALTH CERTIFICATION PROGRAM AT ARKANSAS AGRICULTURE DEPARTMENT, LITTLE ROCK
- 12:15 Jessica Koppien-Fox**, Kara Hans O'Brien
PHYTONUTRIENT FEED ADDITIVE IMPACT ON FISH FILLET FLAVOR
- 12:30 Laura Urdes**, Chris Walster, Julius Tepper
ACQUIRING DAY-ONE COMPETENCY THROUGH THE FUNDAMENTALS OF AQUATIC VETERINARY MEDICINE LEARNING RESOURCE

MUSSELS

Tuesday, March 1 11:00 AM - 12:30 PM Pacific C

Chair: Martina Capriotti

TUESDAY

- 11:00 Martina Capriotti**, Bridget A. Holohan, Maria Rosa, Sandra E. Shumway, Gitai Yahel, J. Evan Ward
A MULTISEASONAL *IN SITU* STUDY TO ASSESS PREY CAPTURE EFFICIENCY IN BIVALVES AND ASCIDIANS
- 11:15 Laura Steeves**, Tore Strohmeier, Ramón Filgueira, Antonio Agüera, Øivind Strand
CHARACTERIZING FEEDING VARIABILITY IN *Mytilus edulis* USING HIGH TEMPORAL RESOLUTION MEASUREMENTS OF PUMPING RATE AND GUT PASSAGE TIME
- 11:30 Tyler Griffin**, Julia Baer, Evan Ward
DIRECT COMPARISON OF FECAL AND GUT MICROBIOTA IN THE BLUE MUSSEL *Mytilus edulis*
DISCOURAGES FECAL SAMPLING AS A PROXY FOR RESIDENT GUT COMMUNITY
- 11:45 Paul Rawson**, Melissa May, Nishad Jayasundara
INTRASPECIFIC VARIATION IN TOLERANCE TO ACUTE TEMPERATURE STRESS IN THE BLUE MUSSEL
Mytilus edulis: A TEACHING MODEL
- 12:00 Chinniah Amutha**
IMPACTS OF XENOBIOTICS AND MOLECULAR DEFENSE MECHANISM ON MARINE GREEN MUSSEL
Perna viridis IN SOUTHERN EAST COASTAL REGION OF BAY OF BENGAL, INDIA

PHYSIOLOGICAL INSIGHTS TOWARDS IMPROVING FISH CULTURE VI (PART 1)

Tuesday, March 1 11:00 AM - 12:30 PM Pacific E

Chairs: Peter Allen, Beth Cleveland, Adam Luckenbach, Javier Santander

HEALTH

- 11:15 Mark Lawrence**, Hasan Tekedar, Basant Goma, Hossam Abdelhamed, Salih Kumru, Jochen Blom, Attila Karsi
USE OF COMPARATIVE GENOMICS TO UNDERSTAND *Aeromonas* PATHOTYPES AND DESIGN A RECOMBINANT VACCINE STRATEGY
- 11:45 Sinthia Mumu**, Honey Win, Kusum Parajuli, Nahian Fahim, Ahmed Mustafa
POTENTIAL USE OF *Gynura procumbens* TO MODULATE STRESS AND IMMUNE RESPONSE IN FISH
- 12:00 Javier Santander**, Trung Cao, My Dang, Ignacio Vasquez, Setu Chakraborty, Katherinne Valderrama, Hajarooba Gnanagobal, Ahemd Hossain, Joy Chukwu, Oluwatoyin Onireti, Steve Hill, Zihyou Chen, Jennifer R. Hall, Jennifer Monk, Surendra Kumar, Vimbai I. Machimbirike, Cristopher Segovia, Nicole O'Brian, Andrew K. Swanson, Danny Boyce
LUMPFISH *Cyclopterus lumpus* IMMUNITY AGAINST MARINE BACTERIAL INFECTIOUS DISEASES
- 12:15 Javier Santander**, Trung Cao, Joy Chukwu, Oluwatoyin Onireti, My Dang, Ignacio Vasquez, Setu Chakraborty, Katherinne Valderrama, Hajarooba Gnanagobal, Ahmed Hossain, Steve Hill, Zihyou Chen, Jennifer R. Hall, Jennifer Monk, Surendra Kumar, Vimbai I. Machimbirike, Cristopher Segovia, Andre Khoury, Yenney Hernandez-Reyes, Antoine Khoury, Nicole O'Brian, Andrew K. Swanson, Danny Boyce
LUMPFISH *Cyclopterus lumpus* IMMUNITY TO *Vibrio anguillarum* VACCINES

12:30 LUNCH

STRESS

- 1:30 Anthony (Kurt) Gamperl**, Fabio Zanuzzo, Anne Beemelmans, Rebecca Sandrelli, Eric Ignatz, Zoe Zrini, Laura Braden, Matthew Rise
TO WHAT EXTENT DO 'HIGH' WATER TEMPERATURES AFFECT THE PHYSIOLOGY, HEALTH AND WELFARE OF ATLANTIC SALMON?
- 2:00 Eric Ignatz**, Rebecca Sandrelli, Sean Tibbetts, Stefanie Colombo, Fábio Zanuzzo, Ashley Loveless, Christopher Parrish, Matthew Rise, Kurt Gamperl
SUPPLEMENTAL DIETARY CHOLESTEROL LIMITS FILLET BLEACHING BUT DOES NOT IMPROVE THE GROWTH PERFORMANCE OR UPPER THERMAL TOLERANCE OF FEMALE TRIPLOID ATLANTIC SALMON
- 2:15 Brandon Gerhart**, Peter Allen
EFFECTS OF TEMPERATURE ON METABOLISM, SWIMMING PERFORMANCE, AND BLOOD-OXYGEN AFFINITY *Ictalurus* spp.
- 2:30 Abby Vaughn**, Peter Allen
THE EFFECTS OF LOW TEMPERATURES ON GROWTH AND METABOLIC PROCESSES OF JUVENILE CHANNEL *Ictalurus punctatus*, BLUE *I. furcatus*, AND HYBRID CATFISH *I. furcatus* × *I. punctatus*
- 2:45 Émile Vadboncoeur**, Charlotte Nelson, Colin J. Brauner, A. Kurt Gamperl, Rebecca Sandrelli
AT WHAT TEMPERATURE DO CULTURED ATLANTIC SALMON *Salmo salar* EXPERIENCE COLD-INDUCED PHYSIOLOGICAL DISTURBANCES?
- 3:00 Timothy Bruce**, Jake Bledsoe, Luke Oliver, Jie Ma, Evan Jones, Brent Vuglar, Thomas Welker, Kenneth Cain
CHARACTERIZATION OF STRESS RESPONSE AND GUT MICROBIOTA IN CULTURED BURBOT *Lota lota maculosa* FOLLOWING FEEDING WITH PLANT-BASED DIETS
- 3:15 Yuzo Yanagitsuru**, Florian Mauduit, Alexis Lundquist, Madison Main, Itza Daza, James Hobbs, Levi Lewis, Tien-Chieh Hung, Richard Connon, Nann Fangue
EFFECTS OF TEMPERATURE AND SALINITY ON CARDIAC FUNCTION AND OSMOREGULATION IN THE THREATENED LONGFIN SMELT *Spirinchus thaleichthys*
- 3:30 Valentina Valenzuela-Muñoz**, Cristian Gallardo-Escárate, Bárbara P. Benavente, Diego Valenzuela-Miranda, Gustavo Núñez-Acuña, Hugo Escobar-Sepulveda, Juan Antonio Váldes
WHOLE-GENOME EXPRESSION APPROACH FOR TRANSCRIPTOME ANALYSIS: ATLANTIC SALMON SEAWATER ADAPTATION AS BIOLOGICAL MODEL
- 3:45 Cláudia Raposo de Magalhães**, Ana Paula Farinha, Raquel Carrilho, Denise Schrama, Marco Cerqueira, Pedro M. Rodrigues
THE PROMISOR ROLE OF SKIN MUCUS TO SCREEN FOR FISH STRESS BIOMARKERS: A PROTEOMICS APPROACH
- 4:00 Peter Allen**, Claudio Alvarez, Brandon Sorrell, Orion Rivers
PHYSIOLOGICAL COMPENSATION FOR ENVIRONMENTAL SALINITY IN GAR: IMPLICATIONS FOR CULTURE
- 4:15 Brian Ott**, Les Torrans, Peter Allen
EFFECT OF HYPOXIA ON THE CHANNEL CATFISH TRANSCRIPTOME

SHRIMP NUTRITION

Tuesday, March 1 11:00 AM - 12:30 PM Palm 2

Chair: Andrew Ray

TUESDAY

- 11:00 Hervé Lucien Brun**
OPTIMISATION OF FEED MARGINS, AS COVID-19 REPRESENTS A REAL CRISIS FOR THE AQUACULTURE INDUSTRY, IT COULD ALSO INDUCE IMPROVEMENTS IN SHRIMP *Penaeus vannamei* FARMING
- 11:15 Samuel Walsh**, Khanh Nguyen, Leila Strebel, Melanie Rhodes, Allen Davis
UTILIZING FEED EFFECTORS AND PASSIVE ACOUSTIC MONITORING FOR SEMI-INTENSIVE PACIFIC WHITE SHRIMP *Litopenaeus vannamei* PRODUCTION
- 11:30 Aya Hussain**, Harsha Galkanda-Arachchige, Khanh Nguyen, D. Allen Davis
EFFECT OF MANAGEMENT STRATEGY USING DIFFERENT COMMERCIAL PROBIOTICS ON NURSERY CULTURE PERFORMANCE OF PACIFIC WHITE SHRIMP *Penaeus vannamei*
- 11:45 Kurt Arce**, José Paez Manrique, Simon J. Davies, Claudia Figueiredo-Silva
BENEFITS OF ADJUSTING TRACE MINERAL PREMIX IN SHRIMP FEED – A MEXICAN FIELD STUDY
- 12:00 Sidra Nazeer**, Scott Tilton, Allen Davis
EVALUATION OF A HIGH PROTEIN DISTILLER'S DRIED GRAINS WITH YEAST AS A PROTEIN SOURCE IN PRACTICAL DIETS FOR PACIFIC WHITE SHRIMP *Litopenaeus vannamei*
- 12:15 Ewen McLean**, L. Tran, P. Hoang, K.B. Alfrey, F.T. Barrows
PRACTICAL EVALUATION OF A FISHMEAL- AND FISH OIL-FREE FEED FOR SHRIMP UNDER COMMERCIAL CONDITIONS IN VIETNAM
- 12:30 Leila Strebel**, Silvio Peixoto, Alexis Weldon, Roberta Soares, D. Allen Davis
ACOUSTIC FEEDING BEHAVIOR USING ATTRACTANTS IN DIETS FOR *Litopenaeus vannamei*

SPOTLIGHT TALKS

Tuesday, March 1 11:00 AM - 12:30 PM Town & Country B

Chairs: Nicole Rhody, Matt Smith

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. Students will give abbreviated versions of their presentations during this session. Selection of these students were based upon evaluations of their abstracts, and these Lightening Round presentations will be judged by representatives from each of the respective societies. This is a great opportunity to see these award-winning students present their work in a competitive platform.

1. Hannah Collins

EXAMINING THE EFFECTS OF NYLON MICROFIBERS ON THE GUT MICROBIOME OF THE BLUE MUSSEL (*Mytilus edulis*)

2. Moureen Matuha

UTILIZATION OF COPEPODS AS ALTERNATIVES TO ROTIFERS AND/OR ARTEMIA FOR WEANING OF LARVAL BURBOT (*Lota lota maculosa*)

3. Evan Jones

EVALUATING A NOVEL ORAL VACCINE DELIVERY PLATFORM IN RAINBOW TROUT *Oncorhynchus mykiss*

4. Lydia Bienlien

ABERRANT, GONADAL TROPISM OF *Perkinsus marinus* IN THE EASTERN OYSTER *Crassostrea virginica* AND EVIDENCE FOR INTRA-OOCYTTIC INFECTION

5. Laura King

USING 2B-RAD SEQUENCING TO IDENTIFY GENETIC VARIATION IN THE POPULATION OF FLORIDA POMPANO (*Trachinotus carolinus*) FOUND OFF THE EAST COAST OF FLORIDA

6. Sarah Hutchins

MANIPULATING ESCAPE RESPONSES OF THE CYCLOPOID COPEPOD *Oithona colcarva* AND THE CALANOID COPEPOD *Parvocalanus crassirostris*

7. Kayla Mladinich

AN EVALUATION OF MICROPLASTICS FOUND IN THE EASTERN OYSTER (*Crassostrea virginica*) AND THE SURROUNDING ENVIRONMENT

8. Yuzo Yanagitsuru

EFFECTS OF TEMPERATURE AND SALINITY ON CARDIAC FUNCTION AND OSMOREGULATION IN THE THREATENED LONGFIN SMELT (*Spirinchus thaleichthys*)

9. Casey Murray

EXAMINING THE DIGESTIVE PHYSIOLOGY OF LARVAL CHINESE ALGAE EATER *Gyriinocheilus aymonieri* TO IMPROVE LARVAL CULTURE PROTOCOLS

DOWN ON THE FARM

Tuesday, March 1 11:00 AM - 5:00 PM Palm 5

Chairs: Leslie Strumer, Bill Walton

- 11:00** **Megan Davis**, Raimundo Espinoza, Victoria Cassar, Carlos Velasquez, Julio Ortiz
A FISHERS OPERATED PILOT-SCALE QUEEN CONCH *Aliger gigas* HATCHERY AND NURSERY FACILITY FOR RESTORATION AND SUSTAINABLE SEAFOOD SUPPLY IN PUERTO RICO
- 11:15** **Alfredo Loor**, Peter Bossier, Nancy Nevejan
DIETARY SUBSTITUTION OF MICROALGAE WITH THE BAKER'S YEAST MUTANT *mnn9* IN PACIFIC OYSTER *Crassostrea gigas* SPAT
- 11:30** **Christopher Brianik**, Gregg Rivara, Micheal Patricio, John Dunne, Pete Topping, Marty Byrnes, Emmanuelle Pales Espinosa, Robert Cerrato, Ximing Guo, Bassem Allam
GROWTH AND SURVIVAL OF LARVAL, JUVENILE, AND ADULT TRIPLOID OYSTERS IN LONG ISLAND WATERS
- 11:45** **Leslie Sturmer**, Andrew Kane, Edward Philips, Natalie Anderson, Erik Lovestrand
ADDRESSING OYSTER *Crassostrea virginica* MORTALITIES IN FLORIDA'S OFF-BOTTOM OYSTER AQUACULTURE INDUSTRY
- 12:00** **Sarah Bodenstein**, Sandra Casas, Terrence Tiersch, Jerome LaPeyre
EFFECT OF PLOIDY AND COHORTS PRODUCED AT TWO HATCHERIES ON THE PHYSIOLOGY OF EASTERN OYSTER *Crassostrea virginica*
- 12:30** **LUNCH**

- 1:30 William Walton**, John Lewis
EFFECT OF WAVE ACTION, BIOFOULING CONTROL, AND DENSITY ON THE PERFORMANCE OF EASTERN OYSTERS *Crassostrea virginica*
- 1:45 Katie Houle**, Jennifer Ruesink, Fiona Boardman
NEKTON USE OF OYSTER *Crassostrea gigas* FLIP-BAG CULTURE IN NATIVE EELGRASS *Zostera marina* HABITAT
- 2:00 Jaclyn Robidoux**, Afton Hupper, Heather Sadusky
THE MAINE OYSTER TRAIL: A CASE STUDY FOR AQUA TOURISM IN MAINE
- 2:15 Michael De Luca**, Lucas Marxen, Jeanne Herb, Lisa Calvo, David Bushek, Russ Babb, Jeff Normant, Michelle Stuart, Zack Greenberg, Megan Kelly
A GIS-BASED TOOL FOR SPATIAL PLANNING AND MANAGEMENT OF SHELLFISH AQUACULTURE IN NEW JERSEY
- 2:30 Dennis McIntosh**, Chris Hauser, Kenneth Kristil
DO SHELLFISH AQUACULTURISTS HAVE A 'RIGHT TO FARM' IN DELAWARE?
- 2:45 Brendan Campbell**, Alyssa Campbell, Laura Wiltsee, Matthew Gray
DETERMINING THE OPTIMAL SALINITY CONFORMITY PERIOD FOR HARVESTED, MESOHALINE OYSTERS *Crassostrea virginica* USING RECIRCULATING WET STORAGE SYSTEMS
- 3:00 Caitlyn Czajkowski**, Dennis McIntosh
EFFICACY OF TWO DISINFECTANT TECHNOLOGIES FOR USE IN POST-HARVEST TREATMENT OF OYSTERS
- 3:15 Anthony Lima**, Anthony Reisinger, Mark Besonen, Alhambra Cubillo, Joao Ferreira, Suzanne Bricker, Joe Fox
OYSTER MARICULTURE AND NITROGEN BIOEXTRACTION IN COPANO BAY, TEXAS

FEDERAL ACTIONS SUPPORTING U.S. AQUACULTURE

Tuesday, March 1 11:00 AM - 5:00 PM Town & Country C

Chairs: Caird Rexroad, Gabriela McMurtry

Moderated by Paul Zajicek

- 11:00 Introduction**
Jim Parsons, National Aquaculture Association
- 11:15 Will the US Become a Global Farmed Seafood Contributor?**
Sebastian Belle, Maine Aquaculture Association
- 11:45 Interagency Efforts to Advance Aquaculture**
Paul Doremus, Co-Chair, NSTC Subcommittee on Aquaculture
- 12:15 Lunch**
- 1:30 Building US Seafood Resilience and Competitiveness**
Paul Doremus, Deputy Assistant Administrator for Operations, NOAA Fisheries, National Oceanic and Atmospheric Administration
- 2:00 Aquaculture is Agriculture**
Dr. Shefali Mehta, Deputy Under Secretary, Research, Education, and Economics
Dr. Caird Rexroad, National Program Leader, Aquaculture, Animal Production and Protection
Agricultural Research Service
US Department of Agriculture

MACROALGAE AQUACULTURE - SUPPORTING AN EMERGING INDUSTRY

Tuesday, March 1 11:00 AM - 5:00 PM Palm 1

Chairs: Anoushka Concepcion, Melissa Good

SUPPORTING AN EMERGING INDUSTRY

- 11:00 Vincent Doumeizel**
ENABLING THE SEAWEED REVOLUTION TO ADDRESS THE MAIN CHALLENGES OF OUR GENERATION
- 11:30 Norman Clough**
IMPROVEMENTS IN SEAWEED CULTIVATION AND GROWTH THROUGH UNIQUE MICROSTRUCTURE SUBSTRATES...AN APPROACH INSPIRED BY NATURE!
- 11:45 Melissa Good, Quentin Fong**
ALASKA'S MACROALGAE MARICULTURE INDUSTRY
- 12:00 Olivia Deans, Catherine Janasie, Stephanie Otts**
DEVELOPING POLICY CONSENSUS TO FACILITATE STATE REGULATION OF SEAWEED AS FOOD PRODUCT
- 12:15 Suzie Flores, Jonathan McGee**
STREAMLINING CHALLENGES ASSOCIATED WITH POST-HARVEST: EFFORTS OF THE SOUTHERN NEW ENGLAND SUGAR KELP COOPERATIVE
- 12:30 LUNCH**
- 1:30 Tammy Warner, Robert Pomeroy**
BUSINESS AND ECONOMIC PLANNING FOR SEAWEED AQUACULTURE SYSTEMS IN THE UNITED STATES

- 1:45 Anoushka Concepcion**, Gabriela Bradt, Meg Chadsey, Antoinette Clemetson, Melissa Good, Dawn Kotowicz, Stephanie Otts, Joshua Reitsma, Jaclyn Robidoux
NURTURING THE SUCCESSFUL GROWTH AND MATURATION OF A DOMESTIC SEAWEED AQUACULTURE INDUSTRY: IDENTIFYING AND REMOVING BARRIERS AND PROMOTING OPPORTUNITIES

PRODUCTION

- 2:00 David Bailey**, Scott Lindell, Clifford Goudey, Domenic Manganelli, Hauke Kite-Powell, Charles Yarish, Loretta Roberson, Kendall Barberly, Tobias Dewhurst, Beau Perry, Alf Pryor, Nick Mangini, Michael Stekoll
OPTIMIZING YIELD POTENTIAL AND HARVEST EFFICIENCY OF A SCALABLE COASTAL AND OFFSHORE MARCROALGAL FARM
- 2:15 Erika R. Thalman**, Karen Gray Geisler, Rafael Cuevas Uribe
LONG-LINE CULTURE OF RED SEAWEED IN THE PACIFIC NORTHWEST
- 2:30 Scott Lindell**, David Bailey, Maggie Aydlett, Michael Marty Rivera, Yaoguang Li, Schery Umanzor, Crystal Ng, Jean-Luc Jannink, Mao Huang, Kelly Robbins, Kendall Barberly, Michael Chambers, Hauke Kite-Powell, Loretta Roberson, Michael Stekoll, Charles Yarish
SELECTIVELY BREEDING IMPROVED STRAINS OF SUGAR KELP *Saccharina latissima*: A THREE YEAR SUMMARY
- 2:45 Michael Doall**, Brooke Morrell, Marissa Velasquez, Christopher Gobler
SHALLOW WATER CULTIVATION OF SUGAR KELP *Saccharina latissima*: A NEW OPPORTUNITY TO DIVERSIFY FOR NORTHEAST U.S. OYSTER FARMERS
- 3:00 Michael H. Graham**
LAND-BASED PRODUCTION OF HIGH-VALUE SEAWEEDS IN CALIFORNIA: PROS AND CONS OF PRODUCING FRESH SEAWEEDS IN THE COVID ERA
- 3:15 Michael Marty Rivera**, Yaoguang Li, Crystal Ng, David Bailey, Scott Lindell, Charles Yarish
ALTERNATE APPROACH TO *Saccharina latissima* FARMING: DIRECTLY SEEDING JUVENILE SPOROPHYTES AND GAMETOPHYTES

SEAWEED AND THE ENVIRONMENT

- 3:30 Alejandro H. Buschmann**, Pamela A. Fernández
EFFECT OF ENVIRONMENTAL HISTORY ON *Macrocystis pyrifera* RESPONSES TO OCEAN ACIDIFICATION AND WARMING: A PHYSIOLOGICAL AND MOLECULAR APPROACH
- 3:45 Alejandro H. Buschmann**
SEAWEED FARMING AND CARBON SEQUESTRATION AS A TOOL FOR REDUCING CLIMATE CHANGE IMPACTS: DESIRE OR FACT?
- 4:00 Tobias Dewhurst**, Timothy Dewhurst, David W. Fredriksson, Alexander Laun, William Beaver, Michael Stanbro
FLUID DRAG AND INERTIAL FORCES ON GIANT KELP *Macrocystis pyrifera* IN CURRENTS AND WAVES DERIVED USING A FULL-SCALE PHYSICAL MODEL
- 4:15 Gabriel de la Rosa**, Phoebe Racine, Christina Frieder, Kristen Davis, Simona Augyte, Steven Gaines, Lisa Wickliffe, Darcy Bradley
THE NUTRIENT POLLUTION ASSIMILATION POTENTIAL OF SEAWEED AQUACULTURE IN U.S. WATERS
- 4:30 Gregory Rorrer**, Joseph Kraai
HIGH DENSITY CULTIVATION AND CO₂ UPTAKE BY PANEL ARRAYS OF THE MACROPHYTIC RED ALGA *Gracilaria vermiculophylla* IN A 100 L RACEWAY POND

- 4:45 Christopher Gobler**, Craig Young, Peter Sylvers, Michael Doall
THE HALO EFFECT: USING SEAWEEDS TO PROTECT AQUACULTURED BIVALVES AGAINST OCEAN ACIDIFICATION AND HARMFUL ALGAL BLOOMS

ONE HEALTH EPIGENOMES AND MICROBIOMES: FROM SOIL TO PEOPLE

Tuesday, March 1 11:00 AM - 5:00 PM Palm 3

Chairs: Acacia Alcivar-Warren, Marcos De Donato

- 11:00 Marcos De Donato**, Acacia Alcivar-Warren
ONE HEALTH EPIGENOMES AND MICROBIOMES: FROM SOIL TO PEOPLE WORKSHOP – RECOGNITION TO STUDENTS AND ‘OUTSTANDING ONE HEALTH RESEARCHERS IN AQUACULTURE’ AWARDEES
- 11:15 Irina Yushenova**, Fernando Rodriguez, Samuel Maffa, Bria Metzger, Dakarai Barnard-Pratt, Rachel Urban, Irina Arkhipova
REVERSE TRANSCRIPTASE-RELATED GENES AND THEIR POSSIBLE ROLE IN THE HOST CELL RESPONSE TO TRANSITION METAL POLLUTION
- 11:45 Andréé De Cock**, Marie Anne Eurie Forio, Niels De Troyer, Isabel Garcia Arevalo, Arne Deknock, Wout Van Echelpoel, Lenin Riascos Flores, Jasmine De Rop, Liesbeth Jacxsens, Pieter Spanoghe, Luis Dominguez Granda, Peter Goethals
FROM FIELD TO PLATE: AGRICULTURAL PESTICIDE PRESENCE IN THE GUAYAS ESTUARY (ECUADOR) AND COMMERCIAL MANGROVE CRABS
- 12:15 Flavio Barros**, Genesis Solorzano, Miriam Alcivar-Arteaga, Iris Hernandez, Mayra Galindo, Gober Asuncion, Arellys Alcivar, Cesar Diaz, Shirley Alcivar, Martha Ochoa, Laura Urdes, Acacia Alcivar-Warren
A TRANSPOSABLE ELEMENT-EPIGENETICS PERSPECTIVE TO UNDERSTAND ANTIMICROBIAL RESISTANCE (AMR) AND CONTAMINATION BY ENDOCRINE DISRUPTING CHEMICALS (EDCs) LIKE HEAVY METALS, BIOCIDES, GLYPHOSATE, MICROPLASTICS, BIS(2-ETHYLHEXYL) PHTHALATE (DEPH), AND PER- AND POLY-FLUOROALKYL SUBSTANCES (PFAS): ADAPTATION TO GLOBAL CHANGE
- 12:30 LUNCH**
- 1:30 Marcos De Donato**, Hectorina Rodulfo, Marcos De Donato, Luz E. Diaz-Avila, Sarai Acuña, Acacia Alcivar-Warren
ANTIMICROBIAL RESISTANCE (AMR) IN AQUACULTURE FROM A ONE HEALTH APPROACH
- 2:00 Genesis Solorzano**, Flavio Barros, Miriam Alcivar-Arteaga, Iris Hernandez, Mayra Galindo, Gober Asuncion, Arellys Alcivar, Cesar Diaz, Shirley Alcivar, Martha Ochoa, Laura Urdes, Acacia Alcivar-Warren
ONE HEALTH EPIGENOMICS, WASTEWATER-BASED EPIDEMIOLOGY AND ANTIMICROBIAL RESISTANCE (AMR): A ROLE FOR GLYPHOSATE-BASED HERBICIDES, *Bacillus thuringiensis*, *Vibrio sp.*, METALS CHELATED BY GLYPHOSATE, ORGANOPHOSPHATES, DISINFECTANTS, AND PERSISTENT ORGANIC POLLUTANTS (PCBs, PAHs) IN EMERGING RESISTANT PATHOGENS OF PUBLIC HEALTH CONCERN
- 2:15 Andréé De Cock**, Niels De Troyer, Marie Anne Eurie Forio, Isabel Garcia Arevalo, Wout Van Echelpoel, Liesbeth Jacxsens, Stijn Luca, Gijs Du Laing, Filip Tack, Luis Dominguez Granda, Peter Goethals
FROM MANGROVE TO FORK: METAL PRESENCE IN THE GUAYAS ESTUARY (ECUADOR) AND COMMERCIAL MANGROVE CRABS

- 2:45 Lu Liu**, Zixiao Guo, Nan Wang, Min Liu, Suhua Shi
NEUTRAL PROCESSES AND SALINITY SHAPE MICROBIAL COMMUNITY ASSEMBLY IN MANGROVE ECOSYSTEMS ALONG ESTUARY
- 3:00 Luigui Gallardo-Becerra**, Fernanda Cornejo-Granados, Alonso A. Lopez-Zavala, Sandra Romero-Hidalgo, Filiberto Sánchez, Juan Pablo Ochoa-Romo, Rogerio R. Sotelo-Mundo, Andrés Cota-Huizar, Adrián Ochoa-Leyva
IMPACT OF HOST GENOTYPE ON GUT AND HEPATOPANCREAS MICROBIOTA OF PACIFIC WHITELEG SHRIMP *Litopenaeus vannamei*
- 3:15 Juan Serrano**, Sonia Soto-Rodriguez, Eduardo Quiroz-Guzmán
A BACTERIOPHAGE COCKTAIL AS AN ALTERNATIVE FOR THE CONTROL OF *Vibrio parahaemolyticus* RESPONSIBLE FOR AHPND IN *Penaeus vannamei*
- 3:30 Jeremiah Minich**
THE HUNT FOR WILD CAUGHT PROBIOTICS: COMPARISON OF MICROBIOMES FROM 569 VERTEBRATES INCLUDING 115 FISH SPECIES
- 4:00 Miriam Reverter**, Samira Sarter, Domenico Caruso, Marine Combe, Jean-Christophe Avarre, Nathalie Tapissier-Bontemps, Pierre Sasal, Rodolpe Gozlan
AQUACULTURE AT THE CROSSROADS OF GLOBAL WARMING AND ANTIMICROBIAL RESISTANCE AND THE USE OF BIOACTIVE PLANTS AND ALGAE AS A SUSTAINABLE ALTERNATIVE
- 4:15 Mara Thomas**, Justyna Andrysiak, Ewelina Wojcik, Elzbieta Gorecka, Justyna Kowalska, Jolanta Witaszewska, Monika Terenowicz, Jaroslaw Dastych
BACTERIOPHAGE TECHNOLOGY, AN EFFECTIVE SOLUTION TO TACKLE ANTIMICROBIAL RESISTANCE IN AQUACULTURE
- 4:45 Laura Urdes**, Maria-Antonia Minea, Acacia Alcivar-Warren
THE WELFARE CONCEPT – DOES IT APPLY TO SHELLFISH, TOO?

