



Marine Scientist, Gulf Coast Division

Education

Currently enrolled as Ph.D. Candidate at USF – College of Marine Science – focus is on fisheries acoustics.

Master of Science in Oceanography, GSO-University of Rhode Island, 1999

Bachelor of Science in Marine Biology, University of Miami, 1994

Student Exchange Program in Marine Science, James Cook University, Townsville, Queensland, Australia, 1993

Mr. Hughes has over 22 years of experience with multi-disciplinary environmental studies, the majority of which was focused in the marine environment. Mr. Hughes has been involved in numerous oceanographic studies, including multidisciplinary baseline studies, environmental monitoring programs, nearshore hard bottom and reef characterization surveys, bioacoustic and side-scan surveys, habitat damage assessment surveys, photodocumentation surveys for outer continental shelf oil and gas lease areas and pipeline right-of-ways, and site clearance studies. Mr. Hughes has worked both locally and abroad, and project locations have included Florida, New England (offshore Georges Bank), New York (Hudson River), and the Gulf of Mexico as well as international locations – Australia, throughout the Caribbean, the Mediterranean Sea, and Sakhalin Island, Russia.

Currently, Mr. Hughes is a doctoral candidate at the University of South Florida's College of Marine Science, where his focus is on the use of scientific acoustic echosounders to examine fish populations at various locations within the Gulf of Mexico along the West Florida shelf. Since early 2013, Mr. Hughes has been participating in ongoing research cruises aboard the RV *Weatherbird II* and the RV *Hogarth* where he oversees the collection of acoustic data of various reef fish communities using a SIMRAD EK60/EK80 echosounders. This work is being done in conjunction with Dr. Steve Murawski and his team collecting video data using a prototype towbody, towed over areas of exposed hardbottom and pipeline. Mr. Hughes will be processing and analyzing these acoustic data and using the collected video data for groundtruthing in efforts to characterize reef fish communities. These data will be used as part of his research toward earning his PhD.

Mr. Hughes has managed several recent marine natural resource mapping efforts for CSA within Tampa Bay. These have included the recent benthic resource mapping effort for the Howard Frankland Bridge for HDR/FDOT and the ongoing hardbottom mapping effort for the Tampa Bay Estuary Program. In 2015, Mr. Hughes oversaw CSA involvement with hardbottom mapping over more than 57 miles² of the bay for the Southwest Florida Water Management District.

Mr. Hughes has experience in the evaluation of impacts offshore oil and gas operations on the marine environment. He has recently assisted in various support roles for natural resource damage assessment (NRDA) efforts and response in three recent oil spill events: BP's Deepwater Horizon spill event in the Gulf of Mexico, the Kirby Barge spill in Galveston Bay near the Texas City Ship Channel, Port Bolivar, Texas, and TPIC's Belle Isle pipeline spill in a flotant marsh south of Morgan City, in southern Louisiana. Mr. Hughes has provided scientific support for projects in both U.S. and international offshore areas, including the Gulf of Mexico, Florida, Russia, Israel, Cyprus, and throughout the Caribbean. These projects include environmental baseline surveys, monitoring programs, Phase I environmental assessments, and environmental impact assessments (reports and statements) for offshore seismic activities, and oil and gas exploration and production. Offshore surveys include benthic as well as marine mammal and turtle surveys involving the collection of quantitative and qualitative video and still photographic data, fish and invertebrate samples, water quality and water column productivity samples, and sediment chemistry and geology samples.



Prior to working as a consultant, Mr. Hughes worked for the Florida Department of Environmental Protection (FDEP), where he served as an aquatic biologist for the Watershed Monitoring Program. His duties included monitoring effluent water quality collected from industrial and domestic wastewater facilities that had National Pollutant Discharge Elimination System (NPDES) permits.

Prior to his work with the FDEP, Mr. Hughes worked as a research assistant while earning his Master's degree from the University of Rhode Island's Graduate School of Oceanography. His work at URI, in conjunction with the U.S. Geological Survey, entailed several research cruises to Georges Bank that involved benthic survey work using remotely operated and manned submersibles as well as collecting benthic fauna using an assortment of dredging and video equipment. Mr. Hughes's research focus was size, density, and distribution comparisons of Atlantic sea scallops (*Placopecten magellanicus*) in open and closed fishing regions on Georges Bank.

