Continual Validation and Development of Conversion Factors for Priority Fish and Crustacean Species
US East Coast Cooperative Project

Revised Proposal submitted to the ACCSP from the
Commercial Technical Committee June 15, 2020

Applicant: ACCSP Commercial Technical Committee (Chair: Michael Lewis, ACCSP Staff: Mike Rinaldi)

Project Title: Continual Validation and Development of Conversion Factors for Priority Fish and Crustacean Species

Project Type: New Project

Principal Investigators: Maine – Rob Watts
Rhode Island – Katherine Rodrigue
New Jersey - Matthey Heyl
Virginia - Ethan Simpson
North Carolina – Alan Bianchi
Florida - Steve Brown
NMFS SE – Lawrence Beerkircher

Requested Award Amount: $142,056

Requested Award Period: One year upon receipt of funds

Date Submitted: June 15, 2020

Program Goals: Catch and Effort by improving data quality. Biological Data by providing whole weight/gutted weight, sex, length and possibly age data.

Primary Program Priority

- Catch and Effort
  - Weight-weight standardizations across reported quantities, landing conditions, geography, agencies, and time are essential components of the commercial data module.
  - More robust conversion factors by state or region increase confidence in commercial landings used in stock assessments for priority species.
- Biological Sampling
  - Advancing ASMFC, NMFS, State, Council, and ACCSP goals for biological sampling priorities based on project's list of species.

Objective: A primary objective of the ACCSP is to ensure that fisheries-dependent statistics used for fisheries management are accurate, consistent and compatible. This is a one-year, multi-partner project designed to validate, verify, update and document conversion factors used to determine whole (live) weight of commercial landings from reported units (ex. Gutted to whole, bushels to pounds, units to

pounds). Samples will be collected along the East Coast of the US (**Maine, Rhode Island, Virginia, North Carolina, and Florida**) throughout the year to assess spatial and temporal variability. **Data obtained in this study will be used to validate conversion factors currently in use by individual partners and propose modifications and standardization if necessary.** This will be a truly collaborative project involving multiple ACCSP partners and the commercial industry. **Standardization of conversion factors will result in more reliable data for stock assessments, quota monitoring and other regional projects such as the NOAA Fisheries of the US document.**

Need: Commercial landings data provide the platform upon which most research, assessments and management plans are based. Data collection authorities obtain information from commercial records; however, commercial records are often in native units that are of limited use for data analysis. Conversions factors are used to convert landed condition weight or landed units of commercial seafood products to whole weight. Although many fisheries land product in whole form which does not require conversion, others record product in gutted, headed, carcass, filet, tail, loins, fins or some other partial form of the fish. Conversion factors are also necessary for product landed in units other than weight in pounds, such as number, thousands, bushels or dozens. In addition, shellfish and crustacean fisheries generally land product as bushels, bags, baskets, numbers, shell on, shell off, or meat only. Conversions factors are then applied to these landed conditions or units with the resulting output of whole weight in pounds.

Standardizing reporting to whole weight in pounds has advantages for trend analysis and comparison between reporting agencies. Unfortunately, there is currently wide variation in conversion factors used among ACCSP partners, and many of those conversion factors have not been verified in recent history. Hesselman and Kemp (2006) analyzed conversion factors in use along the east coast and found that conversions factors for the same species differ from state to state (Table 1). In general, states north of Virginia use standard historical NMFS-NE conversion codes while states south of Virginia use different and unique conversions. **Inconsistencies result in uncertainty when comparing landings among partners and can cause significant problems for species managed under state-by-state or regional quotas.**

Table 1. State conversion factors for selected species and grades. Fish conversions are those employed to go from reported weight to whole weight, for specific market categories. Blue crab and American Eel conversions are those employed to go from reported quantity to whole weight. (Data table of conversions for all Atlantic Coastal States extracted from SAFIS May 2020) .