RECIRCULATING AQUACULTURE SYSTEMS

Tuesday, March 1 11:00 AM - 5:00 PM Town & Country D

Chairs: Yonathan Zohar, Brian Vinci

- 11:00 John Davidson**, Kent Crozier, Ashley Soldavini, Lisa Flanagan, Anna DiCocco, Curtis Crouse, Travis May, Natalie Redman, Megan Murray
OFF-FLAVOR OBSERVATIONS: FACTORS INFLUENCING ACCUMULATION IN RAS AND NEW INFORMATION ON GEOSMIN TASTE-TRESHOLD IN ATLANTIC SALMON *Salmo salar* FILLETS
- 11:30 Terence Barry**, Ramsey Kropp, Casey Grimm, Kyle Woolever, Christopher Haughey, Steven Summerfelt
A NOVEL ADVANCED OXIDATION TECHNOLOGY THAT RAPIDLY REMOVES GEOSMIN AND MIB FROM WATER AND SIGNIFICANTLY REDUCES ATLANTIC SALMON DEPURATION TIME
- 11:45 Andre Bok**, Lawrence Grant
MITIGATION OF THE ACCUMULATION OF OFF-FLAVOURS AND OTHER UNDESIRABLE CHEMICAL COMPOUNDS IN MARINE FINFISH *Seriola lalandi* AND *Argyrosomus japonicus* PRODUCED IN AN INTENSIVE RECIRCULATING AQUACULTURE SYSTEM THROUGH THE USE OF A NOVEL FEED (AMT) AND FEEDING STRATEGY

- 12:00 Allen R. Place**
REPLACING SOY PROTEIN WITH INSECT MEAL IN A FISHMEAL FREE DIET FOR ATLANTIC SALMON
Salmo salar
- 12:15 Guillaume Salze, Larry Feinberg**
A BIOTECHNOLOGY PLATFORM TO MEET THE NEEDS OF RAS AQUACULTURE
- 12:30 LUNCH**
- 1:30 Kevin R. Sowers, Keiko Saito, John Stubblefield, Chris Tollini, Rick Tysor**
CONVERSION OF SOLID WASTE TO BIOGAS IN A SALTWATER RECIRCULATING AQUACULTURE SYSTEM FOR ATLANTIC SALMON
- 1:45 Abhinav Choudhury, Christine Lepine, Freddy Witarso, Christopher Good**
CHALLENGES TO ANAEROBIC DIGESTION OF WASTE STREAMS FROM LAND-BASED RECIRCULATING AQUACULTURE SYSTEM (RAS) FACILITIES
- 2:00 Yonathan Zohar**
BUILDING CAPACITY OF ATLANTIC SALMON RAS PRODUCTION IN THE U.S. – FROM RAS-N TO SAS2
- 2:15 Catherine Frederick, Yonathan Zohar, John Stubblefield**
BUILDING CAPACITY OF ATLANTIC SALMON *Salmo salar* RAS PRODUCTION IN THE U.S. USING AN INDUSTRY DRIVEN STAKEHOLDER NETWORK (RAS-N): ENGAGEMENT AND EXTENSION EFFORTS
- 2:30 Emma Wiermaa, Greg Fischer, Chris Hartleb**
DEVELOPING A SKILLED WORKFORCE FOR ADVANCING RAS THROUGH SUPPORT FROM A NATIONAL COLLABORATIVE EFFORT UTILIZING STRONG INDUSTRY ENGAGEMENT
- 2:45 Christopher Good, Curtis Crouse, John Davidson**
THE EFFECTS OF TWO WATER TEMPERATURE REGIMES ON ATLANTIC SALMON *Salmo salar* GROWTH PERFORMANCE AND MATURATION IN FRESHWATER RECIRCULATING AQUACULTURE SYSTEMS
- 3:00 Christopher Good, Christine Lepine, Natalie Redman, Megan Murray, Carlo Lazado, Lill-Heidi Johansen, Åsa Maria Espmark, John Davidson**
EVALUATING FRESHWATER FLUIDIZED SAND BIOFILTER PERFORMANCE FOLLOWING EXPOSURE TO LOW-DOSE PERACETIC ACID TREATMENTS
- 3:15 Laura Bailey, Brian Vinci**
PERFORMANCE CHARACTERIZATION OF A DIFFUSED AERATION BASIN FOR CARBON DIOXIDE REMOVAL IN RAS
- 3:30 Rakesh Ranjan, Kata Sharrer, Scott Tsukuda**
IMPACT OF IMAGE DATASET SIZE AND QUALITY ON A CONVOLUTIONAL NEURAL NETWORK MODEL ACCURACY FOR IN-TANK FISH DETECTION IN RECIRCULATING AQUACULTURE SYSTEMS
- 3:45 Mathew Zimola**
AUTONOMOUS BEHAVIOURAL FEEDING AND ITS IMPLICATIONS IN LAND-BASED AQUACULTURE
- 4:00 Kevin Jensen, D.J. Brownlee**
YAKAMA NATION COHO HATCHERY: CHILLER AND PRAS SYSTEM INTEGRATION AND PROCESS FLOW

ZEBRAFISH - DAY 1

Tuesday, March 1 11:00 AM - 5:00 PM Pacific D

Chair: Bobbi M. Baur

TUESDAY

FISH DISEASES SESSION - Coordinated by Dr. Michael Kent/Oregon State University (in Person and Virtual)

- 8:30** PCR Testing for *Pseudoloma*: Tank Water and Fish
Corbin Schuster/Oregon State U
- 8:50** Specific Pathogen Free – A Review of Strategies in Agriculture, Aquaculture, and Laboratory Mammals and How They Inform New Recommendations for Laboratory Zebrafish
Katy Murray/ZIRC
- 9:10** Mycobacteria in zebrafish: overview and recent findings with line susceptibility
Chris Whipps/SUNY-ESF

BASIC HUSBANDRY SESSION (In Person and Virtual)

- 9:30** Surface Disinfection of Zebrafish Embryos
George Sanders DVM
- Dissolved Ions in Zebrafish Culture Systems: The Importance and Management of Alkalinity, Total Hardness, and Conductivity
Hugh Hammer/U Pitt
- Methylene Blue and Developing Zebrafish – Effects on Mortality, Morphology, and Behaviour
Joan Hedge/US EPA

10:30 BREAK

11:00 ZHA ANNUAL MEETING
Stewardship Award

12:30 LUNCH

2:00 INTRODUCTION Mark Francis/Aquaneering
ZIRC UPDATE Katy Murray/Oregon State U
ZEBRAFISH HUSBANDRY TRAINING UPDATE Ryan Centini/U Alabama Birmingham

2:30 Kanav Khosla, Kieran Smith, Joseph Kangas, Amey Joshi, Guebum Han, Michael McAlpine, Suhasa Kodandaramaiah, John Bischof, Kieran Smith
ADVANCED TECHNOLOGIES FOR PRESERVATION OF AQUATIC EMBRYOS AND LARVAE:
A NEW PARADIGM IN CONSERVATION AND AQUACULTURE BIOTECHNOLOGIES

2:50 Using analgesia for fin clipping with a recirculating system
Mollie Millington

3:10 Building the zebrafish healthcare team for individual and colony health management
Lauren Habenicht/University of Colorado Denver Anschutz

3:30 BREAK

3:45 John Grayson, Shaley Valentine
FEEDING RATE AND PROTEIN QUALITY DIFFERENTIALLY AFFECT GROWTH AND FEEDING EFFICIENCY
RESPONSE VARIABLES OF JUVENILE ZEBRAFISH *Danio rerio*

- 4:05 Connor Schwepe**, Michal Wojno, Giovanni S. Molinari, Karolina Kwasek
THE EFFECTS OF PLANT PROTEIN ENRICHED LIVE FOOD ON LARVAL ZEBRAFISH *Danio rerio*
GROWTH AND THE STATUS OF ITS DIGESTIVE TRACT DEVELOPMENT
- 4:25 Ameey S. Joshi**, Andrew D. Alegria, Kieran Smith, Kunpeng Liu, Daryl M. Gohl, Kanav Khosla,
John Bischof, Suhasa B. Kodandaramaiah
ROBOTIC PLATFORM FOR AUTOMATED MICROINJECTION OF *Zebrafish* EMBRYOS

CLAMS

Tuesday, March 1 1:30 PM - 3:15 PM Pacific C

Chair: John Kraeuter

- 1:30 Harriet Booth**, Josh Reitsma, Emma Green-Beach, Matthew Weeks, Ryan Burch,
Roxanne Smolowitz, Abigail Archer, Dale Leavitt
SEASONAL REPRODUCTIVE CYCLES OF TWO DEVELOPING COMMERCIAL SHELLFISH SPECIES IN
MASSACHUSETTS
- 1:45 Md Hassan**, Victoria Parks, Susan Laramore
MICROALGAE CONCENTRATE AS A PARTIAL AND COMPLETE REPLACEMENT OF LIVE MICROALGAE
DIET FOR HARD CLAM *Mercenaria mercenaria* LARVAE
- 2:00 Caroline Schwaner**, Sarah Farhat, John Haley, Emmanuelle Pales Espinosa, Bassem Allam
TRANSCRIPTOMIC, PROTEOMIC, AND FUNCTIONAL ASSAYS UNDERLINE THE DUAL ROLE OF
EXTRAPALLIAL HEMOCYTES IN IMMUNITY AND BIOMINERALIZATION IN THE HARD CLAM
Mercenaria mercenaria
- 2:15 Ray Czaja**, Robert Holmberg, Daniel Hennen, Kamazima Lwiza, Robert Cerrato,
Emmanuelle Pales Espinosa, Jennifer O'Dwyer, Brian Beal, Bassem Allam
EFFECTS OF CLIMATE CHANGE ON ATLANTIC SURFLCLAM *Spisula solidissima solidissima* LARVAL
BEHAVIOR: SURVIVAL, GROWTH, AND DISPERSAL IMPLICATIONS
- 2:30 Daphne Munroe**, Lisa Ragone Calvo, Michael De Luca, Michael Acquafredda, Ximing Guo
FARMING ATLANTIC SURFLCLAMS *Spisula solidissima* IN NEW JERSEY – EXPANDING GROWOUT
SITES AND THE CAPACITY TO RESPOND TO CLIMATE STRESS
- 2:45 Alexa Romersa**, Jeremy Esposito, Ralph A. Elston, Jonathan P. Davis, Dennis Hedgecock
REPRODUCTIVE STATUS OF DIPLOID AND TRIPLOID MANILA CLAMS *Ruditapes philippinarum*
REARED IN THORNDYKE BAY, WASHINGTON, USA
- 3:00 Susan Laramore**, Edward Perri, Md Mahbul Hassan, Leslie Sturmer, John Baldwin, Paul Wills
EFFECTS OF MICROALGAL CONCENTRATES ON THE PRODUCTION OF POST-SET SUNRAY VENUS
Macrocallista nimbosa AND HARD CLAMS *Mercenaria mercenaria*

CATFISH

Tuesday, March 1 1:30 PM - 5:00 PM Palm 2

Chairs: Jimmy Avery, Luke Roy

TUESDAY

- 1:30** **Terrill Hanson**, Jimmy Avery
STATUS OF THE U.S. FARM-RAISED CATFISH INDUSTRY – 2021
- 1:45** **Shraddha Hegde**, Ganesh Kumar, Carole Engle, Terry Hanson, Luke Roy, Morgan Cheatham, Jimmy Avery, Suja Aarattuthodi, Jonathan van Senten, Jeff Johnson, David Wise, Sunni Dahl, Larry Dorman, Mark Peterman
TECHNOLOGICAL PROGRESS IN THE U.S. CATFISH INDUSTRY
- 2:00** **Hisham A. Abdelrahman**, William B. Hemstreet, Luke A. Roy, Terrill R. Hanson, Benjamin H. Beck, Anita M. Kelly
DISEASE-RELATED ECONOMIC LOSSES ON COMMERCIAL CATFISH FARMS: A SIX-YEAR CASE STUDY FROM ALABAMA, USA
- 2:15** **David Brune**, Greg Schwartz, Brian Ott, Ganesh Kumar
PADDLEWHEEL WATER MIXING IN SPLIT-PONDS USED FOR CATFISH PRODUCTION
- 2:30** **Suja Aarattuthodi**, Vandana Dharan
AN ESTABLISHED CATFISH CELL LINE TO AID IN FISH VIRUS STUDIES
- 2:45** **Ashmita Poudel**, Lester Khoo, Mark Lawrence, Ganesh Kumar, John Hawke, Larry Dorman, Grace Ramena, Suja Aarattuthodi
PHENOTYPIC CHARACTERIZATION OF *Edwardsiella piscicida* ISOLATES FROM CATFISH AQUACULTURE
- 3:00** **Ashley Franklin**, Whitney Ortiz, Mar Huertas
NITRITE INDUCES CHANGES IN THE CHANNEL CATFISH NOSE AND GUT MICROBIOME
- 3:15** **Hana Hess**, Marie Strader, Jaelen Myers, Feng He, Luke Roy, Rex Dunham, Ian Butts
IDENTIFICATION AND DIFFERENTIAL EXPRESSION OF SMALL NON-CODING RNAs IN TESTES AND SPERM OF BLUE CATFISH *Ictalurus furcatus*
- 3:30** **Manoj Chandy Koshy**, Ashmita Poudel, Lester Khoo, Mark Lawrence, Ganesh Kumar, Mark Peterman, Suja Aarattuthodi
EFFECT OF LOW DISSOLVED OXYGEN ON THE PATHOGENESIS OF *Edwardsiella piscicida* IN CHANNEL AND HYBRID CATFISH
- 3:45** **Olalekan Oguntade**
MOLECULAR PROFILING, GROWTH PERFORMANCE, AND SELECTION TRAITS FOR DIFFERENT STRAINS OF *Clarias gariepinus* (BURCHELL) IN MAJOR NIGERIAN FRESHWATER BODIES
- 4:00** **Sofolabi Sofela**, Karen Veverica, Akinwale Akinleye
WATER EXCHANGE METHOD AFFECTS FEED CONSUMPTION AND FEED CONVERSION IN *Clarias gariepinus* RAISED IN SMALL PLASTIC TANKS
- 4:15** **Letícia Fantini Hoag**, Terry Hanson, Jesse Chappell
IN-POND RACEWAY SYSTEM PRODUCTION TRIALS GROWING STOCKER AND FOODSIZE HYBRID CATFISH PLUS TILAPIA
- 4:30** **Khanh Nguyen**, Oluwafunmilola Afe, Timothy Bruce, Mark Liles, Donald Davis
GROWTH PERFORMANCE, SURVIVAL, BLOOD CHEMISTRY, AND GENE EXPRESSION OF CHANNEL CATFISH *Ictalurus punctatus* FED PROBIOTIC-SUPPLEMENTED DIET

FISH HEALTH

Tuesday, March 1 1:30 PM - 5:00 PM Palm 8

Chair: Grace Ramena

- 1:30 Yueh-chiang Han**, Brian Shepherd
IMMUNOMODULATORY EFFECTS OF GHRELIN ANALOGS ON PRIMARY HEAD-KIDNEY CELLS FROM RAINBOW TROUT *Oncorhynchus mykiss*
- 1:45 Ophélie Gervais**, Agustin Barria, Athina Papadopoulou, Remi Gratacap, Borghild Hillestad, Alan E. Tinch, Samuel A.M. Martin, Mussa Hassan, Ross D. Houston, Diego Robledo
CHARACTERISATION OF RESISTANCE AGAINST INFECTIOUS SALMON ANAEMIA IN ATLANTIC SALMON
- 2:00 Ignacio Vasquez**, Ahmed Hossain, Hajarrooba Gnanagobal, Katherinne Valderrama, Briony Campbell, Michael Ness, Steve Charette, Kurt Gamperl, Cipriano Rocco, Cristopher Segovia, Javier Santander
COMPARATIVE GENOMICS OF TYPICAL AND ATYPICAL *Aeromonas salmonicida* subsp. *salmonicida* STRAINS AND THEIR RELATIONSHIP TO PATHOGENESIS EVOLUTION
- 2:15 Hajarrooba Gnanagobal**, Trung Cao, Ahmed Hossain, Ignacio Vasquez, Setu Chakraborty, Katherine Valderrama, My Dang, Joy Chukwu Osazuwa, Danny Boyce, Cristopher Segovia, Victor Garcia, Javier Santander
ROLE OF RIBOFLAVIN BIOSYNTHETIC PATHWAY PARALOGS, AND RIBOFLAVIN TRANSPORTER (*ribN*) IN *Aeromonas salmonicida* VIRULENCE IN LUMPFISH *Cyclopterus lumpus*
- 2:30 Grace Ramena**, Kailash Bohara, Gnanender Sriramoju
CHARACTERIZATION OF CLCA GENE FAMILY AND SIGNIFICANCE IN FISH HEALTH
- 2:45 Gonzalo Illán**, Paul Wills, Marty Riche, Ignacio de Blas, Imanol Ruiz-Zarzuola, Sahar Mejri
CURRENT AVAILABILITY OF VACCINES AGAINST POTENTIAL FLORIDA POMPANO *Trachinotus carolinus* PATHOGENS – A REVIEW
- 3:00 Esteban Soto**, Tryssa de Ruyter, Zeinab Yazdi, Mark Adkison, Susan Yun, Timothy Welch, William Keleher
EVALUATION OF INTRACOELOMIC AND IMMERSION VACCINE BOOST FOR INACTIVATED IMMERSION VACCINE AGAINST *Lactococcus garvieae* INFECTION IN RAINBOW TROUT *Oncorhynchus mykiss*
- 3:15 Evan Jones**, Jie Ma, Matt Hawkyard, Mary Arkoosh, Joseph Dietrich, Cameron Schuster, Luke Oliver, Brent Vuglar, Veronica Myrsell, Kenneth Cain
EVALUATING A NOVEL ORAL VACCINE DELIVERY PLATFORM IN RAINBOW TROUT *Oncorhynchus mykiss*
- 3:30 Luke Oliver**, Timothy Bruce, Jie Ma, Evan Jones, Kenneth Cain
DEVELOPMENT OF AN ANTI-BURBOT IGM MONOCLONAL ANTIBODY AND OPTIMIZATION OF AN ELISA TO MEASURE ANTI-AEROMONAS SP. ANTIBODY TITERS IN BURBOT *Lota lota* FOLLOWING PATHOGEN CHALLENGE
- 3:45 Vandana Dharan**, Suja Aarattuthodi
COMPARITIVE PATHOGENICITY OF TWO VIRUSES IN CATFISH CULTURE
- 4:00 Andrew Wargo**, Malina Loeher, David Kennedy, Gael Kurath
EVIDENCE OF INFECTIOUS HEMATOPOIETIC NECROSIS VIRUS VIRULENCE EVOLUTION AFTER A HOST JUMP INTO RAINBOW TROUT AQUACULTURE, AND POSSIBLE MANAGEMENT STRATEGIES

- 4:15 Vandana Dharan**, Suja Aarattuthodi
VERIFICATION OF RIVERS'S POSTULATES FOR BLUE CATFISH HERPESVIRUS
- 4:30 James Tuttle**, Timothy Bruce, Luke Roy, Ian Butts, Benjamin Beck, Anita Kelly
EXAMINATION OF POND BOTTOM SEDIMENTS FOR THE PRESENCE OF COMMON PATHOGENIC BACTERIA IN COMMERCIAL CATFISH PONDS
- 4:45 David Bradshaw**, Carlie Perricone, Chris Robinson, Tyler Bianchine, Paul Wills
MICROBIOME CHANGES AND RECOVERY IN BIOFILM: TAXONOMIC AND FUNCTIONAL DIVERSITY IN RESPONSE TO CHELATED COPPER TREATMENT
- 5:00 Mark Braceland**, Marije Booman
TANACIBACULOSIS IN ATLANTIC SALMON *Salmo salar* L.

WORKSHOP ON ART OF SCIENCE PRESENTATION

Tuesday, March 1 1:30 PM - 5:00 PM Town & Country B

Chair: Eric Heupel

Art of science presentation - Join scientist and science illustrator for strategies and tips to help make your science and outreach presentations as well designed and impactful as your science itself. This 2 hour workshop will provide examples of design paradigms and strategies to help make your presentations more engaging without stealing the spotlight of your science itself. Bring along any presentation or illustration needs you may be struggling with or need to be "just right" to deliver the message with clarity and impact.

INTERNATIONAL ASSOCIATION OF AQUACULTURE ECONOMICS AND MANAGEMENT - ECONOMICS AND MARKETS - DAY 1

Tuesday, March 1 11:00 AM - 5:00 PM Palm 7

Chair: Frank Asche

- 11:00 Cathy Roheim**, Frank Asche, Hakan Eggert, Atle Oglend, Martin Smith
AQUACULTURE, EXTERNALITIES, AND POLICY SOLUTIONS
- 11:15 Taryn Garlock**, Frank Asche, Jana Hilsenroth, James Anderson
DIVERSITY IN GLOBAL FISHERIES AND AQUACULTURE
- 11:30 Shraddha Hegde**, Ganesh Kumar, Carole Engle, Terry Hanson, Luke Roy, Jonathan van Senten, Jeff Johnson, Jimmy Avery, Suja Aarattuthodi, Sunni Dahl, Larry Dorman, Mark Peterman
ECONOMIC CONTRIBUTION OF THE U.S. CATFISH INDUSTRY
- 11:45 Charles Clark**, Jonathan van Senten, Carole Engle, Michael Schwarz
REGULATORY COSTS ON ATLANTIC COAST SHELLFISH FARMS
- 12:00 Adams Ceballos-Concha**, Frank Asche
THE CHILEAN SALMON INDUSTRY'S SOCIOECONOMIC IMPACTS
- 12:15 Atle Oglend**, Frank Asche
REGULATORY RENTS IN NORWEGIAN SALMON AQUACULTURE
- 12:30 LUNCH**

- 1:30 Frank Asche**, Taryn M. Garlock, James L. Anderson, Atle Oglend, Hans-Martin Straume
COVID 19: CHALLENGES AND OPPORTUNITIES IN THE SEAFOOD MARKET
- 1:45 Linda ODierno**, Michael Ciaramella, Paul Zajicek
HOW THE PANDEMIC CHANGED THE FOODSERVICE MARKET FOR FARM-RAISED SEAFOOD
- 2:00 Hans-Martin Straume**, Frank Asche, Atle Oglend
IMPACTS OF THE COVID-19 CRISIS ON TRADE MARGINS IN NORWEGIAN AQUACULTURE EXPORTS
- 2:15 Jonathan van Senten**, Carole R. Engle, Ganesh Kumar, Madan Dey
MARKET RESEARCH TO GUIDE U.S. AQUACULTURE RECOVERY FROM THE COVID-19 PANDEMIC
- 2:30 Christian Brayden**, Caroline Noblet, Keith Evans, Kanae Tokunaga, Keri Kaczor, Sam Belknap, Giselle Sillsby, Alissa Miller-Gonzalez, Sebastian Belle, Denise Gurshin
ANALYZING SEAFOOD SALES, DISTRIBUTION, AND PREFERENCES IN THE NEW NORMAL – FOR MAINE AND BEYOND
- 2:45 Robert Botta**, Taryn Garlock, James Anderson, Frank Asche
THE IMPORTANCE OF PRODUCT ATTRIBUTES FOR FARMED OYSTERS: AN ANALYSIS OF U.S. RESTAURANTS
- 3:00 Lianqun Sun**, Ganesh Kumar, Carole Engle, Jonathan Van Senten
RETAIL SEAFOOD MARKET TRENDS IN THE U.S., 2016 TO 2021
- 3:15 Shraddha Hegde**, Ganesh Kumar, Carole Engle, Jimmy Avery, Suja Aarattuthodi, Jeff Johnson, Jonathan van Senten
PRODUCTION ECONOMIC RELATIONSHIPS IN INTENSIVE U.S. CATFISH PRODUCTION SYSTEMS
- 3:30 Hauke Kite-Powell**, Erick Ask, Simona Augyte, David Bailey, Julie Decker, Clifford Goudey, Gretchen Grebe, Yaoguang Li, Scott Lindell, Domenic Manganeli, Michael Marty-Rivera, Crystal Ng, Loretta Roberson, Michael Stekoll, Schery Umanzor, Charles Yarish
TECHNO-ECONOMIC PATHWAY TO BIOFUEL-SCALE SEAWEED FARMS
- 3:45 Jeff Waite**
USDA PROCESS VERIFIED PROGRAM – A MARKETING SOLUTION
- 4:00 Erling Vårdal**
CURRENCY CHOICES OF NORWEGIAN EXPORTERS OF AQUACULTURE PRODUCTS
- 4:15 Ursula Landazuri-Tveteraas**, Frank Asche, Atle Blomgren, Ingrid Pettersen
VERTICAL AND HORIZONTAL PRICE LINKAGES AND DEMAND GROWTH FOR DIFFERENT SALMON PRODUCT FORMS IN EUROPE
- 4:30 Ivar Gaasland**
NORWEGIAN SEAFOOD EXPORT – THE IMPACT OF QUALITY AND MARKET SHARE ON UNIT VALUE

WEDNESDAY, March 2

FLATFISH

Wednesday, March 2 8:30 AM - 10:00 AM Palm 2

Chair: Michelle (Mick) Walsh

- 8:30 Lee A. Fuiman**, Hunter S. Bailey, Ashley Fincannon
BROODSTOCK DIETS CAN ALTER EGG FATTY ACID COMPOSITION AND EGG QUALITY IN SOUTHERN FLOUNDER *Paralichthys lethostigma*
- 8:45 Maxwell Westendorf**, John Mareska
STOCK ENHANCEMENT EFFORTS OF SOUTHERN FLOUNDER *Paralichthys lethostigma* IN ALABAMA COASTAL WATERS
- 9:00 Ruairi MacNamara**, Kevin Stuart, Michael Shane, Mark Drawbridge
PROGRESS ON THE PRODUCTION AND RELEASE OF CALIFORNIA HALIBUT *Paralichthys californicus* TO SUPPORT FISHERIES MANAGEMENT
- 9:15 John Stieglitz**, Jenna Baggett, Ronald Hoenig, Carlos Tudela, Shubham Mathur, Daniel Benetti
PROGRESS IN THE DEVELOPMENT OF LAND BASED FLOUNDER PRODUCTION IN THE U.S.: OLIVE FLOUNDER *Paralichthys olivaceus* AQUACULTURE
- 9:30 Junhyuk Seo**, Jeonghwan Park
STOCKING DENSITY INFLUENCE ON GROWTH PERFORMANCE AND WELFARE OF JUVENILE OLIVE FLOUNDER *Paralichthys olivaceus* IN A RECIRCULATING AQUACULTURE SYSTEM

ECHINODERMS

Wednesday, March 2 8:30 AM - 12:30 PM Palm 8

Chair: Andy Suhrbier

- 8:30 Honey Win**, Soufanieh Pierre, Nahian Fahim, Kusum Parajuli, Ahmed Mustafa
PHYSIOLOGICAL AND IMMUNOLOGICAL PROPERTIES OF SELECTED SEA CUCUMBER SPECIES FROM THE WATERS OF UNITED STATES
- 8:45 Jack Reynolds**, Barry Costa-Pierce, David Anderson
MARKET ANALYSIS OF HAWAIIAN GROWN SEA CUCUMBERS *Stichopus horrens*, *Holothuria whitmaei* AND *Actinopyga varians*
- 9:00 Casey B. Pruitt**, Brian L. Bingham
ASSESSING THE ABILITY OF THE CALIFORNIA SEA CUCUMBER *Apostichopus californicus* TO ASSIMILATE WASTE FROM MEDITERANEAN MUSSEL *Mytilus galloprovincialis* AQUACULTURE IN SOUTH PUGET SOUND, WASHINGTON
- 9:15 Andrew Suhrbier**, Isabel Platten, Ryan Crim, Erin Horkin
GROW-OUT AND NURSERY CULTURE OF THE GIANT RED SEA CUCUMBER *Apostichopus californicus* IN WASHINGTON AND ALASKA
- 9:30 A. Kalam Azad**, Christopher M. Pearce, R. Scott McKinley
AQUACULTURE OF PURPLE SEA URCHINS AND GIANT RED SEA CUCUMBERS IN BRITISH COLUMBIA, CANADA

- 10:00 BREAK**
- 10:30 Renee Angwin**, Brian Hentschel, Todd Anderson, Luke Gardner
LAND-BASED ECHINOCULTURE IN CALIFORNIA: DEVELOPING A PROTOCOL FOR THE ENHANCEMENT OF PURPLE SEA URCHIN ROE IN A RECIRCULATING AQUACULTURE SYSTEM (RAS)
- 10:45 Luke Gardner**, Grace Teranishi, Matthew Hoehn, Jacob Harris, Shea Grady, Jesse Carizzo
CO-CULTURE OF *Pacific dulse* AND PURPLE SEA URCHINS: IN SEARCH OF A SELF-SUSTAINING SEA URCHIN FATTENING SYSTEM
- 11:00 Brian Tsuyoshi Takeda**
RESTORING KELP FORESTS THROUGH RESPONSIBLE, LAND BASED RANCHING OF OVERGRAZING URCHINS
- 11:15 Md Hassan**, Aaron Pilnick, Keri O'Neil, Joshua Patterson
HATCHERY CULTURE OF THE LONG SPINED SEA URCHIN *Diadema antillarum* FOR REEF RESTORATION
- 11:30 Coleen Suckling**, Tara Plee, Luz Kogson, Dana Morse, Larry Harris, Steve Eddy
EXPANDING GREEN SEA URCHIN AQUACULTURE PRODUCTION BY REMOVING KEY AQUACULTURE CHALLENGES

OPTIMIZING ECOSYSTEM SERVICES ASSOCIATED WITH SHELLFISH AQUACULTURE

Wednesday, March 2 8:30 AM - 10:00 AM Palm 5
Chairs: Robert Rheault, Robert Jones

- 8:30 Robert Rheault**, Robert Jones
OPTIMIZING ECOSYSTEM SERVICES ASSOCIATED WITH SHELLFISH AQUACULTURE

A panel of experts will discuss the ecosystem services associated with shellfish aquaculture (habitat provision, nutrient removal, eutrophication mitigation, benthic stabilization, etc.) and encourage workshop participants to brainstorm and propose ways in which growers might tweak their farming methods to maximize the various services and improve the restorative aspects of shellfish farming.