Mr. Hughes was also employed as a staff biologist at the Florida Marine Research Institute's Fishery-Independent Monitoring (FIM) Program. The job duties included fish surveys throughout the Tampa Bay region using a variety of different field equipment to assess the health and abundance of local fish populations. Mr. Hughes also conducted tag and release efforts with economically important gamefish. He also assisted in the construction and testing of prototype marine invertebrate collection equipment. While earning his Bachelor's degree from the University of Miami, Mr. Hughes participated in the student exchange program, and spent two semesters (10 months) at James Cook University of Townsville, located in Queensland, Australia, where he satisfied the core of his marine science coursework. In conjunction with his studies, he volunteered as a research diver with the Australian Institute of Marine Science (AIMS) and assisted with numerous reef fish surveys on several reef areas of the Great Barrier Reef.

EXPERIENCE

2010 to Present: CSA Ocean Sciences Inc. – Marine Scientist, Gulf Coast Division

- CSA Project Manager, Chief Scientist for a short term current study off of Cistern Cay in the Exumas Islands, The Bahamas. Mr. Hughes oversaw the configuration and deployment of two Aquadopp 1-MHz ADCPs as part of a feasibility study for a hydrokinetic turbine installation (Blue Shark Technology, 2020).
- CSA Chief Scientist for an environmental baseline survey (EBS) that included sediment and water quality characterization and towed video data collection at two potential drillsites in approximately 500m of water southwest of Andros Island, The Bahamas. Co-authored the EBS report (Bahamas Petroleum Company, 2020).
- CSA Project Scientist in support of environmental baseline and environmental monitoring surveys that included sediment and water quality characterization, as well as deepwater ROV video data collection of several lease areas under development for exploration offshore off southern Cyprus (ExxonMobil, 2019).
- CSA Project Field Manager/Scientific Diver for beach renourishment hard bottom clearance survey off Gasparilla Island, Florida. CSA performed the primary side scan sonar survey and in-situ diver video survey to identify any hard bottom substrate or other sensitive benthic resources along the 2 sand dredge pipeline approaches to the island (Weeks Marine, Inc., 2019).



- CSA Project Manager for a large-scale hard bottom mapping effort in Tampa Bay, a research effort initiated by the Tampa Bay Estuary Program (TBEP) and other cooperative municipalities and state agencies. CSA performed the primary side scan sonar data collection effort in tandem with its sister survey company, Morgan & Eklund, Inc., using a Klein 3900 side scan sonar system coupled with a single beam sonar for bathymetry. CSA performed the side-scan interpretation. CSA also recently completed the subsequent groundtruthing field effort, which employed a drift camera system to note the type of substrate present including hard bottom features. CSA's GIS staff will ultimately create a comprehensive GIS database of hardbottom features and a thematic map of those features within Tampa Bay. Mr. Hughes authored the final report on this effort (TBEP, 2018–2019).
- CSA Project Manager for a seagrass resources survey performed for Bridge #150252, part of the Interstate Highway 275 corridor within Pinellas County, Florida south of the Howard Frankland Bridge. The effort was completed under HDR's management for the Florida Department of Transportation's District 7. CSA performed the field work, including collecting side scan sonar and diver handheld video data of seafloor areas within 100' of the bridge and causeways. Seagrasses, where present, were delineated and characterized by scientific divers, noting species, and density. Mr. Hughes authored the brief technical report summarizing the field effort and findings (HDR, 2018).
- Project scientist for ongoing multibeam survey of the West Florida Shelf, specifically the southwest Florida Middle Grounds. Utilized Reson T50 multibeam system (400 kHz) to collect high-resolution bathymetry and backscatter data for pre-selected survey regions aboard FIO's RV W.T. Hogarth. Assisted with periodic CTD/sound vertical profile casts using Seacast hardware and software. Assisted with installation of new SIMRAD EK80 wide band transceivers (C-SCAMP, 2018).
- CSA Acoustician/Field Scientist for PRASA 301(h) Dye Study: Mixing Zone validation data collection for the Aguadilla Regional Waste Water Treatment Plant outfall offshore Puerto Rico. Responsibilities included operation of SIMRAD EK60 scientific echosounders (38 and 200 kHz) in the collection of water column data to visual outfall plume characteristics and additional assistance with deck operations (HDR, 2018).
- Acoustician for ongoing acoustic survey using a Teledyne Slocum glider platform. Using Echoview software to process acoustic data collected from an Acoustic Zooplankton Fish Profiler™ (AZFP) scientific echosounder (200 kHz). Generating fish biomass maps along glider mission deployments in the vicinity of the Gulfstream pipeline, West Florida Shelf, eastern Gulf of Mexico, near a region where tagged grouper and snapper were released as part of a larger scale reef residence study (USF-College of Marine Science, 2017–2018).
- Project scientist for ongoing multibeam survey of the West Florida Shelf, specifically the southwest Florida Middle Grounds. Utilized Reson 7125 multibeam system (400 kHz) to collect high-resolution bathymetry and backscatter data for pre-selected survey regions aboard FIO's RV *Bellows*. Assisted with periodic CTD/sound vertical profile casts using Seacast hardware and software (C-SCAMP, 2017).
- Acoustician/project scientist for offshore acoustic survey coupled with towed video examining potential red snapper (*Lutjanus campechanus*) spawning aggregations associated with a full moon during July 2017 within the Florida Middle Grounds (FMG). Assisted chief scientist with calibration and data acquisition of acoustic data collection with SIMRAD EK60 (38kHz) and EK80 (70 and 120 kHz) scientific echosounder system coupled with a Mesotech M3 multibeam system aboard the FIO RV *Weatherbird II*. Vertical and horizontal plankton tows were additionally performed at several deeper water stations in efforts to capture red snapper eggs associated with recent spawning activities. Survey was done in concert with seven other vessels collecting eggs and fish captures for a synoptic examination of red snapper spawning stock in the FMG region (C-SCAMP, 2017).



