**Hisham A. Abdelrahman**

BVSc, MVSc, MPS, PhD

Assistant Professor, Department of Veterinary Hygiene and Management Faculty of Veterinary Medicine, Cairo University

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**EDUCATION**

**Doctor of Philosophy August 2016**

Fisheries & Aquaculture

School of Fisheries, Aquaculture and Aquatic Sciences, Auburn University, Alabama, USA

Thesis title: Consequences of Decreased Water Temperature Caused by Aerator-Induced Evaporation on Growth of Pacific White Shrimp *Litopenaeus vannamei* in Ponds

Advisory Committee: Dr. Claude E. Boyd (Major Professor), Dr. William (Bill) Daniels, Dr. Terry Hanson, and Dr. Asheber Abebe

**Ph.D. Minor in Statistics August 2016**

Department of Mathematics and Statistics

College of Sciences and Mathematics, Auburn University,

Alabama, USA

**Master of Probability and Statistics (MPS) August 2015**

Department of Mathematics and Statistics

College of Sciences and Mathematics, Auburn University, Alabama, USA

Advisory Committee: Dr. Asheber Abebe (Major Professor), Dr. Claude E. Boyd, and Dr. Guanqun (Vivian) Cao

**Master of Veterinary Sciences (MVSc) February 2010**

Department of Hygiene and VeterinaryManagement

Faculty of Veterinary Medicine, Cairo University, Cairo, Egypt.

Thesis title: Environmental Impact of Water Quality Used in Earthen Pond Aquaculture on Freshwater Fish Performance

Advisory Committee: Dr. Zakia Ahmed (Major Professor), and Dr. Wael Anwer

**Bachelor of Veterinary Sciences (BVSc) January 2006**

Faculty of Veterinary Medicine, Cairo University, Cairo, Egypt.

**EMPLOYMENT HISTORY**

**School of Fisheries, Aquaculture, and Aquatic Sciences, Auburn University, USA**

• Statistical consultant for D. Jim Stoeckel’s Ecology lab Jan. 2020 – Present

• Postdoctoral Research Associate: Dr. Jim Stoeckel Jul. 2016 – Jul. 2019

• Manager of Crustacean and Molluscan Ecology Lab Jul. 2017 – Aug. 2019

• Ph.D. Graduate Research Assistant: Dr. Claude Boyd Aug 2012 – Aug 2016

**Department of Hygiene and Veterinary Management, Faculty of Veterinary Medicine, Cairo University**

• Assistant Professor Aug. 2017 – Present

• Assistant Lecturer Mar. 2010 – Jul. 2017

• Teaching Assistant Jul. 2007 – Mar. 2010

**Technical Consultant** Feb. 2012

Part-time consultant at Delta Vet. Center (Veterenarian Pharmaceutical Company)

**Fish Farm Manager** Apr. 2010–Apr. 2012

Part-time manager of a fish farm Rayan Valley, Fayoum, Egypt Species: Nile Tilapia and Flathead grey mullet

**TEACHING EXPERIENCE**

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| **School of Fisheries, Aquaculture and Aquatic Sciences**, College of Agriculture,Auburn University, Auburn, Alabama, USA • **Principles of Aquaculture** o FISH 5210 (Fall 2017): Upper-level Undergraduate students o FISH 6210 (Fall 2017): Graduate students  |
| Description  | Upon completion of this course, students should be able to: a) Learn the status and future of aquaculture in the U.S. and around the world. b) Understand the basic principles of aquaculture and understand how they influence the carrying capacity, growth, and yield of cultured plants and animals. c) Apply the principles to selected species to understand how they influence production methods. d) Learn how major fish and crustacean culture species are farmed.  |
| Role  | Lead instructor  |
| Class Size  | 15 Undergraduate students (from USA, New Zealand, and Indonesia) 9 Graduate students (7 Masters and 2 Ph.D.; from USA, China, Vietnam, and Lebanon) |

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| **Aquaculture Production (**Taught as a study abroad course in Can Tho University, Viet Nam) o FISH 5250 (Spring 2018): Upper-level Undergraduate students o FISH 6250 (Spring 2018): Graduate students  |
| Description  | This course provides field-based training in production aquaculture and applies the principles taught in FISH 5210/6210 (Principles of Aquaculture) to real-world production situations. Students learn about the production of major aquatic species in various culture systems and use real research/production data to understand these principles.  |
| Role  | Co-instructor with Dr. William (Bill) Daniels  |
| Class Size  | 55 Undergraduate students (Can Tho University, Viet Nam) 2 Undergraduate students (Auburn University, USA) 9 Graduate students (Auburn University, USA)  |
| **Water Science** (Fall 2015 and 2018) o FISH 5220: Upper-level Undergraduate students o FISH 6220: Graduate students  |
| Description  | To acquaint students in fisheries, aquaculture, and other areas of agriculture with the properties of water and the basic principles of hydrology, water chemistry, and water quality. The course focuses on basic principles needed for understanding water quality dynamics in water bodies.  |
| Role  | Co-instructor (guest lecturer) with Dr. Claude E. Boyd  |
| Class Size  | ~ 12 Undergraduate students ~ 23 Graduate students  |
| **Water and Sediment Quality Management in Aquaculture** (Fall 2014) FISH 7230: Graduate students  |
| Description  | To present techniques for managing water and sediment quality in aquaculture. The laboratory provides methods for measuring water and sediment quality.  |
| Role  | Co-instructor with Dr. Claude E. Boyd (Taught the aerator performance testing laboratory)  |
| Class Size  | 9 Graduate students  |
| **Animal Hygiene - VHM 506 (**each semester, 2007 – 2012 and Fall 2019)  |
| Description  | Basics of disinfection and pest control in animal farms  |
| Role  | Teaching assistant/Lecturer - Teaching lectures and Running practical laboratories 4 times weekly throughout the semester with other TAs, teaching disinfectants and disinfection methods.  |
| Class Size  | ~ 800 senior undergraduate students (divided as 100 per laboratory)  |
| **Poultry and Aquaculture Hygiene - VHM 507 (**each semester, 2007 – 2012 and Fall 2019)  |
| Description  | Fish farm design, site selection, management procedures, and poultry farm management.  |
| Role  | Teaching assistant/Lecturer- Teaching lectures and Running practical laboratories 4 times weekly throughout the semester with other TAs, teaching calculations required for fish and poultry farms, biosecurity, and management procedures.  |
| Class Size  | ~ 800 senior undergraduate students (divided as 100 per laboratory)  |
| **Veterinary Epidemiology - VHM 402 (**each semester, 2007 – 2012 and Fall 2019)  |
| Description  | Concepts of veterinary epidemiology  |
| Role  | Teaching assistant/Lecturer- Teaching lectures and Running practical laboratories 4 times weekly throughout the semester with other TAs, teaching epidemiology calculations  |
| Class Size  | ~ 800 Upper-level undergraduate students (divided as 100 per laboratory)  |
| **Scientific Research Skills & Ethics (NDC 1000)** (Fall 2019)  |
| Description  | Mandatory class for all graduate students  |
| Role  | Lecturer (Teaching experimental designs, data presentation, citation reference styles, and international publication)  |
| Class Size  | ~70 graduate students  |
| **Introduction to Statistics Using SPSS** (Fall 2019)  |
| Description  | Mandatory workshop for all graduate students  |
| Role  | Main Instructor  |
| Class Size  | 25 in October 2019, and 13 in November 2019  |
| **Introduction to Applied Statistics Using R** (Fall 2019)  |
| Role  | Main Instructor  |
| Class Size  | 50 Faculty members and researchers from different Colleges, Universities and Governorates. |