Panelists:
Heidi Alleway, The Nature Conservancy
Daphne Munroe, Rutgers University
Kelsey Schultz, Northeastern University

**INTERNATIONAL ASSOCIATION OF AQUACULTURE
ECONOMICS AND MANAGEMENT –
ECONOMICS AND MARKETS - DAY 2**

Wednesday, March 2 8:30 AM - 12:30 PM Palm 7

Chair: Frank Asche

WEDNESDAY

- 8:30 TBA**
- 8:45 Barry Nash**, Jane Harrison, Chuck Weirich, Eric Herbst, Frank Lopez
ASCERTAINING THE MARKET VALUE OF NORTH CAROLINA AQUACULTURED SEAFOOD
- 9:00 Morgan Cheatham**, Ganesh Kumar
ECONOMIC RISK OF CATFISH PRODUCTION STRATEGIES
- 9:15 Iwen Su**, Grant Cavanaugh, Alexandra Smith, Genevieve Clow, Mattias R. Cape, Sherry M. Lippiatt, Craig Blackie, Roddy Morrison, Connor D. Dibble, Evan Goodwin, Jonathan P. LaRiviere
FRAMEWORK FOR TRANSLATING OCEAN RISK TO INVESTMENT: A SALMON AQUACULTURE CASE STUDY
- 9:30 Lijun Liu**, Jintao Xu
ECONOMIC CHARACTERISTICS OF FISH PROCESSORS IN ZHEJIANG PROVINCE, CHINA
- 9:45 José Luis Fernández Sánchez**, José M. Fernández-Polanco, Ignacio Llorente, Manuel Luna, Elisa Baraibar-Diez, María D. Odriozola, Ladislao Luna Sotorrío
PROFITABILITY FACTORS IN THE EUROPEAN AQUACULTURE INDUSTRY: ANALYSIS OF COUNTRY DIFFERENCES
- 10:00 BREAK**
- 10:30 José Luis Fernández Sánchez**, José M. Fernández-Polanco, Ignacio Llorente, Manuel Luna, Elisa Baraibar-Diez, María D. Odriozola, Ladislao Luna Sotorrío
THE IMPLEMENTATION OF AUTOMATIC FEEDERS IN SEA BASS GROW-OUT FARMS: AN ECONOMIC EVALUATION
- 10:45 Inna Golfand**
OPPORTUNITIES FOR FISH PRODUCTS EXPORT TO CHINA: AN ANALYSIS OF CONSUMER PREFERENCES
- 11:00 Derrick Robinson**, Dale Squires
ECONOMIC CHALLENGES FACING THE EXPANSION OF THE US AQUACULTURE INDUSTRY

LARVAL NUTRITION OF FINFISH

Wednesday, March 2 8:30 AM - 12:30 PM Pacific C

Chairs: Mark Drawbridge, Matt Hawkyard, Kevin Stuart

- 8:30 Mark Drawbridge**, Matt Hawkyard, Kevin Stuart, Mike Rust, Ron Jo, Rick Barrows, Chris Langdon
A SUMMARY OF MARINE FINFISH LARVAL NUTRITION RESEARCH SUPPORTED BY THE WESTERN REGIONAL AQUACULTURE CENTER
- 8:45 Matt Hawkyard**, Kevin Stuart, Mark Drawbridge, Chris Langdon
WRAC AS A SPRINGBOARD FOR ADVANCEMENTS IN MARINE LARVAL FINFISH NUTRITION

- 9:00 Leonardo Ibarra-Castro**, Todd Osborne, Mark Martindale
DIFFERENT EXPERIENCES AT FIRST FEEDING IN JUVENILES FISH PRODUCTION FOR SEVERAL MARINE SPECIES
- 9:15 Delbert Gatlin**, Bryan Candelaria, Fernando Yamamoto
EVALUATING VARIOUS NUTRITIONAL ENRICHMENTS OF ROTIFERS *Branchionus* sp.
- 9:30 Giovanni S. Molinari**, Michal Wojno, Macdonald Wick, Karolina Kwasek
DOES THE ORIGIN OF THE MUSCLE AND/OR DIGESTIVE ENZYMES AFFECT THE QUALITY OF MUSCLE PROTEIN HYDROLYSATES USED AS FIRST FEED FOR LARVAL FISH?
- 9:45 Moureen Matuha**, Luke Oliver, Colby Johnson, Kenneth Cain
UTILIZATION OF COPEPODS AS ALTERNATIVES TO ROTIFERS AND/OR ARTEMIA FOR WEANING OF LARVAL BURBOT *Lota lota maculosa*
- 10:00 BREAK**
- 10:30 Daniel Margulies**, Vernon Scholey, Susana Cusatti, Yole Buchalla, Enrique Mauser, Jeanne Wexler, Tomoki Honryo, Michio Kurata, Yasuo Agawa, Yoshifumi Sawada
STUDIES OF GROWTH AND SURVIVAL DURING THE LARVAL AND EARLY-JUVENILE STAGES OF YELLOWFIN TUNA AT THE IATTC'S ACHOTINES LABORATORY IN PANAMA
- 10:45 Matt Hawkyard**, Kevin Stuart, Mark Drawbridge, Ben Laurel, Chris Langdon
RECENT PROGRESS ON THE USE OF LIPOSOMES FOR THE DELIVERY OF WATER-SOLUBLE NUTRIENTS TO MARINE FISH LARVAE
- 11:00 Giovanni S. Molinari**, Michal Wojno, Macdonald Wick, Genciana Terova, Karolina Kwasek
THE EFFECT OF THE TRANSITION OF MOLECULAR WEIGHT PROFILE OF DIETARY PROTEIN ON LARVAL LARGEMOUTH BASS *Micropterus salmoides* DEVELOPMENT
- 11:15 Victoria Uribe**, Paul S. Wills, Aaron J. Adams, Christopher Robinson, Sahar Mejri
NUTRITIONAL COMPOSITION AND PHYSICAL CHARACTERISTICS OF CAPTIVE REARED PRE-METAMORPHIC BONEFISH *Albula vulpes* LARVAE
- 11:30 Kamil Mert Eryalçin**, Melek Isinibilir Okyar
EFFECT OF DIFFERENT MICROALGAL FEEDING ON SURVIVAL OF ISOLATED COPEPOD *Acartia clausi* FROM MARMARA SEA, TURKEY
- 11:45 Connor Schwepe**, Michal Wojno, Giovanni S. Molinari, Bethany Rader, Vance McCracken, Karolina Kwasek
NUTRITIONAL PROGRAMMING OF FIRST FEEDING YELLOW PERCH *Perca flavescens* WITH SOYBEAN MEAL ENRICHED LIVE FOOD
- 12:00 PANEL SESSION**

AQUAPONICS - SPECIAL SESSION

Wednesday, March 2 8:30 AM - 5:00 PM Town & Country D

Chair: Janelle Hager

- 8:30 Janelle V. Hager**
GENOMICS RESEARCH CAN UNLOCK THE MICROBIAL "BLACK BOX" OF AQUAPONIC SYSTEMS
- 9:00 Andrew Lohman**, Janelle Hager, James Ward, James Tidwell
FROM RESEARCH TO THE FARM: A PARTIAL BUDGET ANALYSIS OF LOW-COST LED LIGHTS FOR PRODUCTION OF BIBB LETTUCE *Lactuca sativa* var. *Capitate* IN A COMMERCIAL INDOOR AQUAPONIC SYSTEM
- 9:30 Paul Brown**, Peng Chen, Yu-Ting Chu
AQUAPONICS RESEARCH NEEDS IDENTIFIED BY STAKEHOLDERS AND PRELIMINARY THOUGHTS ON STANDARDIZED RESEARCH APPROACHES
- 10:00 BREAK**
- 10:30 Chelsea Walling**, Janelle Hager
IMPLEMENTING AQUAPONICS PROJECT-BASED INVESTIGATIONS (APBI) IN K-12 EXTENSION PROGRAMS
- 11:00 Richard Shultz**
TRAINING AQUAPONIC PRODUCERS THROUGH CONTROLLED ENVIRONMENT AGRICULTURE PROGRAMMING AT SANTA FE COMMUNITY COLLEGE
- 11:30 David J. Cline**
INTEGRATING AQUAPONICS INTO THE SECONDARY SCHOOL CLASSROOM
- 12:00 Huy Tran**
AQUAPONIC SYSTEM, DIY FOR HOME AND CLASSROOM, 7 YRS. UPDATE
- 12:15 Germán E. Merino**, Elisabeth von Brand, María C. Morales Suazo, Constanza Jana
BIOINTEGRATING RAINBOW TROUT, RIVER PRAWN, AND LETTUCE IN A COMMERCIAL AND EDUCATIONAL PROTOTYPE AQUAPONIC SYSTEM IN ARIDS ZONES
- 12:30 LUNCH**
- 1:30 Allen Pattillo**, Janelle Hager
FINANCIAL BOTTLENECKS FOR AQUAPONIC PRODUCERS
- 2:00 Angela Caporelli**
AQUAPONICS CERTIFICATION: WHAT DOES IT MEAN FOR YOU?
- 2:30 Huy Tran**
AQUAPONIC SYSTEM BOTTLENECKS IN DWC AERATION/MIXING AND UV/O3 APPLICATIONS
- 3:00 Daniel Wells**, Emmanuel Ayipio, Kyle Hensarling, Caroline Blanchard
IMPROVING PLANT QUALITY AND YIELD: AQUAPONICS FROM A HORTICULTURAL PERSPECTIVE

WEDNESDAY

**CELEBRATING NOAA ENGAGEMENT THROUGH COMMUNITY
BASED AQUACULTURE GRANTS WITH AN EMPHASIS ON
FUNDED DIVERSITY AND INCLUSION PROJECTS**

Wednesday, March 2 8:30 AM - 5:00 PM Palm 1

Chairs: Cliff Cosgrove, Kim Thompson, Seth Theuerkauf, Mark Rath

8:30 WELCOME, INTRODUCTIONS, & AGENDA REVIEW

Derek Orner: Moderator, NMFS
Clete Otoshi: Science Coordinator, NOAA Office of Aquaculture
Seth Theuerkauf: Science Coordinator, NOAA Office of Aquaculture
Mark Rath: Aquaculture Manager, NOAA Sea Gr
Cliff Cosgrove: Saltonstall-Kennedy Program Manager

8:50 NOAA AQUACULTURE GRANT OPPORTUNITIES PANEL

Dan Namur: NMFS, Financial Assistance (grants) Division Chief
Clete Otoshi: Science Coordinator, NOAA Office of Aquaculture
Mark Rath: Aquaculture Manager, NOAA Sea Grant
Derek Orner: NMFS Grant Program Manager

9:30 Hawaiian Fishpond Network

Rosalyn KR D Concepcion: Fishpond Manager, Waikalua Loko I'a Kua'āina Ulu 'Auamo (KUA)

9:45 Ku a Lanakila Na Mahi I'a: The Fish Farmers Stand Victorious

Rosalyn KR D Concepcion: Fishpond Manager, Waikalua Loko I'a
Tori Spence: Fishery Policy Analyst, NMFS

10:00 BREAK

11:00 The Power of a Collaborative Inclusive Approach

Jana Hennig: Director, Positively Groundfish

11:15 A Fishers-Operated Queen Conch (*Strombus gigas*) Hatchery for Growout of Sustainable Seafood for Local Markets in Puerto Rico

Megan Davis: Ph.D. Atlantic University, Harbor Branch Oceanographic

11:30 Community Based Approach to Full Utilization

Fishful Future: Saltonstall-Kennedy Team

11:45 Community Based Alternative to Fish Waste

Fishful Future: Saltonstall-Kennedy Team

12:00 Improving Diversity and Inclusion in Aquaculture through Dulse Farming Youth Education

Rebecca Cates: Alaska Sea Grant Fellow

12:15 Pilot Program for Commercial/Subsistence Educational Macro Algae Aquaculture Development for Alaska

Melissa Good: Mariculture Specialist, Alaska Sea Grant

12:30 LUNCH

1:30 Welcome, Introductions, & Agenda Review

Clete Otoshi: Science Coordinator, NOAA Office of Aquaculture
Cliff Cosgrove: Saltonstall-Kennedy Program Manager
Derek Orner: Moderator, NMFS

- 1:40 Developing Effective, Low-Cost Community Outreach Tools for Fishers and Seafood Farmers**
Mackenzie Nelson: Science Communications Fellow, Aquarium of the Pacific
- 1:55 Building a Diverse Aquaculture/NOAA Workforce Through High School Aquaculture Education and Engagement**
Chris Schillaci: Aquaculture Coordinator, NMFS
- 2:10 Na'boka: Battling Hunger through Community-Driven Aquaculture Projects**
Frank Roberto: Biologist, Guam Department of Agriculture
- 2:30 Promoting Gullah Geechee Maritime Cultural Heritage and Enhancing Economic Resilience through a Gullah Geechee Seafood Trail**
Marilyn Hemingway: CEO/Founder of the Gullah Geechee Chamber of Commerce
- 2:50 Fishadelphia: Expanding a successful program connecting NJ seafood harvesters with culturally and economically diverse seafood consumers**
Dr. Talia Young: Fishadelphia Program Director
- 3:15 Conti Panel: Continuing the Conversation: Diversity and Inclusion Driving Innovative Approaches in Aquaculture**
Rosalyn KR D Concepcion: Fishpond Manager, Waikalua Loko I'a
Jana Hennig: Director, Positively Groundfish
Melissa Good: Mariculture Specialist, Alaska Sea Grant
Mackenzie Nelson: Science Communications Fellow, Aquarium of the Pacific
Frank Roberto: Biologist, Guam Department of Agriculture
Marilyn Hemingway: CEO/Founder of the Gullah Geechee Chamber of Commerce
Dr. Talia Young: Fishadelphia Program Director

OFFSHORE AQUACULTURE

Wednesday, March 2 8:30 AM - 5:00 PM Town & Country B

Chairs: Neil Sims, Dan Benetti, Tyler Sclodnick

- 8:30 Tim Gallaudet**
A CALL TO IMPLEMENT THE SEAFOOD COMPETITIVENESS EXECUTIVE ORDER OF 2020
- 8:45 Sarah Brenholt**
STRONGER AMERICA THROUGH SEAFOOD: INCREASING U.S. AQUACULTURE WILL STRENGTHEN OUR ECONOMY, OUR HEALTH AND OUR ENVIRONMENT
- 9:00 Neil Anthony Sims, Sandra E. Shumway, Barry Costa-Pierce**
PEOPLE WHO WORK IN FRESHWATER FISHPONDS SHOULDN'T THROW MUD: OFFSHORE AQUACULTURE CAN ADDRESS GLOBAL ENVIRONMENTAL AND SOCIAL IMPERATIVES
- 9:15 Paul Zajicek, John Corbin, Sebastian Belle, Robert Rheault**
REFUTING PERNICIOUS OFFSHORE MARINE AQUACULTURE MYTHS, ASSUMPTIONS, AND CRITICISMS FOISTED ON THE U.S. PUBLIC
- 9:30 Don Kent**
WE SHOULD USE THE REGULATIONS WE ALREADY HAVE TO GROW THE FOOD WE NEED
- 9:45 Daniel Benetti**
ASSESSING CHALLENGES LIMITING COMMERCIAL VIABILITY OF OFFSHORE AQUACULTURE

- 10:00 BREAK**
- 10:30 Tyler Sclodnick**
LETTING THE ENVIRONMENT DO THE WORK – THE HIDDEN VALUE OF OPEN OCEAN FARMS
- 10:45 Kristine Vedal Størkersen**, Hans V. Bjelland, Thorvaldsen Trine, Heidi Moe Føre, Esten Ingar Grøtli, Jan Tore Fagertun, Ørjan Selvik, Ole Folkedal
EXPOSED AQUACULTURE OPERATIONS IN NORWAY: KEY CHALLENGES
- 11:00 Catherine Purcell**, Greg Blair, Jason Volk, John Hyde
MODELING OFFSHORE AQUACULTURE ESCAPE RISK ASSESSMENTS USING OMEGA
- 11:15Carolynn Culver**, Caroline Pomeroy, Michael Robinson
MAKING SPACE FOR MARICULTURE WHILE LIMITING IMPACTS ON FISHERIES: CRITICAL ISSUES AND OPPORTUNITIES
- 11:30 Diane Windham**
THE SOUTHERN CALIFORNIA OFFSHORE AQUACULTURE INTERAGENCY WORKING GROUP – A FORUM FOR COLLABORATION
- 11:45 Marcy L. Cockrell**, Charlie M. Culpepper, III, Portia Sapp, Lisa Wickliffe, Jonathan Jossart, James Morris, Jr., Kenneth Riley
MARINE SPATIAL PLANNING FOR OFFSHORE AQUACULTURE IN FLORIDA: A FIRST LOOK AT POTENTIAL OPTIONS FOR SITING IN THE GULF OF MEXICO
- 12:00 Devan Nichols**, Timothy Hogan
MONITORING TECHNOLOGIES FOR HABS IN OFFSHORE AQUACULTURE: A REVIEW
- 12:15 Leah Hoeger**
COPPER ALLOY MESH (CAM) DEVELOPMENT BY LUVATA APPLETON
- 12:30 LUNCH**
- 1:30 Asa Johannesen**, Jóhannus Kristmundsson, Øystein Patursson, Signar P. Dam, Mats Mulelid, Pascal Klebert
SALMON MOVEMENT WITHIN A CAGE IS RESTRICTED BY A COMBINATION OF WAVES AND CURRENT
- 1:45 Travis Lowery**, Kevin Stokesbury
AMERICAN LOBSTER *Homarus americanus* ABUNDANCE SURVEY, AND TAGGING STUDY OF THE FIRST OFFSHORE WINDFARM IN THE UNITED STATES
- 2:00 Philip Schreven**, Mark Van Leeuwen
OFFSHORE AQUACULTURE DEVELOPMENT MOROCCO
- 2:15 Dennis Peters**, Neil Sims
THE VELELLA EPSILON PROJECT: PIONEERING OFFSHORE AQUACULTURE IN THE SOUTHEASTERN GULF OF MEXICO; CHAPTER 4 – FINALIZING PROJECT PERMITTING AND PREPARING FOR DEPLOYMENT
- 2:30 Steve Leathery**, Cristi Reid, Scott Farley, Phaedra Doukakis, Diane Windham
PACIFIC OCEAN AQUAFARMS NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) ENVIRONMENTAL IMPACT STATEMENT: STATUS UPDATE
- 2:45 Alejandro Buentello**, Manabu Seoka, Laura Martinez, Mariana Michelato
SUSTAINABLE BLUEFIN TUNA: AN IDEAL CANDIDATE SPECIES FOR OFFSHORE AQUACULTURE IN THE UNITED STATES; RECENT ADVANCES IN LARVICULTURE

- 3:00 Michael Chambers**, Rob Swift, Arron Jones, Erich Berghahn, Gunnar Ek, Igor Tsukrov, Ward Byrne
COASTAL INTEGRATED MULTI-TROPHIC AQUACULTURE OF STEELHEAD TROUT, BLUE MUSSELS, AND SUGAR KELP ON A FLOATING PLATFORM
- 3:15 Kent Satterlee**
MULTI-TROPHIC OFFSHORE AQUACULTURE INTEGRAL WITH IDLE OFFSHORE OIL AND GAS PLATFORMS IN THE GULF OF MEXICO
- 3:30 Tobias Dewhurst**, Michael MacNicoll, Zach Moscicki, Pete Lynn, Igor Tsukrov, Rob Swift, Beth Zotter, Melissa Landon, Michael Chambers
DESIGNING OFFSHORE MACROALGAE CULTIVATION STRUCTURES TO PREVENT CATASTROPHIC FAILURE
- 3:45 Clifford Goudey**, Domenic Manganeli, David Bailey, Scott Lindell, Loretta Roberson
COMMERCIAL-SCALE SEAWEED FARMING SYSTEMS
- 4:00 Michael Stekoll**, Scott Lindell, David Bailey, Cliff Goudey, Dominic Manganeli, Alf Pryor, Nicholas Mangini, Julie Decker, Charles Yarish, Toby Dewhurst, Yaoguang Li, Crystal Ng, Michael Marty, Hauke Kite-Powell, Beau Perry, Kendal Barbary, Loretta Roberson
MARICULTURE OF *Saccharina latissima* (SUGAR KELP) AS A SCALABLE MODEL FOR OFF-SHORE CULTIVATION
- 4:15 James P. McVey**
AQUACULTURE AND ECOSYSTEMS AN INTEGRATED APPROACH FOR OFFSHORE AQUACULTURE AS APPLIED IN PALAU, WESTERN CAROLINE ISLANDS
- 4:30 Katharine Smith**, Greg Rocheleau
MODELING OFFSHORE TROPICAL MACROALGAE FARMS WITH EFDC
- 4:45 Kristen Davis**, Marcelo Chamecki, James McWilliams, Javier Infante, Christina Frieder, Yan Chao, Daniel Dauhajre, Isabell Arzeno, Benjamin Saenz, Matthew Long, Julianne DeAngelo, Steven Davis
MACROALGAE CULTIVATION MODELING SYSTEM (MACMODS): ASSESSING OFFSHORE MACROALGAL FARMING AS A CONTRIBUTOR TO ENERGY SECURITY AND CARBON SEQUESTRATION
- 5:00 Tori Spence McConnell**, Kate Taylor, David Nichols, Melanie Brown, Michelle McGregor, Josh DeMello, Anne Southam, P. Michael Payne, Suzanne M. Ban, Kevin Kelly, Emma Forbes
POTENTIAL AQUACULTURE MANAGEMENT PROGRAM IN THE PACIFIC ISLANDS

PHYSIOLOGICAL INSIGHTS TOWARDS IMPROVING FISH CULTURE VI (PART 2)

Wednesday, March 2 8:30 AM - 5:00 PM Pacific E

Chairs: Peter Allen, Beth Cleveland, Adam Luckenbach, Javier Santander

GROWTH

- 8:30 Brian C. Small**
THE GUT-BRAIN AXIS IN FISH AND POTENTIAL TO DEVELOP TARGETED APPROACHES TO FISH NUTRITION FOR AQUACULTURE
- 9:00 Jose Ortiz**, Jacob Bledsoe, Jeongwhui Hong, Brian Small
FATTY ACIDS AS POSTPRANDIAL REGULATORS OF FEEDING IN RAINBOW TROUT *Oncorhynchus mykiss*

- 9:15 Serhat Turkmen**, Marisol Izquierdo
NUTRITIONAL PROGRAMMING OF GILTHEAD SEA BREAM *Sparus aurata*: IMPROVEMENTS TOWARDS BETTER UTILIZATION OF LOW N-3 HUFA DIETS
- 9:30 Khalid Freij**, Serhat Turkmen, Beth Cleveland, Peggy Biga
IMPROVING RAINBOW TROUT *Oncorhynchus mykiss* GROWTH PERFORMANCE THROUGH OPTIMIZATION OF DIET-EPIGENETIC INTERACTIONS
- 9:45 Konrad Dabrowski**, Kevin Fisher, Mackenzie Miller
COMPARISON OF SURVIVAL, GROWTH AND PLOIDY OF KOI CARP, TRIPLOID KOI, AND TRIPLOID HYBRIDS OF KOI FEMALE WITH KOI X GOLDFISH MALE
- 10:00 BREAK**
- 10:30 Laura Jenkins**, Lea Medeiros, Neil Graham, Brian Hoffman, Diana Cervantes, Douglas Hatch, James Nagler, Andrew Pierce
METABOLIC STATUS AT SPAWNING AND POST-SPAWNING NUTRITION INTERACT TO INFLUENCE CONSECUTIVE OR SKIP REPEAT SPAWNING IN SUMMER-RUN STEELHEAD TROUT
- 10:45 Peggy Biga**, Mary Latimer, Serhat Turkmen, Khalid Freij, Nathalie Sabin, Aurelie Le Cam, Iban Seilliez, Jean-Charles Gabillard
METHIONINE RESTRICTION DIMINISHES SKELETAL MUSCLE CELL DIFFERENTIATION THROUGH EPIGENETIC MECHANISMS IN RAINBOW TROUT *Oncorhynchus mykiss*
- 11:00 Michael Phelps**, Jasmine Richman, Leah Davis
OHNOLOG SPECIFIC GENE EDITING REVEALS FUNCTIONALIZATION PATTERNS IN THE ACTIVIN/ MYOSTATIN SIGNALING PATHWAY IN RAINBOW TROUT *Oncorhynchus mykiss*
- 11:15 Russell Borski**, Hannah M. Reynolds
LEPTIN METABOLIC FUNCTION AND REGULATION OF OXYGEN CONSUMPTION IN THE TILAPIA *Oreochromis mossambicus*
- REPRODUCTION**
- 11:30 Nicholas Adams**, John Stubblefield, Yonathan Zohar, Eric Saillant
HORMONAL INDUCTION OF SPAWNING IN TRIPLETAIL
- 11:45 Benjamin Reading**, Linnea K. Andersen, Cara Kowalchuk, Jin Namgung, Yuji Mushiobira, Takashi Todo, Naoshi Hiramatsu
VITELLOGENESIS IN FISHES
- 12:00 Rex Dunham**, Darshika Hettiarachchi, Veronica Alston, Logan Bern, Mei Shang, Baofeng Su, Khoi Vo, Jeremy Gurbatow, Ian Butts
XENOGENESIS FOR PRODUCING CATFISH EMBRYOS
- 12:15 Adam Luckenbach**, Edward Hayman, William Fairgrieve
TRIPLOIDY DISRUPTS EARLY REPRODUCTIVE DEVELOPMENT OF FEMALES AND ALTERS SEX RATIOS OF SABLEFISH *Anoplopoma fimbria*