Partner	Snowy Grouper (Gutted)	Menhaden (Bushel)	Sharpnose Shark (Gutted)	Blue Crab (Bushel)	American Eel (Number)
ME	1.25	70	2	65	1.1
RI	-	-	1.39	65	-
NJ	-	65	1.39	40	0.9358
VA	-	-	1.39	65	1.24
NC	1.25	-	2 (all shark carcasses)	40	-
SC	1.11	-	1.33	40	-
FL	1.18	0.25 (numbers)	1.39	0.5 (numbers)	-

SEFSC	1.11		1.33	40	

Available documentation of conversion factors currently in use is sparse. In fact, an online search resulted in no readily accessible documentation of NMFS or other partner standard conversions. What sparse information was online was found to be primarily from single species research studies. Historical documents on file with the North Carolina Division of Marine Fisheries (NCDMF) indicate that the NMFS appeared to be the primary source of conversion factors from 1980 to 1990 (NMFS, 1980 and 1990). There are also individual memoranda by NMFS Southeast Fisheries Center staff presenting conversion factors to be used for shrimp, king mackerel, shark fins, wreckfish, tuna and hard clams. These data were obtained from various Science Centers, most likely based on research studies undertaken at that time although there are no raw data presented for confirmation. However, NMFS 1990, contains a complete summary of conversion factor sources presented in the document, including internal NMFS memos and published papers. Most conversion factors in use today were based on these historical data although no validation of these conversions can be found since 1990.

Bennett and Kanwit (2010) coordinated a regional pilot project to sample for conversion factors for monkfish, sea scallops, sea herring and spiny dogfish. Their results showed spatial differences in conversion factors for monkfish and sea scallops, large variability in industry standard weights for sea herring and differences between accepted ACCSP standard conversions and their findings. Their report also presented some of the same difficulties they experienced in obtaining commercial samples, primarily due to reluctance on the part of the commercial industry to assist but also due to annual variations in effort toward any given species. Their established sampling protocols will be similar in this study.

Most of the historical conversion factor documentation grouped many of the individual species into larger taxonomic groupings due to either lack of data or the desire to group these species for presentation purposes. However, there can be considerable variation between species within some of these groups. For sharks, there have been a number of studies done on the conversion of fin weights to whole weight because of the popularity of and controversy over the practice of shark finning and proposed regulatory measures to curtail this practice. These results show large interspecies variability in the conversion of fin weight to whole weight ranging from 45 for porbeagle, 48 for blue and 59 for mako shark in New Zealand (fin weight X conv. = whole weight)(www.fish.govt.nz). Interspecies variability is also evident in the grouper family. In 2009, NCDMF conducted a study to collect samples of commercially caught fish and validate the conversion factors currently in use for grouper and snapper species. Preliminary results from this study showed interspecies variability, as well as variability within the sexes. Results from this study allowed for species-specific and gender-specific conversion factors to be calculated.

In 2010, a similar study was conducted by program partners in coordination with the ACCSP in order to validate or update existing conversion factors. Each partner's methods were cross-examined to determine which one was the most thorough approach to conducting conversion factor studies for each species or groups of species. A broad dataset compiled from landings data was also examined in that dealers and fishermen were selected throughout the state, all market grades of fish were targeted as well as vessels using all gear types pertinent to the target species. Landings data were used to assist samplers with coordinating sampling trips by showing when and where species were typically harvested.

Table 2. Conversions from gutted to whole weight for Snowy Grouper obtained from the State-ACCSP study in 2010 compared with existing factors from SAFIS in May 2020

	SC (n=67)	NC, SC, FL (n=83)
2010 Study **2020 SAFIS CF**	1.088 1.11	1.0836 1.25 (NC) 1.18 (FL)

*Note: Grouper conversion factors currently in use in the southeast Atlantic Ocean are: NC-1.25, SC-1.11, GA-1.18, FL-1.18.

It is also probable that conversions can change over time as fish stocks are subjected to overfishing, strict regulatory protections, and/or changes in migration patterns caused by fluctuating ocean temperatures. Each of these impacts can affect diet, metabolism, and reproductive patterns thus changing physical condition and tissue allocation. It is unlikely that the majority of conversion factors currently in use along the US east coast have been updated since NMFS published the list of conversions in 1990 (NMFS 1990).

It is for many of the reasons stated above that it is important to update historical conversion factors and to sample under spatial and temporal differences. A regional cooperative project is thus preferred.