**STUDENT RESEARCH SUPERVISION**

I serve as a committee member for 4 graduate students at the School of Fisheries, Aquaculture, and Aquatic Sciences, Auburn University, USA; and 2 graduate students at the Faculty of Veterinary Medicine, Cairo University, Egypt.

- Linh Le Gia Vo (MSc student, May 2017 – May 2019), Auburn University, USA:

Co-supervising with Dr. Allen Davis, Dr. William Daniels, and Dr. Ian Butts. Thesis title: The efficiency of modified canola oil as a replacement of Menhaden fish oil in practical diet for Pacific white shrimp, *Litopenaeus vannamei* (graduated: May 2019).

- Austin Haney (MSc student, May 2017 – May 2019), Auburn University, USA:

Co-supervising with Dr. James Stoeckel, Dr. Brian Helms, and Dr. Russel Wright. Thesis title: Use of metabolic assays to assess thermal and hypoxia stress of freshwater mussel species from central Texas (graduated: May 2019).

- Ryan Fluharty (MSc student, Aug. 2017 – August 2019), Auburn University, USA:

Co-supervising with Dr. James Stoeckel, and Dr. Matthew Catalano. Tentative thesis title: Assess the effects of temperature, salinity and turbidity on freshwater mussel species using MosselMonitor® and Micro-respirometry (expected graduation: Aug. 2019).

- Kaelyn Fogelman (PhD student, Aug. 2017 – Present), Auburn University, USA: Co-supervising with Dr. James Stoeckel, Dr. Brian Helms, and Dr. Russel Wright. Tentative thesis title: Evaluating the feeding ecology of endemic freshwater mussels (Unionidae) in central Texas using stable isotope and fatty acid analysis (expected graduation: Dec. 2021).

- Heba Ali Mohamed Gad (MSc student, Aug. 2018 – Present), Cairo University, Egypt:

Co-supervising with Dr. Zakia Ahmed. Tentative thesis title: Assessment of environmental risk factors associated with emerged infectious bronchitis in poultry farms in Egypt (expected graduation: Dec. 2021).

- Mohamed Abdelsalam Ali (MSc student, Aug. 2019 – Present), Cairo University, Egypt:

Co-supervising with Dr. Sherif Marouf, and Dr. Ahmed Maher. Tentative thesis title: Assessments of some Mycoplasma vaccines used in layers farm (expected graduation: Dec. 2022).

**JUDGE, REVIEWER & EDITOR**

2020 Reviewer of Journal of World Aquaculture Society

2020 Reviewer of Aquaculture Reports

2020 Reviewer of Journal of Oceanology and Limnology

2019 Reviewer of Cairo University project grant proposals

2019 Reviewer of Hydrobiologia

2019 Reviewer of Aquaculture Research

2019 Reviewer of International Journal of Environmental Science and Technology

2019 Reviewer of Advances in Animal and Veterinary Sciences

2019 Reviewer of International Journal of Veterinary Science and Medicine

2019 Judge student abstracts for Aquaculture America 2020 meeting in Hawaii, USA

2019 Judge student poster presentations at the World Aquaculture Society conference,

New Orleans, LA, USA

2019 Judge at “This is Research: Student Symposium”, Graduate School, Auburn

University, USA

2018 Judge the Three-minute thesis competition (3MT) preliminary presentations,

Auburn University, USA

2017 Judge the Three-minute thesis competition (3MT) preliminary presentations,

Auburn University, USA

2016 Judge at “This is Research: Student Symposium”, Graduate School, Auburn

University, USA

**AWARDS & DISTINCTIONS**

Appointed to be chair of the conference committee of WAS-AC, the African Chapter of World Aquaculture Society (2020 – 2022).

Appointed to be member of the scientific committee of AFRAQ20, the upcoming African Chapter, World Aquaculture Society’s first annual meeting, Alexandria, Egypt in December 2020.

Best in class presentation award (first place) during the Food safety Education Forum. Risk Based Approach to Ensure Global Food Safety and Security MIEH 607 - Global Classroom 2020, School of Public Health, University of Maryland, USA. June 1st to July 10th, 2020.

An Outstanding leadership award during the Food safety Education Forum. Risk Based Approach to Ensure Global Food Safety and Security MIEH 607 - Global Classroom 2020, School of Public Health, University of Maryland, USA. June 1st to July 10th, 2020.

Awarded the International Publication Award of Cairo University for the years 2017, 2018, and 2019.

Distinguished Future Faculty Certificate (License: AUBURN-15938198) from Biggio Center for the Enhancement of Teaching and Learning, Auburn University, USA.

Second place in the Alltech Innovation Competition 2017 “Aqua Challenge”, at Aquaculture America 2017. San Antonio, Texas, USA. February

Best Student Oral Presentation Award (Second place) sponsored by the World Aquaculture Society (WAS) for the oral presentation at Aquaculture 2016 titled, "Influence of Variation in Water Temperature on Survival, Growth, and Yield of Pacific White Shrimp *Litopenaeus vannamei* in Inland Ponds for Low-Salinity Culture". Las Vegas, Nevada, USA. February 22-26, 2016.

People’s Choice Award winner at Auburn University Three Minute Thesis Competition (3MT). The presentation titled, “Influence of Variation in Water Temperature on Survival, Growth, and Yield of Pacific White Shrimp in Inland Ponds”. Auburn University Graduate School and Student Government Council. The Hotel at Auburn University & Dixon Conference Center, Auburn, Alabama, USA. November 19, 2015.