THE SHRIMP GENOME AND EPIGENOME (SHRIMPENCODE) PROJECT

Wednesday, March 2 8:30 AM - 5:00 PM Palm 3

Chairs: Acacia Alcivar-Warren, Marcos De Donato, Kathy F. J. Tang

- 8:30** **Acacia Alcivar-Warren**, Marcos De Donato, Kathy Tang
THE SHRIMP GENOME AND EPIGENOME (ShrimpENCODE) PROJECT SESSION: IN MEMORY OF DR. DONALD V. LIGHTNER
- 8:45** **Fernando Rodriguez**, Irina A. Yushenova, Irina R. Arkhipova
EPIGENETIC REGULATION IN AQUATIC MICRO-INVERTEBRATES: A NON-CANONICAL SYSTEM OF BACTERIAL ORIGIN
- 9:15** **Jianbo Yuan**, Xiaojun Zhang, Fuhua Li, Jianhai Xiang
GENOME SEQUENCING AND ASSEMBLY STRATEGIES AND A COMPARATIVE ANALYSIS OF THE GENOMIC CHARACTERISTICS IN PENAEID SHRIMP SPECIES
- 9:30** **Gladys Zuniga**, Acacia Alcivar-Warren
PRELIMINARY SURVEY OF TRANSPOSABLE ELEMENTS FROM THE FIRST SPECIFIC PATHOGEN FREE (SPF) SHRIMP *Penaeus vannamei* PRODUCED IN THE UNITED STATES
- 10:00** **BREAK**
- 10:30** **Acacia Alcivar-Warren**, Weidong Bao
THE COMPLETE GENOME OF AN ENDOGENOUS NIMAVIRUS (*Nimav-1.LVa*) FROM SPECIFIC PATHOGEN-FREE SHRIMP *Penaeus vannamei* – THE NEED FOR REFERENCE GENOMES OF PENAEIDS AND OTHER CRUSTACEANS
- 11:00** **Eduardo Martínez-Matus**, Cesar Marcial Escobedo-Bonilla, Judith González Benitez
VIRUS INTERFERENCE AND OCCURRENCE IN CRUSTACEANS
- 11:15** **Acacia Alcivar-Warren**, Victoria Alday-Sanz, Kathy Tang
A REVIEW OF WHITE SPOT SYNDROME VIRUS (WSSV) FROM ECUADOR, ENDOGENOUS VIRAL SEQUENCES (EVE) OF WSSV (WSSV-EVE), AND ENDOGENOUS NIMAVIRUS *Nimav-1.LVa*: THEIR INTEGRATION IN THE GENOMES OF THE FIRST SPECIFIC PATHOGEN-FREE (SPF) *Penaeus vannamei* DOMESTICATED IN THE UNITED STATES AND *P. vannamei* FARMED IN CHINA
- 11:45** **Acacia Alcivar-Warren**, Weidong Bao, Kathy Tang
ENDOGENOUS VIRAL ELEMENTS (EVE) OF *Decapod penstylhamaparvovirus 1* (INFECTIOUS HYPODERMAL AND HEMATOPOIETIC NECROSIS VIRUS, IHNV) – IMPLICATIONS FOR SHRIMP DIAGNOSIS
- 12:15** **Hectorina Rodulfo**, Acacia Alcivar-Warren, Jianbo Yuan, Gober Asuncion, Marcos De Donato, Miriam Alcivar-Arteaga
CHROMOSOME LOCATIONS OF *RTE-3.LVa* NON-LTR RETROTRANSPOSON FROM THE FIRST SPECIFIC PATHOGEN-FREE (SPF) SHRIMP *Penaeus vannamei* PRODUCED IN THE UNITED STATES – A POTENTIAL SEX MARKER FOR SHRIMP
- 12:30** **LUNCH**
- 1:30** **Marcos De Donato**, Carlos Fajardo, Hectorina Rodulfo, Ashutosh Sharma
UNDERSTANDING OF THE SHRIMP IMMUNE RESPONSE TO PATHOGENS FROM ITS TRANSCRIPTOME
- 2:00** **Baltasar Garcia**, Álvaro Bonaguro, Carolina Araya, Roberto Carvalheiro, José Yáñez
ESTIMATION OF LINKAGE DISEQUILIBRIUM AND EFFECTIVE POPULATION SIZE IN A PACIFIC WHITE SHRIMP *Litopenaeus vannamei* POPULATION USING A NOVEL 50K SNP GENOTYPING ARRAY

WEDNESDAY

- 2:15 Liliana Rojo-Arreola**, Ramiro Jose Gonzalez-Duarte, Wendy Espinosa de Aquino, Fernando García-Carreño
THE HURDLES OF DELIVERY CRISPR-Cas9 COMPONENTS FOR GENE EDITING IN PENAEID SHRIMPS
- 2:30 Ardhra Gopan**, Chinnaiyah Amutha, Dharshana Dhinesh, Maheswari Ambethkar
ASSESSMENT OF THE OXIDATIVE STRESS AND BIO-TRANSFORMATION ENZYMATIC EFFECTS OF GLYPHOSATE EXPOSURE ON THE PACIFIC WHITELEG SHRIMP *Penaeus (Litopenaeus) vannamei*
- 2:45 Sergio F. Nates**, Brandon White, Luke Fredrickson
INHIBITORY CAPACITY OF A NOVEL MICROBIAL ENHANCED PROTEIN AGAINST *Vibrio* spp. IN PACIFIC WHITE SHRIMP *Penaeus vannamei*
- 3:15 Acacia Alcivar-Warren**, Jianbo Yan, Nitsara Karoonuthaisiri, Tanaporn Uengwetwanit, Kanchana Sittikankaew, Miriam Alcivar-Arteaga, Gober Asuncion
THE *NonLTR-1-LVa* NON-LTR RETROTRANSPOSON FROM THE FIRST SPECIFIC PATHOGEN-FREE (SPF) SHRIMP *Penaeus vannamei* PRODUCED IN THE UNITED STATES IS SIMILAR TO A RETROTRANSPOSON PUTATIVELY ASSOCIATED WITH ABDOMINAL SEGMENT DEFORMITY DISEASE (ASDD) OF FARMED *P. vannamei* FROM THAILAND
- 3:30 Philip L. Hertzler**
THE DEVELOPMENTAL BIOLOGY OF PENAEID SHRIMP
- 4:00 Acacia Alcivar-Warren**
WHITE PAPER: THE NEED TO SEQUENCE THE GENOMES OF *Penaeus Fabricius*, 1798 SPECIES TO CONFIRM TAXONOMY CLASSIFICATION ACCEPTED BY THE WORLD REGISTER OF MARINE SPECIES (WoRMS)

ZEBRAFISH - DAY 2

Wednesday, March 2 8:30 AM - 5:00 PM Pacific D

Chair: Bobbi M. Baur

8:30 BASIC HUSBANDRY SESSION (In Person and Virtual)

The Art of Breeding

Christine Archer/U Colorado

Background Genetics and Effects on Husbandry

Marcus Crim/IDEXX

Successful Rotifer Culturing: From the Bucket to the Belly

Josh Barber/Columbia U

FISH DISEASES SESSION- Coordinated by Dr. Michael Kent/Oregon State University (In Person and Virtual)

9:30 Effects of Diet on Growth and MicroBiome

Michael Sieler/Oregon State U

9:50 Scoring Zebrafish Health by Condition Parameters

Tannia Clark/NIH

10:10 Heat can be our friend: treating zebrafish infections with elevated heat.

Michael Kent/Oregon State

10:30 BREAK

- 11:00 Long-Term Imaging of Living Adult Zebrafish**
Dan Castranova
- 11:20 Fin Clips for Genotyping**
Megan Matsutani/USC
- 11:40 Konrad Dabrowski**, Mackenzie Miller, Kevin Fisher, Afroza Naznin, Md Shahjahan
COMPARISON OF GYNOGEN SURVIVAL, GROWTH AND SEX RATIO IN WILD (BRAHMAPUTRA RIVER, BANGLADESH) AND DOMESTICATED "CASPER" STRAIN OF ZEBRAFISH
- 12:00 Sex in zebrafish: deciphering (epi)genomic mechanisms**
Laia Ribas/ICM/CSIC
- 12:30 LUNCH**
- KEYNOTE SPEAKER**
- 1:30 A tale of two worlds: Behavior of wild and domesticated zebrafish in response to habitat alteration**
Piyumika S. Suriyampola/Arizona State University
- 2:30 Open hardware to support biomedical research with aquatic models**
Dr. Yue Liu/LSU Agricultural Center
- 2:50 Database Review**
Bobbi Baur/Aquaneering
- 3:10 A GENE CATALOG OF THE ZEBRAFISH (*Danio rerio*) GUT MICROBIOME CLARIFIES THE EFFECTS OF HUSBANDRY PRACTICE AND STRAIN ON GUT MICROBIOME OPERATION AND TRANSLATIONAL POTENTIAL**
Christopher Gaulke/U Illinois Urbana Champagne
- 3:30 BREAK**
- 4:10 EDUCATION and CAREERS Mini-Session**
ohn Ewart/WAS; Chris Green/WAS; Beth Hawkins/St. Mary's
- 5:00 TOWN HALL MEETING**

LIFE SUPPORT SYSTEMS

Wednesday, March 2 10:30 AM - 12:30 PM Palm 2

Chair: Travis Knorr

- 10:30 Travis Knorr**
PRESERVING A HISTORIC FACILITY WHILE UPDATING LSS INFRASTRUCTURE: THE STORY OF THE KEY WEST AQUARIUM
- 10:45 Patrick H. Rice**
DEVELOPMENT OF AN INNOVATIVE HATCHERY SYSTEM FOR BLACK GROUPER *Mycteroperca bonaci* AND RED GROUPER *Epinephelus morio* AT THE COLLEGE OF THE FLORIDA KEYS
- 11:00 Lauren M. Pandolfo**
DESIGNING AND MAINTAINING CUTTING EDGE AQUACULTURE FACILITIES

- 11:15 Lauren Mazzola**, Michael Shane, Alex Primus, Mark Drawbridge
THE EVOLUTION OF PRODUCTION PRACTICES AT A HIGH PROFILE CONSERVATION HATCHERY FOR WHITE SEABASS IN SOUTHERN CALIFORNIA
- 11:30 Matthew Gray**, Vyacheslav Lyubchich, Jacob Cram, Stephanie Alexander
HIGHS AND LOWS: EXAMINING HATCHERY YIELDS AND CRASHES AT HORN POINT LABORATORY WITH PRODUCTION ANALYSIS
- 11:45 Bobbi-Jo Caskey**, Barbara I. Evans, Stephen Kolomyjec
MANIPULATING THE AQUACULTURE MICROBIOME
- 12:00 Derek Nelson**, Kevin Jensen, Jeff Heindel
ENGINEERING AND OPERATING LIFE SUPPORT SYSTEM APPLICATIONS FOR INTENSIVE AQUACULTURE

SHELLFISH GENETICS AND GENOMICS

Wednesday, March 2 10:30 AM - 5:00 PM Palm 5

Chair: Konstantin Divilov

- 10:30 Heather King**, William Walton, Huiping Yang, Leslie Sturmer, Christopher Hollenbeck, John Scarpa, Brian Callam, Jim Stoeckel, Scott Rikard, Megan Gima, E Hu, Jason Stannard, Kelly Lucas, Eric Saillant
DEVELOPMENT OF A BREEDING PROGRAM FOR GULF OF MEXICO EASTERN OYSTER USING COMMUNAL REARING OF FAMILIES AND MARKER-BASED PEDIGREE RECONSTRUCTION
- 10:45 Tim Bean**, Tim Regan, Lewis Stevens, Carolina Peñaloza, Ross Houston, Diego Robledo
EXPANSION OF GENE FAMILIES THROUGHOUT BIVALVE MOLLUSC EVOLUTION
- 11:00 Caroline Schwaner**, Emmanuelle Pales Espinosa, Bassem Allam
USING RNAi TO VALIDATE THE ROLE OF PERLUCIN GENE IN *Crassostrea virginica* LARVAE RESILIENCE TO OCEAN ACIDIFICATION
- 11:15 Maureen K. Krause**, Juliette Gorson, James C. Kuldell, Jade A. Drawec
DISCOVERY AND CHARACTERIZATION OF EASTERN OYSTER *Crassostrea virginica* CIS-DEFENSIN ANTIMICROBIAL PEPTIDES
- 11:30 Ximing Guo**, Jonathan Purity, Dina Proestou, Zhenwei Wang, Standish Allen, Jr., Jessica Small, Klara Verbyla, Noah Chriss, Jaime Haggard, Kathryn Lundgren, Bassem Allam, Marta Gomez-Chiari, Matthew Hare, Christopher Hollenbeck, Ming Liu, Katie Lotterhos, Louis Plough, Paul Rawson, Eric Saillant, Robin Varney, Gary Wikfors, Ami Wilbur
DEVELOPMENT AND EVALUATION OF HIGH-DENSITY SNP ARRAYS FOR THE EASTERN OYSTER *Crassostrea virginica*
- 11:45 Joseph L. Matt**, David S. Portnoy, Christopher Hollenbeck
SOFTWARE DEVELOPMENT FOR MORE REALISTIC SIMULATION OF SELECTIVE BREEDING PROGRAMS FOR OYSTERS
- 12:00 Honggang Zhao**, Zhenwei Wang, Ximing Guo, Matthew Hare
TESTING FOR GENOMIC SIGNATURE OF DOMESTICATION ON EASTERN OYSTER *Crassostrea virginica*
- 12:30 LUNCH**

- 1:30 Konstantin Divilov**, Noah Merz, Blaine Schoolfield, Tim Green, Chris Langdon
THE GENETIC ARCHITECTURE OF OSHV-1 TOLERANCE IN A PACIFIC OYSTER BREEDING POPULATION
- 1:45 Matthew Hare**, Honggang Zhao, Avi Simon
WITHIN-GENERATION RESPONSES TO SELECTION ACROSS HABITAT HETEROGENEITIES - WHEN, WHERE, AND WHY DOES IT MATTER?
- 2:00 Honggang Zhao**, Avi Simon, Hannah Hartung, Archi Howlader, Emily Manuel, Daphne Munroe, Elizabeth North, Matthew Hare
WITHIN-GENERATION POLYGENIC RESPONSES TO SELECTION SHAPE MICROGEOGRAPHIC POPULATION STRUCTURE IN THE EASTERN OYSTER *Crassostrea virginica*
- 2:15 Christopher Hollenbeck**, Polly Hajovsky, Joel Anderson, David Portnoy, Amanda Barker
GENOMIC POPULATION STRUCTURE OF THE EASTERN OYSTER *Crassostrea virginica* IN THE GULF OF MEXICO
- 2:30 Hannah G. Hartung**, Matthew Hare
FURTHER NORTH THAN EXPECTED: POPULATION CONNECTIVITY AND GENETIC DIVERSITY ACROSS "SOUTHERN" ATLANTIC SURFLAM *Spisula solidissima similis* POPULATIONS

AQUACULTURE KNOWLEDGE FROM OLD COOTS REPRISED

Wednesday, March 2 1:30 PM - 5:00 PM Pacific C

Chair: Bob Robinson

- 1:30 Expensive Mistakes Shellfish Farmers Should Avoid**
Dr Robert (Skid) Rheault - Executive Director of East Coast Shellfish Producers
- 2:00 No Clue Yet**
Jim Parsons C.E.O. Jamestown Seafood
- 3:00 Don't expect a Plaque**
Dr Jimmy Avery - Extension Aquaculture Professor, MS State University Director - USDA-NIFA. Southern Regional Aquaculture Center, Stoneville, MS
- 3:30 Lessons on Salmon and Shellfish Farming from a Sourdough**
Jeff Hetrick - Director of Alutiiq Pride Marine Institute, Seward, Alaska
- 4:00 Recycling Ideas: Projects Ahead of Their Time are Now State of the Art**
Kevin Fitzsimmons - University of Arizona
- 4:30 Lessons from the Oldest Coot in this Session**
Marvin Emerson - President of Crystal Lake Fisheries Trout Farm - Ava, MO

EXPANDING THE HORIZONS OF AQUACULTURE THROUGH CULTURE OF EMERGING SPECIES: A STATUS REPORT

Wednesday, March 2 1:30 PM - 5:00 PM Palm 7

Chair: Theresa Talley

- 1:30 Avery Wallace**, Theresa S. Talley,Carolynn Culver, Drew Talley, Jeff Crooks
ASSESSING THE FEASIBILITY OF THE CULTURE OF CALIFORNIA CLAMS IN AN INTEGRATED MULTI-TROPHIC AQUACULTURE (IMTA) SYSTEM
- 1:45 Joshua Reitsma**, Harriet Booth, Abigail Archer, Paul Wittenstein, Emma Green-Beach, Matt Weeks, Patrick Ross, Mark Begley, Mike Dunbar, Stephen Wright, Craig Poosikian, Iris Pickard, Alex Brown, Dan Martino, Greg Martino, Brandon Small, Roxanne Smolowitz
EXPLORING AQUACULTURE POTENTIAL OF TWO SPECIES OF SURF CLAMS AT MASSACHUSETTS SHELLFISH FARM SITES
- 2:00 Matthew Hoehn**, Luke Gardner, Scott Hamilton
DEVELOPING TECHNIQUES FOR THE CULTIVATION OF THE HERBIVOROUS MONKEYFACE PRICKLEBACK *Cebidichthys violaceus* AS A SUSTAINABLE ALTERNATIVE TO UNAGI
- 2:15 Dana Morse**, Hugh Cowperthwaite, Damian Brady, Christian Brayden, Marsden Brewer, Robert Brewer, Struan Coleman, Chris Davis, Alex de Koning, Phoebe Jekielek, Kohl Kanwit, Tom Kiffney, Nate Perry, Andrew Peters
MAINE IS SIX MONTHS OF WINTER AND SIX MONTHS OF POOR SLEDDIN': THE ONGOING SAGA OF SEA SCALLOPS *Placopecten magellanicus* AS A NEW SPECIES FOR AQUACULTURE
- 2:45 Olivia Deans**, Catherine Janasie, Stephanie Otts
LEGAL CHALLENGES AND OPPORTUNITIES RELATED TO CULTURE OF NEW AND EMERGING SPECIES
- 3:00 Sadie Small**, Kristin Aquilino
SCALING UP RESTORATIVE AQUACULTURE OF ENDANGERED WHITE ABALONE *Haliotis sorenseni*
- 3:00 Jack Koch**, Allyssa Oune, Rose Upton, Lucía Arregui, M. Teresa Gutierrez-Wing, Terrence Tiersch
OPPORTUNITIES AND CHALLENGES IN DEVELOPING A GERMPLASM REPOSITORY PATHWAY FOR THE SEA HARE *Aplysia*, GENERALIZABLE TO OTHER MARINE INVERTEBRATES
- 3:30 Jaclyn Robidoux**
SEAWEED AQUACULTURE IN MAINE: A DECADE OF DEVELOPMENT AND INNOVATION

ORNAMENTALS

Wednesday, March 2 1:30 PM - 5:00 PM Palm 2

Chair: Michelle (Mick) Walsh

- 1:30 Matthew A. DiMaggio**
ADDRESSING LARVICULTURE CHALLENGES IN ORNAMENTAL FISHES
- 1:45 Casey Murray**, Nathan D. Evans, Sophie B. White, Amy L. Wood, Matthew A. DiMaggio
DEVELOPING LARVAL CULTURE PROTOCOLS FOR THE X-RAY TETRA *Pristella maxillaris* TO MINIMIZE THE USE OF LIVE FEEDS
- 2:00 Sarah Hutchins**, Brad Gemmell, Matthew DiMaggio
MANIPULATING ESCAPE RESPONSES OF THE CYCLOPOID COPEPOD *Oithona colcarva* AND THE CALANOID COPEPOD *Parvocalanus crassirostris*

- 2:15 Travis Knorr, Michelle Walsh**
GARAGE-A-CULTURE: SMALL-SCALE ORNAMENTAL AQUACULTURE
- 2:30 Courtney Ohs, Audrey Beany**
VOLITIONAL SPAWNING PATTERNS OF THREE SPECIES OF CAPTIVELY HELD BUTTERFLYFISHES
Chaetodon ocellatus, Chaetodon striatus AND *Chelmon rostratus*
- 2:45 Lauren Pandolfo**
INTRODUCING THE AUSTRALIA NEW ZEALAND ASSOCIATION OF AQUARIUM PROFESSIONALS
- 3:00 Okechukwu Alum-Udensi, Anthony A. Nlewadim, Johnpaul C. Ikwuemesi**
OPPORTUNITIES IN THE ORNAMENTAL FISH BUSINESS IN NIGERIA

WORKFORCE DEVELOPMENT

Wednesday, March 2 1:30 PM - 5:00 PM Palm 8

Chair: Christian Brayden

- 1:30 Maine Aquaculture Occupational Standards**
Christian Brayden, Chris Vonderweidt, Carissa Maurin, Sebastian Belle
- 1:45 Educational Supply Lines for Developing an Aquaculture Workforce**
Barbara Evans, Elliot Nelson, Christopher Hartleb
- 2:00 Paving the Way for Coordinated Workforce Development in Alaska**
Melissa Good
- 2:15 Aquaculture Curriculum and Internships for Arkansas Students**
Jamie Anderson
- 2:30 Aquaculture in Shared Waters: a Training Program to Strengthen the Sector**
Heather Sadusky
- 2:45 Federal Services to Support Aquaculture Workforce Development**
David O'Brien
- 3:00 Aquaculture Pioneers Program - Workforce and Talent Development in Maine**
Kate Howell
- 3:15 BREAK**
- 3:30 Panel Discussion - How can we improve aquaculture and maritime workforce development to better serve both farmers and aquaculture-interested people?**
Brayden, Evans, Good, Anderson, Sadusky, O'Brien, Howell

THURSDAY, March 3

DIVERSITY AND INCLUSION IN US AQUACULTURE

Thursday, March 3 3:30 PM - 5:30 PM Pacific D

Chairs: Eric Saillant, Angela Caporelli

Eric A. Saillant*, Angela Caporelli, George B. Brooks Jr., Aswani Volety, D. Allen Pattillo, Abigail Bockus, Steven Hughes, Adam Daw, Imani Black, Rebecca Lochmann, Carla Schubiger

This session is organized by members of the Diversity and Inclusion (DI) committee of the United States Aquaculture Society (USAS) and welcomes all World Aquaculture Society members and conference participants. The goal of the session is to provide a safe and inclusive environment where questions related to diversity, equity, and inclusion in the society, and aquaculture community at large, can be discussed freely. In this relaxed-fit forum, we welcome audience participation in a structured discussion of current issues, priority areas, and on-going diversity initiatives in the USAS.

Agenda

Update and discussion on the development of a USAS code of conduct

The Phoenix, Arizona urban agriculture program

DEI initiatives at Elon University

REGIONAL SHELLFISH SEED BIOSECURITY PROGRAM (RSSBP)

Thursday, March 3 8:30 AM - 10:00 AM Palm 8

Chairs: Ryan Carnegie, David Bushek

Regional Shellfish Seed Biosecurity Program (RSSBP) forum (leads Bushek and Carnegie). The forum will include an update on RSSBP progress and discussion of emerging concerns to interests on Atlantic, Pacific, and Gulf Coasts. Members of the commercial, regulatory, and scientific communities are welcome to attend."

SHELLFISH AND FINFISH CONTAMINANTS

Thursday, March 3 8:30 AM - 10:15 AM Palm 1

Chairs: Evan Ward, Kayla Mladinich

- 8:30** **Ambethkar Maheshwari**, Chinnaiah Amutha
TISSUE DAMAGING AND OXIDATIVE STRESS EFFECTS ON GUPPY *Poecilia reticulata* (W. PETERS,1859) DUE TO THE PROLONGED EXPOSURE OF ATRAZINE HERBICIDE
- 8:45** **Bidisha M Sen**, Sumit Homechaudhuri
ASSESSMENT OF IMMUNOTOXICITY BY QUANTITATIVE ALTERATION CORRELATED WITH ROS GENERATION IN HAEMOPOIETIC CELL POPULATION IN *Labeo rohita* (HAMILTON, 1822) EXPOSED TO AZADIRACTIN
- 9:00** **Krystal M. Boley**, Amalia M. Harrington, M. Scarlett Tudor, Heather J. Hamlin
SUBLETHAL EFFECTS OF LOW-DOSE EXPOSURE TO IMIDACLOPRID ON THE AMERICAN LOBSTER *Homarus americanus*
- 9:15** **Hannah I. Collins**, Bridget A. Holohan, Tyler W. Griffin, J. Evan Ward
EXAMINING THE EFFECTS OF NYLON MICROFIBERS ON THE GUT MICROBIOME OF THE BLUE MUSSEL *Mytilus edulis*

- 9:30 Kayla Mladinich**, J. Evan Ward, Bridget Holohan, Sandra E. Shumway
AN EVALUATION OF MICROPLASTICS FOUND IN THE EASTERN OYSTER *Crassostrea virginica* AND THE SURROUNDING ENVIRONMENT
- 9:45 Evan Ward and Sandra E. Shumway**, Kayla Mladinich, Bridget Holohan, Noreen Blaschik
MICROPLASTICS AND MOLLUSCS – A BRIEF OVERVIEW OF A FLAWED FIELD

US MARINE FINFISH AQUACULTURE SPECIAL SESSION

Thursday, March 3 8:30 AM - 10:00 AM Palm 7

Chair: Marty Riche

- 8:30 Noah Boldt**, Carole Engle, Cristina Watkins, Michael Schwarz, Jonathan van Senten
A SUPPLY ANALYSIS OF 20 EMERGING MARINE FINFISH SPECIES FOR COMMERCIAL AQUACULTURE PRODUCTION IN THE UNITED STATES
- 8:45 Domena A. Agyeman**, Jonathan van Senten, Carole R. Engle, Cristina Watkins, Michael H. Schwarz
WARMWATER MARINE FINFISH IN THE SOUTHERN TIER STATES: CONSUMER PREFERENCE SURVEY RESULTS
- 9:00 Jonathan van Senten**, Carole R. Engle, Michael H. Schwarz, Domena Agyeman, Noah Boldt, Cristina Watkins
MARKETING AND ECONOMICS OF WARMWATER MARINE FINFISH AQUACULTURE
- 9:15 Jason Broach**, Aaron Watson, Tanya Darden, Fabio Casu, Erin Levesque, Justin Yost
ENHANCING RESEARCH CAPACITIES FOR ONGOING AND FUTURE MARICULTURE RESEARCH AT THE WADDELL MARICULTURE CENTER IN BLUFFTON, SOUTH CAROLINA
- 9:30 John Stieglitz**, Ronald Hoenig, Carlos Tudela, Daniel Benetti, Kevan Main, Mark Drawbridge, Federico Rotman, Kevin Stuart, Marty Riche, Sahar Mejri, Paul Wills
COMPARATIVE BIOENERGETICS OF YELLOWTAIL JACKS *Seriola* spp. FOR OPTIMIZING AQUACULTURE PRODUCTION
- 10:00 BREAK**
- 11:00 John Stieglitz**, Ronald Hoenig, Carlos Tudela, Shubham Mathur, Luiz Anchieta Da Silva, Leonardo Ibarra-Castro, Daniel Benetti
ADVANCING SUSTAINABLE MARINE FISH PRODUCTION FOR THE SOUTHEAST U.S. AND CARIBBEAN: ADVANCEMENTS IN YELLOWTAIL SNAPPER *Ocyurus chrysurus* AQUACULTURE
- 11:15 Nasir Kureshy**
RED DRUM *Sciaenops ocellatus* AQUACULTURE IN THE UNITED STATES – CHALLENGES AND OPPORTUNITIES
- 11:30 Nicole T. Kirchhoff**
OPERATING A MARINE BAITFISH AND FOOD FISH HATCHERY: TRIALS, TRIBULATIONS, AND OUTLOOK FOR THE FUTURE
- 11:45 Donna Lanzetta**
HOW BLOCKCHAIN WILL TRANSFORM THE FUTURE OF SEAFOOD: TRACEABILITY, TRANSPARENCY AND BUILDING RESILIENCE IN THE SEAFOOD SUPPLY CHAIN
- 12:00 Open Forum**

THURSDAY

ADVANCES IN AQUACULTURE PLANNING AND POLICIES

Thursday, March 3 8:30 AM - 12:30 PM Pacific E

Chair: Barry Costa-Pierce

- 8:30 Barry Antonio Costa-Pierce**
THE FAO ECOSYSTEM APPROACH TO AQUACULTURE AS AN INTEGRATED PLANNING FRAMEWORK FOR SITING AQUACULTURE IN COMMON PROPERTY AREAS
- 8:45 Samson Afewerki**, Trine Thorvaldsen, Kristine Størkersen, Andreas Misund, Tonje Osmundsen, Marit Olesen
TECHNOLOGY PUSH POLICY AND THE NORWEGIAN AQUACULTURE INDUSTRY: THE CASE OF DEVELOPMENT LICENSING SCHEME
- 9:00 Gregor Reid**, Danielle Dempsey, Leah Lewis-McCrea
MEANS VERSUS MEDIANS: DOES IT MAKE A DIFFERENCE FOR AQUACULTURE REGULATORY COMPLIANCE OF BENTHIC SULFIDES?
- 9:15 Jacob Boyd**, Owen Mulvey-McFerron, Charlie Culpepper
STATE MARINE AQUACULTURE COORDINATORS NETWORK
- 9:30 Hannah Wilson**, Alicia Bishop
ALASKA AQUACULTURE PERMITTING PORTAL – BRINGING IT ALL TOGETHER
- 10:00 BREAK**
- 11:00 Heather Sadusky**, Gayle Zydlewski, Sebastian Belle, Christopher Davis, Hugh Cowperthwaite, Deborah Bouchard
THE MAINE AQUACULTURE HUB: A NETWORK TO STRENGTHEN AQUACULTURE IN THE STATE
- 11:15 Julianne Grenn**, Amy Schrank, Donald Schreiner
COLLECTING ACCURATE DATA FROM THE AQUACULTURE INDUSTRY: A MINNESOTA EXAMPLE
- 11:30 Owen Mulvey-McFerron**, Jacob Boyd
ADDRESSING USER CONFLICTS ASSOCIATED WITH THE GROWTH OF THE SHELLFISH AQUACULTURE INDUSTRY IN NORTH CAROLINA
- 11:45 John Schook**
FACILITY DESIGN ELEMENTS THAT ENHANCE BIOSECURITY AND FOOD SAFETY WITHIN LAND-BASED AQUACULTURE FACILITIES
- 12:00 Rod Getchell**, Danielle Scott, Alina Demeter, Xanth El-Sayed, Ana Griefen, Brian Chambers, Niccole Wandelaar, Paul Bowser, Philippe Baneux, Drew Kirby, Julie Schroeter, Marilyn Blair
MORE SAFETY DATA FOR USE OF AQUI-S[®] 20E (10% EUGENOL) AS A SEDATIVE FOR MARINE FINFISH
- 12:15 Jackson Gross**, Crystal Yang
RECENT ADVANCEMENTS IN SLAUGHTER TECHNOLOGY TO INCREASE FISH QUALITY FOR SMALL-SCALE SALMONID PRODUCERS AND PROCESSORS
- 12:30 Yingkai Fang**
CAN RECREATIONAL ANGLERS HELP TO PREVENT THE SPREAD OF AQUATIC INVASIVE SPECIES (AIS)?

