

*Curriculum vitae***Zachary Thomas Olsen**

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**Current Address:**

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**Education**

Doctorate of Philosophy in Coastal and Marine Systems Science      Fall 2019 (expected)

Texas A&M University- Corpus Christi

Dissertation: 'Defining essential fish habitat in an ecosystem context: practical identification and relevance to management'

Advisor: Dr. Gregory Stunz

GPA: 4.0/4.0 (current)

Master of Science in Coastal Sciences

August 2012

University of Southern Mississippi, Gulf Coast Research Laboratory

Thesis: 'Determining the trophic role of Gulf Menhaden (*Brevoortia patronus*) using carbon and nitrogen stable isotopes'

Co-Advisors: Dr. Richard Fulford and Dr. Kevin Dillon

GPA: 4.00/4.00

Bachelor of Arts in Biology

May 2010

Malone University (Canton, Ohio)

*Minor: Chemistry*

Advisor: Dr. Christopher Carmichael

GPA: 3.79/4.00

**Relevant Work Experience**

- Texas Parks and Wildlife Department

Corpus Christi, Texas

*Natural Resource Specialist I/II- Upper Laguna Madre Ecosystem Biologist*

December 2012 - Present

- Description: Responsible for overseeing, coordinating, and participating in resource and harvest monitoring data collection as outlined by Texas Parks and Wildlife Department (TPWD) sampling protocols. Many duties are similar to Fish and Wildlife Technician I (outlined below) including operation of trucks, trailers, and research vessels, utilizing sampling gear including trawls, bag seines, gill nets, water samplers, and YSI's, conducting regular creel and fish house surveys, recording, editing, organizing, and summarizing data, overseeing, organizing, and participating in collection of requested TPWD 'Special Studies' samples which include otoliths, finclips, and/or whole organisms of a variety of rare or recreationally/commercially important species.

Participate in seagrass monitoring work including propeller scar recovery project in upper Laguna Madre, Aransas Bay, and Galveston Bay area (use of Trimble GPS units for remote sensed imagery 'ground-truthing' work and familiarity with experimental design relating to such projects). Also, responsible for interacting and talking to recreational and commercial fisherman (in addition to other concerned members of the public/public interest groups/media) in an attempt to answer questions relating to resource management and conservation and to understand the views and concerns of these individuals while representing TPWD in a positive manner in accordance with the goals and vision of the Department. Additional duties as Natural Resource Specialist I/II include purchasing of laboratory/field equipment (currently one of two purchasing card holders in the upper Laguna Madre field office), scheduling field personnel for field work, organizing new research projects within the upper Laguna Madre ecosystem group to address concerns and issues specific to the bay system (e.g. Wade-Bank Harvest surveys, condition factor analysis of *Pogonias cromis*), perform quality control visits for both resource and harvest programs within the upper Laguna Madre and provide constructive feedback to field personnel, take part in reviewing applications, interviewing, and hiring of field personnel, coordinating/scheduling field work volunteers and interns, coordinating with university researchers/graduate students/interns/staff members on a variety of projects (e.g. 2013-2015 State Wildlife Agency Grant project, Baffin Bay Group), serve as acting ecosystem leader in absence of the field station supervisor, analyzing fisheries data using a variety of specialized statistical software (R, JMP-SAS, PRIMER, ArcGIS, Ecopath/Ecosim), report writing and publishing of scientific manuscripts both independently and as a co-author for both internal and external peer review publications, peer review of TPWD internal manuscript publications, publication of public education pieces for print in local fishing magazines, and presentation of research findings at both scientific and public venues.