Ph.D. runner-up (2nd place) at Auburn University Three Minute Thesis Competition(3MT).

The presentation titled, “Influence of Variation in Water Temperature on Survival, Growth, and Yield of Pacific White Shrimp in Inland Ponds“. Auburn University Graduate School and Student Government Council. The Hotel at Auburn University & Dixon Conference Center, Auburn, Alabama, USA. November 19, 2015.

Preparing Future Faculty (PFF) Certificate, Biggio Center for the Enhancement of Teaching and Learning, Auburn University, Auburn, Alabama, USA. 2015-2016.

Third place in the North America Regional Graduate Competition in the Alltech Young Scientist Program 2014 – 2015, for the paper titled, "Effects of Mechanical Aeration on Water Temperature and Evaporation Rate in Aquaculture Ponds". April 13, 2015.

Third place in the United States Graduate Competition in the Alltech Young Scientist Program 2014 – 2015, for the paper titled, "Effects of Mechanical Aeration on Water Temperature and Evaporation Rate in Aquaculture Ponds". March 20, 2015.

Best Student Oral Presentation Award (First place) sponsored by Merck and U.S. Aquaculture Society (USAS) for the presentation at Aquaculture America 2015 titled, "Effects of Paddlewheel and Diffused-Air Aerators on Water Temperature and Pond Evaporation". New Orleans, Louisiana, USA. February 19-22, 2015.

**PUBLICATIONS AND PRESENTATIONS**

(**Google Scholar**: *h-*index: 6, *i10-*index: 4, Citations: 183; **RG score**: 16)

**Refereed Publications and Theses**

15. Ghasem Mohammadi, Gholamreza Rafiee, and Hisham A. Abdelrahman. Effects of dietary *Lactobacillus plantarum* (KC426951) in biofloc and stagnant-renewal systems on growth performance, mucosal parameters and serum innate responses of Nile tilapia *Oreochromis niloticus*. Fish Physiology and Biochemistry 46 (**2020**): 1167–1181. DOI: 10.1007/s10695-020-00777-w (Citations: 3).

14. Austin Haney, Hisham Abdelrahman, and James Stoeckel. Effects of thermal and hypoxic stress on respiratory patterns of three unionid species: implications for management and conservation. Hydrobiologia 847 (**2020**): 787–802. DOI: 10.1007/s10750-019-04138-4

13. Ahmed Elaswad, Karim Khalil, Zhi Ye, Ahmed Alsaqufi, Hisham Abdelrahman, Baofeng Su, Dayan A. Perera, Sheng Dong, Nermeen Abass and Rex A. Dunham. “Effects of cecropin transgenesis and interspecific hybridization on the resistance to *Ichthyophthirius multifiliis* in Channel Catfish and Channel Catfish Female X Blue Catfish Male Hybrids” North American Journal of Aquaculture 81.3 (**2019**): 242-252. DOI: 10.1002/naaq.10096 (Citations: 1).

12. Hisham A. Abdelrahman, Asheber Abebe, and Claude E. Boyd. “Influence of Variation in Water Temperature on Survival, Growth, and Yield of Pacific White Shrimp *Litopenaeus vannamei* in Inland Ponds for Low-Salinity Culture.” Aquaculture Research 50.2 (**2019**): 658-672. DOI: 10.1111/are.13943 (Citations: 11).

11. Abdelrahman HA, and Boyd CE. “Effects of mechanical aeration on evaporation rate and water temperature in aquaculture ponds.” Aquaculture Research 49.6 (**2018**):2184–2192 (Citations: 2).

10. Ahmed, Zakia AM, Mahmoud Khalaf, and Hisham Abdelrahman. “Nanotechnology in veterinary practices” Arab Journal of Agricultural Sciences 1.3 (**2018**): 41–58. DOI: 10.21608/asajs.2018.42718.

9. Khalil, Karim, Medhat Elayat, Elsayed Khalifa, Samer Daghash, Ahmed Elaswad, Michael Miller, Hisham Abdelrahman et al. “Generation of Myostatin Gene-Edited Channel Catfish (Ictalurus punctatus) via Zygote Injection of CRISPR/Cas9 System” Scientific Reports 7.1 (**2017**): 7301 (Citations: 30).

8. Hisham Abdelrahman, et al. "Aquaculture genomics, genetics and breeding in the United States: current status, challenges, and priorities for future research." BMC Genomics 18.1 (**2017**): 191 (Citations: 79).

7. Shamim Naigaga, Claude E. Boyd, Philippe Gaillard, Hisham A. Abdelrahman, and Joseph J. Molnar. “Assessing the Reliability of Water-Test Kits for Use in Pond Aquaculture.” Journal of the World Aquaculture Society 48.8 (**2017**): 555 (Citations: 4).

6. Hisham A. Abdelrahman "Consequences of Decreased Water Temperature Caused by Aerator-Induced Evaporation on Growth of Pacific White Shrimp *Litopenaeus vannamei* in Ponds." Dissertation, School of Fisheries, Aquaculture and Aquatic Sciences, Auburn University, USA. August **2016**. (Citations: 3).

5. Ahmed, Zakia AM, H. A. Hussein, M. A. Rohaim, and HA Abdel Rahman. "Efficacy of Composting Poultry Mortality and Farms Wastes with Mixed Respiratory Infection Viruses H5N1 and H9N2 in Egypt." Global Veterinaria 11.5 (**2013**) 640-648. (Citations: 5).

4. Zakia AM Ahmed, ZM Sedik, MD Alharery, MA Khalaf, Shimaa A Nasr, and HA Abdelrahman. “Microbial Ecology of Composting Dead Poultry and Their Wastes.” Global Veterinaria 9.6 (**2012**): 683-690. (Citations: 6).

3. Zakia Ahmed, Faten Fathy Mohammed, and Hisham A. Abdelrahman. Ecomonitoring of Climate Impact on *Tilapia niloticus* Performance and Development of Different Histopathological Changes. Global Veterinaria 8.3 (**2012**) 209-221. (Citations: 7).

2. Zakia A. Ahmed, and Hisham A. Abdelrahman. Ecomonitoring of Climate Impact on Earthen Pond Water Quality in El-Fayoum, Egypt. International Research Journal of Microbiology 2.11 (**2011**): 442-454. (Citations: 6).