Results and Benefits: As a result of this study, partners will develop conversion factors that more accurately represent spatial realities of their state or region. The resulting validated conversion factors will make reporting of quota monitored species more accurate and consistent for management. These results will also be used to update historical conversion factors and provide previously unavailable documentation of source, variation within seasons, sexes, species and location. These benefits will aid the commercial fishing industry by providing consistency and accuracy among reporting agencies.

Previous Approach: In 2010, a cooperative ACCSP, state, and federal project consistent with the guidelines above was established. Between 2010 and 2013, several studies were conducted individually to verify the validity of conversion factors. Each partner's methods were cross-examined to determine which one was the most thorough approach to conducting conversion factor studies for each species or group of species.

The project faced constant overarching concerns among all the participants in the study, including; inadequate funding to procure sufficient samples, differences in the methods for data collection among partners, inability to collect sufficient sample sizes, and difficulty in obtaining samples representative of both temporal and spatial distributions and representative of all grade categories (Dukes et al. 2016).

Due to the previously mentioned concerns, some partners did not feel comfortable recommending a single conversion factor for the region. The project was reviewed by the ACCSP Biological and Bycatch Committees, and initial feedback was provided. The Committees made several suggestions for ACCSP to consider changing how conversion factors are implemented in order to better reflect the biology of the species: to incorporate seasonality into the conversion factors for species that exhibit different

size/growth rates throughout the year; and to consider moving away from state (agency)-based factors in favor of biologically informed regional-based factors.

The Commercial Technical Committee decided to proceed by focusing on a smaller number of species, and design a sample method around it. This regional approach could facilitate future projects and avoid issues associated with the pilot study.

Approach: During the Commercial Technical Committee meetings in 2019 and 2020, members expressed dissatisfaction with conversion factors being used for weight-weight conversions. ACCSP staff requested a list of priority species be submitted by each partner. From the 8 responding partners, the number of votes were tallied per species. This list was reviewed by a conversion factor working group in April 2020, in conjunction with materials prepared by ACCSP staff including summaries of commonly-used conversion factors in the Data Warehouse and a summary of the most recent biological-bycatch matrices.

The working group determined that American Eel, Atlantic Menhaden, Atlantic Sharpnose Shark, Blue Crab, and Snowy Grouper were ideal candidates for the project. Multiple ComTech representatives had listed each species, and at least one working group member had expressed interest. The biological, geographic, and industry differences between the species were intended to help inform future projects. Additionally, the list represented a mix of ASMFC, state, NMFS, and Council biological sampling priorities.

Each partner participating in this study will conduct their own sampling, determine their specific sampling schedule and independently conduct their own analysis (Table 3). Analyses will rely on standard linear regression methods. Each partner will obtain samples from those species of interest to them and attempt to obtain samples from other species collected by other partners. These data will then be compiled, validated for standard methodology and summarized in a final report to be published in a scientific journal.

Table 3. List of project partners and species of interest.

Species of Interest	Primary States
Atlantic Menhaden	ME, NJ, VA, NC, FL
Blue Crab	NJ, RI, VA (historic), NC, FL
American Eel	ME, NJ, VA, NC, FL*
Atlantic Sharpnose Shark	NJ, NC, FL
Snowy Grouper	NC, FL

*Florida may not be able to collect an adequate number of American eel samples without participation of it's Division of Freshwater Fisheries which has dropped out of the study. Efforts will be made to collect more samples of the other target species.

Methodology to be used by all partners

Sampling methodology will be standardized among partners. Samples should be derived from the commercial fishery to the greatest extent possible. In cases where fisheries products from other sectors closely resemble those of the commercial fishery, samples may be used upon coordination with state leads. Samples shall be obtained throughout the year, from different fishermen, fish houses, regions of the state, market grades and conditions, depending on availability.

In summary, samplers will coordinate with commercial dealers and fishermen to have whole forms of product brought to the dock at a time when the sampler can meet the boat and conduct the sampling; except some HMS species where sampling can be conducted on board the vessels by fisheries observers. The purpose of the study will be explained to the fishermen and dealer.

Finfish samples shall be determined by statistical analysis of existing data using regression analysis with a set target by species by month. The minimum target of samples shall be determined by each partner, and will allow partners to achieve the appropriate sampling methodology. However, samples ought to exceed the 2010 Study for selected species.

Table 5. Number of samples collected for 2020 target species from 2010 Conversion Factor study.