- Acoustician and field scientist for ongoing acoustic and towed video surveys on the West Florida Shelf, focused on reef fish populations within marine reserve areas (Madison Swanson MRA, Florida Middle Grounds HAPC) and over areas of existing natural gas pipeline. Responsible for calibration, data acquisition, and processing of acoustic data collected with the SIMRAD EK60 scientific echosounder system aboard the RV Weatherbird II. Data processing is being addressed using EchoView (USF-College of Marine Science, 2013 to Present).
- CSA Project Manager for a biological resources survey for the Howard Frankland Bridge and adjacent causeways performed as part of the Florida Department of Transportation's District 7 Tampa Bay Express (TBX) Project. CSA performed the field work, including collecting side scan sonar and towed video data of the project footprint along the north side of the southbound bridge and causeways. Areas of interest were investigated, and substrate and fauna were further documented by scientific divers using video and still cameras. Seagrass areas adjacent to the shallow regions near the causeways were inspected and further characterized by scientific divers, noting species, density, and short shoot counts. Mr. Hughes also authored the technical report summarizing the field effort and findings (HDR, 2016).
- CSA Acoustician and Field Scientist for PRASA 301(h) Dye Study: Mixing Zone validation data collection for the Arecibo Regional Waste Water Treatment Plant outfall offshore Puerto Rico. Responsibilities included operation of SIMRAD EK60 scientific echosounders (38 and 200 kHz) in the collection of water column data to visual outfall plume characteristics and additional assistance with deck operations (HDR, 2016).
- CSA Project Manager for a large-scale hard bottom mapping effort in Tampa Bay, a research effort initiated by the Southwest Florida Water Management District (SWFWMD). CSA provided data collection support to the two primary survey firms, with both firms employing an Edgetech 6205 combination bathymetry and side scan sonar. CSA performed all of the side-scan interpretation and the subsequent groundtruthing field effort. CSA's GIS staff created a comprehensive GIS database of hardbottom features in select areas of Tampa Bay and thematic map of hard bottom areas. Mr. Hughes authored the reports summarizing the effort and its results (SurvTech Solutions 2016 and AIM Engineers and Surveyors, 2016).
- CSA Field Scientist, providing support for seagrass mitigation transplant for impacts associated with the Miami Harbor Phase III dredging project. Following the filling and capping of a large dredge hole (16.6 acres) located just north of the Julia Tuttle Causeway, Mr. Hughes assisted other CSA scientific dive staff with donor seagrass collection, transplant plug creation, and manual planting of seagrasses (manatee grass, *Syringodium filliforme*). Seagrass planting was performed in checkerboard fashion, covering over 7 acres in 10 m × 10 m plots (Port of Miami, 2015).
- CSA Field Scientist providing support and representation for the landowner following an oil pipeline spill owned by the Texas Petroleum Investment Company (TPIC) in a wetland marsh area on Belle Isle near East Wax Lake, Louisiana. Responsibilities included representing the land owner during cleanup-activities, joint field assessments with the responsible party and the Trustees, and providing oversight during sediment soil sampling prior and immediately following the controlled burn in attempts to remove the oil (Chet Morrison, 2015).
- Authored the comprehensive "CSA Response Manual for Environmental Sampling and Monitoring during BPTT Oil Spill Response Operations" (Response Manual) to integrate local and regional information, BPTT guidance documents, Job Safety Analyses (JSAs), Standard Operating Procedures (SOPs) relevant to the sampling and monitoring activities anticipated during oil spill response, and Job Safety Analyses (JSAs), a Health and Safety Plan (HASP), and a Health, Safety, Security, and Environment (HSSE) Plan tailored to these activities and procedures (BP Trinidad and Tobago LLC, 2015).