1. Hisham A. Abdelrahman. Environmental Impact of Water Quality Used in Earthen Pond Aquaculture on Freshwater Fish Performance. Thesis, Faculty of Veterinary Medicine, Cairo University, Egypt. February **2010**. (Citations: 2).

**Manuscripts in non-refereed journals**

2. Hisham A. Abdelrahman and Claude E. Boyd (2018). Effects of mechanical aeration on evaporation rate, water temperature. (Global Aquaculture Advocate, May 14, 2018). (Citations: 1).

1. Hisham A. Abdelrahman and Karen L. Veverica (2016). Testing Micro-Nanobubble Generating Device at Different Salinities (Global Aquaculture Advocate, Feb. 7th, 2016).

**Manuscripts in submission**

4. Olfat A. Mahdy, Sahar Z. Abdel-Maogood, **Hisham A. Abdelrahman**, Faten M. Fathy, and Mai A. Salem. Ultra-structural and histopathological alterations in *Clinostomum phalacrocoracis* metacercariae (Digenea: *Clinostomatidae*) isolated from *Tilapia zillii* after exposure to *Verbesina alternifolia* and *Mentha piperita* oil extracts. Submitted to *Aquaculture International* on June 12th, **2020**. Manuscript ID: AQUI-D-20-00397.

3. Reem M. Serag, Ashraf M. Abu-Seida, **Hisham A. Abdelrahman**, Ahmed Samir, Ibrahim M. Ibrahim, Naglaa A. AbdElkader. An Epidemiological Study on Orodental Disorders in 3,791 Working Donkeys in Egypt: Prevalence and Risk Factors. Submitted to *Journal of Equine Veterinary Science* on June 10th, **2020***.* Manuscript ID: JEVS-D-20-00255.

2. Manal R. Bakeer 1, **Hisham A. Abdelrahman**, Karim M. Khalil. Effects of pomegranate peel and olive pomace supplementation on reproduction and antioxidative status of rabbit doe. Submitted to *Reproduction in Domestic Animals* on May 23rd, **2020**. Manuscript ID: RDA-OA-May-2020-0283.R1.

1. Jacob Westhoff, James Stoeckel, **Hisham Abdelrahman**, and Chris Rice. Linking multiple aspects of thermal performance to explore thermal resource partitioning by native and invasive crayfish. Submitted to *Ecology* on February 25th, **2020**. Manuscript ID: ECY20-0209.

**Manuscripts to be submitted in 2020/2021**

8. **Hisham A. Abdelrahman**, Nathan Whelan, Brian Helms, and James Stoeckel. Development and Validation of Environmental DNA (eDNA) Markers to Assess Populations of Invasive *Faxonius virilis* and Native *F. erichsonianus* Crayfish Species in the Southeastern United States.

7. James Stoeckel, **Hisham Abdelrahman**, Mary Szoka, David Blersch, and Jeremiah Davis. Crayfish Chimney Function: Airflow, Oxygen, and Pheromones.

6. Sahar H. El-Nagar, **Hisham A. Abdelrahman**, Mohamed A. Helal, Shawky Mahmoud, and S. Leanne Dillard. Ameliorative Effects of Nano-Chromium Chloride Particles on Broiler Rabbit Performance.

5. Jennifer Weber, **Hisham Abdelrahman**, James Stoeckel, and Brian Helms. Variations in Morphology and Physiology of Introduced Populations of the Virile Crayfish *Faxonius virilis*

4. Austin Haney, **Hisham Abdelrahman**, and James Stoeckel. Impacts of Acute and Chronic Heat Stress on Potential Metabolic Activity (PMA) of Freshwater Mussels.

3. **Hisham A. Abdelrahman**, Carla L. Atkinson, and James A. Stoeckel. Use of the Electron Transport System (ETS) Assay to Test for Differences in Thermal Tolerance of Eight Mussel Species in the Sipsey River, Alabama.

2. **Hisham A. Abdelrahman**, Lindsay White, and James A. Stoeckel. Optimization of the Electron Transport System (ETS) Assay for the Measurement of Thermal Tolerance.

1. Karim Khalil, Ahmed Elaswad, Patrick Page-McCaw, **Hisham Abdelrahman**, Maximillian Michel, Wenbiao Chen, Roger Cone, and Rex Dunham. Altering Melanocortin-4 Receptor Activity in Channel Catfish (*Ictalurus Punctatus*) Using CRISPR/Cas9 System.

**Published abstracts, conference proceedings, and presentations**

**\*Indicates Presenter**

40. Aya S. Hussain\*, Kaelyn Fogelman, **Hisham Abdelrahman**, Luke A. Roy and James Stoeckel (2020). Thermal Tolerance of the White-Legged Shrimp *Litopenaeus vannamei* in Low Salinity Culture Systems. Oral presentation at Aquaculture America 2020. Honolulu, Hawaii, USA. February 9-12.

39. **Attended** the 8th International Conference of Veterinary Research Division, National Research Center, Giza, Egypt. December 3-5, 2019.

38. **Hisham Abdelrahman\***, Austin Haney, and James Stoeckel (2019). Impacts of Acute and Chronic Heat Stress on Potential Metabolic Activity (PMA) of Freshwater Mussels. Oral presentation at the Freshwater Mollusk Conservation Society meeting. San Antonio, Texas, USA. April 14-18.

37. James Stoeckel\*, **Hisham Abdelrahman**, Austin Haney, and Brian Helms (2019). Effects of thermal and hypoxia stress vary among mussel species and subpopulations in central Texas. Oral presentation at the Freshwater Mollusk Conservation Society meeting. San Antonio, Texas, USA. April 14-18.

36. Ryan Fluharty, **Hisham Abdelrahman**, and James Stoeckel\* (2019). Effect of Declining Viability and Rising Temperature on Oxygen Demand of Mussel Broods. Oral presentation at the Freshwater Mollusk Conservation Society meeting. San Antonio, Texas, USA. April 14-18.

35. Kaelyn Fogelman\*, Jim Stoeckel, **Hisham Abdelrahman**, Brendan Higgins, Haixin Peng, and Brian Helms (2019). Evaluating the Feeding Ecology of Endemic Freshwater Mussels (Unionidae) in Central Texas Using Stable Isotope and Fatty Acid Analysis. Oral presentation at the Freshwater Mollusk Conservation Society meeting. San Antonio, Texas, USA. April 14-18.

34. **Hisham A. Abdelrahman\***, and Claude E. Boyd (2019). Effects of Turbidity and Mechanical Aeration on Water Temperature and Pond Evaporation. Oral presentation at Aquaculture 2019. New Orleans, Louisiana, USA. March 7-11.