Species	**FL**	**GA**	**NC**	**SC**	**SEFSC**	**Total**
Snowy Grouper	12	-	7	67	-	86
Blue Crab	1,278	200	385	-	-	1,863

Finfish

Samplers will obtain fish at the dealer when they are offloaded by the vessel or alternatively, on board the vessel, depending on the situation. The whole weight of each individual fish sample will be taken using digital scales to the nearest 0.1 kg if the fish is less than 10 kg and the fish house scale if larger than 10 kg. Total length to the nearest millimeter will be taken with a metric rule fish board or flexible tape measure. Each specimen will then be gutted, sexed and reweighed. If the fish is normally landed headed, finned, as a carcass or other form, then those actions will be undertaken using industry standards and weights obtained at each phase. If the fish is normally landed in counts or some volumetric unit then an appropriate subsample will be taken and the number of fish per unit counted. Once all measurements are completed the fish will be returned to the fisherman or dealer.

Although not required for this study, individual partners sampling finfish (NC to FL, NMFS-SE and NMFSNE) may choose to obtain samples of gonads for fecundity analysis or otoliths for age

determination. Obtaining otoliths may increase the cost of sampling since these fish will be unsellable and will need to be purchased from the fisherman or dealer.

Crustacean Shellfish

Crustacean shellfish can be obtained at the dealer when they are offloaded by the vessel, obtained from cold storage, or at a processing facility. Each unit (bushel, tote) shall be weighed then opened and each item counted. Shellfish width shall be measured to the nearest millimeter using digital calipers. Each specimen shall then be weighed to the nearest 0.1 gram on a digital scale. Once all measurements are completed the shellfish can be returned to the fisherman or dealer.

Geographic Location and Samples Species:

- Maine- Atlantic Menhaden, American Eel
    a. Dealer and harvesters
- Rhode Island - Blue Crab
    a. Winter dredge survey in Narragansett Bay and RI Sound
    b. Dealers and harvesters
- New Jersey - Atlantic Menhaden, Atlantic Sharpnose Shark, American Eel, Blue Crab, Snowy Grouper
    a. Dealers and harvesters
- Virginia - Atlantic Menhaden, American Eel
    a. Dealers and harvesters
- North Carolina - Atlantic Menhaden, Atlantic Sharpnose Shark, American Eel, Blue Crab, Snowy Grouper
    a. Morehead City headquarters with sampling conducted along coastal NC
- Florida - Atlantic Menhaden, Atlantic Sharpnose Shark, American Eel, Blue Crab, Snowy Grouper
    a. St. Petersburg with sampling conducted east coast of Florida
- NMFS-SE - Atlantic Menhaden, Atlantic Sharpnose Shark, American Eel, Blue Crab, Snowy Grouper
    a. Miami with sampling conducted in coastal NC and on the east coast of FL, as well as at sea in various offshore waters of the northwestern Atlantic and Gulf of Mexico.

Data Delivery Plan: Partner specific data forms will be used by all samplers. Each partner will determine the format of their database but must be able to output and share data in a standard format with other partners. **Variables collected must at a minimum include species, date, gear, area fished, whole weight, processed weight, and processed condition. Upon completion of the sampling phase of the project, partner files will be combined into a single csv file and shared with all partners during analysis. Because the analytical process often identifies errant data, the final data set will be submitted to ACCSP upon project completion.**

Milestone Schedule:

Task	Month

	1	2	3	4	5	6	7	8	9	10	11	12
Hire samplers	X	X										
Purchase Equipment	X	X										
Coordinate between fishermen and dealers to obtain samples		X	X	X	X	X	X	X	X	X	X	X
Sample fish and shellfish			X	X	X	X	X	X	X	X	X	X
Analyze data					X	X					X	X
Semi Annual report						X						X

Cost Summary (Budget): See Attachment A for partner specific budgets.