- Field Scientist and Assistant Project Manager in support of the response effort to the Kirby Barge spill in Galveston Bay near the Texas City Ship Channel, Port Bolivar, Texas. Provided support with project management, team coordination and logistics for several NRDA-related studies to monitor the effects of the spill, including the Matagorda Island NRDA support. Galveston Pom Trawl Study, Intertidal Tar Ball Study, and the Cedar Bayou Pre-Dredge Sediment Study (Kirby Corporation, 2015).
- CSA Project Manager and Lead Field Scientist providing support for an endangered sturgeon monitoring effort in the Hudson River in New York. S.T. Hudson Engineers is employing a wide variety of cutting edge high-resolution acoustic “cameras” (such as Soundmetric's ARIS) and other sonars to document the presence/absence of sturgeon as part of a Feasibility Study, a subsequent Pilot Study, and, if shown to be successful, at least a year of monitoring. CSA is providing biological interpretive support and guidance on the study design using the active acoustic technologies (S.T. Hudson Engineers, 2014 to 2015).
- Field Scientist and Safety Officer in support of the Deep Sediment Survey Cruise in June 2014. Responsibilities included safety coordination for all science participants and as field support – operation of multicorer sediment sampler and boxcore sediment sampler,, assisting with sediment sample collection, processing, and cleaning/re-setting of sampling equipment (BP GCRO, June 2014)
- Field Scientist in support of the Deepwater Horizon Accident Oil Spill Response and Natural Resource Damage Assessment. Responsibilities include managing intertidal sediment and water quality surveys and nearshore water sampling efforts at various areas throughout the Gulf of Mexico (BP GCRO, 2010–2014).
- Project Field Scientist for four deepwater offshore survey cruises in the Levantine Basin within the eastern Mediterranean (offshore Israel) focused on monitoring sediment and water quality as well as video documentation of benthic faunal assemblages of a lease area under development for exploration (Client Confidential, November 2011, January 2012, September, 2013 and February 2014).
- Field Scientist in support of the Deepwater Horizon Accident Oil Spill Response and Natural Resource Damage Assessment – Mesopelagic Fish Assessment Study, Gulf of Mexico, NOAA's *RV Pisces*. Responsibilities included logging trawl and sample collection activities during the watch, programming and operating Seabird SBE-39 (temperature depth recorder), sorting trawl samples, identifying fishes, collecting tissue samples, and preserving specimen. Prior to cruises, assisted with the bid development and selection of vendor(s) for construction of replacement mid-water trawl nets and logistics for gear delivery to Pascagoula, Mississippi. Also assisted Acoustics Chief Scientists with the collection of Simrad EK-60 acoustic data (BP GCRO, December 2010 and September 2011).
- Field Scientist in support of offshore survey cruises off the coast of Suriname focused on baseline sediment and water quality characterization of several lease areas under development for exploration (Inpex and Murphy Oil, February 2010 and May 2014).

2005 to 2009: Scheda Ecological Associates – Staff Scientist

- Project Manager/Chief Field Scientist for a seagrass mapping survey of the 300-acre project area within Longboat Pass, in Manatee County, Florida, as part of ongoing mapping studies for the West Coast Inland Navigation District (Humiston and Moore Engineers, Inc. 2009).
- Project Manager/Chief Field Scientist for a seagrass mapping survey of the 30-acre project area within the Venice Inlet, in Sarasota County, Florida, as part of ongoing mapping studies for the West Coast Inland Navigation District (Humiston and Moore Engineers, Inc. 2009).
- Project Manager/Chief Field Scientist for a seagrass mapping survey of the 125-acre project area which included areas adjacent to Honeymoon Island beach and Hurricane Pass, in Pinellas County, Florida, as part of ongoing beach renourishment efforts (Humiston and Moore Engineers, Inc. 2009).