#### - Texas Parks and Wildlife Department

Corpus Christi, Texas

*Fish and Wildlife Technician I- Upper Laguna Madre Ecosystem Region*

June 2012 - November 2012

- Description: Responsible for coordinating, collecting, conducting, and compiling resource and harvest monitoring data as outlined by TPWD sampling protocols. This includes operation and general maintenance/upkeep of trucks, trailers, and research vessels, utilizing and maintaining sampling gear including trawls, bag seines, gill nets, water samplers, and YSI's, and conducting regular creel and fish house surveys. Additional duties include recording, editing, organizing, summarizing, and entering field data into local Access database as outlined by TPWD sampling protocol, identification of fishes/invertebrates of the Gulf of Mexico, utilizing GIS (ArcGIS and others) to create maps of local sampling locations and to update GPS technology with the most recent sample collection sites, upkeep of SPOT GPS locator, maintenance and upkeep of ice machine. Also responsible for overseeing, organizing, and participating in collection of requested TPWD 'Special Studies' samples which includes otoliths, finclips, and/or whole organisms of a variety of rare or recreationally/commercially important species. Responsible for interacting and talking to recreational and commercial fisherman during harvest surveys in an attempt to answer questions relating to resource

management and conservation and to understand the views and concerns of these individuals while representing TPWD in a positive manner in accordance with the goals and vision of the Department.

**- University of Southern Mississippi, Gulf Coast Research Laboratory**

Ocean Springs, Mississippi

*Graduate Research Assistant- Quantitative Fisheries Ecology/Chemical Oceanography*  
May 2010 - May 2012

- Description: Responsible for coordination of sampling events, collection/analysis of quantitative fisheries and tagging data on a variety of projects (inshore and offshore), operation of trucks, trailers, and small boats, and use of gear types such as gill nets, hook-and-line, hand-line, long-line, plankton nets, trawls, traps, and cast nets. Additional duties include upkeep of live organisms, collection of tissue samples in field/lab settings (muscle, organ, otolith), collection of physical/environmental/water quality data, identification of fishes/invertebrates of the Gulf of Mexico, elemental and isotopic analysis of tissues, preparation and advanced statistical analysis and modeling of fisheries data (using Microsoft Excel, R, SigmaPlot, SPSS, and ArcGIS), supervision of interns in field and laboratory settings, presentation of findings at professional meetings (oral and poster presentations), and report writing/publication of research findings.

**- Malone University**

Canton, Ohio

*Laboratory Assistant-Herpetology Laboratory*

Fall 2006 - Fall 2008

- Description: Oversaw and assisted in care and maintenance of laboratory animals (including turtles, large and small constrictors, American alligators, large monitor lizards). Led tours and educational talks to public groups and prospective University students.

*Laboratory Teaching Assistant-Department of Natural Sciences*

Spring 2009 -Spring 2010

- Description: Supervised and instructed fellow undergraduate students in dissection methods, anatomy, physiology, and basic taxonomy. Also responsible for setting up, administering, and grading laboratory practical exams.

Classes: Invertebrate Zoology, Vertebrate Zoology

**- Smithsonian Environmental Research Center**

Edgewater, Maryland

*Intern-Marine Invasive Species Laboratory*

Summer 2009

- Description: Responsible for fisheries data collection using field survey techniques including seining, tethering, dip netting, and trawling and identification of fishes/invertebrates of the Atlantic Coast. Completed a project examining the population dynamics of the nearshore fish/invertebrate population at two sites in the Rhode River, Chesapeake Bay and presented findings to Smithsonian staff and faculty.

## **Relevant Course Work**

Invertebrate Zoology (Undergraduate)  
 Vertebrate Zoology (Undergraduate)  
 Comparative Vertebrate Anatomy (Undergraduate)  
 Population Management (Undergraduate)  
 Stable Isotope Analysis (MS Graduate)  
 Biometry (MS Graduate)  
 Quantitative Fisheries Management (MS Graduate)  
 Introduction to Geographic Information Systems (MS Graduate)  
 Spatial Analysis (MS Graduate)  
 Environmental Systems Analysis- Multivariate statistics (PhD Graduate)  
 Coastal Management and Ocean Law (PhD Graduate)  
 Environmental Systems Modeling (PhD Graduate)  
 Geospatial Science (PhD)