THURSDAY

ALTERNATIVE PROTEIN FOR SEAFOOD PRODUCTION SYSTEMS

Thursday, March 3 8:30 AM - 12:30 PM Palm 3

Chairs: Razieh Farzad, Lexi Duscher

- 8:30 Razieh Farzad**, Jeanette Andrade
PERCEPTION OF SEA GRANT'S EXTENSION EDUCATORS REGARDING THE CULTIVATED SEAFOOD PRODUCTS
- 8:45 John Grayson**, Erica Curles, Michal Wojno, Karolina Kwasek
PARTIAL AND TOTAL REPLACEMENT OF SOYBEAN MEAL WITH A HIGH-PROTEIN YEAST FERMENTATION PRODUCT IN RAINBOW TROUT *Oncorhynchus mykiss* FEEDS
- 9:00 H-Michael Habte-Tsion**, Marty Riche, Sahar Mejri, Joseph Myers, David Bradshaw, Carlie Perricone, Paul Wills
THE EFFECTS OF CLAM MEAL SUBSTITUTION ON THE GROWTH, DIGESTION CAPACITY AND HEALTH OF FLORIDA POMPANOTrachinotus carolinus
- 9:15 Reza Ovissipour**, Amiti Banavar, Lexi Duscher, Setareh Shiroodi, Samad Keramat, Michael Schwarz, Jesse Trushenski
NUTRITIONAL EVALUATION OF BLACK SOLDIER FLY FRASS AS A NOVEL INGREDIENT IN FLORIDA POMPANO *Trachinotus carolinus* DIET
- 9:30 Mosope Abanikannya**, Jia Ma, Liz Koustos, Alejandra McComb, Kenneth D. Cain, Vikas Kumar
INSECT MEAL AS COMPLEMENTARY INGREDIENT IMPROVES THE UTILIZATION OF SOY BASED DIETS AND REDUCES THE MORTALITY OF RAINBOW TROUT CHALLENGED WITH *Flavobacterium psychrophilum*
- 9:45 Md. Sakhawat Hossain**, Brian C. Small, Yan Zhang
EVALUATION OF A HIGH PROTEIN CORN DISTILLERS' DRIED GRAINS WITH SOLUBLES (DDGS) AS A COMPLETE SOYBEAN MEAL REPLACER IN PRACTICAL DIETS FOR ATLANTIC SALMON *Salmo salar*
- 10:00 BREAK**
- 11:00 Reza Ovissipour**, David Kaplan, Nitin Nitin, Lexi Duscher, Sean Cash, Merredith D. Portsmouth, Nicole Tichenor Blackstone, Tiffany Drape, Sean O'Keefe, Markus Buehler, Yixiang Xu, Michael F. Tlusty, Georgia Mavrommati
INTEGRATED APPROACHES TO ENHANCE SUSTAINABILITY, RESILIENCY, AND ROBUSTNESS IN U.S. AGRI-FOOD SYSTEMS – AN OVERVIEW OF NATIONAL INSTITUTE FOR CELLULAR AGRICULTURE
- 11:15 Alexandra (Lexi) Duscher**, Inayat Batish, Reza Ovissi
APPLYING MACHINE LEARNING TECHNIQUES TO DEVELOP AND OPTIMIZE LOW-COST SERUM-FREE GROWTH MEDIA FOR SEAFOOD CELL LINES

THURSDAY

AQUACULTURE AND SHELLFISH PLANNING INITIATIVES

Thursday, March 3 8:30 AM - 12:30 PM Pacific D

Chairs: Chris Schillaci, Dan Tonnes, Stephen Kirk

- 8:30 Julie Decker**, Alicia Bishop
ALASKA MARICULTURE INITIATIVE – INDICATORS OF PROGRESS
- 8:45 Laura Butler**, Nicole Naar, Bobbi Hudson
BUILDING AN ECOSYSTEM-BASED MANAGEMENT COLLABORATIVE FOR SHELLFISH AQUACULTURE IN WILLAPA BAY AND GRAYS HARBOR
- 9:00 Tessa Getchis**, David Carey, Kristin DeRosia-Banick, Julie Rose, Nancy Balcom, Sylvain De Guise, Anoushka Concepcion
THE CONNECTICUT SHELLFISH INITIATIVE: A FIVE-YEAR PROGRESS REPORT
- 9:15 Tessa Getchis**, Abigail Archer, Azure Cygler, Dana Bauer, Giulio Farolfi, Brooke Hodge, Robert Johnston, Kristen Jabanoski, Tom Ndebele, Catherine Schluter, Julia Wyman
ADVANCING SOUTHERN NEW ENGLAND SHELLFISH AQUACULTURE THROUGH AN ENGAGED PUBLIC AND NEXT GENERATION SUPPORT TOOLS
- 9:30 PANEL DISCUSSION**

STRIPERHUB

Thursday, March 3 8:30 AM - 12:30 PM Town & Country D

Chair: Ben Reading

- 8:30 Benjamin Reading**, Linnea Andersen, Jason Abernathy, David Berlinsky, Greg Bolton, Russell Borski, David Cerino, Michael Ciaramella, Michael Frinsko, Adam Fuller, Steve Gabel, Bartholomew Green, Eric Herbst, Michael Hopper, Linas Kenter, Frank Lopez, Andrew McGinty, Barry Nash, Matthew Parker, Steve Rawles
STRIPERHUB: STRIPED BASS *Morone saxatilis* AQUACULTURE
- 8:45 Linnea Andersen**, Willy Valdivia-Granda, Benjamin Reading
EXPRESSION PROFILE ANALYSIS VIA MACHINE LEARNING TO IDENTIFY CRITICAL GENES DETERMINANT OF HYBRID STRIPED BASS *Morone chrysops* × *M. saxatilis* GROWTH
- 9:00 Business Meeting I: Larval Rearing and Hatchery Systems**
Chaired by Ben Reading, Eric Herbst and Russell Borski
- 10:00 BREAK**
- 11:00 Business Meeting II: Striped Bass Culture Manual**
Chaired by Ben Reading, Eric Herbst and Russell Borski

US TROUT FARMERS FORUM

Thursday, March 3 8:30 AM - 12:30 PM Palm 2

Chair: TBA

- 8:30: Collaboration between USTFA and FCS**
Jeff Heindel, President of the AFS Fish Culture Section
- 9:00 WRAC Project Update: Identification of Genetic Markers for Disease Resistance to IHNV in Commercial Populations of Rainbow Trout**
Kyle Martin, Troutlodge
- 9:30 Recent Advancements in Slaughter Technology to Increase Fish Quality for Small-Scale Salmonid Producers and Processors**
Jackson Gross, UC Davis
- 10:00 Updates Regarding Revisions of the AFS Blue Book and Piper Redux**
Jesse Trushenski, Riverence

VALUE OF VETERINARY SERVICES

Thursday, March 3 8:30 AM - 12:30 PM Town & Country C

Chair: Ruth Francis-Floyd

- 8:30 Opening Remarks and Welcome (15 min):**
Craig Watson, Director Kathleen Hartman, National Program Leader
UF IFAS Tropical Aquaculture Laboratory USDA-VS, Aquaculture
- 8:45 Veterinary Medicine for 21st Century Aquatic Farms (15 min):**
Ruth Francis-Floyd Roy Yanong
UF College of Veterinary Medicine UF IFAS Tropical Aquaculture Laboratory

Introducing the USDA-NIFA Veterinary Aquaculture Fellows

- 9:00 Working as an Aquaculture Veterinarian in Washington State**
Ed Haigh, DVM
Haigh Veterinary Hospital, Shelton WA
- 9:15 Why a Dairy Veterinarian is Interested in Aquaculture**
Paul Niehaus, DVM, PC
Jerome ID
- 9:30 USDA Aquatic Veterinary Fellowship Reflection**
Erika Brigante, DVM
ODFW La Grande Fish Health Services Lab, La Grande OR
- 9:45 Veterinarians and the Future of Aquaculture**
Danielle Lore, DVM
- 10:00 BREAK**
- 11:00 Adapting Principles of Aquaculture to a Laboratory Animal Medicine Practice**
Jonathon Lee, DVM
University of Florida, Gainesville FL
- 11:15 Challenges of Becoming an Aquatic Veterinarian After Graduation**
Irene Yen, MPH, DVM, CertAqV
Yen Veterinary Relief Services, PS, Seattle WA

THURSDAY

- 11:30 All Creatures Big and Small**
David Wilbur, MS, DVM, CertAqV
UF Veterinary Aquaculture Fellow
- 11:45 Panel Discussion with Producers**
Sean Nepper, VP of Fish Health, Chief Brood Officer, Riverence, ID

OLYMPIA OYSTERS

Thursday, March 3 8:30 AM - 3:00 PM Palm 5
Chairs: Kay McGraw, Kerstin Wasson

- 8:30 Kay A. McGraw**
OLYMPIA OYSTER *Ostrea lurida* (CARPENTER 1864) RESTORATION: A COLLABORATION STORY. *QUID NUNC?* AN INTRODUCTION TO THE SESSION
- 8:45 Kerstin Wasson**, April Ridlon, Edwin Grosholz, Kay McGraw, Betsy Peabody, Jennifer Ruesink, Chela Zabin, Danielle Zacherl
THE NATIVE OLYMPIA OYSTER COLLABORATIVE: A COMMUNITY OF PRACTICE FOR *Ostrea lurida* CONSERVATION
- 9:00 Danielle Zacherl**, April Ridlon, Althea Marks, Chela J. Zabin, Brian Allen, Jeffrey Crooks, Gary Fleener, Edwin Grosholz, Betsy Peabody, Jodie Toft, Kerstin Wasson
NATIVE OYSTER RESTORATION FROM CALIFORNIA TO BRITISH COLUMBIA: LESSONS FOR THE CONSERVATION OF MARINE FOUNDATION SPECIES
- 9:15 Allie Margulies**, Chela Zabin, Geana Ayala, Stephanie Kiriakopolos, Edwin Grosholz, Jeffrey Blumenthal
USING AN ELEVATION PORTFOLIO APPROACH FOR SUCCESS IN PASSIVE RESTORATION OF NATIVE OYSTERS IN SAN FRANCISCO BAY
- 9:30 Bryce D. Perog**, Chelsea M. Bowers, Carmen Y. Lopez, Richard F. Torres, Jr., Marah L. Wolfe, Danielle C. Zacherl
SHELL COVER, RUGOSITY, AND TIDAL ELEVATION IMPACT NATIVE AND NON-INDIGENOUS OYSTER RECRUITMENT TO CONCRETE AND AFFECT REEF BALL DESIGN
- 9:45 BRIEF UPDATES ON OLY RESEARCH FROM SESSION PARTICIPANTS**
- 10:00 BREAK**
- 11:00 Gary Fleener**, April Ridlon, Kerstin Wasson, Tiffany Waters, John Adams, Jamie Donatuto, Halley Froehlich, Rhona Govender, Aaron Kornbluth, Julio Lorda, Betsy Peabody, Gifford Pinchot IV, Steven Rumrill, Elizabeth Tobin, Chela J. Zabin, Danielle Zacherl, Edwin Grosholz
CONSERVATION AQUACULTURE OF OLYMPIA OYSTERS *Ostrea lurida*: A FRAMEWORK FOR EVALUATING THE BENEFITS AND RISKS OF THIS INTERVENTION FOR MARINE SPECIES RECOVERY
- 11:15 Jacob Harris**, Kerstin Wasson, Luke Gardner, Amanda Kahn
CONSERVATION AQUACULTURE IN THE ELKHORN SLOUGH, CA: SYNTHESIZING PHYSIOLOGY WITH RESTORATION FOR OLYMPIA OYSTERS
- 11:30 Ryan Crim**, Mackenzie Gavery, Crystal Simchick, Jodie Toft, Rick Goetz
GENETIC CHARACTERIZATION OF WILD AND HATCHERY-BRED OLYMPIA OYSTER *Ostrea lurida* SEED USED FOR RESTORATION

- 11:45 Gary Fleener**
CAN YOU EAT THEM TO SAVE THEM? FARMING THE WEST COAST NATIVE OYSTER *Ostrea lurida* FOR BOTH MARKET AND RESTORATIVE VALUES IN TOMALES BAY, CALIFORNIA
- 12:00 Valerie Goodwin**, Danielle C. Zacherl, Christine R. Whitcraft
 BIVALVE BODYGUARDS: EELGRASS *Zostera marina* MEADOWS MAY BUFFER HIGH ENERGY BOAT WAKES AND REDUCE DEGRADATION TO OLYMPIA OYSTER *Ostrea lurida* BEDS CONSTRUCTED FOR A LIVING SHORELINES PROJECT
- 12:15 Mason Emery**, Kevin Nichols, Katie Nichols, Danielle Zacherl
 NOT SO SHELLFISH AFTER ALL: HOW NATIVE OYSTERS *Ostrea lurida* MAY AID EELGRASS *Zostera marina* RESTORATION BY NITROGEN FILTRATION
- 12:30 LUNCH**
- 1:30 Brandon Quintana**, Mayra Silva, Kaysha Kenney, Ariana Sanchez, Danielle Zacherl
 FRIEND OR FOE? EFFECT OF EELGRASS DENSITY ON FILTER FEEDER BIOMASS AND CONDITION INDEX IN A MULTI-HABITAT LIVING SHORELINE
- 1:45 Leeza-Marie Rodriguez**, Valerie Goodwin, Danielle Zacherl
 EFFECTS OF A NON-INDIGENOUS BRYOZOAN ON THE RECRUITMENT OF THE NATIVE OLYMPIA OYSTER *Ostrea lurida*
- 2:00 Julio Lorda**, Alicia Abadía-Cardoso, Rodrigo Beas-Luna, April Ridlon, Kerstin Wasson
 INVASIVE POPULATIONS OF THE PACIFIC OYSTER *Crassostrea gigas* IN THE NORTHERN PACIFIC COAST OF BAJA CALIFORNIA
- 2:15 Kerstin Wasson**, Bryce Perog, Samantha Crippen, Danielle Zacherl, Brandon Quintana, Edwin Grosholz, Aaron Kornbluth
 DISTRIBUTION, ABUNDANCE, AND CONNECTIVITY: A COLLABORATION TO MAP OYSTERS FROM BAJA CALIFORNIA TO BRITISH COLUMBIA
- 2:30** INTERACTIVE DISCUSSION: LOOKING FORWARD: OLYMPIA OYSTER CONSERVATION, OUTREACH AND AQUACULTURE IN THE COMING DECADE

SHRIMP HEALTH AND DISEASE IN HONOR OF DON LIGHTNER

Thursday, March 3 8:30 AM - 3:15 PM Pacific C

Chairs: Arun Dhar, Kevin Fitzsimmons

CELEBRATING PROF. DONALD V. LIGHTNER'S LIFE

- 8:30 Dr. George Chamberlain, GAA**
- 9:00 Dr. Jim Wyban**
- 9:15 Dr. Craig Browdy, Zeigler Brothers**
- 9:30 Dr. Kevin Fitzsimmons, UAZ**
- 9:45 Dr. Arun K. Dhar, UAZ**
- 10:00 Ms. Rita Redman (Dr. Lightner's Wife)**
- 10:15 BREAK**

- 11:00 Hung Mai**, Luis Fernando Aranguren Caro, Roberto Cruz-Flores, Brenda Noble White, Arun Dhar
DIFFERENTIALLY EXPRESSED GENES IN HEPATOPANCREAS OF ACUTE HEPATOPANCREATIC NECROSIS DISEASE TOLERANT AND SUSCEPTIBLE SHRIMP *Penaeus vannamei*
- 11:15 Kuakarun Krusong**, Thapanan Jatuyosporn, Pasunee Laohawutthichai, Juan Pablo Ochoa Romo, Filiberto Sánchez, Anchalee Tassanakajon, Adrián Ochoa-Leyva
WSSV IMPACT ON GUT MICROBIOME OF THE BLACK TIGER SHRIMP *Penaeus monodon*
- 11:30 Pasunee Laohawutthichai**, Anchalee Tassanakajon, Kuskarun Krusong
ROLE OF JAK/STAT SIGNALING PATHWAY DURING VIRAL INFECTION IN BLACK TIGER SHRIMP *Penaeus monodon*
- 11:45 Warumporn Yingsunthonwattana**, Anchalee Tassanakajon
FUNCTIONAL CHARACTERIZATION OF PACIFIC WHITE SHRIMP *Litopenaeus vannamei* HEAT SHOCK PROTEIN 90 (LvHSP90) IN RESPONSE TO WHITE SPOT SYNDROME VIRUS (WSSV) INFECTION
- 12:00 Ardhra Gopan**, Ambethkar Maheshwari, Dinesh Darshana, Chinnaiiah Amutha
ASSESSMENT THE OXIDATIVE STRESS AND BIO-TRANSFORMATION ENZYMATIC EFFECTS OF GLYPHOSATE EXPOSURE IN 24 HR STRESS ON WHITE LEG SHRIMP *Litopenaeus vannamei* (BOONE, 1931)
- 12:15 Paul Schofield**, Frances Marcos, Luis Fernando Aranguren Caro, Arun Dhar
DEVELOPMENT OF AN *IN VIVO* *Enterocytozoon hepatopenaei* (EHP) EXPERIMENTAL CHALLENGE MODEL IN *Penaeus vannamei*
- 12:30 LUNCH**
- 1:30 Shelly Trigg**, Samuel Major, Arun Dhar, Roberto Cruz Flores, Andrea Bodnar
CRISPR-BASED DIAGNOSTICS FOR DISEASE DETECTION IN SHRIMP
- 1:45 Luis Fernando Aranguren Caro**, Hung Mai, Roberto Cruz-Florez, Frances Marcos, Rod Rusel Alenton, Arun Dhar
EXPERIMENTAL REPRODUCTION OF WHITE FECES SYNDROME IN WHITELEG SHRIMP *Penaeus vannamei*
- 2:00 Roberto Cruz Flores**, Thales P.D. Andrade, Hung N Mai, Russel Alenton, Arun K. Dhar
IDENTIFICATION OF A NOVEL CALICIVIRUS WITH NUCLEAR LOCALIZATION ASSOCIATED WITH MASS MORTALITIES IN CULTURED WHITELEG SHRIMP *Penaeus vannamei*
- 2:15 Rod Russel R. Alenton**, Hung N. Mai, Arun K. Dhar
REVERSE-GENETICS APPROACH IN DEVELOPING A *Macrobrachium rosenbergii* NODAVIRUS (MrNV)-BASED VIRAL VECTOR FOR AN ORAL DELIVERY OF THERAPEUTICS IN SHRIMP
- 2:30 Mark Braceland**, Marije Booman, Nasif Sarowar, Jordan Poley
WHITE SPOT SYNDROME VIRUS AND *Vibrio parahaemolyticus* CHALLENGE MODEL DEVELOPMENT IN WHITELEG SHRIMP *Litopenaeus vannamei*
- 2:45 Arun Dhar**, Roberto Cruz Flores, Hung Mai, F.C. Thomas Allnutt
EXPEDITING PATHOGEN DISCOVERY BY COMBINING HISTOPATHOLOGY AND GENOMICS IN SHRIMP AQUACULTURE

SHELLFISH DISEASE

Thursday, March 3 11:00 AM - 3:00 PM Palm 8

Chair: Roxanna Smolowitz

- 11:00 Roxanna Smolowitz**, Abigail K. Scro, Joshua Reitsma, Abigail Archer, Harriet Booth, Diane Murphy
AN UPDATE CONCERNING THE FIELD RESEARCH AND MONITORING ON THE OCCURRENCE OF
NEOPLASIA IN THE NORTHERN QUAHOG (= HARD CLAM) IN WELLFLEET, MASSACHUSETTS, USA
- 11:15 Zachary R. Forbes**, Casey M. Dunbar, Abigail K. Scro, Roxanna M. Smolowitz
HEMOCYTE MORPHOLOGY AND THE EXPRESSION OF PCNA AND P53 IN HARD CLAMS *Mercenaria
mercenaria* WITH HEMOCYTIC NEOPLASIA
- 11:30 Abigail K. Scro**, Rebecca J. Gast, Roxanna M. Smolowitz
DEVELOPMENT OF RT-qPCR FOR MOLECULAR DIAGNOSIS OF HEMOCYTIC NEOPLASIA IN THE HARD
CLAM *Mercenaria mercenaria*
- 11:45 Timothy Green**, Chen Walker, Sarah Leduc, Trevor Michalchuk
SPATIAL AND TEMPORAL PATTERN OF NOROVIRUS DISPERSAL IN AN OYSTER GROWING REGION IN
THE NORTHEAST PACIFIC
- 12:00 Mingli Zhao**, Louis Plough, Donald Behringer, Andrew Kough, Jamie Bojko, Eric Schott
GENOMES REVEAL GENETIC DIVERSITY OF *Callinectes sapidus* REOVIRUS 1 (CsRV1) IN WILD BLUE
CRAB POPULATIONS ACROSS TWO HEMISPHERES OF ITS HABITATION
- 12:15 Lydia M. Bienlien**, Ryan B. Carnegie
ABERRANT, GONADAL TROPISM OF *Perkinsus marinus* IN THE EASTERN OYSTER *Crassostrea
virginica* AND EVIDENCE FOR INTRA-OOCYTIC INFECTION
- 12:30 LUNCH**
- 1:30 Dina Proestou**, Mary Sullivan, Kathryn Markey Lundgren, Keegan Hart
PHENOTYPIC AND TRANSCRIPTOMIC CHARACTERIZATION OF DERMO TOLERANT EASTERN OYSTER
FAMILIES
- 1:45 Bassem Allam**, Madison Muehl, Stephen Tettelbach, Sarah Farhat, Sabrina Geraci-Yee,
Jessica MacGregor, Harrison Tobi, Scott Hughes, Arni Kristmundsson, Bradley Peterson,
Emmanuelle Pales Espinosa
CHARACTERIZATION OF THE BAY SCALLOP COCCIDIA (BSC) IN *Argopecten irradians irradians*
- 2:00 Heidi Yeh**, Lee J. Kerkhof, David Bushek
USING THE MINION TO RAPIDLY PROFILE THE OYSTER MICROBIOME
- 2:15 Evelyn Takyi**, Lauren Gregg, Amanda Chesler-Poole, Jessica Moss Small, Meredith White,
Robbie Hudson, Cem Giray, David Rowley, David Nelson, Marta Gomez-Chiari
EFFECT OF PROBIOTIC TREATMENT ON LARVAL MICROBIOMES OF EASTERN OYSTER *Crassostrea
virginica* RAISED IN DIFFERENT HATCHERIES
- 2:30 Julieta Martinelli**, Megan E. Considine, Helen R. Casendino, Teri L. King, Laura H. Spencer,
Carolyn Tarpey, Lindsay Alma, Jacqueline L. Padilla-Gamiño, Steven S. Rumrill, Chelsea L. Wood
PREVALENCE, DISTRIBUTION, AND CONTROL OF SHELL-BORING POLYCHAETES ON OYSTER FARMS
FROM CALIFORNIA TO ALASKA

THURSDAY

SOCIAL LICENSE AND PERCEPTIONS OF AQUACULTURE

Thursday, March 3 11:00 AM - 3:00 PM Town & Country B

Chairs: Kimberly Thompson, Bailey Moritz

- 11:00 Kim Thompson, Bailey Moritz**
INTRODUCTION
- 11:15 Amalia Aruda Almada**, Brianna Shaughnessy, Kimberly Thompson, Wen-Tsing Choi, Michelle Marvier, Peter Kareiva
- 11:30 Amalia Almada**, Heather Fenney, Diane Kim, Nathan Churches, Linda Chilton, Maria Madrigal, Phyllis Grifman, Bernard Friedman, Ann Joo Kim, Victoria Campbell-Arvai
IMPROVING EQUITABLE ACCESS TO LOCALLY FARMED SEAFOOD THROUGH THE SOUTH CENTRAL LOS ANGELES SUSTAINABLE SEAFOOD HUB
- 11:45 Megan Rector**, Ramon Filgueira, Jon Grant
THE ROLE OF ECO-CERTIFICATION IN MODERATING PUBLIC PERCEPTIONS AND ATTITUDES TOWARDS MARINE SALMON AQUACULTURE
- 12:00 Charlie Arnot**
EARNING TRUST IN TECHNOLOGY FOR A SUSTAINABLE FOOD FUTURE
- 12:30 LUNCH**
- 1:30 Eliza Harrison**
SOCIAL LICENSING FOR OFFSHORE KELP FARMING IN CALIFORNIA
- 1:45 Afton Vigue**
FILM AS A MEDIUM TO ADVANCE PUBLIC SUPPORT FOR AQUACULTURE
- 2:00 Lauren Errickson**, William Hallman, Douglas Zemeckis
PERCEPTIONS OF AQUACULTURE: CURRENT TRENDS AMONG U.S. CONSUMERS
- 2:30 Kim Thompson, Bailey Moritz**
CLOSING REMARKS

THURSDAY

CALIFORNIA'S AQUACULTURE JOURNEY: WHERE WE'VE TRAVELED / WHERE WE'RE HEADED

Thursday, March 3 11:00 AM - 5:30 PM Palm 1

Chair: Micheal Lee

- 11:00 Tony Vaught**
FOUNDATIONS AND CORNERSTONES OF CALIFORNIA AQUACULTURE
- 11:30 Kim Thompson**, Peter Okurowski, Darcy Wheelles
CUTTING THE BLUE TAPE IN CALIFORNIA: A CASE STUDY ANALYSIS OF BARRIERS AND OPPORTUNITIES TO IMPROVE CALIFORNIA'S PERMITTING PROCESS FOR COMMERCIAL AND CONSERVATION AQUACULTURE
- 11:45 Eliza Harrison**
THE POTENTIAL FOR OFFSHORE SEAWEED CULTIVATION IN SOUTHERN CALIFORNIA
- 12:00 Bernard Friedman**
FINDING THE WAY TO THE FUTURE BY LOOKING BACK INTO THE PAST
- 12:15 Nathan Churches**, Kelly Stromberg, Peter Chang, Diane Kim, Sergey Nuzhdin, Bernard Friedman
Mytilus californianus AS A POTENTIAL NEW SPECIES FOR AQUACULTURE PRODUCTION: A PROOF-OF-CONCEPT AND ESTABLISHED SEED-TO-FARM PIPELINE IN SOUTHERN CALIFORNIA
- 12:30 LUNCH**
- 1:30: Gilbert Sylvia**
THE OREGON AQUACULTURE EXPLORER: CAN CONCEPTS FROM A NOVEL GEOSPATIAL AND FINANCIAL PLANNING TOOL HELP ADVANCE CALIFORNIA AQUACULTURE?
- 1:45 Zarah Deutsch**
WELFARE CHALLENGES ASSOCIATED WITH HANDLING AND SLAUGHTER OF LARGE CAVIAR FINFISH
- 2:00 Rafael Cuevas Uribe**
SEAWEED FARMING IN HUMBOLDT BAY
- 2:15 Jessica Brasher, Nancy Caruso**
HUSBANDRY OF PISMO CLAMS IN A SAND-LESS CLOSED SYSTEM
- 2:30 Alex Wright**, Jackson Gross
ANTIMICROBIAL USE IN CALIFORNIA AQUACULTURE: PRODUCTS, PURPOSE, AND STEWARDSHIP
- 2:45 Don Kent**
CALIFORNIA NEEDS TO GROW WHAT PEOPLE WANT TO EAT!
- 3:00 BREAK**
- 3:30 Andrew Kim**
AQUACULTURE TECHNIQUES ENHANCE THE POTENTIAL FOR PROLONGED SUCCESS IN THE RESTORATION OF BULL KELP, *Nereocystis luetkeana*
- 3:45 Brian Takeda**
EATING OUR WAY THROUGH A PROBLEM: MASTERING A RESTORATIVE SEAFOOD THROUGH AQUACULTURE TO RESTORE KELP FORESTS

THURSDAY

- 3:45 Brian Takeda**
EATING OUR WAY THROUGH A PROBLEM: MASTERING A RESTORATIVE SEAFOOD THROUGH AQUACULTURE TO RESTORE KELP FORESTS
- 4:15 Michael Graham**
CLIMATE-ADAPTIVE AQUACULTURE: CAN WE FUTURE-PROOF CALIFORNIA SEAFOOD PRODUCTION?
- 4:30 California Aquaculture Association Member Meeting**