- Deputy Project Manager, assisting with engineering coordination and the preparation of environmental support documentation, which included permit applications and crafting technical memoranda for threatened and endangered species, wetland and aquatic resource presence, and essential fish habitat for the State's ERP Permit and U.S. Coast Guard Bridge Permit for the Ocean Avenue Bridge Improvements project, in Lantana, Palm Beach County, Florida (E.C. Driver and Associates, 2009).
- Chief Field Scientist mapping areas of seagrasses and essential fish habitat, including the endangered Johnson's seagrass (*Halophila johnsonii*) for two consecutive summers. Mr. Hughes collected quadrat data to characterize relative seagrass bed densities, noting local marine life, as well as photodocumenting these areas and flora/fauna with underwater still photos and video, for the Ocean Avenue Bridge Improvements project, in Lantana, Palm Beach County, Florida (E.C. Driver and Associates, 2008 and 2009).
- Project Manager assisting with wetland delineations, conceptual design permitting, and consulting needs for the Tampa Port Authority's Master Drainage Plan, as the Port implements phased improvements to significantly expand its container terminal facilities in Hillsborough County, Florida (Moffatt & Nichol Engineers, 2009).
- Project Manager/Chief Field Scientist for overseeing the sediment sample collection and canal sediment depth profiling in 92 ridge residential canals of interest. This is the first assessment performed by Highlands County for these residential canals. The data that Scheda collects will help the County prioritize dredging activities in over a dozen lakes located throughout Highlands County (Highlands County Lakes Department, 2008).
- Project Manager/Chief Field Scientist, conducting surveys for seagrass, mangroves, and benthic communities in 15 different residential canals off the Westshore area and Davis Islands, Tampa. The survey included 3 dredged holes potentially slated for filling, to create essential fish habitat (BCI Scientists and Engineers, 2008 and 2009).
- Project Manager/Chief Field Scientist oversaw the benthic mapping of a 23-acre area that encompassed a portion of the Matanzas Pass Federal Channel located north of Bowditch Point on the north end of Estero Island off Ft. Myers Beach in Lee County, Florida. The survey was performed in support of an emergency Joint Coastal Permit (Humiston and Moore Engineers, 2008).
- Chief Field Scientist/Marine Mammal Observer, oversaw the watch plan and assisted with manatee observations while dredging and wharf constructions activities were underway at Berth 26 at the Port of Tampa (Port Sutton), Hillsborough County, Florida (Tampa Port Authority 2006 and 2008).
- Chief Field Scientist/Marine Mammal Observer, oversaw the watch plan and, assisted with manatee observations while mooring and breasting dolphins were removed from the Tampaplex Terminal berth at the Port of Tampa (Port Sutton), Hillsborough County, Florida (Kinder-Morgan, 2007).
- Project Manager/Chief Field Scientist oversaw the surveying the benthic habitat of 5 proposed mooring field areas totaling approximately 100 acres in the St. Augustine Inlet, St. Johns County, Florida. Scheda scientists conducted a survey using side scan sonar and towed video to characterize benthic habitats of four mooring fields and the adjacent municipal marina (City of St. Augustine, Florida, 2007).
- Chief Field Scientist/Water Quality Analyst, overseeing the collection of water quality samples, following FDEP water chemistry sampling protocol, for various parameters and the *in-situ* measurement of other parameters using a YSI multi-parameter water quality meter. These collections were performed as part of permit requirements for the pier expansion for the City of St. Petersburg's Municipal Marina (Moffatt & Nichol Engineers, sampling is ongoing on a semi-annual basis since 2006).