33. **Hisham Abdelrahman\***, James Stoeckel, and Jacob Westhoff (2019). Enzymatic Thermal Optimum of Multiple Crayfish Species. Oral presentation at Aquaculture 2019. New Orleans, Louisiana, USA. March 7-11.

32. Shaimaa Salem\*, Iman Ibrahim, Attila Karsi, **Hisham A. Abdelrahman**, and D.Allen Davis. The Effect of Crystalline Amino Acids Supplementation in the Reduced Intact Protein Diets on Muscle Growth and Intestinal Morphology of Channel Catfish *Ictalurus Punctatus*. Oral presentation at Aquaculture 2019. New Orleans, Louisiana, USA. March 7-11.

31. James Stoeckel\*, Rebecca Tucker, **Hisham Abdelrahman**, Aaron Cupps, Ann Allert, Kim Fredricks, Seth Herbst, Sara Thomas, and Brian Roth (2019). Evaluation of Carbon Dioxide to Stimulate Emergence of Red Swamp Crayfish from Invaded Ponds. Oral presentation at Midwest Fish & Wildlife Conference 2019. Cleveland, Ohio, USA. January 27-30.

30. **Hisham Abdelrahman\***, James Stoeckel, and Jacob Westhoff (2019). Comparisons of Enzymatic Thermal Optima among Native and Invasive Crayfish Species. Oral presentation at Midwest Fish & Wildlife Conference 2019. Cleveland, Ohio, USA. January 27-30.

29. **Hisham Abdelrahman\***, Mallary Clay, Chester Figiel, Nathan Whelan, Brian Helms, and James Stoeckel (2019). Development and validation of environmental DNA (eDNA) markers for detection of *Faxonius virilis*& *F. erichsonianus*. Oral presentation at Annual Alabama Mollusk and Crayfish Meeting. Andalusia, Alabama, USA. January 16-17.

28. **Hisham Abdelrahman\***, Jacob Westhoff, and James Stoeckel (2019). Enzymatic Thermal Optimum of Multiple Crayfish Species…Updates. Oral presentation at Annual Alabama Mollusk and Crayfish Meeting. Andalusia, Alabama, USA. January 16-17.

27. James Stoeckel\*, **Hisham Abdelrahman**, Mary Szoka, David Blersch, and Jeremiah Davis (2019). What is the Function of Crayfish Chimneys? Oral presentation at Annual Alabama Mollusk and Crayfish Meeting. Andalusia, Alabama, USA. January 16-17.

26. James Stoeckel\*, **Hisham Abdelrahman**, and Rebecca Tucker (2019). Use of CO2 to Control Invasive Crayfish. Oral presentation at Annual Alabama Mollusk and Crayfish Meeting. Andalusia, Alabama, USA. January 16-17.

25. **Hisham Abdelrahman\***, James Stoeckel, and Jacob Westhoff (2018). Comparisons of enzymatic thermal optima among narrowly and broadly distributed crayfish species. Oral presentation at the International Association of Astacology symposium. Pittsburgh, Pennsylvania, USA. July 9-13.

24. James Stoeckel\*, **Hisham Abdelrahman**, Brian Helms, David Blersch, Jeremiah Davis, and Mary Szoka (2018). Crayfish chimney function: airflow, oxygen, and pheromones. Oral presentation at the International Association of Astacology symposium. Pittsburgh, Pennsylvania, USA. July 9-13.

23. Jacob Westhoff\*, Chris Rice, **Hisham Abdelrahman**, and James Stoeckel (2018). Multi-method inference of temperature tolerance and preference for a native and an invasive crayfish. Oral presentation at the International Association of Astacology symposium. Pittsburgh, Pennsylvania, USA. July 9-13.

22. Jennifer Weber, **Hisham Abdelrahman**, James Stoeckel\*, and Brian Helms (2018). Variations in Morphology and Physiology of Introduced Populations of the Virile Crayfish *Faxonius virilis.* Oral presentation at the International Association of Astacology symposium. Pittsburgh, Pennsylvania, USA. July 9-13.

21. James Stoeckel\*, Austin Haney, and **Hisham Abdelrahman** (2018). Comparison of enzymatic thermal tolerance among rare and common mussel species of central Texas. Oral presentation at Society for Freshwater Science annual meeting. Detroit, Michigan, USA. May 20-24.

20. **Hisham A. Abdelrahman\*,** Austin Haney, Carla L. Atkinson, and James A. Stoeckel (2018). Is a widespread, common species already living near its upper thermal tolerance limit in its natural environment? Oral presentation at Society for Freshwater Science annual meeting. Detroit, Michigan, USA. May 20-24.

19. Karen Veverica\* and **Hisham Abdelrahman** (2018). Some site-appropriate options for aeration in aquaculture. Oral presentation at the Uganda Fish Farmer Association Meeting. Uganda. January

18. James A. Stoeckel\*, **Hisham Abdelrahman**, Rebecca Tucker, Austin Haney, Ryan Fluharty, Lindsay White, and Kaelyn Fogelman (2017). Physiological Ecology of Freshwater Mussels. Poster presentation at Faculty Research Seminar, Auburn University, Auburn, Alabama, USA. September 22.

17. James A. Stoeckel\*, Brian Helms, Austin Haney, Ryan Fluharty, Rebecca Tucker, and **Hisham Abdelrahman** (2017). Tolerance Study Updates for Central Texas Mussels. Invited Webinar for concerned stakeholders in the state of Texas.

16. **Hisham A. Abdelrahman\***, Mallary Clay, Nathan Whelan, Brian Helms, and Jim Stoeckel (2017). Use of Environmental DNA (eDNA) and the Electron Transport System (ETS) Assay to Assess Populations of Invasive *Orconectes Virilis* in the Southeastern United States. Oral presentation at Society for Freshwater Science annual meeting. Raleigh, North Carolina, USA. June 4-8.

15. **Hisham A. Abdelrahman\***, Lindsay White, Carla L. Atkinson, Troy Farmer, and James A. Stoeckel (2017). Use of the Electron Transport System (ETS) Assay to Test for Differences in Thermal Tolerance of Eight Mussel Species in the Sipsey River, Alabama. Oral presentation at the Freshwater Mollusk Conservation Society meeting. Cleveland, Ohio, USA. March 26-30.

14. **Hisham A. Abdelrahman\*** and Karen L. Veverica (2017). The Performance of New Airlift Aerators at Different Salinities, Using Different Blower Powers. Oral presentation at Aquaculture America 2017. San Antonio, Texas, USA. February 19-22.