EMERGING OPPORTUNITIES FOR GERMLASM REPOSITORIES

Thursday, March 3 1:30 PM - 3:00 PM Pacific D

Chair: Yue Liu

- 1:30 Terrence Tiersch**, Todd Monroe, Yue Liu, Jin-Woo Choi, Teresa Gutierrez-Wing
GERMLASM REPOSITORIES AND COMMERCIAL MARKETS FOR GENETIC RESOURCES OF AQUATIC SPECIES: A ROLE FOR OPEN TECHNOLOGIES
- 1:45 Yue Liu**, William Monroe, Jin-Woo Choi, Maria Gutierrez-Wing, Terrence Tiersch
OPEN HARDWARE TO FACILITATE DEVELOPMENT OF GERMLASM REPOSITORIES FOR BIOMEDICAL MODELS
- 2:00 Lucia Arregui**, Rose Upton, Jack C. Koch, M. Teresa Gutierrez-Wing, Terrence R. Tiersch
SCALABLE AND GENERALIZED APPROACHES FOR STOCK-CENTER-BASED REPOSITORY CAPABILITIES IN AMPHIBIANS
- 2:15 Rose Upton**, Lucia Arregui, Yue Liu, Jack Koch, Sarah Bodenstein, M. Teresa Gutierrez-Wing, Terrence Tiersch
HOW CAN WE INTEGRATE GERMLASM REPOSITORIES INTO THE CONSERVATION LANDSCAPE?
- 2:30 Allyssa Oune**, Jack Koch, Terrence Tiersch, Teresa Gutierrez-Wing, Rose Upton, Lucia Arregui
DEVELOPMENT OF *Aplysia californica* EMBRYOS OUTSIDE THE EGG STRAND TO PROVIDE NEW OPTIONS FOR CRYOPRESERVATION?
- 2:45 Yue Liu**, Terrence Tiersch
BETA TESTING OF CRYO-JEOPARDY: A USER COMMUNITY DEVELOPMENT TOOL FOR OPEN HARDWARE

THURSDAY

AQUACULTURAL ENGINEERING SOCIETY SESSION

Thursday, March 3 1:30 PM - 5:30 PM Town & Country D

Chairs: German Merino, Gary Miller

- 1:30 Germán E. Merino**, Carla Galleguillos Solar, María C. Morales Suazo
PARTICLE SIZE DISTRIBUTION OF TWO DIFFERENT VOLUMES OF BIOFLOC USED IN RIVER PRAWN *Cryphiops caementarius* CULTURE
- 1:45 Nitesh Kasera**, Praveen Kolar, Steven Hall
ADSORPTION OF AQUACULTURE WASTEWATER CONTAMINANTS ON N-DOPED BIOCHARS
- 2:00 Spencer Lunda**, Samantha Burroughs, Jennifer Hesser, Joy Waite-Cusic, Carla Schubiger
PILOT-SCALE DEPURATION DEMONSTRATES THE SUITABILITY OF NON-PATHOGENIC *Vibrio parahaemolyticus* AS A SURROGATE FOR COMMERCIAL-SCALE VALIDATION STUDIES

- 2:15 Carlos J. Cortés**, Germán E. Merino, Carlos P. Garrido, Mauricio J. Godoy
HYDRAULIC ASSESSMENT OF A D-ENDED TANK PROTOTYPE FOR PELAGIC SPECIES AQUACULTURE USING THE COMPUTATIONAL FLUIDS DYNAMICS METHOD (CFD)
- 2:30 Zach Moscicki**, Pete Lynn, Igor Tsukrov, Michael Chambers, Noah MacAdam, Rob Swift, Louis Gitelman, Beth Zotter
REDUCING RISK OF MARINE MAMMAL ENTANGLEMENT IN AQUACULTURE STRUCTURES BY REPLACING ROPE WITH SEMI-RIGID FIBERGLASS LINES
- 3:00 BREAK**
- 3:30 Jóhannus Kristmundsson**, Øystein Patursson, John Potter, Qin Xin
DETECTION OF FISH FARMING EQUIPMENT USING 3D MULTIBEAM SONAR
- 3:45 Herman B. Amundsen**, Bent O.A. Haugaløkken, Eleni Kelasidi
AQUACULTURE ROBOTICS AND DIGITALIZATION - INCREASING AUTONOMY IN UNDERWATER OPERATIONS IN FISH FARMS
- 4:00 Steven Hall**, Celso Castro Bolinaga, Swarna Chowdhury, Jake Keller, Natalie Nelson, Anh Nguyen, John-Paul Ore, Randy Price, Daniel Smith, Russell Smith, Sierra Young
NEW ENGINEERING APPLICATIONS OF MULTIPLE UNCREWED VEHICLE SYSTEMS IN OYSTER AQUACULTURE
- 4:15 James Brown**, Ken Semmens, Joseph Dvorak
EVALUATION OF THREE DEVICES TO INDUCE WATER FLOW AND THE EFFECT OF SCREEN MESH SIZE ON FLOW IN FLOATING RACEWAYS
- 4:30 Dawson Armstrong**, Ken Semmens
MODEST SUSPENDED FLOATING RACEWAY DESIGN, ASSEMBLY, AND PRELIMINARY EVALUATION
- 4:45 Thomas Grimm**, Andrew Gracey
APPLICATION OF ELECTRIC FIELD POTENTIAL TO ENHANCE SHELLFISH AQUACULTURE
- 5:00 Asmerom Gilau**, Todd Sink, Samson Beyene
FLOATING SOLAR-POWERED AERATION SYSTEM FOR AQUACULTURE, WATER QUALITY IMPROVEMENT AND EXCESS ELECTRICITY PRODUCTION

AQUACULTURE REGULATIONS: NAVIGATING COST, COMPLEXITY AND CONSEQUENCES

Thursday, March 3 1:30 PM - 5:30 PM Palm 7

Chair: Jim Parsons

- 11:00 Aquaculture Regulations: Why the Complexity?**
Paul Zajicek, National Aquaculture Association
- 11:30 Regulatory Costs Across 56% of US Aquaculture: Commonalities and Differences**
Jonathan van Senten, Virginia Tech
- 11:45 Understanding the State-Level Seascape of Mariculture Production and Policy in the United States**
Rebecca Gentry, Halley Froehlich, Luke Gardner, Kim Thompson, Hayley Lemoine, Mae Rennick, Sebastian Tapia-Lewin, Elizabeth Ruff, Sarah Lester

- 12:00 Regulatory Costs on US Catfish Farms**
Shraddha Hegde, Thad Cochran National Warmwater Aquaculture Center
- 12:30 LUNCH**
- 1:30 Permitting Offshore Aquaculture in Federal Waters - Persistence Prevails?**
Dennis Peters, Gulfstream Aquaculture, LLC
- 2:00 Strategies for Efficient Aquaculture Permitting**
Robert M. Smith, K&L Gates, LLP
- 3:15 BREAK**
- 3:30 Tales of an Ex-Regulator: Be Careful What You Wish For**
Sebastian Belle, Maine Aquaculture Association
- 3:45 20+ Plus Years of a One-Stop Shop for State Aquaculture Regulations**
Geno Evans, Florida Aquaculture Association/Evans Farms
- 4:00 Commercial Aquaculture Health Program Standards: A Non-Regulatory Approach**
Jim Parsons, Jamestown S'Klallam Tribe
- 4:30 Audience and Speakers Q&A**

FINFISH BIOLOGY

Thursday, March 3 1:30 PM - 5:30 PM Pacific E

Chair: Anita Kelly

- 1:30 Mackenzie Miller, Konrad Dabrowski**
TURNING UP THE HEAT: FURTHER EVALUATION OF THE EFFECT OF TEMPERATURE ON GONAD DIFFERENTIATION IN YELLOW PERCH *Perca flavescens*
- 1:45 Gavin Aguilar, Josh Sakmar, Allen Nicholls, Timothy Bruce, Anita Kelly, Luke Roy, Moises Bernal, Ian Butts**
TEMPERATURE EFFECTS ON LARVAL DEVELOPMENT OF FLORIDA *Micropterus salmoides floridanus* AND NORTHERN *Micropterus salmoides salmoides* LARGEMOUTH BASS: IMPLICATIONS FOR INTENSIVE INDOOR AQUACULTURE PRODUCTION
- 2:00 Anita M. Kelly, Leticia E. Fantini, Matthew A. Smith, Michele Jones, Luke A. Roy, Rebecca Lochmann**
GROWTH PARAMETERS IN NORTHERN LARGEMOUTH BASS *Micropterus salmoides salmoides* RAISED NEAR THEIR UPPER THERMAL TOLERANCE FOR 28 DAYS
- 2:15 Kevin Fisher, Mackenzie Miller, Konrad Dabrowski**
INVESTIGATION OF LATE MITOTIC SHOCKS FOR INDUCING TETRAPLOIDY IN ZEBRAFISH AND PEARL DANIO UNDER VARIED CONDITIONS
- 2:30 Yole Buchalla, Daniel Margulies, Vernon Scholey, Susana Cusatti, Enrique Mauser, Jeanne Wexler, Maria Stein**
PREY SELECTIVITY, EFFECT OF LIGHT INTENSITY ON GROWTH AND SURVIVAL, AND DIEL FEEDING PATTERNS OF REARED YELLOWFIN TUNA *Thunnus albacares* LARVAE
- 2:45 Casandra Adams, Jeffrey Miner, John Farver, Kevin Neves**
THE EFFECTS OF DISSOLVED CARBON DIOXIDE ON THE FORMATION OF VATERITE IN THE OTOLITHS OF AQUACULTURE RAINBOW TROUT *Oncorhynchus mykiss*

3:00 BREAK

3:30 Gonzalo Illán, L. King, B. McHenry, B. Rupnik, V. Uribe, N. Kirchoff, D.J. Bradshaw II, C. Perricone, M. Riche, P. Wills, S. Mejri
GILL HISTOLOGY OF FARMED FLORIDA POMPANO *Trachinotus carolinus* CULTURED UNDER DIFFERENT SALINITY CONDITIONS

3:45 Gonzalo Illán, Marty Riche, Paul Wills, Francesc Padrós, Susan Fogelson, Sahar Mejri
HISTOLOGICAL AND SKELETAL DEVELOPMENT IN FARMED FLORIDA POMPANO *Trachinotus carolinus* LARVAE AND JUVENILES

4:00 James Ward, Shawn Coyle, James Tidwell
ACUTE TOXICITY OF AFLATOXIN B1 IN THE LARGEMOUTH BASS *Micropterus salmoides*

NOAA SEA GRANT RESEARCH, EDUCATION AND ENGAGEMENT

Thursday, March 3 1:30 PM - 5:30 PM Palm 3

Chair: LaDon Swann

THURSDAY

1:30 NATIONAL SEA GRANT AQUACULTURE PROGRAM

LaDon Swann, Sea Grant Network Aquaculture Liaison
Charles Weirich, Mark Rath and Kola Garber, NOAA Sea Grant

2:00 NATIONAL SEA GRANT LAW CENTER: AN OVERVIEW OF RECENT AQUACULTURE WORK

Olivia Deans and Stephanie Ott, National Sea Grant Law Center

2:30 ECONOMIC STATUS AND CONTRIBUTION OF U.S. AQUACULTURE.

Jonathan van Senten, Virginia Tech University
Ganesh Karunakaran, Mississippi State University

3:00 THE SEA GRANT GREAT LAKES AQUACULTURE COLLABORATIVE'S (GLAC) ROLE IN SUPPORTING SUSTAINABLE AQUACULTURE IN THE GREAT LAKES REGION

Amy Schrank and Don Schreiner, Minnesota Sea Grant

3:30 BIG SNAIL, BIG IMPACT: TELLING THE ABALONE AQUACULTURE STORY

Shauna Oh and Carrie Culver, California Sea Grant

3:45 A GOLDEN OPPORTUNITY: STRATEGIES TO ACCELERATE GROWTH OF GOLDEN SHINER *Notemigonus crysoleucas* IN MINNESOTA AND OTHER NORTHERN CLIMATES

Donald R. Schreiner and Amy Schrank, Minnesota Sea Grant

4:00 2021-2025 SEA GRANT RESEARCH, EDUCATION AND ENGAGEMENT PLAN

LaDon Swann, Mississippi-Alabama Sea Grant Consortium

4:30 OPEN DISCUSSION ABOUT SEA GRANT INVESTMENTS IN AQUACULTURE

ECOLOGY, ENVIRONMENT AND WILD CULTURE

Thursday, March 3 3:30 PM - 5:30 PM Pacific C

Chair: Yathish Ramena

- 3:30 Bolaji Edward**, Funmilayo E. Ayeni, Success A. Ohunayo, Olusola R. Agunbiade
PHYSICOCHEMICAL PARAMETERS AND FISH FAUNA OF OGBESE RIVER, OWENA AKURE, ONDO STATE, NIGERIA
- 3:45 Sobha Merina George**, Joe Prasad Mathew, Arunima Sebastian
EFFECT OF SEASONAL FLUCTUATIONS IN PHYSICOCHEMICAL PARAMETERS ON FISH DIVERSITY
- 4:00 Gianmarco David**, Paulo Cesar von Kruger, Reinaldo José da Silva, Clovis Ferreira do Carmo
REAL TIME WATER QUALITY MONITORING IN BRAZILIAN HYDROELECTRIC RESERVOIRS FOR PREVENTION OF ENVIRONMENTAL RISKS TO CAGE AQUACULTURE
- 4:15 Adriana Artilles**, Melissa Allen, Jason Stannard, Richard Towner, Salvador Gezan, Jorge Cordoba, Joao Rocha, John Buchanan
MICROBIOLOGICAL DIVERSITY AND COMPOSITION OF WATER AND SEDIMENTS IN THREE FARMS FROM ECUADOR
- 4:30 Jayaprakas Vasu**, Satish Sahayak
A PILOT SCALE MASS CULTURE PROGRAM FOR *Dunaliella salina* FOR ACHIEVING HIGHEST PRODUCTION LEVELS
- 4:45 Luke McAllister**, Travis Van Leeuwen, Mark Abrahams
TRACING THE EFFECTS OF FINFISH AQUACULTURE ON THE BEHAVIOUR AND BIOLOGICAL TRAITS OF WILD FISH POPULATIONS USING FATTY ACID COMPOSITION AND STABLE ISOTOPE SIGNATURES
- 5:00 Rucha Kolhatkar**, Jessica Couture, Alicia Caughman, Darcy Bradley, Simona Augyte, Steven Gaines
USING NEURAL NETWORKS TO BETTER UNDERSTAND THE BIODIVERSITY NEAR KELP FARMS
- 5:15 Kelly A. McDonald**, Phil Bloch, Brett R. Dumbauld, Nathaniel S. Lewis
UTILIZING AERIAL IMAGERY AND REMOTE SENSING TO MONITOR EELGRASS *Zostera marina* WITHIN SHELLFISH AQUACULTURE OPERATIONS: CHALLENGES, SUCCESSES, AND LESSONS LEARNED
- 5:30 Gretchen Grebe**, Loretta Roberson, David Bailey, Cliff A. Goudey, Hauke Kite-Powell, Scott Lindell, Domenic Manganelli, Michael Marty-Rivera, Crystal Ng, Charles Yarish
DEVELOPMENT OF CULTIVATION SYSTEMS AND BEST MANAGEMENT PRACTICES FOR SEAWEED AQUACULTURE IN THE TROPICAL U.S. AND CARIBBEAN

THURSDAY

UTILIZING VETERINARIANS FOR BOTTOM LINE

Thursday, March 3 1:30 PM - 5:30 PM Town & Country C

Chair: Jessie Sanders, Hugh Mitchell, Myron Kebus

- 1:30 How Veterinarians Help Fish Farmers' Bottom Line**
Myron Kebus
- 2:00 Don't force me to vaccinate my fish! How do I decide whether it is worth it?**
Hugh Mitchell
- 2:30 Accomplishing Extra-label Drug Use in Aquatic Species**
Tim Kniffen
- 3:00 BREAK**
- 3:30 Aquaculture and Telehealth: Best Practices and Limitations**
Myron Kebus
- 3:45 Diagnostic Methods in Aquaculture: The Classic to the Novel**
Esteban Soto
- 4:00 Biosurveillance Practices: Lessons Learned from Rearing Zebrafish in Research Setting**
Tannia Clark
- 4:30 Overview of Federal Programs Supporting Aquatic Animal Health and Seafood Safety**
Janet Whaley
- 4:45 Veterinary Feed Directive (VFD) Completion**
Tim Kniffen
- 5:00 Round Table Discussion - How can we improve veterinary services to better serve aquaculture producers?**
Mitchell, Kniffen, Sanders, Kebus, Whaley, Soto, Clark

GETTING IT RIGHT: A GUIDE TO SUCCESSFUL SUPPLEMENTATION FOR RECREATION, RESTORATION, AND RECOVERY

Thursday, March 3 3:30 PM - 5:30 PM Palm 2

Chair: Jeff Heindel

- 3:30 Kevin Kelsey**
OVERCOMING OPERATIONAL CHALLENGES; AN OVERVIEW OF UTILIZING RECIRCULATING AQUACULTURE SYSTEM (RAS) AND PARTIAL RECIRCULATION AQUACULTURE SYSTEM (PRAS) TECHNOLOGY FOR SALMONID SPORTFISH RESTORATION AND ENHANCEMENT PROGRAMS IN VERMONT
- 3:45 Kevin Kelsey**
LARGE SCALE INTENSIVE CULTURE PRODUCTION OF WALLEYE *Stizostedion vitreum* FINGERLINGS IN A RECIRCULATING AQUACULTURE SYSTEM (RAS)
- 4:00 Ellen Reiber, Ruairi MacNamara, Mark Drawbridge, Mike Shane, Michael R. Denson, Tanya Darden**
POPULATION GENETIC AND STOCK ENHANCEMENT TOOLS FOR CONSERVATION OF THE OVERFISHED WHITE SEABASS *Atractoscion nobilis*

- 4:15 Chad Brewer**, Lauren Mazzola, Michael Shane, Alex Primus, Mark Drawbridge
THE USE OF ACCLIMATION CAGES AND VOLUNTEERS TO HELP RESTORE DEPLETED WHITE SEABASS IN SOUTHERN CALIFORNIA
- 4:30 Justin Yost**, Mike Denson, Aaron Watson, Tanya Darden, Matt Walker
IMPACTS FROM TROPICAL SYSTEMS ON HATCHERY CONTRIBUTION, WILD RECRUITMENT, AND DISTRIBUTION OF JUVENILE RED DRUM *Sciaenops ocellatus*: LESSONS FROM A LONG-TERM STOCK ENHANCEMENT PROGRAM

MANGROVE SHELLFISH

Thursday, March 3 3:30 PM - 5:30 PM Town & Country B

Chair: Acacia Alcivar-Warren

- 3:30 Acacia Alcivar-Warren**
MANGROVE SHELLFISH SESSION: A ONE HEALTH PERSPECTIVE ON ANTIMICROBIAL RESISTANCE, FOOD SAFETY AND FOOD SECURITY
- 3:45 Mayra Galindo**, Miriam Alcivar-Arteaga, Iris Hernandez, Gober Asunción, Jorge Romero, Gladys Zuniga, Sofia Figueroa, Genesis Solorzano*, Flavio Barros, Christian Saltos, Sofia Figueroa, Diana Villota, Diana Calvache, Benjamin Hall, Brenna Kelley, Gladys Zuniga, Daniela Espinoza, Jorge Echevarria, Pedro Alcivar-Marcillo, Diego Alejandro, Andrea Alejandro, Acacia Alcivar-Warren
THE MANGROVE EPIGENOME (MangroveENCODE) PROJECT OF THE FUCOBI FUNDATION OF ECUADOR: A ONE HEALTH APPROACH TO CONSERVATION OF HEALTHY MANGROVES, TO PRODUCE HEALTHY SHELLFISH AND FISH, TO PROTECT CHILDREN'S HEALTH LONG-TERM
- 4:00 Jianwu (Jim) Tang**
GREENHOUSE GAS EMISSIONS AND CARBON SEQUESTRATION (BLUE CARBON) IN RESPONSE TO CLIMATE CHANGE AND HUMAN MANAGEMENT IN COASTAL WETLANDS / MANGROVES
- 4:30 Fausto Vinicio López Rodríguez**
THE STATUS OF MANGROVES IN ECUADOR
- 4:45 Dina Morel**, Mira Maude Chouinard, Nelson Rodriguez, Jorge Reyes, Acacia Alcivar-Warren
STATUS OF MANGROVE FORESTS IN HONDURAS: METALS AND PESTICIDES
- 5:00 Caroline A. Warren**, Martha Reyes, Jennifer N. Warren, Ryan Hutchins, Sruthi Tanikella, Miriam Alcivar-Arteaga, Iris Hernandez and Acacia Alcivar-Warren
SHRIMP SCAMPI: A CITIZENS SCIENCE PROJECT TO EXAMINE THE LEVELS OF ENDOCRINE DISRUPTING CHEMICALS (METALS, GLYPHOSATE, BISPENOL A) IN FROZEN SEAFOOD SOLD AT US SUPERMARKETS
- 5:15 Jazzy May G. Enero**, Lilibeth A. Bucol, Allen D. Empeynado, Bernadette G. Vasig, Beth Polidoro, Cassandra Clement
MICROPLASTICS AND ORGANIC POLLUTANTS IN MANGROVE SEDIMENTS & MARSH CLAM (*Polymesoda expansa*) FROM SELECTED COASTAL AREAS OF NEGROS ORIENTAL, PHILIPPINES, AS INDICATORS OF COASTAL POLLUTION

OYSTERS

Thursday, March 3 3:30 PM - 5:30 PM Palm 5

Chair: Alex Marquardt

- 3:30 Alexandria Marquardt**, Melissa Southworth, Roger Mann
ESTIMATING POST-SETTLEMENT GROWTH AND SURVIVAL IN EASTERN OYSTERS *Crassostrea virginica* IN THE CHESAPEAKE BAY
- 3:45 Megan Gima**, Bradley DeLeon, Benjamin Doshier, Reg Blaylock
LARVAL PRODUCTION OF THE AMERICAN OYSTER *Crassostrea virginica* IN A RECIRCULATING, ARTIFICIAL SEA WATER HATCHERY
- 4:00 Alyssa Campbell**, Laura Wiltsee, Alan Williams, Kailey Ramsing, Rose Duane, Matthew Gray
UTILIZING REFURBISHED RECIRCULATING AQUACULTURE SYSTEMS (RAS) TO OPTIMIZE SHELLFISH PRODUCTION
- 4:15 Salvador Villasuso-Palomares**, Carmen Guadalupe Paniagua-Chávez
BROODSTOCK CONDITIONING OF PACIFIC OYSTER IN RAS: EFFECT OF THE WATER QUALITY, CO₂-CARBONATE SYSTEM, AND *Polydora* sp.
- 4:30 Sarah Bodenstein**, Isabelina Nahmens, Terrence Tiersch
USING SIMULATION MODELING OF HIGH-THROUGHPUT EASTERN OYSTER CRYOPRESERVATION TO DEVELOP GERMPLOASM REPOSITORIES
- 4:45 Gulnihal Ozbay**, Mohana Gadde, Memory Nakazwe, Aaron Bland
ANALYSIS OF CARBON AND NITROGEN ISOTOPES TO ASSESS NUTRIENT LOADING IN REHOBOTH BAY, DE AND ITS POTENTIAL IMPACTS ON OYSTER *Crassostrea virginica* AQUACULTURE
- 5:00 Tahera Attarwala**, Amin Boukari, Memory Nakazwe, Jackie Maina, Gulnihal Ozbay
ARAGONITE SATURATION AS AN INDICATOR FOR OYSTER HABITAT HEALTH IN DELAWARE INLAND BAYS
- 5:15 Alexandria Marquardt**, Roger Mann, Eric Powell
DISTRIBUTION AND DEMOGRAPHICS OF FOSSIL OYSTERS ON THE ATLANTIC CONTINENTAL SHELF
- 5:30 Frederic Leroudier**, Lucas Schaeffer, Arthur Tré-Hardy, Nicolas Prost, Romain Pete, Sébastien Mas, Florence Bouillé-Chada, Maxime Paris
RISK ANTICIPATION IN AQUACULTURE: FOUR DATA SOURCES TO SUPPORT OYSTER FARMING RISKS

THURSDAY

FRIDAY, March 4

FINFISH GENETICS

Friday, March 4 8:30 AM - 10:00 AM Palm 2

Chair: Madison (Matt) Powell

- 8:30 Foluke O. Areola**, Paul Ajah, Vivian Ifunaya Anene, Love N. Allison
THE SYNERGISTIC EFFECT OF COMBINED THERAPEUTIC AND SINGLE ACUTE DOSES OF PITUITARY AND OVAPRIM HORMONES ON LATENCY, FERTILITY, HATCHABILITY, AND SURVIVAL OF AFRICAN CLARIID CATFISH *Clarias gariepinus*
- 8:45 Sujan Bhattarai**, Jacob H. Jones, Nilima Renukdas, Dayan A. Perera
ISOLATION AND *IN VITRO* CULTURE OF PRIMARY CELL POPULATION DERIVED FROM WHITE AND BLACK CRAPPIE OVARIAN TISSUE
- 9:00 Laura E. King**, Iris Segura-Garcia, Carlie S. Perricone, Nicholas J. Dickens, Paul S. Wills
USING 2B-RAD SEQUENCING TO IDENTIFY GENETIC VARIATION IN THE POPULATION OF FLORIDA POMPANO *Trachinotus carolinus* FOUND OFF THE EAST COAST OF FLORIDA
- 9:15 Shogo Tsuruta**, Daniela Lourenco, Ignacy Misztal
GENETIC GAIN FOR QUANTITATIVE TRAITS BY GENOMIC SELECTION – A SIMULATION STUDY
- 9:30 Klara Verbyla**, R.G. Tait
COLLABORATIVELY DESIGNED GENOMIC TOOLS MAXIMIZE BOTH GENETIC GAIN AND ECONOMIC EFFICIENCY

VIBRIO (HUMAN HEALTH)

Friday, March 4 8:30 AM - 10:00 AM Palm 1

Chairs: Cheryl Whistler, Steve Jones

- 8:30 Cheryl Whistler**, Stephen Jones, Feng Xu, Randi Foxall, Meghan Hartwick
TEMPORAL CHANGES IN *Vibrio parahaemolyticus* POPULATIONS LINKED TO CHANGING CLIMATE AND AQUACULTURE IN NEW HAMPSHIRE
- 8:45 Marcelo Victorio-De Los Santos**, Ma. de Jesus Durán-Avelar, Norberto Vibanco-Pérez, Edgar Zenteno, Georgina Garza, Miriam Fabiola Ayón-Perez, Alejandro Vazquez-Reyes
INTERACTION STUDIES OF THE B SUBUNIT OF PIRAB_{vp} TOXIN FROM *Vibrio parahaemolyticus* WITH THEIR RECEPTORS: IN SILICO AND EXPERIMENTAL APPROACH
- 9:00 Steve Jones**, Thomas Howell, Christian Petipas, Cheryl Whistler, Randi Foxall, Diane Regan, Jacob Madden, Brianna Shanks, Lori Howell, William Nash
POPULATION DYNAMICS OF TOTAL AND POTENTIALLY PATHOGENIC *Vibrio parahaemolyticus* IN TEMPERATURE-ABUSED AND RESUBMERGED OYSTERS IN THE NORTHEAST U.S.