Description	Total Cost	In-Kind
Personnel (a)		
RI	$8,663	$0
NJ	$19,761	$5,361
NC	$49,369	$24,869
FL	$23,986	$0
Subtotal(a)	$101,779	
Fringe (b)		
RI	$6,371	$0
NJ	$3,576	$2,474
NC	$8,100	$1,902
FL	$9,969	$0
Subtotal(b)	$28,016	
Travel (c)		
RI	$0	$0
NJ	$2,125	$0
NC	$5,450	$0
FL	$1,130	$0
Subtotal(c)	$8,705	
Equipment (d)		
RI	$0	$0
NJ	$0	$0
NC	$0	$0
FL	$0	$0
Subtotal(d)	$0	
Supplies (e)		
RI	$950	$0
NJ	$13,500	$1,000

NC	$8,565	$1,500
FL	$800	$0
Subtotal(e)	$23,815	
Totals		
Total Direct Charges (i)	$154,314	
Indirect Charges (j)	$27,411	
Total (sum of Direct and Indirect) (k)	$181,724	
Requested Total	$142,056.31	

In-Kind Contribution: 21.83% of total project cost, $39,667.69. All requested totals are bolded in partner-specific budgets.

Literature Cited:

A. Dukes et al., 2016. Cooperative Project on the Validation of Commercial Finfish and Shellfish Conversion Factors for the US East Coast. Atlantic Coastal Cooperative Statistics Program, Commercial Technical Committee, Arlington, Virginia. 22 pages.

Bennett, T. and K. Kanwit. 2010. Conversion Factor Update Sampling in Maine, NH and MA-Pilot Phase. Final Report submitted to the ACCSP.

Hesselman, D. and G. Kemp. 2006. ACCSP Conversion Factor Assessment Summary of Findings. North Carolina Division of Marine Fisheries, Morehead City, North Carolina. 19 pages.

NMFS, 1980. Conversion Factors for Fish and Shellfish used in the United States. Chief, Resource Statistics Division, National Marine Fisheries Service, Washington DC. 18 pages.

NMFS, 1990. NMFS Conversion Factors. Memorandum from Mark C. Holliday, Acting Chief, Fisheries Statistics Division, National Marine Fisheries Service, Silver Spring, MD to NMFS Regional and Science Directors.

Pilot Study of Conversion Factors Used by the North Carolina Trip Ticket Program (NA05NMF4741003). 2010; North Carolina Division of Marine Fisheries, Prepared by Alan Bianchi.

Principal Group Members:
Maine – Rob Watts
Rhode Island – Katherine Rodrigue
New Jersey - Matthey Heyl
Virginia - Ethan Simpson
North Carolina – Alan Bianchi
Florida - Steve Brown, Chris Bradshaw
NMFS SE – Lawrence Beerkircher

Attachment A

Specific Partner Budgets

New Jersey

Description	Calculation	Cost
Personnel (a)		
Biologist (FTE)	10% of salary	$5,361.00
Technician (PTE)	900 hours @ $16.00/hr	**$14,400.00**
Subtotal(a)		$19,761.00
Fringe (b)		
Biologist (FTE)	46.15%	$2,474.00
Technician (PTE)	7.65%	**$1,102.00**
Subtotal(b)		$3,576.00
Travel (c)		
Mileage for sampling trips	Fuel / Mileage $0.35 per mile Average 100 miles per trip 35 trips	**$1,125.00**
Vehicle Maintenance		**$1,000.00**
Subtotal(c)		$2,125.00
Equipment (d)		
Subtotal(d)		$0.00
Supplies (e)		
Office Supplies and Information Processing		$1,000.00
Field Supplies		**$2,500.00**
Finfish / Blue Crab Samples		**$10,000.00**
Subtotal(e)		$13,500.00
Contractual (f)		
Subtotal(f)		$0.00
Other (h)		
Subtotal(h)		$0.00
Totals		
Total Direct Charges (i)		$39,061.70

Indirect Charges (j)	22.2% 1,739.39 NJ 3,441.36 ACCSP	$5,181.00
Total (sum of Direct and Indirect) (k)		$44,242.45
Requested Total		$31,442.96