13. **Hisham A. Abdelrahman\*** and Claude E. Boyd (2017). Effects of Clay and Phytoplankton Turbidity on Thermal Stratification in Shallow Aquaculture Ponds. Oral presentation at Aquaculture America 2017. San Antonio, Texas, USA. February 19-22.

12. **Hisham A. Abdelrahman\***, Mallary Clay, Chester Figiel, Nathan Whelan, Brian Helms, and Jim Stoeckel (2017). Physiological constraints of southern introductions of the Virile crayfish (*Orconectes virilis*). Oral presentation at the Annual Alabama Mollusk and Crayfish Meeting. Guntersville, Alabama, USA. January 18-19.

11. James Stoeckel\*, **Hisham A. Abdelrahman**, Lindsay White, Rebecca Tucker, Austin Haney, Carla L. Atkinson (2017). Assessing thermal and hypoxia stress to freshwater mussels. Oral presentation at the Annual Alabama Mollusk and Crayfish Meeting. Guntersville, Alabama, USA. January 18-19.

10. **Hisham A. Abdelrahman\*** (2016). Dr. Claude Boyd’s Water Quality Lab Update. Oral presentation at the 2016 Annual Catfish Update Meeting. Demopolis, Alabama, USA. December 13th.

9. **Hisham A. Abdelrahman\*** and Claude E. Boyd (2016). Water Loss as a Consequence of Using Mechanical Aeration in Aquaculture. Poster presentation at WaterSmart Innovations 2016. Las Vegas, Nevada, USA. October 5-7.

8. **Hisham A. Abdelrahman\*** and Claude E. Boyd (2016). Water Temperature as a Possible Cause of Variations in Performance of Pacific White Shrimp *Litopenaeus vannamei* in Inland Ponds for Low-Salinity Culture. Oral presentation at “This is Research: student symposium 2016”. The Auburn University Student Center, Auburn University, Auburn, Alabama, USA. April 13th.

7. **Hisham A. Abdelrahman\*** and Claude E. Boyd (2016). Influence of Variation in Water Temperature on Survival, Growth, and Yield of Pacific White Shrimp *Litopenaeus vannamei* in Inland Ponds for Low-Salinity Culture. Oral presentation at Aquaculture 2016. Las Vegas, Nevada, USA. February 22-26.

6. **Hisham A. Abdelrahman\*** and Claude E. Boyd (2016). Thermal Stratification in Shallow Aquaculture Ponds: Response to Turbidity and Aeration. Oral presentation at Aquaculture 2016. Las Vegas, Nevada, USA. February 22-26.

5. **Hisham A. Abdelrahman\*** and Claude E. Boyd (2016). Influences of Different Types and Rates of Mechanical Aeration on Water Temperature and Evaporation Rate inAquaculture Ponds. Oral presentation at 2016 meeting of Georgia Chapter of the American Fisheries Society. Columbus, Georgia, USA. February 9-11.

4. **Hisham A. Abdelrahman\*** and Claude E. Boyd (2015). Effects of Paddlewheel and Diffused-Air Aerators on Water Temperature and Pond Evaporation. Oral presentation at Aquaculture America 2015. New Orleans, Louisiana, USA. February 19-22. (Citations: 3).

3. **Hisham A. Abdelrahman\*** and Claude E. Boyd (2015). Effects of Clay and Phytoplankton Turbidity on Water Temperature and Pond Evaporation. Oral presentation at Aquaculture America 2015. New Orleans, Louisiana, USA. February 19-22.

2. **Hisham A. Abdelrahman\*** and Karen L. Veverica (2015). Comparison between Performance Tests for Different Types of Aerators. Oral presentation at Aquaculture America 2015. New Orleans, Louisiana, USA. February 19-22.

1. **Hisham A. Abdelrahman\*** and Claude E. Boyd (2014). Effects of Mechanical Aeration on Water Temperature and Pond Evaporation. Oral presentation at Aquaculture America 2014. Seattle, Washington, USA. February 9-12.

**Institutional seminars and invited guest lectures**

3. Invited lecturer at The Egyptian International Center for Aquaculture, Egypt (2019). Title: Shrimp Culture. Training of fish farm consultants from Burkina Faso, Burundi, Cote D'ivoire, Madgascar, Malawi, Nigeria, Sudan, Tanzania, and Togo. The training was funded by Japan International Cooperation Agency. September 1st.

2. Invited seminar at the Auburn University, USA (2014). Title: Air and Oxygen Diffusers: Testing and Selection. Training of farmers from Nigeria and Ghana. Certification of Aquaculture Professional.E.W. Shell Fisheries Center, School of Fisheries, Aquaculture and Aquatic Sciences, September 24.

1. Invited seminar at the Auburn University, USA (2014). Title: Learning about the aquaculture competition in Vietnam through first-hand experience: the students’ journey. Office of International Agriculture, International Scholars Seminar, February 25.

**GRANTS**

**Research Grants**

Physiological Basis for Thermal Tolerance of Shrimp in Low-Salinity Ponds: Implications for Strain Selection and Management Strategies (2021-2022). Submitted to U.S. Department of Agriculture, National Institute of Food and Agriculture (USDA-NIFA) on April 29th, 2020. Total requested funds are 258,588$.

Thermal Tolerance of White-Legged Shrimp in Low Salinity Aquaculture Systems of the Southeastern U.S. (2018-2020). Funded by Alabama Agricultural Experiment Station. Auburn University, USA (50,000$)

**Travel Grants**

Tankersley Endowment fund to assist with teaching Aquaculture Production in Vietnam. December 2017. **$2400**

Universities Council on Water Resources’ graduate student scholarship to attend the WaterSmart Innovations Conference in Las Vegas, October 2016. **$1200**

Auburn University’s Graduate Student Travel Grant to attend the Annual meeting of the U.S. Aquaculture Society. Las Vegas, Nevada. Feb. 22-26, 2016

Auburn University’s American Fisheries Society Chapter Travel Grant to attend the Annual meeting of the U.S. Aquaculture Society. New Orleans, Louisiana. Feb. 19-22, 2015.

Auburn University’s Graduate Student Travel Grant to attend the Annual meeting of the U.S. Aquaculture Society. New Orleans, Louisiana. Feb. 19-22, 2015. $200

Auburn University’s American Fisheries Society Chapter Travel Grant to attend the Annual meeting of the U.S. Aquaculture Society. Seattle, Washington. Mar. 4-5, 2014. $225

Auburn University’s Graduate Student Travel Grant to attend the Annual meeting of the U.S. Aquaculture Society. Seattle, Washington. Mar. 4-5, 2014.