- Project Manager/Chief Field Scientist overseeing a 5-year mitigation monitoring program that entails semi-annual monitoring of planted tree islands and 288-acre seagrass mitigation area utilizing quadrat sampling and underwater photography. The mitigation is for the creation of the Hudson Channel of Hudson, in Pasco County, Florida. Mr. Hughes has also coordinated aerial surveys at specific year intervals for review of regional seagrass coverage. Mr. Hughes authored the last three semi-annual reports submitted for agency review (Pasco County, 2006–2010).
- Chief Field Scientist/Water Quality Analyst, overseeing a 24-hour water quality sampling event. Mr. Hughes oversaw sample collection and ensured that samples were collected following FDEP water chemistry sampling protocol in the collection of grab samples for various parameters and the *in-situ* measurement of other parameters using a YSI multi-parameter probe. This monitoring effort was one of several permitting requirements for the City's proposed mooring field in the Vinoy Basin, City of St. Petersburg, Pinellas County, Florida (Moffatt and Nichol Engineers, 2007).
- Scientific Diver, deploying four pre-fabricated seepage meters at different locations around the perimeter of the nutrient-impaired lake for BCI scientists. This is part of a multi-faceted study to determine and correct lake health issues for Lake Hunter, in the City of Lakeland, located in Polk County (BCI Scientists and Engineers, 2007).
- Chief Field Scientist mapping areas of seagrasses and essential fish habitat, including the endangered Johnson's seagrass (*Halophila johnsonii*) for the Boca Club Bascule Bridge Study. Mr. Hughes collected qualitative data to characterize relative seagrass bed densities, noting local marine life, as well as photodocumenting these areas and flora/fauna with underwater still photos and video. Mr. Hughes also authored an Essential Fish Habitat Assessment memo following the survey effort in Boca Raton, Palm Beach County, Florida (E.C. Driver and Associates, 2007).
- Field Scientist/Scientific Diver mapping seagrasses and other sensitive areas, noting local marine life as well as photodocumenting these areas and flora/fauna with underwater still photos and video. Mr. Hughes also authored an existing conditions report following the survey for the Anna Maria Bridge Improvements Seagrass and Wetland Mapping Survey, for the Anna Maria Island, in Manatee County, Florida (E.C. Driver and Associates, 2006).
- Field Scientist, mapping seagrasses and other sensitive areas and noting local marine life as well as photodocumenting these areas and flora/fauna with underwater still photos and video. Mr. Hughes also authored several technical memoranda addressing wildlife, endangered species concerns, and existing wetlands as part of the permitting for this project. Matlacha Bridge Replacement, Pine Island, Lee County, Florida (E.C. Driver, 2006).
- Project Manager/Chief Field Scientist mapping areas of seagrasses and essential fish habitat. Mr. Hughes collected qualitative data to characterize potential sensitive area, noting local marine life. Mr. Hughes authored an Essential Fish Habitat Assessment memo following the survey effort for the Winterberry Drive Bridge Replacement, Marco Island, in Collier County, Florida (Stanley Group, 2006).
- Field Scientist responsible for overseeing established permit protocols and verification of seagrass recovery levels as part of a large-scale seagrass mitigation project for an on-going multi-year effort. Assisted with mapping of new seagrass growth. Further assisted with testing prototype turtle grass (*Thalassia testudinum*) cutting device and transplanting sod units using hookah diving equipment for the Manatee County Port Authority, Seagrass Mitigation Project, Port Manatee, in Manatee County, Florida (Manatee Port Authority, 2005 to ongoing).



- Field Scientist/Scientific Diver, mapping extensive areas of canals and potential new channels through seagrasses and other sensitive habitats. Mr. Hughes collected still-photo and video imagery of the canals and channels slated for maintenance and new development. Also mapped and characterized potential mitigation areas in anticipation of potential permitting requirements for the City of Port Richey, in Pasco County, Florida (LPA Group, 2006).
- Field Scientist/Scientific Diver mapping the boundaries of any existing seagrass beds and benthic invertebrate communities within the project area and photodocumenting these areas with still photos, also noting local marine flora and fauna. Mr. Hughes authored two technical memoranda for this effort for the USCG St. Petersburg Small Boat Moorings Benthic Characterization and Essential Fish Habitat Survey, St. Petersburg, in Pinellas County, Florida (Moffatt & Nichol, 2006).
- Project Manager/Field Scientist with a multi-day water quality survey within Faka Union Canal to determine modeling parameters based on the level of freshwater influence from existing weir structure and potential impacts to over-wintering manatees. Mr. Hughes also compiled a report of multi-discipline data sources to assist modelers with more accurate information for the Faka Union Canal Water Quality Survey, Naples, Florida (South Florida Water Management District, 2006).
- Project Manager/Chief Field Scientist responsible for overseeing seagrass mitigation and wetland creation monitoring and submitting reports for agency review. These areas were released from additional monitoring in 2009. This project was for Yacht Club of the Americas, Tampa Harbor Yacht Club, Seagrass and Wetland Creation Mitigation Project, located in Tampa, Hillsborough County, Florida (2005 to 2009).