North Carolina

Description	Calculation	Cost
Personnel (a)		
Biologist (FTE)	10% of salary, includes SS and IND	$24,869.00
Technician (PTE)	35 hours per week, 11 mo @ $13.86/hr	**$24,500.00**
Subtotal(a)		$49,369.00
Fringe (b)		
Biologist (FTE)		$0.00
Technician (PTE)	7.65% of salary	**$1,875.00**
Technician (PTE)	Indirect 25.4% of salary	**$6,225.00**
Subtotal(b)		$8,100.00
Travel (c)		
Lodging In-State	30 Trips @ $75 per trip	**$2,250.00**
Per Diem In-State	30 trips @ $40 per trip	**$1,200.00**
Gas		**$500.00**
Ferry Charges, Parking, Miscellaneous		**$1,500.00**
Subtotal(c)		$5,450.00
Equipment (d)		
Subtotal(d)		$0.00
Supplies (e)		
Clerical Supplies	Paper, pens, clipboards, etc	**$500.00**
General Office Supplies	Phone, fax, etc	$1,500.00
Computer Supplies	Computer	**$3,000.00**
Samples/Sampling Gear	Samples/Incentives	**$2,500.00**

Samples/Sampling Gear	Rain Gear	**$75.00**
Samples/Sampling Gear	Gloves	**$30.00**
Samples/Sampling Gear	Shucking Knives/Filet Knives/Sharpening Stone	**$125.00**
Samples/Sampling Gear	Digital Scales	**$460.00**
Samples/Sampling Gear	Measuring Board	**$25.00**
Samples/Sampling Gear	Boots	**$50.00**
Samples/Sampling Gear	Aprons	**$200.00**
Samples/Sampling Gear	Carry contained / Tote	**$50.00**
Samples/Sampling Gear	Cleaning Supplies	**$50.00**
Subtotal(e)		$8,565.00
Contractual (f)		
Subtotal(f)		$0.00
Other (h)		
Subtotal(h)		$0.00
Totals		
Total Direct Charges (i)		$63,384.00
Indirect Charges (j)		$8,100.00
Total (sum of Direct and Indirect) (k)		$71,484.00
Requested Total		$44,615.00

Rhode Island

Description	Calculation	Cost
Personnel (a)		
Biologist (FTE)	30 days at $288.77 per day	**$8,663.10**
Subtotal(a)		$8,663.10
Fringe (b)		
Biologist (FTE)	30 days at $212.36 per day	**$6,370.80**
Subtotal(b)		$6,370.80
Travel (c)		
Subtotal(c)		$0.00
Equipment (d)		
Subtotal(d)		$0.00
Supplies (e)		
Digital scale	1 item	**$650.00**
Digital calipers	2 items	**$300.00**
Subtotal(e)		$950.00
Contractual (f)		
Subtotal(f)		$0.00
Other (h)		
Subtotal(h)		$0.00
Totals		
Total Direct Charges (i)		$15,983.00
Indirect Charges (j)	19.25%	$2,894.03
Total (sum of Direct and Indirect) (k)		$18,877.93
Requested Total		$18,877.93

Florida

Description	Calculation	Cost
Personnel (a)		
Staff (FTE)	4.361 biweeks x $1,374.84 pay	**$5,995.68**
OPS 1 (PTE)	160 hours at $15.00 per hour	**$2,400.00**
OPS 2 (PTE)	507 hours at $16.00 per hour	**$8,112.00**
OPS 3 (PTE)	507 hours at $14.75 per hour	**$7,478.00**
Subtotal(a)		$23,985.68
Fringe (b)		
Staff (FTE)	FICA + Insurance	**$2,516.30**
OPS 1 (PTE)	FICA + Insurance	**$690.00**
OPS 2 (PTE)	FICA + Insurance	**$4,592.25**
OPS 3 (PTE)	FICA + Insurance	**$2,170.35**
Subtotal(b)		$9,968.90
Travel (c)		
Fuel for state trucks	45 trips (70 miles) $3.00 per gallon @ 15mpg	**$630.00**
Truck maintenance		**$500.00**
Subtotal(c)		$1,130.00
Equipment (d)		
Subtotal(d)		$0.00
Supplies (e)		
Field gear	Scales, measuring board, bags, knives	**$800.00**
Subtotal(e)		$800.00
Contractual (f)		
Subtotal(f)		$0.00
Other (h)		
Subtotal(h)		$0.00
Totals		
Total Direct Charges (i)		$35,884.87
Indirect Charges (j)	31.31%	$11,235.55
Total (sum of Direct and Indirect) (k)		$47,120.42
Requested Total		$47,120.42

Summary of Proposal for Ranking Purposes

Proposal Type: New

Primary Program Priority:

- Catch and Effort: This project will result in more reliable data for stock assessments, quota monitoring, and other regional projects such as the NOAA FUS. The effect of more reliable weight-weight conversions would be reflected across the ACCSP Data Warehouse, SAFIS, and any data provided by the ACCSP.
- Biological Sampling: This project will allow for increase in sampling for priority species, and facilitate relationships between management agencies and industry.