Auburn University’s USDA International Science and Education Grant (#USDA-2009- 51160- 05473) to participate in the Aquaculture Production Class (FISH 6250) at Can Tho University, Can Tho City, Vietnam, December 6-24, 2013. **$2,020**

An Egyptian government scholarship for 4 years in the U.S. to obtain a Ph.D. degree.

Embassy of the Arab Republic of Egypt Cultural and Educational Bureau (ECEB) covers tuition fees, travel expenses, medical insurance for student and his family, and a yearly allowance. **$270,000**

**Continuing Education & Technical Training**

• Risk Based Approach to Ensure Global Food Safety and Security MIEH 607 - Global Classroom 2020, School of Public Health, University of Maryland, USA. June 1st to July 10th, 2020.

• Aquaponics 101 workshop (Teaching with Tilapia and Tomatoes), School of Fisheries, Aquaculture, and Aquatic Sciences, Auburn University, Alabama, USA. July 8-12, 2019.

• R Basics - R Programming Language Introduction Course (online) from Udemy (December 2019)

• International Summer School in Bioinformatics organized by Eg-CompBio project: “Empowering computational biology and bioinformatics research in Egypt”, Nile University, Giza, Egypt (25th to 27th of October 2019).

• A Primer of Multilevel (mixed) Modeling Using R by Dr. Song Qian, The University of Toledo. The workshop was during Midwest Fish & Wildlife Conference 2019, Cleveland, Ohio, USA (January 2019).

• Statistics in R workshop by Dr. Todd Steury, School of Forestry and Wildlife Sciences, Auburn University, USA (January 2019).

• Introduction to R Course (online) from DataCamp (January 2019).

• Statistical Learning Certificate (online) from Stanford University, USA (December 2018).

• One Million Arab Coders (online) – Data Analyst Track (cohort 2) August 2018.

• Meta-analysis Class (Spring 2018). Auditing the class taught by Dr. Alan Wilson at School of Fisheries, Aquaculture, and Aquatic Sciences at Auburn University.

• Trained on molecular techniques at U.S Fish and Wildlife Service's Southeast Conservation Genetics Lab located in the School of Fisheries, Aquaculture, and Aquatic Sciences at Auburn University. June 2018.

Trained on Environmental DNA (eDNA) sampling and analytical techniques at the U.S. Fish and Wildlife Service, Whitney Genetics Laboratory in Onalaska, Wisconsin, USA. February 6-10, 2017.

**MEMBERSHIP OF PROFESSIONALORGANIZATIONS**

• Member of International Association of Astacology (Jan. 2018 – Present).

• Member of the Freshwater Mollusk Conservation Society (Jan. 2017- Present).

• Member of the Society for Freshwater Science (July 2016 - Present).

• Member of the American Statistical Association (March 2016 – Present).

• Member of the American Water Works Association (Jan. 2016 – Present).

• Member of Georgia Chapter of the American Fisheries Society (Jan. 2016-Present).

• Member of the National Society of Leadership and Success (2015 – Present)

• Member of the Gamma Beta Phi Society (2015 – Present)

• Member of the Aquaculture Engineering Society (AES) (2014 – Present)

• Member of the World Aquaculture Society (WAS) (2013 - Present).

• Member of the United States Aquaculture Society (USAS) (2013 – Present).

• Member of the African Chapter of World Aquaculture Society (Jan. 2019 – Present).

• Member of the Asian Pacific Aquaculture Society (2013 – 2014).

• Certified Alabama Water Watch monitor (2013 - Present).

• Member of Auburn University Chapter of the American Fisheries Society (2012-Present).

**LEADERSHIP/COMMUNITY SERVICES**

• Initiated a series of weekly scientific seminar days, Faculty of Veterinary Medicine, Cairo University (October 2019 – Present).

• Advisor of Egyptian Student Association (ESA), Auburn University (August 2018 - Present)

• President of Egyptian Student Association (ESA), Auburn University (July 2015 - 2018)

• Treasurer of ESA, Auburn University (April 2014 – July 2015)

• Volunteer in Shrimp Sale, Fish Market, E.W. Shell Fisheries Center, Auburn University (August 2013 & 2014)

• Volunteer in Shrimp Harvesting, Claude Peteet Mariculture Center. Gulf Shores, Alabama (August 2013)

• Volunteer at Tilapia Spawning Club. E.W. Shell Fisheries Center, Auburn University (Summer 2013).

• Volunteer in maintenance and preparation of shrimp ponds, Claude PeteetMariculture Center, Gulf Shores, Alabama (March 2013)

• Founder of YFA (Youth Faculty Association) in the Faculty of Veterinary Medicine, Cairo University, Egypt (Jan 25th, 2012).

• Volunteer teacher of science for orphan children, Giza, Egypt (2007-2009).

• Volunteer in the Association of Friends of the National Cancer Institute (AFNCI), Cairo, Egypt (June 2003 – May 2008).

**CONSULTATION & COACHING**

**Aquaculture Consultation**

• Earthwise Water Technologies, Cornwall, Ontario, Canada (July 2018 – Present)

Responsibilities:

- Support EarthWise Water Technologies in implementing their projects in aquaculture worldwide.

- Provide my knowledge and expertise in aquaculture production and production systems design and implementation as requested.

• Aqua Hill Aeration Inc., Lafayette, Indiana, USA (August 2015 – Present)

Responsibilities:

- Provide technical support to the R&D team

- Conduct Standard Oxygen Transfer Rate (SOTR) test, and Standard Aeration Efficiency (SAE) test on their invented, patented aeration devices.

**Statistical Consultation**

I had the chance to collaborate as a statistical consultant with many researchers from different institutions.

- **Faculty of Veterinary Medicine, Cairo University, Egypt**

Dr. Ali Salama, Dr. Ayah Badawy, Dr. Samar El Sharkawy, Dr. Bardees Bahaa, Dr. May Abowarda, Dr. Olfat Anter. Dr. Mai Anter, Dr. Ashraf Abou Saeda

- **School of Fisheries, Aquaculture, and Aquatic Sciences, Auburn University, USA**

Dr. Shamim Naigaga, Dr. Karim Khalil, Dr. Ahmed Elaswad, Dr. Haitham Mohamed, Dr. Karima Mohamed, Rebbeca Tucker, Austin Haney, Kaelyn Fogelman, Ryan Fluharty, Sarah Bodenstein, Muyassar Abualreesh, Sahar Elnaggar, Shimaa Salem, Linh Le Gia Vo, Jingping Guo

**Coaching**

I served as a training coach for Thamer Al-qurashi, Ph.D. student in the Harrison School of Pharmacy, during his participation in Auburn University’s Three Minutes Thesis (3MT) competition (Nov. 2018 – Feb. 2019). Al-Qurashi was selected as both the overall winner and people's choice award winner. He was also qualified to participate in the regional completion.