## **Relevant Knowledge, Skills, and Abilities**

### **Laboratory and field based knowledge, skills and abilities**

- Knowledge of the biology and ecology of the marine ecosystems of the Gulf of Mexico most notably that of the Texas Coast
- Knowledge of the geography of the Texas Coast and advanced understanding and experience with marine navigation in the Upper Laguna Madre ecosystem
- Knowledge of recreational and commercial marine fisheries along the Texas coast and the fisheries management and conservation issues facing the Texas coast
- Skilled and experienced in a variety of fish and invertebrate collection techniques:
  - Gill net
  - Cast net
  - Fish/crab traps
  - Hook and line
  - Trawl
  - Bag Seine
  - Longline
  - Dip net
  - Tethering
  - Hand-line
  - Spear fishing/Snorkeling/Free Diving
  - Plankton collection via oblique tow net or water pump
- Skilled in trailering/operation/maintenance of small boats (up to 22') in coastal waters
- Skilled in handling a wide variety of hazardous reptiles, fish, and invertebrates
- Skilled in identification of a wide variety of fauna:
  - Fishes of the Gulf and Atlantic coasts
  - Birds of eastern and southeastern North America (especially Gulf and Atlantic coastal birds)
  - Reptiles and amphibians of the eastern United States
- Skilled and experienced in a variety of laboratory procedures and techniques:
  - Basic laboratory/field safety

- Preparation of various tissue and full body samples (fish and invertebrates) for stable isotope analysis
- Elemental and stable isotope analysis using Elemental Analyzer/Isotope Ratio Mass Spectrometer
- Dissection and extraction of various tissue/organ and muscle samples from fish and invertebrates including removal of otoliths, gonads, fin clips, and stomachs
- Preservation and identification of phytoplankton and zooplankton to basic taxonomic groupings
- Up keep and maintenance of live fish in wet lab facility
- Up keep and maintenance of live reptiles and amphibians in laboratory facility including small Colubrids, large boas and pythons, crocodilians, and various lizard and turtle species
- Skilled and experienced in advanced data analysis/modeling and scientific report writing
- Ability to actively participate in field sampling activities and function on a wide size range of vessels in nearshore and offshore waters
- Ability of work independently or as part of a team in both leadership and non-leadership positions to complete field, office, and laboratory related tasks
- Ability to effectively communicate (verbally and via writing) with both the scientific community and members of the general public on matters of natural resource management and conservation

#### **Data Analysis and Computer Based Skills:**

- Microsoft Office
  - Word, PowerPoint, Outlook, Excel, Access, OneNote, Skype
  - Use of Visual Basic and macro writing and recording in Excel to expedite data organization and analysis
- Advanced knowledge of statistical (univariate and multivariate) methodologies/visualization of data using R, PRIMER (v7, PERMANOVA), and JMP-SAS
- Intermediate knowledge of SQL for accessing relational database Sybase
- Advanced knowledge of map making and spatial analysis using ArcGIS
- Intermediate knowledge of Ecopath with Ecosim modeling suite

#### **Certifications**

- Mississippi Boating Safety Certification
- First aid/ CPR certified (Exp. 2017)
- PADI Open water dive certification
- Responsible Conduct of Research Training (Cooperative Institutional Training Initiative)
- Safe Driver Certification (State Office of Risk Management; September 2015)

#### **Post-graduate Training**

- Completed workshop entitled 'Analysis of Multivariate Data for Ecology and Environmental Science, using PRIMER v6' (Instructor: KR Clark; Dickinson, Texas, June 17-21, 2013).

- Completed a series of webinars entitled 'R for Natural Resources' covering basic to advanced data handling and analysis in the statistical program R (Spring 2013).
- Completed training entitled 'Successful First Line Management Training' (Instructor: B Lewis, J Micallef; Camp Allen, Texas; October 2013)
- Completed workshop entitled 'Applied Environmental Statistics' covering advanced statistical analysis including multivariate model building, and permutation procedures in the statistical program R (utilizing R Commander) (Instructor: D Helsel, Practical Stats; College Station, Texas, August 25-29, 2014).
- Completed training entitled 'What's What & How to: Human Resource Process Training, Leave and Benefits' (Instructor: Rebecca Gonzales; Corpus Christi, Texas; Spring 2015)
- Completed workshop entitled 'Advanced multivariate statistics in PRIMER v7 and PERMANOVA' (Instructor: KR Clarke; Corpus Christi, Texas, January 11-15, 2016).