Project Quality Factors:

- Multi-Partner/Regional Impact: The project has been discussed at multiple Commercial Technical Committee meetings, and on monthly calls with a working group composed of staff from North Atlantic, Mid-Atlantic, and South Atlantic agencies. It represents a collaborative effort in designating priority species and advancing the quality of commercial data
- Funding Transition Plan or Defined End-Point: This is a one year project for collecting commercial samples. Report progress is expected in July and December of the calendar year of funding.
- In-Kind Contribution: The in-kind contribution to the sampling portion of this project equate to 21.83% of the project's cost. When factoring in coordination/calls, additional analysis, data delivery, and data storage for state and ACCSP staff, this total may have a significantly higher value.
- Improvement in data: Reliable conversion factors will create greater confidence when transforming data into and from different quantities and conditions.
- Impact on Stock Assessment: An improvement in state-specific conversion factors will have an enormous impact on stock assessments. The method employed in many assessments is to employ the recalculation of landing condition, based on species, by state-specific conversion factors.

Attachment B

CV's of Principal Investigators

Robert B. Watts II

Maine Department of Marine Resources
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June 2020

PROFILE:

- Knowledge of Maine and federal regulations pertaining to commercial fishing and associated reporting requirements through working with the Department of Marine Resources and the National Marine Fisheries Service.
- Knowledgeable of Maine's fishing industries and how they operate.

EDUCATION:

B.S. Marine Science, Maine Maritime Academy, Castine, ME 2002

EMPLOYMENT EXPERIENCE:

May 2016 – Present **Marine Resource Scientist III**
Maine Department of Marine Resources
West Boothbay Harbor, ME

- Manages daily operations of Maine's Commercial Landings Program, which collects, compiles and distributes commercial fishery statistics for Maine's commercial fisheries.
- Supervises Landings Program personnel.
- Maintain Microsoft Access databases for licensing information, compliance and data entry.
- Communicates with industry regarding reporting requirements, monitors reporting compliance and works with the licensing division in order to ensure all mandatory reporting requirements are met and licenses are issued accordingly.
- Oversees DMR's landings suspension authority and process.
- Oversees DMR's swipe card reporting program.
- Maintains dealer and harvester auditing databases.
- Oversees Maine's Interactive Voice Response (IVR) reporting program.
- Oversees Maine's Environmental Monitoring Program.
- Serves as key contact for Maine commercial landings information.
- Promotes Maine's partnership with Atlantic Coastal Cooperative Statistical Program (ACCSP), serving on the Operations Committee, Commercial Technical Committee, Information Systems Technical Committee, Standard Codes Committee and Outreach Committee; working to bring the Landings Program into compliance with ACCSP standards.

Jan 2014 – Jan 2016 **Marine Resource Scientist III (Acting Capacity)**
June 2015 – Apr 2016 **Marine Resource Scientist II**
Maine Department of Marine Resources

West Boothbay Harbor, ME

- Manages daily operations of Maine's Commercial Landings Program, which collects, compiles and distributes commercial fishery statistics for Maine's commercial fisheries.
- Supervises Landings Program personnel.
- Maintain Microsoft Access databases for licensing information, compliance and data entry.
- Communicates with industry regarding reporting requirements, monitors reporting compliance and works with the licensing division in order to ensure all mandatory reporting requirements are met and licenses are issued accordingly.
- Oversees DMR's landings suspension authority and process.
- Oversees DMR's swipe card reporting program.
- Maintains dealer and harvester auditing databases.
- Oversees Maine's Interactive Voice Response (IVR) reporting program.
- Serves as key contact for Maine commercial landings information.
- Promotes Maine's partnership with Atlantic Coastal Cooperative Statistical Program (ACCSP) through serving on the Commercial Technical Committee, Information Systems Technical Committee and Outreach Committee; working to bring the Landings Program into compliance with ACCSP standards.