2001 to 2004: CSA Ocean Sciences Inc.– Staff Scientist

- Acting Chief Field Scientist/Scientific Diver for the coral monitoring team, responsible for coral health assessment at a number of sampling stations along the dredging route and other affected areas at Fleming Key and around Truman Harbor. Survey work involved underwater video and still camera imaging of coral and seagrass stations, collecting flourometer readings of selected coral colonies, and relocating corals from planned dredging and demolition areas, as part of the Key West Channel Dredge Project, Key West, Monroe County, Florida (Department of the Navy, 2003–2004).
- Field Scientist/Scientific Diver for a coral reef rehabilitation project in Newfound Harbor Key Sanctuary Preservation Area (SPA). Re-attached and re-stabilized corals and coral fragments from multiple vessel grounding sites. Enhanced the habitat quality and increased the structural complexity of previous restoration structures (coral rings) located at the Bateau Duhe vessel grounding site in Newfound Harbor Key SPA. Approximately 200 corals dislodged during multiple vessel groundings were collected and reattached at the Bateau Duhe restoration site (FKNMS and FDEP, 2003).
- Project Scientist assisted with still image and video data collection on several trips. Mr. Hughes' main role was analyzing several thousand images using PointCount software to characterize benthic fauna (corals) and flora for subsequent data analysis and seasonal progress reports for the Palm Beach County Artificial Reef Program, Palm Beach County, Florida (Palm Beach County, 2003, 2004).
- Scientific Diver, assisted in towed diver video transects as part of a benthic habitat characterization survey to establish baseline conditions prior to dredging activities at the Port Everglades Entrance Channel in Fort Lauderdale, Broward County, Florida (Olsen Associates, Inc., 2003).
- Scientific Diver, assisting with the seagrass surveys in several borrow areas located at the Naval Air Facility and Truman Annex in Key West, that were potentially slated to receive fill material from the dredging work. These borrow areas had become colonized with meadows of turtlegrass (*Thalassia testudinum*) (Department of the Navy, 2002).



- Field Scientist/Diver for the damage survey and coral restoration project subsequent to the grounding of the Turkish freighter M/V *FIRAT* offshore Ft. Lauderdale, Florida (Mosely, Warren, Prichard, and Parish, 2002).
- Field Scientist/Towed Diver for a biological survey of nearshore seagrass beds (*Halophila johnsonii*) in the “Crossroads” area in Martin County, Florida (Taylor Engineering, Inc., 2002).
- Chief Field Scientist for comprehensive oyster resource mapping project within West Black Bay, Louisiana. Employed side-scan sonar and bottom profiler data to determine sample stations for oysters. This effort included a comprehensive oyster sampling study/benthic assessment using Louisiana Department of Wildlife and Fisheries (LDWF) oyster sampling protocols to establish length frequencies and approximate abundances of oysters in the immediate project region and working directly with LDWF. Mr. Hughes assisted again with field efforts in 2004 for a short-term pilot study to monitor the effects on turbidity from limited pipeline removal (Anadarko Petroleum Corporation, 2002, 2004).
- Scientific Diver collecting still and video images as part of a benthic habitat characterization survey to establish baseline conditions prior to beach re-nourishment activities for the City of Venice Benthic Habitat Survey (Coastal Technology Corporation, 2002).
- Field Scientist assisted with towed video collection of the proposed Seafarer pipeline route from the Bahamas into several proposed sites along Palm Beach County. The project included analysis of several thousand photographs for benthic habitat characterization using digital video and PointCount software (El Paso Energy Partners, 2002).
- Assisted with several sections of National Environmental Policy Act (NEPA) documentation for ExxonMobil’s new liquefied natural gas (LNG) terminal in the Gulf of Mexico (ExxonMobil, 2003).
- Chief Field Scientist for a 403(c) monitoring program related to an NPDES permit for a discharge from the Shell Chemical Yabucoa, Inc. refinery into Yabucoa Bay, Puerto Rico (Shell Yabucoa Company, 2003 and 2004).
- Field Scientist assisted in an extensive bottom characterization survey along the east coast of Sakhalin Island, Russia, that involved video collection of benthic resources and sediment characterization for several proposed pipeline routes. Further provided quality assurance and quality control of the field sampling operations that were conducted by Sakhalin Energy Investment Company LTD’s Russian contractor, which included collection of sediment and water samples for analysis of geological, chemical, and biological parameters. Mr. Hughes also co-authored the final report for Sakhalin Energy (Sakhalin Energy, 2001).
- Field Scientist for a field survey that included report preparation to characterize benthic disturbances caused by a pipe laybarge’s anchor cables equipped with and without mid-line buoys on the west Florida shelf (Gulfstream Natural Gas System, 2001).