### **Professional Affiliations**

- American Fisheries Society (AFS)

### **Professional Activities**

- USM Student Sub-unit President and active member of the American Fisheries Society (May 2011- May 2012). Duties as AFS-USM sub-unit president included organization of monthly student meetings and monthly Lunchtime Lecture Series, organization of regular AFS officer meeting, coordinating and helping with fundraising events, participating in the organization of the 2012 AFS Southern Division meeting hosted by Mississippi AFS in January 2012, and working with a variety fisheries professionals and interest groups at various organizations including Mississippi Department of Marine Resources, Mississippi Department of Wildlife, Fisheries, and Parks, and Mississippi Coastal Conservation Association.

- Baffin Bay Group- This is a Consortium of state, federal, non-profit, and university researchers in addition to public interest groups concerned with the health of the Baffin Bay Ecosystem (a secondary bay of the upper Laguna Madre of Texas). As a participant in the Baffin Bay Group, I have represented TPWD at group meetings, given multiple presentations, and co-authored a report describing and outlining the health of black drum (*Pogonias cromis*) in the system and the work TPWD has done to address potential issues on the health of this population. Additionally, I have provided feedback on proposed research projects and am currently working with university personnel on projects relating to this group and its initiatives (e.g. 2013-2015 State Wildlife Agency Grant, see below). For more information on the Baffin Bay Group, please visit <http://www.cbbep.org/projectsbaffinbay.html>.

- Participate in internal peer review process for TPWD publications. Provide blind reviews of manuscripts for other researchers within the TPWD system.

- Serve as the Quality Control representative for the TPWD upper Laguna Madre field station. As the QC representative, I communicate issues relating to data collection, data quality, and procedural difficulties in the upper Laguna Madre system to the TPWD

Quality Control Committee. The purpose of the QC committee is to assure that field stations are adhering to prescribed sampling procedures for the TPWD Fishery Independent/Dependent Sampling programs so as to produce high quality, comparable data.

- Organized training event for TPWD Coastal Fisheries staff entitled ‘Conflict Resolution for Natural Resource Professionals’. The event took place on 20 February 2014 and focused on preparing field staff to deal with communication and conflict with constituents and public user groups. The training consisted of lectures from TPWD Law Enforcement personnel, TPWD Ecosystem leaders, TPWD Communication Specialists, and role playing for meeting participants.

- State Wildlife Agency Grant (SWG)- TPWD contact for project entitled ‘Food web effects on black drum (*Pogonias cromis*) in Baffin Bay’ in coordination with faculty at Texas A&M University- Corpus Christi Center for Coastal Studies. As TPWD contact for this project, my duties include coordinating TPWD field collections with university staff, collection of appropriate specimens by TPWD staff, and assuring progress of project meets predetermined deadlines and fulfills goals outlined in grant proposal. Project was completed within the deadline and the final report submitted in February 2016.

- Adjunct Faculty at Texas A&M University- Corpus Christi. Served as graduate committee member and formal internship mentor for TAMUCC non-thesis Master’s student Holly Grand (graduated in 2014). Documented non-thesis internship goals and monitored progress throughout the internship process. Provided feedback and professional guidance relating to the natural resource management.

### **Other Research Experience**

- Osprey nest site survey in coordination with Ohio Department of Natural Resources as a class project while enrolled in Animal Population Management at Malone University (Summer 2008).
- Floral diversity at two differing types of forest edge habitat in Costa Rica while enrolled in a study abroad program through Boston University School for Field Studies (Summer 2008).
- Striped Bass Restoration Project. Aided with attempts to capture rare striped bass (*Morone saxatilis*) in a variety of riverine systems of coastal Mississippi (Summer 2011).
- Comparison of artificial and natural oyster reef habitats in Mississippi Sound. Aided in sport fish tagging surveys, deployment and collection of oyster reef settlement trays, and quantification and stable isotope preparation of benthic fish and invertebrate samples from the reef habitat (Summer 2011/ Fall 2011).