AQUACULTURE OPPORTUNITY AREAS - UPDATES

Friday, March 4 8:30 AM - 12:30 PM Pacific D

Chair: Kristy Beard

8:30 INTRODUCTION BY NMFS LEADERSHIP

8:45 **Kristy L. Beard**

AQUACULTURE OPPORTUNITY AREAS: UPDATES

9:00 **Ken Riley**

NOAA AQUACULTURE OPPORTUNITY ATLAS RESULTS FOR FEDERAL WATERS OF THE GULF OF MEXICO

9:15 **James Morris**

NOAA AQUACULTURE OPPORTUNITY ATLAS RESULTS FOR FEDERAL WATERS OF THE SOUTHERN CALIFORNIA BIGHT

9:30 **Seth Theuerkauf**, Michael Rust

SCIENCE TO SUPPORT AQUACULTURE OPPORTUNITY AREAS

9:45 **Phaedra Doukakis**, Andrew Richard, Diane Windham

AQUACULTURE OPPORTUNITY AREAS NATIONAL ENVIRONMENTAL POLICY ACT ENVIRONMENTAL IMPACT STATEMENT STATUS UPDATE

10:00 BREAK

10:30 Facilitated Panel to Answer Questions

EAST COAST SHELLFISH RESTORATION AND CONSERVATION

Friday, March 4 8:30 AM - 12:30 PM Palm 5

Chair: Peter Kingsley-Smith

8:30 **Peter Kingsley-Smith**, Andrew Tweel, Gary Sundin, Graham Wagner, Denise Sanger

RESTORING COASTAL SALT MARSHES THROUGH THE CREATION OF INTERTIDAL EASTERN OYSTER REEFS IN SOUTH CAROLINA, USA

8:45 **Graham Wagner**, Gary Sundin, Greg Rothman, Peter Kingsley-Smith

DESIGNING AND EVALUATING WIRE-BASED STRUCTURES FOR THEIR ABILITY TO RECRUIT OYSTERS *Crassostrea virginica* AND STABILIZE SHORELINES IN COASTAL SOUTH CAROLINA, USA

9:00 **Janine M. Barr**, Daphne Munroe, Lisa Calvo, Danielle Kreeger, Kurt M. Cheng, Julie M. Rose, Skylar Bayer

QUANTIFYING FARM-SCALE WATER QUALITY BENEFITS ASSOCIATED WITH EASTERN OYSTER AQUACULTURE AND ACUTE LOW SALINITY EXPOSURE IN THE MID-ATLANTIC

9:15 **Joshua Moody**, Sarah Bouboulis, LeeAnn Haaf, Ella Rothermel, Danielle Kreeger

THE SPATIOTEMPORAL DEVELOPMENT OF TWO SHELLFISH POPULATIONS AND THEIR ASSOCIATED FILTRATION CAPACITY ON A LIVING SHORELINE, DELAWARE, USA

9:30 **Danielle Kreeger**, Kurt Cheng, Matthew Gentry, Leah Morgan, Joshua Moody

BEYOND RESTORATION AQUACULTURE: TESTING THE PROPAGATION, REARING AND DEPLOYMENT OF FRESHWATER MUSSELS FOR WATER QUALITY ENHANCEMENT OF IMPAIRED HABITATS

- 9:45 John Carroll**, Jacque Kelly
POTENTIAL NEGATIVE IMPACTS OF SUBMARINE GROUNDWATER DISCHARGE ON OYSTERS IN GEORGIA: IMPLICATIONS FOR RESTORATION
- 10:00 BREAK**
- 10:30 Tessa Getchis**, David Carey, Kristin DeRosia-Banick, Daniel Meiser, Zofia Baumann, Tyeisha Cole, Jimmy Bloom, John Short, Cyrena Thibodeau
EXPLORING CONNECTICUT'S SHELL RECOVERY, RECYCLING AND RESTORATION EFFORTS
- 10:45 Marcus Teat**, Emily Andrade, Tahera Attarwala, Aaron Bland, Jackie Maina, Memory Nakazwe, Juan Ramos, Devotha Tumushimiyimana, Gulnihal Ozbay
EASTERN OYSTERS SPAWNING AND IMPACT ON RECRUITMENT, WATER QUALITY, AND SPECIES DIVERSITY IN REHOBOTH BAY, DELAWARE
- 11:00 Brianna Group**, Alix Laferriere, Boze Hancock
UGLIES FOR RESTORATION: KEY RESULTS AND LESSONS LEARNED USING ADULT OYSTERS ON REEF RESTORATION IN THE GREAT BAY ESTUARY, NEW HAMPSHIRE EXPANDED UNDER THE SOAR PROGRAM (SUPPORTING OYSTER AQUACULTURE AND RESTORATION)
- 11:15 Paul Rawson**, Haleigh Wright, Boze Hancock, Brianna Group
ABUNDANCE OF SHELL-BORING POLYCHAETE WORMS IN AQUACULTURED OYSTERS FROM MAINE USED FOR REEF RESTORATION IN GREAT BAY, NEW HAMPSHIRE

GENETIC ENGINEERING

Friday, March 4 8:30 AM - 12:30 PM Pacific E

Chairs: Yonathan Zohar, John Buchanan

- 8:30 Alan E. Tinch**
WHY DO WE NEED GENOME EDITING IN AQUACULTURE?
- 8:45 Takeshi Umazume**, Spencer Herbert, John Buchanan, Xavier Lauth
MAKING PRESCISE GENETIC CHANGES IN THE TILAPIA GENOME
- 9:00 Isam Khalaila**, Shany Cohen, Omer Iluz
BIOTECHNOLOGY IN AQUACULTURE: A CRUSTACEAN OOCYTES DELIVERY TOOL FOR GENE SILENCING AND EDITING
- 9:15 Mark Walton**, Sylvia Wulf, David Melbourne
COMMERCIALIZATION OF AQUADVANTAGE SALMON, A GENETICALLY ENGINEERED LINE OF ATLANTIC SALMON *Salmo salar*
- 10:00 BREAK**
- 10:30 Xavier Lauth**, Takeshi Umazume, Spencer Herbert, John Buchanan
A SOLUTION FOR PROVIDING STERILE FARMED FISH
- 10:45 Nicholas Jacob**, Michael Smanski
TRANSGENESIS PIPELINE FOR ENGINEERING SPECIES LIKE BARRIERS TO REPRODUCTION IN *C. carpio*

- 11:00 Erik Kjærner-Semb**, L. Kleppe, P.G. Fjellidal, E. Andersson, T. Hansen, M. Sanden, A. Bruvik, K.O. Skaftnesmo, T. Furmanek, D. Crespo, S. Flavell, A.Ø. Pedersen, P. Vogelsang, A. Torsvik, S. Olausson, B. Norberg, R.W. Schulz, J. Bogerd, N. Santi, R.B. Edvardsen, A. Wargelius
LONG-TERM PERFORMANCE OF GENE EDITED, STERILE ATLANTIC SALMON – GROWTH, SMOLTIFICATION, WELFARE INDICATORS AND FILLET COMPOSITION
- 11:15 Lan Xu**, Yonathan Zohar, Ten-Tsao Wong
PRODUCING INFERTILE SALMONIDS FISH FOR AQUACULTURE BY AN IMMERSION-BASED GENE SILENCING TECHNOLOGY
- 11:30 Shaojun Du**, Jun Shi, Yufeng Si, Mengxin Cai, Ping Wu
FUSOGENIC REGULATORS, MYOMAKER AND MYOMIXER, ARE ESSENTIAL FOR MYOBLAST FUSION AND FISH MUSCLE GROWTH
- 11:45 Yehwa Jin**, Ross Houston
APPLICATION OF GENOME EDITING TOWARDS IMPROVED DISEASE RESISTANCE IN AQUACULTURE SPECIES
- 12:00 Logan Bern**, Michael Coogan, Veronica Alston, Baofeng Su, Mei Shang, Rex Dunham
DIRECT AND PLEIOTROPIC EFFECTS OF GENE EDITING MYOSTATIN AND *mc4r* GENES IN CHANNEL CATFISH *Ictalurus punctatus* FOR GROWTH ENHANCEMENT
- 12:15 Rex Dunham**, De Xing, Baofeng Su, Mei Shang, Yingqi Huang, William Bugg, Zhenkui Qin
DIRECT AND PLEIOTROPIC EFFECTS OF DESATURASE AND ELONGASE TRANSGENES IN CHANNEL CATFISH *Ictalurus punctatus* FOR OMEGA-3 FATTY ACID ENHANCEMENT

PARASITES OF FISH AND SHRIMP

Friday, March 4 8:30 AM - 12:30 PM Pacific C

Chairs: Laura Urdes, Nick Saint-Erne, Acacia Alcivar-Warren

- 8:30 Laura Urdes**, Nick Saint-Erne, Acacia Alcivar-Warren
PARASITES OF FISH AND SHELLFISH SESSION
- 8:45 Laura Urdes**, Chris Walster, Julie Tepper
THE FUNDAMENTALS OF AQUATIC VETERINARY MEDICINE TEACHING AND LEARNING RESOURCE
- 9:00 Laura Urdes**, Acacia Alcivar-Warren
A COMPARATIVE STUDY ON METALS AND PARASITES IN SHELLFISH OF FRESHWATER AND MARINE ECOSYSTEMS
- 9:15 Nick Saint-Erne**
PROTOZOAL PARASITES OF ORNAMENTAL FISH
- 9:45 Trista Becker**
PREVENTION TECHNIQUES FOR SELECTED FRESHWATER PARASITES
- 10:00 BREAK**
- 10:30 Nick Saint-Erne**
PARASITIC WORMS AND CRUSTACEANS OF ORNAMENTAL FISH
- 11:00 Acacia Alcivar-Warren**, Laura Urdes
INTERACTIONS OF METALS, GLYPHOSATE, PARASITES AND EPIGENETICS IN SHELLFISH AND FISH: A REVIEW

- 11:15 Antonio Casuso**, Valentina Valenzuela-Muñoz, Cristian Gallardo-Escárate
TRANSCRIPTOME MODULATION OF *SALMO SALAR* IMMUNIZED WITH *Caligus rogercresseyi*
VACCINE PROTOTYPE: A HOST-PARASITE INTERACTION
- 11:30 Gustavo Núñez-Acuña**, Constanza Sáez-Vera, Valentina Valenzuela-Muñoz,
Diego Valenzuela-Miranda, Cristian Gallardo-Escárate
NOVEL GENOMIC MARKERS ASSOCIATED WITH PHARMACOLOGICAL RESISTANCE IN THE SEA LICE
IDENTIFIED THROUGH WHOLE-GENOME RESEQUENCING
- 11:45 Diego Valenzuela-Miranda**, Ana Teresa Gonçalves, María Morales-Rivera,
Valentina Valenzuela-Muñoz, Gustavo Núñez-Acuña, Cristian Gallardo-Escárate
UNTANGLING SEA LICE MICROBIOTA: NOVEL INSIGHTS IN THE BIOLOGICAL ROL AND POTENTIAL
THREAT ASSOCIATED WITH THE SALMON AQUACULTURE
- 12:00 Cristian Gallardo-Escárate**, Yeny Leal, Antonio Casuso, Valentina Valenzuela-Muñoz,
Barbara Benavente, Constanza Saez-Vera, Gustavo Núñez-Acuña, Diego Valenzuela-Miranda
CELL-BASED ANTIGENS PROSPECTION THROUGH TRANSCRIPTOME ANALYSIS UNCOVERS VACCINE
CANDIDATES IN ATLANTIC SALMON AGAINST SEA LICE
- 12:15 Robert Morefield**, Heather Hamlin
LARVAL SEA LICE *Lepeophtheirus salmonis* EXHIBIT BEHAVIORAL RESPONSES TO PRE-ADULT AND
ADULT CONSPECIFIC CUES

SCALLOPS

Friday, March 4 8:30 AM - 12:30 PM Palm 8

Chair: Steve Geiger

- 8:30 Robin Varney**, Ami Wilbur
USE OF QUANTITATIVE GENETICS AND MARKER ASSISTED SELECTION FOR IMPROVED GROWTH
PERFORMANCE IN NORTH CAROLINA BAY SCALLOPS *Argopectin irradians*
- 8:45 Germán E. Merino**, German Lira, Carlos Basulto
HATCHERY LARVAE AND JUVENILE PRODUCTION OF SCALLOP *Argopecten purpuratus* IN A
RECIRCULATING AQUACULTURAL SYSTEM
- 9:00 Dana Morse**, Hugh Cowperthwaite, Damian Brady, Marsden Brewer, Robert Brewer,
Struan Coleman, Chris Davis, Alex de Koning, Phoebe Jekielek, Kohl Kanwit, Tom Kiffney,
Nate Perry, Andrew Peters
LESSONS LEARNED IN GROWING SEA SCALLOPS *Placopecten magellanicus* IN MAINE: EQUIPMENT,
HUSBANDRY, OPERATIONS
- 9:15 Sally Roman**, David Rudders, Roger Mann, Kaitlyn Clark
UNDERSTANDING HOW GROWTH AND YIELD VARY WITH RESPECT TO DENSITY FOR THE ATLANTIC
SEA SCALLOP
- 9:30 Kaitlyn R. Clark**, Sally Roman, Roger Mann, David B. Rudders
THE EFFECT OF DENSITY ON REPRODUCTIVE ACTIVITY IN ATLANTIC SEA SCALLOPS *Placopecten
magellanicus*
- 9:45 Kyle Cassidy**, Kevin Stokesbury
COMPARATIVE STUDY OF SMAST DROP CAMERA SURVEY TECHNIQUES ON ATLANTIC SEA SCALLOP
Placopecten magellanicus BIOMASS AND DENSITY ESTIMATES IN THE GULF OF MAINE

10:00 **BREAK**

10:30 **Kelsey Ward**, Paul Rawson, Huijie Xue
PREDICTING LARVAL DISPERSAL AND POPULATION CONNECTIVITY OF SEA SCALLOPS *Placopecten magellanicus* IN COASTAL MAINE THROUGH COMPUTER MODELING AND POPULATION GENOMICS

10:45 **Stephen P. Geiger**
ENVIRONMENTAL CUES FOR SPAT SETTLEMENT IN FLORIDA BAY SCALLOPS

SHRIMP AND OTHER CRUSTACEANS

Friday, March 4 8:30 AM - 12:30 PM Palm 7

Chair: Andrew Ray

8:30 **Claude E. Boyd**, Aaron A. McNevin
THE ESTIMATION OF RESOURCE USE IN SHRIMP FARMING USING A LIFE CYCLE ANALYSIS (LCA) APPROACH

8:45 **Robin Pearl**
CAN WE EVER REALLY GROW SHRIMP IN AMERICA?

9:00 **Tim Morris**, Mitchell Lucas, Miguel Artilles, Margaret Barlow, Robin Pearl
TRADEOFFS IN SHRIMP BREEDING: NAVIGATING THE RELATIONSHIP BETWEEN GROWTH AND SURVIVAL USING GENOMIC TOOLS

9:15 **Jackie Maina**, Gulnihal Ozbay
COMPARING STABLE CARBON AND NITROGEN ISOTOPES TO EXAMINE FEEDING TRENDS IN BLUE CRABS *Callinectes sapidus* ACROSS VEGETATION ZONES IN BLACKBIRD CREEK, DELAWARE

9:30 **Jesse P.B. James**, Sunni Dahl, David Teichert-Coddington, Anita M. Kelly, James D. Creel, Benjamin H. Beck, Ian A.E. Butts, Luke A. Roy
POLY CULTURE OF RED SWAMP CRAWFISH *Procambarus clarkii* AND PACIFIC WHITE SHRIMP *Litopenaeus vannamei* CULTURED IN LOW SALINITY WATER

9:45 **David Pardo Hernández**, Anita Kelly, Ian Butts, Allen Davies, Benjamin Beck, Luke Roy
EVALUATION OF AQUEOUS MAGNESIUM CONCENTRATION ON PERFORMANCE OF PACIFIC WHITE SHRIMP *Litopenaeus vannamei* CULTURED IN LOW SALINITY WATER OF WEST ALABAMA

10:00 **BREAK**

10:30 **Dariano Krummenauer**, Steve Urick, Caio A. Miyai, Flávia Banderó Höffling, Abdelnaser Bayoumy, Reza Ovissipour, Michael H. Schwarz
EFFECTS OF COPEPODS *Apocyclops panamensis* ON THE MICROBIAL AGGREGATES ENRICHMENT IN *Litopenaeus vannamei* REARED IN BFT SYSTEMS

10:45 **Dariano Krummenauer**, Wellica Gomes dos Reis, Paulo Cesar Abreu, Hellyjúnyor Brandão, Wilson Wasielesky Jr.
EFFECT OF DIFFERENT COLORED LED LIGHTS ON BFT CULTURE SYSTEM OF PACIFIC WHITE SHRIMP *Litopenaeus vannamei*

11:00 **Connor Tiersch**, Ron Malone, Maria Gutierrez-Wing
INTERIM SIZING GUIDELINES FOR SIZING AIRLIFTED POLYGEYSER® RAS FOR THE MARINE SHRIMP *Litopenaeus vannamei*

CLIMATE CHANGE IN AQUACULTURE

Friday, March 4 8:30 AM - 3:00 PM Town & Country C

Chairs: Daniel Wieczorek, Gregor Reid, Cliff Cosgrove, Sally McGee, Michelle Rub

- 8:30 Jennie Korus**
THE PROGRESS AND FUTURE OF AUTOMATED PLANKTON AND WATER QUALITY MITIGATION STRATEGIES IN A CHANGING CLIMATE
- 8:45 David Peter Mina Baya**
IMPACT OF CLIMATE CHANGE ON FISHERIES AND AQUACULTURE IN THE DEVELOPING WORLD AND OPPORTUNITIES FOR ADAPTATION
- 9:00 Anthony (Kurt) Gamperl**, Zaman Sajid, Javier Santander, Chris Parrish, Albert Caballero-Solares, Sarah Lehnert, Ramon Filgueira, Stephanie Colombo, Cynthia MacKenzie, Gerald Singh
ABIOTIC AND BIOTIC CHALLENGES FACING SALMON AQUACULTURE IN THE ERA OF CLIMATE CHANGE: UNDERSTANDING AND MANAGING INTERACTIVE EFFECTS THAT RESULT IN MORTALITY
- 9:15 Angelo DePaola**
SHELLEVATOR: SCALABLE PLATFORM AND METHOD THAT AUTOMATES AND MOBILIZES SHELLFISH AQUACULTURE
- 9:30 Don Kent**, Kat Montgomery
MARINE AQUACULTURE CAN MITIGATE IMPACTS OF CLIMATE CHANGE AND INCREASE SECURITY OF THE WORLD'S SEAFOOD SUPPLY
- 9:45 Call Nichols**
FINDING COMMON GROUND AMONG U.S. SHELLFISH PRODUCERS: A YEAR ON THE ROAD WITH THE SHELLFISH GROWERS CLIMATE COALITION
- 10:00 BREAK**
- 10:30 Sarah Spiegler**, Jacob Boyd, Eric Herbst
INCORPORATING CLIMATE RESILIENCE INTO NORTH CAROLINA'S SHELLFISH AQUACULTURE INDUSTRY
- 10:45 Danielle Dempsey**, Gregor Reid, Leah Lewis-McCrea, Nicole Torrie
COASTAL OCEAN MONITORING AT BIOLOGICALLY RELEVANT SCALES: SUPPORTING AQUACULTURE RISK MANAGEMENT
- 11:00 Gregor Reid**, Leigh Howarth, Danielle Dempsey
CLIMATE CHANGE VULNERABILITY ASSESSMENTS AND AQUACULTURE
- 11:15 Cliff Cosgrove**, Michelle Rub
NOAA'S OFFICE OF AQUACULTURE SCIENTISTS WILL DISCUSS METHODS AND RESULTS ON THE INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA'S (ICES) WORKSHOP ON PATHWAYS TO CLIMATE-AWARE ADVICE (WKCLIMAD)
- 11:30 Danielle Dempsey**, Gregor Reid, Ryan Horricks, Leah Lewis-McCrea
STOCKING SIZE AND GROWTH RATE ESTIMATES OF ATLANTIC SALMON UNDER DIFFERENT COASTAL TEMPERATURE PROFILES: GUIDING YEAR-ROUND AND SEASONAL SITING UNDER A CHANGING CLIMATE
- 11:45 Rebeca Mata**, Sara E. Boles, Tien-Chieh Hung, Jackson Gross
INFLUENCE OF RISING OCEAN TEMPERATURE ON THE RED ABALONE *Haliotis rufescens* THROUGH CHANGES IN ITS FOOD SOURCE, MARINE SEAWEED *Palmaria mollis*

12:30 LUNCH

1:30 Jeff Hetrick, Alexis Valauri-Orton, Burke Hales, Jacqueline Ramsay, Kaitlyn Lowder, Maile Branson
ADAPTING TO THE INVISIBLE: THE pCO_2 TO GO AS A LOW-COST TOOL TO ADDRESS OCEAN ACIDIFICATION IMPACTS IN HATCHERIES

1:45 Zhongqi Chen, Brian Small, Chris Caudill, Ronald Hardy, Shawn Narum
GENOMIC REGIONS ASSOCIATED WITH THERMAL ADAPTATION IN REDBAND TROUT *Oncorhynchus mykiss gairdneri*

2:00 Colin Beal, Leda Van Doren, David Hazlebeck, Amha Belay, B. Greg Mitchell
SUSTAINABLE AQUAFEED: PRODUCING MICROALGAE WITH ATMOSPHERIC CO₂ AND SOLAR ELECTRICITY

2:15 Timothy Green, Marissa Wright-LaGreca, Clara Mackenzie, Karen Leask
OCEAN ACIDIFICATION ALTERS DEVELOPMENTAL TIMING AND GENE EXPRESSION OF ION TRANSPORT PROTEINS DURING LARVAL DEVELOPMENT IN RESILIENT AND SUSCEPTIBLE LINEAGES OF THE PACIFIC OYSTER *Crassostrea gigas*

2:30 Heidi Alleway
Climate-Friendly Seafood: Pathways for Emissions Reductions and Carbon Sequestration in Marine Aquaculture

2:45 Sally McGee
Wrap up & Survey Results

AQUACULTURE EDUCATION, EXTENSION AND OUTREACH

Friday, March 4 8:30 AM - 5:00 PM Town & Country B

Chairs: Forrest Wynne, Matthew Smith, Ken Thompson

8:30 David E. Brune
AQUACULTURE IN THE U.S. MIDWEST; ECONOMIC OPPORTUNITY FOR MISSOURI FARMERS?

8:45 Lauren N. Jescovitch, Emma Forbes, Elliot Nelson, Titus Seilheimer, Amy J. Schrank
WHAT MAKES A FARM SUCCESSFUL? VIRTUAL FARM TOURS WITH GREAT LAKES AQUACULTURE COLLABORATIVE

9:00 Kellen Parrish, Gilbert Sylvia, John Moehl, Clint Bentz, Angee Doerr, Lisa Gaines, Michael Harte, Matthew Hawkyard, Megan Judge, Amy Ehrhart, Marc Rempel, Janine Salwasser
SUPPORTING AQUACULTURE INVESTMENT USING A NOVEL GEOSPATIAL AND FINANCIAL PLANNING TOOL

9:15 Jim LaChance, Ginny Eckert, Sherry Larkin, Beth Lenz, Fredrika Moser, Shauna Oh, Pamela Plotkin, Cathlyn Styliniski, Susan White, Gayle Zydlewski
CONNECTING SEA GRANT, NCCOS, AND COASTAL STAKEHOLDERS TO IMPROVE SUSTAINABLE AQUACULTURE SITING AND DEVELOPMENT

9:30 Alicia Bishop, Hannah Wilson, Rebecca Cates, Laura Hoberrecht
NOAA FISHERIES ALASKA AQUACULTURE ACCOMPLISHMENTS

9:45 Vincent Encomio, Holly Abeels, Angela Collins, Laura Tiu, Chris Verlinde, Huiping Yang, Charles Sidman, Sherry Larkin
ALL CLAMS ON DECK: FLORIDA SEA GRANT'S HARVEST PROGRAM - INTERNSHIPS IN SUPPORT OF FLORIDA'S AQUACULTURE INDUSTRY

- 10:00 BREAK**
- 10:30 Marcy L. Cockrell**, Katrina Bayliss, Charlie M. Culpepper, III, Portia Sapp, Eric Cassiano, Anita Grove, Joe Taylor
EXPANDING AQUACULTURE EDUCATION AND TRAINING OPPORTUNITIES IN FLORIDA: SUCCESS STORIES AND LESSONS LEARNED FROM RECENT INITIATIVES
- 10:45 Megan Davis**
eConch: eLearning FOR GROWING QUEEN CONCH *Aliger gigas*
- 11:00 Allen Pattillo**, Miao Yu, Matt Parker, Don Webster, Cathy Liu, Yang Tao, Yiannis Aloimonos, Nikhil Chopra, Matt Gray, Brian Callam, Bobbi Hudson, Jonathan van Senten
SMART, SUSTAINABLE SHELLFISH AQUACULTURE MANAGEMENT PROGRAM
- 11:15 Linda J. ODierno**, Michael Ciaramella, Paul Zajicek
MARKETING U.S. FARM-RAISED SEAFOOD TO THE FOODSERVICE COMMUNITY
- 11:30 Elliot Nelson**, Barbara Evans
CREATING WORKFORCE PATHWAYS BY EDUCATING YOUTH THROUGH AQUACULTURE
- 11:45 Eric Herbst**, Bryan L. Snyder, David S. Cerino, Charles R. Weirich, Frank M. López
THE CREATION, LAUNCH AND SUSTAINED DELIVERY OF THE NORTH CAROLINA SHELLFISH FARMING ACADEMY: AN AQUACULTURE TRAINING AND WORKFORCE DEVELOPMENT INITIATIVE - IN THE MIDST OF A GLOBAL PANDEMIC
- 12:00 Forrest Wynne**, Dana Morse
NATIONAL AQUACULTURE EXTENSION CONFERENCE PLANNING AND DEVELOPMENT
- 12:30 LUNCH**
- 1:30 Michael Shane**, David Tabor, Mark Drawbridge
SEABASS IN THE CLASSROOM: AN AQUACULTURE EDUCATION PROGRAM IN SOUTHERN CALIFORNIA
- 1:45 Kenneth Thompson**, Carl Webster, Kirk Pomper, James H. Tidwell
INTEGRATING AQUACULTURE IN AND OUTSIDE THE CLASSROOM THAT SUPPORTS STEM EDUCATION: A QUALITATIVE STUDY TO IDENTIFY HIGH SCHOOL STUDENTS' ATTITUDES, INTERESTS, AND EXPERIENCES
- 2:00 Maria Gutierrez-Wing**, Yue Liu, Jin-Woo Choi, W. Todd Monroe, Terrence R. Tiersch
LEVERAGING OPEN FABRICATION FOR COMMUNITY DEVELOPMENT AND AQUATIC GERMPASM CONSERVATION
- 2:15 Jeremiah J. Minich**
REFLECTIONS OF A FULBRIGHT STUDENT 7 YEARS LATER: SUCCESS AND FAILURES OF INTEGRATED FARMING AND AQUACULTURE IN MALAWI
- 2:30 Hsiang Pin Lan**, Lukas Manomaitis
OFFSHORE PEN AQUACULTURE CHALLENGES & OPPORTUNITIES IN SOUTHEAST ASIA - THE U.S. SOYBEAN EXPORT COUNCIL'S SOUTHEAST ASIAN AQUACULTURE PROGRAM WORK
- 2:45 Herbert E Quintero**, Donald Bailey, Dale Morton, Usman Adamu
UNIVERSITY OF THE VIRGIN ISLANDS (UVI) - HISTORICAL PERSPECTIVE AND OPPORTUNITIES IN AQUAPONICS AND AQUACULTURE
- 3:00 BREAK**

- 3:30 David Cline**
AQUACULTURE EDUCATION USING A MULTI-PRONG APPROACH
- 3:45 Mercy Pena-Morales, Herbert Quintero**
DEVELOPING MATHEMATICAL AND STATISTICAL THINKING IN THE CONTEXT OF AQUACULTURE
- 4:00 Grace Cajski**
"TALKING STORY: HOW HAWAII'S MODERN AQUACULTURISTS DISCOVERED A SOLUTION TO THE FUTURE IN THEIR PAST", THE POWER OF STORYTELLING
- 4:15 Richard Bryant**
EDUCATING BEGINNING AQUACULTURE PRODUCERS THROUGH DIFFERENT EDUCATIONAL FORMATS

AQUAPONICS

Friday, March 4 8:30 AM - 5:00 PM Town & Country D

Chair: Huy Tran

- 8:30 Yu-Ting Chu, Paul Brown**
SUSTAINABLE MARINE AQUAPONICS: EFFECTS OF SHRIMP TO PLANT RATIOS AND RATIOS
- 8:45 Yu-Ting Chu, Paul Brown**
OPTIMAL DIETARY CRUDE PROTEIN FOR SHRIMP AND HALOPHYTES IN MARINE AQUAPONIC BIOFLOC SYSTEMS
- 9:00 Yu-Ting Chu, Paul Brown**
EXPLORE THE IMPACT OF DIFFERENT PH LEVELS AND ADDITIONAL C ON THE OPERATION OF SUSTAINABLE MARINE AQUAPONICS
- 9:15 Megan Davis, Ikuko Fujisaki, Richard Baptiste, Obby Tapley, Jordon Beckler, M. Dennis Hanisak, Paul S. Wills**
SEA VEGETABLES GROWN IN AN INTEGRATED MULTI-TROPHIC AQUACULTURE SYSTEM IN FLORIDA
- 9:30 Leo Fleckenstein, Jill Fisk, Nathan Kring, Victor Lobanov, Andrew Ray**
EFFECTS OF DIFFERENT IRON COMPOUNDS AND AQUEOUS IRON CONCENTRATIONS ON KALE WINTERBOR PERFORMANCE IN BRACKISH WATER HYDROPONICS
- 9:45 Jill Fisk, Leo J. Fleckenstein, Nathan A. Kring, Andrew J. Ray, Brian Slater**
COMPARING PERFORMANCE OF COUPLED AND DECOUPLED BRACKISH WATER AQUAPONICS SYSTEMS USING KALE WINTERBOR F1 HYBRID *Brassica oleracea* AND PACIFIC WHITE SHRIMP *Litopenaeus vannamei*
- 10:00 BREAK**
- 10:30 Shib N. Pattadar, Mohammad A. Rahman, Gary Gao, Krishnakumar Nedunuri, Khandakar R. Islam, Brian Slater**
BIOACTIVE PHENOLICS PROFILING OF AQUAPONIC LETTUCE
- 10:45 Jonathan Kershaw, Brittany Kralik, Kevin Neves, Hans Wildschutte, Nicholas Zeedyk, Dawn Anderson**
COMPOSITION, SAFETY, AND SENSORY COMPARISON OF AQUAPONIC TOMATOES AND SOIL-GROWN TOMATOES *Solanum lycopersicum*