2000 to 2001: Florida Department of Environmental Protection – Environmental Specialist

- Served as an aquatic biologist for the Watershed Monitoring Program. His duties included monitoring effluent water quality collected from industrial and domestic wastewater facilities that had National Pollutant Discharge Elimination System (NPDES) permits.

1997 to 2000: Graduate School of Oceanography

- Participated in 4 summer cruises on the R/V *ABEL J*, the R/V *ALBATROSS*, the R/V *EDWIN LINK*, and the R/V *ABEL J* in conjunction with the U.S. Geological Survey, entailed several research cruises to Georges Bank that involved benthic survey work using remotely operated and manned submersibles as well as collecting benthic fauna using an assortment of dredging and video equipment. The assistantship work also included the identification and cataloging of the collected benthic specimens for later analysis.

1995 to 1996: Florida Fish and Wildlife Conservation Commission – Staff Biologist

- The job duties included fish surveys throughout the Tampa Bay region using a variety of different field equipment to assess the health and abundance of local fish populations, as well as tag and release of recreationally important finfish, such as snook, red drum, and spotted seatrout. He also assisted in the construction and testing of prototype marine invertebrate collection equipment.

PUBLICATIONS (Corporate)

CSA Ocean Sciences, Inc. (E. A. Hughes, primary author). 2019. Tampa Bay Hard Bottom Mapping Project. A technical report prepared for the Tampa Bay Estuary Program (TBEP). 44 pp.

CSA Ocean Sciences, Inc. (E. A. Hughes, primary author). 2016. Biological Resources Survey for the Howard Frankland Bridge and Adjacent Causeways, Tampa Bay, Florida. A technical report prepared for HDR, Inc. 42 pp.

CSA Ocean Sciences, Inc. (E. A. Hughes, primary author). 2016. Tampa Bay Hard Bottom Mapping Project – Phases 1 and 2. Two technical reports prepared for the Southwest Florida Water Management District. 60 pp. each.

CSA Ocean Sciences, Inc. (E. A. Hughes, primary author). 2015. CSA Response Manual for Environmental Sampling and Monitoring during BPTT Oil Spill Response Operations. A technical response manual prepared for BP Trinidad and Tobago, LLC. 49 pp.

CSA Ocean Sciences, Inc. (E. A. Hughes, primary author). 2015. Summary Report for Feasibility of Proposed Monitoring Take of Atlantic and Shortnose Sturgeon at the Circulating Water Intakes at Indian Point Energy Center, Buchanan, New York. A technical report prepared for S.T. Hudson Engineers. 88 pp.

Scheda Ecological Associates, Inc. (E. A. Hughes, primary author). 2009. Environmental Support Document – Ocean Avenue Bridge in Lantana over the Intracoastal Waterway. A technical report prepared for EC Driver (for Palm Beach County) 135 pp.

Scheda Ecological Associates, Inc. (E. A. Hughes, primary author). 2009. Longboat Pass Seagrass Survey. A technical report prepared for Humiston and Moore Engineers. 12 pp.

Scheda Ecological Associates, Inc. (E. A. Hughes, primary author). 2009. Venice Inlet Seagrass Survey. A technical report prepared for Humiston and Moore Engineers. 13 pp.

Scheda Ecological Associates, Inc. (E. A. Hughes, primary author). 2009. Seagrass Survey for the Experimental Longshore Bar Project in Tampa Bay. A technical report prepared for Malcolm Pirnie, Inc. 13 pp.

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PROFESSIONAL AFFILIATIONS AND CERTIFICATIONS

Acoustical Society of America
American Fisheries Society
American Geophysical Union
Propeller Club of Tampa Bay
Further Offshore Emergency Training (FOET) including HUET and EBS – Expires 07/16/2019
Hydrogen Sulfide Awareness Training
Echoview (vers. 8) 3-Day Training Course at USF, St. Petersburg, Florida – August 2017
Echoview 3-Day Training Course at FIU, North Miami, Florida – March 2012
NAUI Certified Master Diver 2008
American Fisheries Society Advanced GIS for Fisheries Scientists – August 2017
Red Cross First Aid/CPR Certified
NAUI Certified Rescue Diver 2003
PADI Certified Nitrox Diver 2001