- Influence of coastal nutrient runoff on seasonal abundance and growth of Gulf menhaden (*Brevoortia patronus*) while enrolled in Geographic Information Systems Design at the University of Southern Mississippi (Fall 2011).
- Ecology of freshwater spring systems in Western Florida. Aided in the collection of fish, invertebrates, reptiles and amphibians using a variety of gears and techniques including snorkeling, spearing, hoop nets, and cast nets (Fall 2011/Spring 2012).
- Potential growth impacts of the Deepwater Horizon oil spill on speckled trout (*Cynoscion nebulosus*) and red drum (*Sciaenops ocellatus*) in Mississippi and Louisiana. Aided in the collection of fish and fisheries samples. (Summer/Fall 2010, Summer/Fall 2011).
- Participated in Leg III of NOAA-NMFS Bottom Longline survey. The cruise was a two week endeavor aboard the NOAA vessel Oregon II and covered both federal and state waters from Brownsville, Texas to Venice, Louisiana. Duties aboard the cruise included baiting, setting, retrieving and maintaining longline gear, collecting length/weight data, fin clips, and tagging (both dart tag and satellite tag) of a variety of large and small shark species in the western Gulf of Mexico. Additionally, otolith and gonad samples were collected for select Lutjanid and Serranid species. (August-September 2013).
- Seagrass scar mapping along the Texas coast. Aided with 'ground-truthing' of aerial imagery in the upper Laguna Madre and Galveston Bay ecosystems. Utilized Trimble GPS units to collect spatial data related to habitat type and presence of boat propeller scars in seagrass beds (2014-2016).

### **Current Research Projects**

- Variation in habitat suitability and stage structured demography of Black Drum (*Pogonias cromis*) on the Texas coast.
- Assessing gill net length variation among TPWD field offices.
- Constructing an Ecopath/Ecosim model focusing on Blue Crabs (*Callinectes sapidus*) in Galveston Bay Texas (Collaborators: Glen Sutton (TPWD), Tom Wagner (TPWD), Carey Delphi (TPWD), Joel Anderson (TPWD)).
- Analysis of size at maturity and size at age of Black Drum (*Pogonias cromis*) in Baffin Bay and the Upper Laguna Madre (Collaborators: Dusty McDonald (TPWD), Britt Bumguardner (TPWD)).
- Updating the Texas Oyster Fishery Management Plan for the upcoming legislative session (Collaborators: Bill Rodney (TPWD), Chris Mace (TPWD), Christine Jensen (TPWD)).

### **Projects Currently Under Review**

- Ballew, H. and **Z. Olsen** (*under review*) Long-term monitoring of Scyphozoan jellyfish in the western Gulf of Mexico: putting blooms into perspective. Target publication: Estuaries and Coasts (currently addressing TPWD internal reviews).



- **Olsen, Z.**, J. Anderson, and D. McDonald (*under review*) Morphological and molecular variation among populations of tidewater (*Menidia peninsulae*) and inland (*M. beryllina*) silversides: insight into drivers of adaptation and speciation of silverside fishes. *Environmental Biology of Fishes* (submitted March 2016).
- **Olsen, Z.T.** (*under review*) Emaciated black drum (*Pogonias cromis*) in the upper Laguna Madre, Texas: recovery of the population over two years. *Texas Journal of Science* (Submitted March 2015).

### **Selected Scientific Presentations**

**Olsen, Z.** and D. McDonald. 2015. Early maturation of black drum (*Pogonias cromis*) in Baffin Bay, Texas. Texas Bays and Estuaries Meeting, Port Aransas, Texas, April 2015.