**RELEVANT SKILLS AND EXPERIENCE**

• Environmental DNA.

• Electron Transport System (ETS) assay (a physiological assay used to assess the thermal performance of aquatic organisms).

• Respirometry assays.

• Molecular lab techniques such as cPCR and qPCR

• Water quality assessment and water health hazards.

• Aeration Performance testing.

Acquainted with computer writing skills.

• Has a great experience in Photoshop, Microsoft Office and Adobe Acrobat.

• Has good experience in using a number of statistical programs, e.g. SAS, R, Sigmaplot, SPSS, Minitab, Graph pad, Matlab, and JMP.

• Has good experience in using ArcGIS 10.3.

**SELECTED PROFESSIONAL DEVELOPMENT SEMINARS**

• Seminar titled, " Importance of Student-Centered Teaching and Learning Practices” by Henry (Rique) Campa, organized by Biggio Center for the Enhancement of Teaching and Learning,Auburn University, Auburn, Alabama, USA (November 7th, 2016).

• Stream Biomonitoring Workshop. Alabama Water Watch (AWW), Auburn University, Auburn, Alabama, USA (April 16th, 2016).

• Seminar titled, "Web-Enhanced, Hybrid, and Online Learning ". Professional Development Seminars (PDS), Biggio Center for the Enhancement of Teaching and Learning,Auburn University, Auburn, Alabama, USA (March 31st, 2016).

• Seminar titled, "Engaging Students in Large Lectures: Auburn Faculty Share Their Expertise". Professional Development Seminars (PDS), Biggio Center for the Enhancement of Teaching and Learning,Auburn University, Auburn, Alabama, USA (March 24th, 2016).

• ESRI web course titled, "Learning ArcGIS Desktop (for ArcGIS 10.0)", eight modules, Completed on March 23th, 2016.

• ESRI web course titled, "Basics of Geographic coordinate systems", one module, Completed on February 13th, 2016.

• Seminar titled, “Active Learning Experts Tell All". ProfessionalDevelopment Seminars (PDS), Biggio Center for the Enhancement of Teaching and Learning,Auburn University, Auburn, Alabama, USA (February 4th, 2016).

• Seminar titled, "Developing In-Class Application Exercises". Professional Development Seminars (PDS), Biggio Center for the Enhancement of Teaching and Learning,Auburn University, Auburn, Alabama, USA (November 4th, 2015)

• Seminar titled, "Cognitive Tools to Improve Learning". Professional Development Seminars (PDS), Biggio Center for the Enhancement of Teaching and Learning, Auburn University, Auburn, Alabama, USA (October 29th, 2015)

• Seminar titled, "Team-Based Learning Primer". Professional Development Seminars (PDS), Biggio Center for the Enhancement of Teaching and Learning, Auburn University, Auburn, Alabama, USA (September 9th, 2015).

• Seminar titled, "Never Grade a Quiz Again". Professional Development Seminars (PDS), Biggio Center for the Enhancement of Teaching and Learning, Auburn University, Auburn, Alabama, USA (April 8th, 2015).

R Programming workshop, Auburn University’s Chapter of the American Fisheries Society (AFS), Auburn University, Auburn, Alabama, USA. (Feb. 9th – March 9th, 2015).

• Seminar titled, " Digital Content to Engage Students: Organic Chemistry Laboratory iBooks and iPad in a Large Lecture Course". Professional Development Seminars (PDS), Biggio Center for the Enhancement of Teaching and Learning, Auburn University, Auburn, Alabama, USA (March 20th, 2014).

• Seminar titled, "Active Learning – Classroom Assessment Techniques (CATs)". Professional Development Seminars (PDS), Biggio Center for the Enhancement of Teaching and Learning, Auburn University, Auburn, Alabama, USA (January 15th, 2014).

• Bacteriological Monitoring Workshop. Alabama Water Watch (AWW), Auburn University, Auburn, Alabama, USA (July 2013).

• Water Chemistry Monitoring Workshop. Alabama Water Watch (AWW), Auburn University, Auburn, Alabama, USA (July 2013).

• Workshop in "Reflection, Integration and ePortfolio Practice". Ralph BrownDraughon Library, Auburn University, Auburn, Alabama, USA (March 21st, 2013)

• Seminar titled, "How to Effectively Use E-Portfolios in The Classroom". Professional Development Seminars (PDS), Dudley Hall Auditorium, Auburn University, Auburn, Alabama, USA (March 20th, 2013).

**REFERENCES**

**1. Dr. James (Jim) Stoeckel**

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Auburn University, USA

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Web: http://sfaas.auburn.edu/jim-stoeckel/

Academic relationship: Postdoc supervisor

**2. Dr. Claude E. Boyd**

Professor Emeritus, School of Fisheries, Aquaculture & Aquatic Sciences,

Auburn University, USA

Phone: +1 (334) 844-4075

E-mail: Boydce1@auburn.edu

Web: http://sfaas.auburn.edu/claude-boyd/

Academic relationship: Ph.D. Advisor

**3. Dr. William (Bill) Daniels**

Acting Director of Global Programs for the College of Agriculture;

Associate Professor, School of Fisheries, Aquaculture and Aquatic Sciences,

Auburn University, USA;

President of World Aquaculture Society (WAS)

Phone: +1 (334) 844-9123

E-mail: daniewh@auburn.edu

Web: http://sfaas.auburn.edu/bill-daniels/

Academic relationship: Ph.D. co-advisor; teaching mentor

**4. Karen Veverica**

Director of E.W. Shell Fisheries Center, School of Fisheries, Aquaculture and Aquatic Sciences,

Auburn University, USA;

Phone: +1 (334) 844-4667

E-mail: veverkl@auburn.edu

Academic relationship: Research collaboration

**5. David Cline**

Extension Specialist, School of Fisheries, Aquaculture and Aquatic Sciences,

Auburn University, USA;

President of U.S. Aquaculture Society (USAS)

Phone: +1 (334) 844-2874

E-mail: clinedj@auburn.edu

Academic relationship: Research collaboration