- 11:00** **Fei Weisstein**, Brittany Kralik, Jeffrey Meyer, Kevin Neves, Dawn Anderson, Jonathan Kershaw
UNDERSTANDING CONSUMER ACCEPTANCE OF AQUAPONIC FISH: A MIXED-METHOD APPROACH
- 11:15** **Erin Horn**, Gundula Proksch, Rubel Chowdhury, Silvio Caputo, Brent Jacobs, Alyssa Joyce, Mari Winkler
THE INNOVATION SYSTEM OF COMMERCIAL AQUAPONICS: A QUALITATIVE INVESTIGATION OF PATHWAYS FOR INDUSTRY SUCCESS
- 11:30** **Gundula Proksch**, Erin Horn
CHARACTERIZING NORTH AMERICAN COMMERCIAL AQUAPONICS: AN INTERVIEW AND CASE STUDY ASSESSMENT OF EMERGENT PATTERNS IN TECHNOLOGY, INNOVATION, AND OPERATIONS
- 11:45** **Huy Tran**
A 1,500 FT² AQUAPONIC SYSTEM DESIGN CONSIDERATIONS
- 12:00** **Dorcas Lukwesa**, Daniel Wells, Mollie Smith, Caroline Blanchard, Emmanuel Ayipio
MOBILE AQUAPONICS: PROMOTING SMALL-SCALE AQUAPONICS SYSTEMS OF FARMING TO SMALLHOLDER FARMERS IN ZAMBIA
- 12:15** **John Colt**, Anthonie Schuur
COMPARISON OF NUTRIENT COSTS FROM FISH FEEDS AND INORGANIC FERTILIZERS FOR AQUAPONICS SYSTEMS
- 12:30** **LUNCH**
- 1:30** **John Colt**, Kenneth Semmens
COMPUTATION OF FEED CONVERSION RATIO (FCRPLANT) AND PLANT-FISH MASS RATIO (PFRM) FOR AQUAPONIC SYSTEMS
- 1:45** **Kate Stalkfleet**, Matthew Recsetar
NUTRIENT MANIPULATION AND MEDIA SELECTION IN DECOUPLED AQUAPONICS SYSTEMS FOR GROWING *Cannabis Sativa*
- 2:00** **George B. Brooks Jr.**
PHOENIX BACKYARD GARDEN PROGRAM: HARNESSING URBAN AQUACULTURE (AQUAPONICS) TO MITIGATE FOOD INSECURITY - IMPLEMENTATION
- 2:15** **George B. Brooks Jr.**
THE PHOENIX BACKYARD GARDEN PROGRAM: HARNESSING URBAN AQUACULTURE (AQUAPONICS) TO MITIGATE FOOD INSECURITY – DIVERSITY, EQUITY AND INCLUSION
- 2:30** **Matthew Recsetar**, Kate Stalkfleet, Kevin Fitzsimmons
ENRICHMENT OF FISH WASTE WITH VODKA AND OTHER CARBON SOURCES TO INCREASE NUTRIENT MINERALIZATION IN AQUAPONICS AND RAS
- 2:45** **Mark Schmitz**, Justin Speck, Timothy Hovanec, Anghelo Gangano, Madison Schultz
USE OF METAGENOMIC SEQUENCING TO IDENTIFY MICROBIAL DIVERSITY IN DIFFERENT COMPONENTS IN THE STARTUP OF AN AQUAPONICS SYSTEM RAISING WALLEYE *Sander vitreus*
- 3:00** **Joshua Dusci**, Regina Greuel-Cook, Kaben Smallwood
EXPLORING THE USE OF AUTOMATED NUTRIENT DELIVERY SYSTEMS (ANDS) FOR AQUAPONIC SYSTEMS
- 3:15** **Ron Malone**, Connor Tiersch, Samuel Tanner
LINKING LOCALIZED SLUDGE DIGESTORS TO POLYGEYSERS® WITH PNEUMATIC EXCHANGE TO FACILITATE DECOUPLED AQUAPONICS OPERATIONS

FISH NUTRITION AND FEEDS

Friday, March 4 8:30 AM - 5:00 PM Palm 3

Chair: Rebecca Lochmann

ALTERNATIVE DIET INGREDIENTS - GENERAL

- 8:30 Aaron Watson**, Fabio Casu, Justin Yost, David Klett, Molly Milstein, Sara McConnell, Scott McConnell, Chris Brown, Andy Elliot
INITIAL EVALUATION OF CRAFT BREWERY SPENT GRAINS AS A POTENTIAL FEED INGREDIENT FOR RED DRUM *Sciaenops ocellatus*
- 8:45 Dong-Fang Deng**, Hu Chen, Brian Shepherd, Merry Zohn, Fabio Casu, Mathew Digman, Deborah Samac, Wendy Sealey
UTILIZATION OF ALFALFA NUTRIENT CONCENTRATE IN FEED FOR RAINBOW TROUT *Oncorhynchus mykiss*: EFFECTS ON PELLET PHYSICAL QUALITY, NUTRIENT UTILIZATION AND METABOLISM OF FISH
- 9:00 Guillaume Salze**, Chris Jackson, Jesse T. Trushenski
PREVENTION OF STRESS-DRIVEN MORTALITIES IN RAINBOW TROUT USING A SINGLE-CELL MEAL IN FEED
- 9:15 Ricardo Ekmay**, Sandrine Skiba-Cassy, Elisabeth Plagnes-Juan
THE IMPACT OF TORULA YEAST ON GROWTH PERFORMANCE AND DIGESTIBILITY IN RAINBOW TROUT *Oncorhynchus mykiss*
- 9:30 Amha Belay**, William Barclay, David Hazlebeck, Wilson Mendoza, B. Greg Mitchell
SUSTAINABLE AND ALTERNATIVE AQUAFEED FROM A MIX OF ALGAL STRAINS: PARTIAL OR FULL REPLACEMENT OF FISH OIL AND FISH MEAL
- 9:45 Gladys Holeh**, Mary Opiyo, Fridah Munyi, Christopher Brown, Esther Sumbule, Kigen Compton, Joel Gatagwu, Emmanuel Oje
EFFECT OF DIFFERENT WASTE SUBSTRATES ON THE GROWTH, DEVELOPMENT AND PROXIMATE COMPOSITION OF BLACK SOLDIER FLY *Hermetia illucens* LARVAE

10:00 BREAK

ALTERNATIVE LIPID INGREDIENTS AND NOVEL FEEDS EVALUATION

- 10:30 Katherine A. Neylan**, Ronald B. Johnson, Rick Barrows, Scott L. Hamilton, Luke D. Gardner
EVALUATING *Schizochytrium* sp. AS AN ALTERNATIVE LIPID SOURCE IN FISH-FREE FEEDS FOR SABLEFISH *Anoplopoma fimbria*
- 10:45 Jeongwhui Hong**, Jacob Bledsoe, Kenneth Overturf, Seunghan Lee, Diliara Iassonova, Brian Small
LATITUDE OIL™ AS A SUSTAINABLE ALTERNATIVE TO DIETARY FISH OIL IN RAINBOW TROUT *Oncorhynchus mykiss*: EFFECTS ON FILLET FATTY ACID PROFILES, INTESTINAL HISTOLOGY, AND PLASMA BIOCHEMISTRY
- 11:00 Ethan Ramsey**, Donya Zakeri, Ali Mashinchian Moradi
FEASIBILITY OF USING POMEGRANATE *Punica granatum* SEED OIL, RICH IN CONJUGATED LINOLENIC ACID, AS A LIPID SOURCE IN THE DIET OF COMMON CARP *Cyprinus carpio* JUVENILES
- 11:15 Kevin Stuart**, Sahar Mejri, Federico Rotman, Mark Drawbridge
EVALUATION OF A COMMERCIAL BROODSTOCK DIET FOR ADULT CALIFORNIA YELLOWTAIL *Seriola dorsalis*
- 11:30 Alejandro Buentello**, Vladimir Muñoz, Paula Gamas, Daniella Acevedo, Mario Reguera
FORMULATED ATLANTIC BLUEFIN TUNA DIETS: ADDING SUSTAINABILITY AND PERMANENCE TO THE GLOBAL TUNA FARMING INDUSTRY

- 11:45 Kelly Alfrey**, E. McLean, D.M. Gatlin III, FT. Barrows
EVALUATION OF AN OPEN-SOURCE FISHMEAL AND FISH OIL FREE LARGEMOUTH BASS FEED
- 12:00 Scott Snyder**, Craig Browdy, Tim Markey
DEVELOPMENT OF IMPROVED COMMERCIAL FEEDS FOR RAINBOW TROUT *Oncorhynchus mykiss*:
A CASE STUDY ON BALANCING COST, PERFORMANCE, AND SUSTAINABILITY
- 12:15 Vikas Kumar**, Nicholas Romano, Fotini Kokou, Amit Sinha, Kimia Kajbaf
GUT MICROBIOME AND DISTAL INTESTINAL MORPHOLOGY MODULATED BY DIFFERENT DIETARY
LEVELS OF CARBOHYDRATE AND LIPID WITH OR WITHOUT BILE ACID SUPPLEMENTATION IN
LARGEMOUTH BASS
- 12:30 LUNCH**

STRATEGIES TO INCREASE USE OF PLANT-BASED FEEDS

- 1:30 Madison Powell**, Brian Small, T. Gibson Gaylord, Wendy M. Sealey, Kenneth E. Overturf,
Thomas Welker
ADVANCES IN UNDERSTANDING SOYBEAN MEAL INDUCED DISTAL ENTERITIS IN SALMONIDS
- 1:45 Marina Benito**, Nicholas Romano, Kenneth Overturf, Vikas Kumar
THE POTENTIAL ROLE OF BILE SALTS IN SOYBEAN MEAL-INDUCED ENTERITIS MITIGATION IN RAINBOW
TROUT *Oncorhynchus mykiss* FED TWO LEVELS SBM DIETS OVER AN 18-WEEK FEEDING TRIAL
- 2:00 Kasondra Miller**, Michelle Loftus, Waldemar Rossi
EVALUATION OF SUPPLEMENTAL ENZYMES IN PLANT PROTEIN-BASED DIETS FOR HYBRID STRIPED BASS
- 2:15 Rebecca Lochmann**, Michele Jones, Rudy Nugroho, Isaac Buyinza
INCREASING FEED INTAKE AND NUTRIENT UTILIZATION OF SOYBEAN MEALS FOR LARGEMOUTH
BASS THROUGH INCLUSION OF PALATANTS
- 2:30 Heikki Keskitalo**
PEKILO PROTEIN AND SUSTAINABLE GROWTH OF AQUACULTURE
- 2:45 Isaac Buyinza**, Rebecca Lochmann, Amit Sinha, Grace Ramena, Nicholas Romano
PERFORMANCE OF CHANNEL CATFISH *Ictalurus punctatus* FED PLANT-BASED DIETS WITH
DIFFERENT CONCENTRATIONS OF INORGANIC IRON (FeSO₄) OR ORGANIC IRON
- 3:00 BREAK**

PESCALANEOUS

- 3:30 Moureen Matuha**, Krishna Singha, Md. Sakhawat Hossain, Jia Ma, Timothy Bruce, Kenneth Cain,
Vikas Kumar
DETERMINATION OF OPTIMUM DIETARY PROTEIN REQUIREMENT FOR BURBOT *Lota lota maculosa*
- 3:45 Michelle Loftus**, Waldemar Rossi
DIETARY THREONINE REQUIREMENT OF LARGEMOUTH BASS *Micropterus salmoides*
- 4:00 John Grayson**, Michal Wojno, Karolina Kwasek
FEAST OR FAST: THE EFFECTS OF FEEDING RESTRICTIONS ON RAINBOW TROUT *Oncorhynchus
mykiss* GROWTH AND FEED UTILIZATION
- 4:15 Karen Veverica**, Charles Ngugi, Rachael Gachui
YIELD VERIFICATION TRIALS FOR POND FARMERS IN KENYA TO EXAMINE OPTIONS WHEN
EXTRUDED FISH FEEDS ARE EXPENSIVE

- 4:30 Krishna Singha**, Vikas Kumar, Amit K. Amit K. Yadav
DISPENSABLE AMINO ACID L-ALANINE CAN LOWER THE LIPID LOAD IN RAINBOW TROUT
Oncorhynchus mykiss DIET
- 4:45 Amit Yadav**, Amit Sinha, Nicholas Romano, Vikas Kumar
THE UNDERLYING PHYSIOLOGICAL MECHANISM FOR MITIGATING THE FEED BORNE IRON TOXICITY IN RAINBOW TROUT VIA DIETARY SUPPLEMENTATION OF VITAMIN C AND BENTONITE

VIBRIOSIS IN AQUACULTURE

Friday, March 4 10:30 AM - 12:30 PM Palm 1

Chair: Claudia Hase

- 10:30 Marta Gomez-Chiarri**, Jessica Coppersmith, Chris Schuttert, Evelyn Takyi, David Nelson, David Rowley
A TALE OF TWO (OR MORE) BACTERIA: APPLYING KNOWLEDGE ON VIBRIO - PROBIONT INTERACTIONS TO MANAGE BACTERIAL DISEASES IN BIVALVE HATCHERIES
- 10:45 Jessica E. Coppersmith**, Jacqueline H. Camm, Christian W. Schuttert, David R. Nelson, David C. Rowley, Marta Gomez-Chiarri
INHIBITION OF FLAGELLAR ASSEMBLY IN THE BIVALVE PATHOGEN *Vibrio coralliilyticus* DURING COMPETITION WITH THE PROBIONT *Phaeobacter inhibens*
- 11:00 Scott Bittner**, Hong M. Moulton, Claudia C. Häse
CONTROL OF VIBRIOSIS IN PACIFIC OYSTER LARVAE BY A TRANSLATION-BLOCKING PEPTIDE-CONJUGATED PHOSPHODIAMIDATE MORPHOLINO OLIGOMER TARGETING A *Vibrio coralliilyticus* VIRULENCE FACTOR
- 11:15 Xiaoting Zheng**, Biao Han, Vikash Kumar, Adam F. Feyaerts, Patrick Van Dijck, Peter Bossier
ESSENTIAL OILS IMPROVE THE SURVIVAL OF GNOTOBIOTIC BRINE SHRIMP *Artemia franciscana* CHALLENGED WITH *Vibrio campbellii*
- 11:30 Julia van Kessel**, Laura Brown
DEVELOPMENT OF QUORUM SENSING INHIBITORS AS POTENTIAL TREATMENTS FOR VIBRIOSIS

TILAPIA

Friday, March 4 10:30 AM - 5:00 PM Palm 2

Chair: Kevin Fitzsimmons

- 10:30 Honey Win**, Asif Mortuza, Ahmed Mustafa
EFFECTS OF CANNABIDIOL (CBD) ON THE IMMUNOMODULATION OF FISH *Oreochromis niloticus* SPLEEN IMMUNE CELLS COMPARED TO MICE
- 10:45 Sinthia Mumu**, Isabella Bailey, Taylor Schoenfeld, Ahmed Mustafa
EFFECTS OF *Gynura procumbens* EXTRACT IN NILE TILAPIA, AS A STRESS REDUCING AND IMMUNE STIMULATING NUTRACEUTICAL
- 11:00 Blaine Suehs**, Fernando Y. Yamamoto, Fahad Asiri, Delbert M. Gatlin III
ADDITIVE EFFECTS OF POLY-B-HYDROXYBUTYRATE ON GROWTH AND IMMUNE RESPONSES OF JUVENILE NILE TILAPIA *Oreochromis niloticus* BASED ON *IN VIVO* AND *IN VITRO* APPROACHES
- 11:15 Lindee Mason**, Nahian Fahim, Ahmed Mustafa
PHYSIOLOGICAL EFFECTS OF AN ASTAXANTHIN SUPPLEMENTED DIET ON STRESSED NILE TILAPIA
- 11:30 Matthijs de Jong**, Arno van der Aa, Brecht Bruneel, Eakopol Wangkahart, Kim Wilson
THE INTERACTIVE EFFECTS OF DIETARY LIPIDS AND THE USE OF A NUTRITIONAL EMULSIFIER IN JUVENILE NILE TILAPIA *Oreochromis niloticus*

- 11:45** **Tewodros Abate Alemayehu**, Abebe Getahun, Akewake Geremew, Dawit Solomon, John Walker, Dawit Solomon, Gebermedihin Ambaw
SINGLE OR COMBINED EFFECTS OF INULIN OR MANNAN-OLIGOSACCHARIDE (MOS) ON GROWTH, FEED UTILIZATION, FATTY ACID PROFILES, AND GUT MORPHOLOGY OF CHAMO STRAIN NILE TILAPIA FRY REARED AT SUBOPTIMAL TEMPERATURE
- 12:00** **Mohamed Salem**, Heba Abdel-Ghany, Doaa El-Sisy
EFFECT OF DIETARY CURCUMIN OR CURCUMIN NANOSPHERE ON GROWTH, IMMUNITY, HEAT STRESS RESISTANCE AND STRESS INDICATORS OF NILE TILAPIA *Oreochromis niloticus*
- 12:15** **Luisa Villamil**, Javier Fernando Melo-Bolívar, Ruth Yolanda Ruiz Pardo, Maria Ximena Quintanilla-Carvajal
Priestia aryabhatai M10 ASGROWTH PROMOTER AND RESISTANCE ENHANCER IN NILE TILAPIA *Oreochromis niloticus* CULTURE
- 12:30** **LUNCH**
- 1:30** **Krishna Singha**, Seunghan Lee, Femi Fawole, Nicholas Romano, Liz Koustsos, Alejandra McComb, Vikas Kumar
A NOVEL INGREDIENT "FRASS" BY-PRODUCT FROM THE INSECT LARVAL FARMING SYSTEM: NUTRITIONAL EVALUATION FOR NILE TILAPIA FEED
- 1:45** **Kevin Fitzsimmons**
2021 GLOBAL REVIEW OF TILAPIA PRODUCTION AND MARKETS
- 2:15** **Heba Abdel-Ghany**, Amr Helal, Doaa El-Sisy, Mohamed Salem
EFFECT OF *Yucca schidigera* EXTRACT AND *Bacillus subtilis* ON THE AMMONIA REDUCTION IN EFFLUENT AND ANTIOXIDANT ACTIVITY OF NILE TILAPIA *Oreochromis niloticus*
- 2:30** **Abdul Mateen**
IMMUNE COMPETENCY AND GROWTH RESPONSE VARIABILITY OF *Oreochromis niloticus* UNDER DIETARY SUPPLEMENTATION OF BLACK SEED *Nigella sativa*
- 2:45** **Jasmine Iniguez**, Noel Novelo
ULTRASOUND IMAGING: AN INSTRUMENTAL REPRODUCTIVE TECHNOLOGY FOR TILAPIA BROODSTOCK MANAGMENT
- 3:00** **BREAK**
- 3:30** **American Tilapia Association Annual Meeting**

ABALONE

Friday, March 4 1:30 PM - 5:00 PM Palm 8

Chairs: Peter Cook, Laura Rogers-Bennett

- 1:30** **Sara Boles**, Isabelle P. Neylan, Laura Rogers-Bennett, Jackson A. Gross
DEVELOPMENT OF ULTRASONOGRAPHY AS A NON-INVASIVE METHOD TO EVALUATE REPRODUCTIVE CONDITION IN RED ABALONE *Haliotis rufescens*
- 1:45** **Stephanie Fan**, Taylor Smith, Nasseer Idrisi, John Hyde, Nick Wegner
THE EFFECTS OF TEMPERATURE AND BODY SIZE ON THE METABOLISM AND HYPOXIA TOLERANCE OF WHITE ABALONE *Haliotis sorenseni* AND RED ABALONE *H. rufescens*
- 2:00** **Blythe C. Marshman**, Chelsey Souza, Colleen Burge, Malina Loeher, Kristin Aquilino, Jim Moore
CIRCUMVENTING EXTINCTION: ADAPTIVE DISEASE MANAGEMENT IN ENDANGERED WHITE ABALONE *Haliotis sorenseni* CAPTIVE BREEDING AND OUTPLANTING EFFORTS

- 2:15 Jeremie Bauer**, Rodrigo Beas-Luna, Julio Lorda, Fabiola Lafarga de la Cruz, Alicia Abadía, Luis Malpica-Cruz, Ricardo Searcy-Bernal
PROMOTING CONSERVATION AND MANAGEMENT ACTIONS TO RECOVER ABALONE POPULATIONS IN MEXICO
- 2:30 Catherine Purcell**, Rick Masonbrink, Fabiola Lafarga-De la Cruz, Andrew Severin, John Hyde
GENOMIC RESOURCE DEVELOPMENT TO SUPPORT COMMERCIAL AND RESTORATION CULTURE OF NORTH AMERICAN ABALONE SPECIES
- 2:45 Erika Castro**, Carmen Paniagua-Chávez, Fabiola Lafarga de la Cruz
SPERM CRYOPRESERVATION OF GREEN ABALONE *Haliotis fulgens* FOR CONSERVATION AQUACULTURE
- 3:00 Daniel Swezey**, Evan Tjeerdema, Malina Loeher, Blythe Marshman, Eric Sanford, James Moore, Kristin Aquilino
EFFECTS OF OCEAN ACIDIFICATION AND WARMING ON DISEASE VIRULENCE IN THE ENDANGERED WHITE ABALONE *Haliotis sorenseni* UNDER CAPTIVE CULTURE

AQUACULTURE 101

Friday, March 4 1:30 PM - 5:00 PM Palm 5

Chair: Paul Zajicek

- 1:30 The Aquaculture Bug has Bit Me! Now What?**
Paul Zajicek, National Aquaculture Association
- 1:45 State's Regulator's Perspective**
Wayne East, Colorado Dept of Agriculture
- 2:00 Farmers and Researchers: How to Utilize Extension and Find Helpful Resources**
Matt Smith, The Ohio State University
- 2:15 Plan to Make a Profit; Don't Leave It to Chance**
Jonathan van Senten, Virginia Tech
- 2:30 Q&A**

AQUACULTURE FOR ECOSYSTEM OUTCOMES

Friday, March 4 1:30 PM - 5:00 PM Pacific D

Chairs: Robert Jones, Ken Riley

- 1:30 Habitat value of bivalve shellfish and seaweed aquaculture for fish and invertebrates: Pathways, synthesis and next steps**
*Seth Theuerkauf, National Oceanic and Atmospheric Administration; Heidi Alleway and Robert Jones, The Nature Conservancy; Luke Barrett, University of Melbourne; Barry Costa-Pierce, University of New England; and Adam St. Gelais, University of Maine
- 1:45 Global Principles of Restorative Aquaculture**
*Tiffany Waters, Robert Jones, and Heidi Alleway, The Nature Conservancy
- 2:00 Marine Aquaculture Ecosystem Services Research: What Next?**
*Adriane Michaelis, Seth Theuerkauf, Suzanne Bricker, Jordan Hollarsmith, and Julie Rose, National Oceanic and Atmospheric Administration

- 2:15 Aquaculture as a regenerative system: what are we learning at the seafood-environment nexus?**
*Heidi Alleway and Robert Jones, The Nature Conservancy; Alice Jones, University of Adelaide
- 2:30 TNC Global Aquaculture Program: Green Benefits for Nature and People**
*Robert Jones, The Nature Conservancy
- 2:45 Aquaculture Siting in Palau: Using satellite data for climate-ready aquaculture**
*Jonathan MacKay, Yvonne Ueda, Michael Aulerio, Robert Jones; The Nature Conservancy
- 3:00 BREAK**
- 3:30 The Shellfish Growers Climate Coalition – Personal stories about climate impacts that inspire climate action**
*Sally McGee, The Nature Conservancy
- 3:45 Conservation and monitoring considerations for SOAR: Supporting Oyster Aquaculture and Restoration**
*Boze Hancock, Robert Jones, and Christina Popolizio, The Nature Conservancy; Aaron Kornbluth and Zachary Greenberg, The Pew Charitable Trusts
- 4:00 Launching and executing the SOAR program - a win-win for people and nature during the COVID-19 pandemic**
*Christina Popolizio, Boze Hancock, and Robert Jones, The Nature Conservancy; Aaron Kornbluth and Zachary Greenberg, The Pew Charitable Trusts
- 4:15 Climate-Friendly, Regenerative Shrimp Farming: What's the potential?**
*Robert Jones, The Nature Conservancy
- 4:30 Planning for the future: Habitat considerations for aquaculture development in coastal ecosystems**
*Kenneth Riley, Brandon Jensen, Lisa Wickliffe, Jonathan Jossart, and James A. Morris, Jr., NOAA National Ocean Service, National Centers for Coastal Ocean Science

HARMFUL ALGAL BLOOMS (OTHERS AND CYANOBACTERIA)

Friday, March 4 1:30 PM - 5:00 PM Palm 1

Chairs: Steve Morton, Alan Wilson

- 1:30 Douglas Levin**, Steve Morton
BASIC OBSERVATION BUOYS FOR HAB PREDICTION
- 1:45 Michelle C. Tomlinson**, Alexandria G. Hounshell, William C. Holland, D. Ransom Hardison, Jennifer L. Wolny, Richard P. Stumpf, Yizhen Li
TOWARDS THE SURVEILLANCE OF HARMFUL ALGAL BLOOMS IN CHESAPEAKE BAY THROUGH THE APPLICATION OF OPTICAL REMOTE SENSING, ECOLOGICAL ASSOCIATIONS, AND CITIZEN MONITORING EFFORTS
- 2:00 Chris Whithead**, Tod Leighfield, Steve Morton
CREATING MULTI-REGIONAL TRIBALLY LED COMMUNITY PARTNERSHIPS TO MONITOR HARMFUL ALGAL BLOOMS AND SHELLFISH TOXINS

- 2:15 Steve Morton**, Nia Rene, Jennifer Maucher-Fuquay, Andrew Shuler
AQUACULTURE PHYTOPLANKTON MONITORING NETWORK: USE OF CITIZEN SCIENTISTS TO MONITOR HARMFUL ALGAL BLOOMS AND CHANGES IN ENVIRONMENTAL CONDITIONS
- 2:30 Gulnihal Ozbay**, Amanda Pappas, Kathryn Coyne
WINTER BLOOM DYNAMICS AND MOLECULAR ANALYSIS OF BENTHIC SEDIMENTS FOR HAB *Dinophysis acuminata* AT TORQUAY CANAL, REHOBOTH BAY, DELAWARE
- 2:45 Leila Basti**, Jyoji Go, Satoshi Nagai, Kyohito Nagai
ICHTHYOTOXICITY OF THE PSP -PRODUCING *Alexandrium catenella* AND DSP-PRODUCING *Dinophysis acuminata*
- 3:00 BREAK**
- 3:30 Bobbi Hudson**, Katie Houle, Joth Davis, Sandy Shumway, Steve Morton, Tod Leighfield, Jerry Borchert, Brent Vadopalas
SAXITOXIN ACCUMULATION AND DEPURATION IN ROCK SCALLOPS *Crassadoma gigantea*: A PREREQUISITE FOR CULTURE ON THE WEST COAST OF NORTH AMERICA
- 3:45 Kimberley Reece**, Iris Anderson, Mark Brush, Ryan Carnegie, Todd Egerton, Samantha Fortin, Robert Latour, William Reay, Clara Robison, Gail Scott, Hamish Small, Juliette Smith, Bongkeun Song, Wolfgang Vogelbein
IMPACTS OF LATE SUMMER BLOOMS IN THE LOWER CHESAPEAKE BAY
- 4:00 Alan Wilson**, Angelea Belfiore, Riley Buley, Edna Fernandez-Figueroa, Matthew Gladfelder
ZOOPLANKTON AS AN ALTERNATIVE METHOD FOR CONTROLLING PHYTOPLANKTON IN CATFISH POND AQUACULTURE
- 4:15 Rifat Hasan**, Steven Hall, Ashley Beck
RE-FRAMING WASTE AS A VALUABLE RESOURCE: A METABOLIC APPROACH TO VALUE ADDED PRODUCT VIA CYANOBACTERIAL CULTIVATION

MARINE PROTECTED RESOURCES RISK MITIGATION TECHNIQUES

Friday, March 4 1:30 PM - 5:00 PM Pacific E

Chair: Kevin Madley

- 1:30 Josh Hatfield**, Marc Micatka, Eric Singer, Wesley Welch, Jeffrey Au, Mia Wong
LEVERAGING OF INTERNET OF THINGS AND MACHINE LEARNING TECHNOLOGIES FOR AUTOMATED MONITORING OF MARINE MAMMALS
- 1:45 Scott Lindell**, David Bailey, Maggie Aydlett, Michael Chambers, Dan Smith, John Lovett
NOVEL BOTTOM CULTURE OF SUGAR KELP *Saccharina latissima* FOR DIVERSIFYING MARINE FARMS
- 2:00 David Fredriksson**, Doug Chapman, Matthew Campbell, Paul Dobbins, Bailey Moritz
A HIGH FLYER SENSOR FOR MARINE MAMMAL ENTANGLEMENT DETECTION AND NOTIFICATION
- 2:15 Ann Bowles**, Mark Drawbridge, Pamela K. Yochem, Paul Dobbins, James Kohl, Daniel Codd, Diane Windham
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- 2:30 Kristy Long**, Laura Gray, Jaclyn Taylor
AQUACULTURE AND THE MARINE MAMMAL PROTECTION ACT

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