**[Oral Presentation]**

**Olsen, Z.** 2014. 'Emaciated black drum in the upper Laguna Madre: tracking the recovery of the population two years later' Gulf Estuarine Research Society Biennial Meeting, Port Aransas, Texas, October 2014. **[Oral presentation]**

**Olsen, Z.** 2014. 'Assessing variation in recruitment seasonality of sciaenids along the Texas coast'. American Fisheries Society Southern Division Meeting, Charleston, South Carolina, January 2014. **[Poster presentation]**

**Olsen, Z.** 2014. 'Impacts of extreme salinity and surface temperature events on population dynamics of black drum, *Pogonias cromis*, in a hypersaline lagoon'. American Fisheries Society Southern Division Meeting, Charleston, South Carolina, January 2014. **[Oral presentation]**

**Olsen, Z.** 2013. 'Unique population dynamics of black drum (*Pogonias cromis*) in the upper Laguna Madre'. Texas Bays and Estuaries Meeting, Port Aransas, Texas, April 2013. **[Oral presentation]**.

**Olsen, Z.**, R. Fulford, K. Dillon, W. Graham. 2012. 'Determining the trophic role of Gulf menhaden (*Brevoortia patronus*) using carbon and nitrogen stable isotopes'. American Fisheries Society Southern Division Meeting, Biloxi, Mississippi January 2012. **[Oral presentation]**

**Olsen, Z.**, R. Fulford, K. Dillon, W. Graham. 2011. 'Using stable isotopes as a management tool for Gulf menhaden (*Brevoortia patronus*)'. Gulf States Marine Fisheries Commission Spring Meeting, Gulf Menhaden Advisory Committee, Houston, Texas, March 2011. **[Invited oral presentation]**

### **Selected Public Education Presentations**

**Olsen, Z.** (2013). 'What is Marine Biology?' Presentation made to New Midway Elementary School 'Green Team'. New Midway, Maryland January 2013. **[Oral presentation]**

**Olsen, Z.** (2013). ‘What does a Marine Scientist do?’ Presentation made to Walkersville High School Environmental Science class. Walkersville, Maryland January 2013. [**Oral presentation**]

### **Peer Review Publications**

#### ***TPWD Management Data Series***

**Olsen, Z.** and C. Mace. (2015). A summary of the 2014 federal recreational red snapper harvest monitoring pilot study’. Texas Parks and Wildlife Department, Coastal Fisheries Division, Management Data Series Number 286. Austin.

**Olsen, Z.,** T. Wagner, and W. Cupit. (2014). Summary of the 2007 nighttime roving counts and pre-trip flounder gig surveys. Texas Parks and Wildlife Department, Coastal Fisheries Division, Management Data Series Number 282. Austin.

**Olsen, Z.** and T. Wagner. (2014). Use of trail cameras for 24-hour monitoring of boat ramp activity. Texas Parks and Wildlife Department, Coastal Fisheries Division, Management Data Series Number 281. Austin.

#### ***External Publications***

**Olsen Z.,** T. Wagner, and G. Sutton (*in press*) Regional and temporal variation in size at maturity of female Blue Crabs (*Callinectes sapidus*) in Texas coastal waters. Transactions of the American Fisheries Society

**Olsen, Z.T.** (2014). Potential impacts of extreme salinity and surface temperature events on population dynamics of black drum, *Pogonias cromis*, in the upper Laguna Madre, Texas. Gulf of Mexico Science 32:1.

**Olsen, Z.T.,** F.P. Grubbs, A.D. Morris, A.X. Nuñez, and J.M. Tolan (2014). Reports of emaciated black drum (*Pogonias cromis*) in the upper Laguna Madre, Texas. Texas Journal of Science 66 *in press*.

**Olsen, Z.,** R. Fulford, K. Dillon, W. Graham. (2014). Trophic role of Gulf menhaden (*Brevoortia patronus*) examined with carbon and nitrogen stable isotope analysis. Marine Ecology Progress Series 497:215-227.

### **Public Educational Writings**

**Olsen, Z.T.** (2014). TPWD’s New Catch Reporting System for Red Snapper to Take Effect June 1, 2014. Texas Saltwater Fishing Magazine. June 2014.

Hartman, L.D. **Z.T. Olsen** (2013). Lionfish Stalking our Bays?’ Texas Saltwater Fishing Magazine. November 2013.

**Olsen Z.T.** (2013). Brown Tide in Baffin Bay: A look at what we have learned and what the future may hold. Texas Saltwater Fishing Magazine. June 2013.