Feb 2012 – Apr 2015 **Marine Resource Scientist I**
Maine Department of Marine Resources

- Manages daily operations of Maine's Commercial Landings Program, which collects, compiles and distributes commercial fishery statistics for Maine's commercial fisheries.
- Supervises five Landings Program personnel.
- Maintain Microsoft Access databases for licensing information, compliance and data entry.
- Communicates with industry regarding reporting requirements, monitors reporting compliance and works with the licensing division in order to ensure all mandatory reporting requirements are met and licenses are issued accordingly.
- Oversees outreach to industry.
- Maintains dealer and harvester auditing databases.
- Oversees Maine's Interactive Voice Response (IVR) reporting program.
- Serves as key contact for Maine commercial landings.

Oct 2007 – Jan 2012 **Marine Resource Specialist II**
Maine Department of Marine Resources

- Oversee daily operations of the harvester landings program.
- Notify new harvesters about reporting requirements.
- Maintain databases used for data audits and data entry.
- Monitor reporting compliance database and notifies harvesters if they are delinquent.
- Supervise two Landings Program personnel.
- Oversees IVR reporting.
- Prepare data requests from various sources

Jul 2005 – Oct 2007 **Marine Resource Specialist I**
Maine Department of Marine Resources

- Interviewed marine recreational anglers all over the Maine coast to help determine fish stocks.

Identified, weighed, measured and recorded fish caught by anglers.

- Created publications, updated regulation handouts and updated the recreational fishing website as needed.

May 2001 – Jun 2005 **Conservation Aid**
Maine Department of Marine Resources

- Interviewed marine recreational anglers all over the Maine coast to help determine fish stocks.

Identified, weighed, measured and recorded fish caught by anglers.

- Acted as a liaison between the State of Maine and the recreational anglers, answered anglers questions about fishing regulations.

Katherine E. Rodrigue

Principal Marine Biologist
RIDEM Div. of Marine Fisheries
3 Ft. Wetherill Rd, Jamestown, RI
401-423-1944
katherine.rodrigue@dem.ri.gov

Education:

2009-2013 Bachelor of Science, University of Rhode Island, Major in Marine Biology
Overall GPA: 3.77
Relevant Coursework in Major: Biology and Ecology of Fishes, Marine Biology, Ecology, Vertebrate Biology, Genetics, Animal Development, Animal Behavior

Fall 2011 Bermuda Institute of Ocean Sciences
GPA: 3.84
Course Work: Coral Reef Ecology, Marine Invertebrate Zoology, Research Diving Methods, independent research.

Work Experience:

May 2018 – present
Principal Marine Biologist, RI Department of Environmental Management – Division of Marine Fisheries, Jamestown, RI

Conduct fisheries independent surveys for assessment of recreationally and commercially important fisheries populations in Narragansett Bay, RI's coastal ponds, and RI and Block Island sounds. Lead the Coastal Pond Seine Survey and collect, analyze, and summarize beach seine survey data from Rhode Island's coastal ponds and estuaries for the purpose of forecasting recruitment in relation to the spawning stock biomass of winter flounder and other recreationally important species. Lead the Coastal Pond Shellfish Survey to assess the distributions and density of shellfish resources (particularly quahogs) in the coastal ponds. Develop a fishery-independent blue crab winter dredge survey to assess and characterize the population of this emerging fishery in RI. Respond to fish kills and assess loss of marine resources and damage to marine environment due to natural or pollution-driven mortality events. Compile and analyze fisheries data for use in stock assessments and technical reports.

October 2016 – May 2018
Marine Biologist, RI Department of Environmental Management – Office of Water Resources, Providence, RI

Conducted water quality monitoring of all shellfish growing area waters within the state of RI. Monitoring included sampling water for fecal coliform bacteria, harmful algal blooms, and occasionally male-specific bacteriophage. Sampling was conducted by boat (one 23- foot boat for sampling within Narragansett Bay and one 16-foot aluminum boat for sampling within the coastal ponds) and from shore. Collected and reviewed laboratory results provided by the RI Department of Health. Determined concentration of harmful algal species and monitored these

concentrations to ensure safe shellfish waters. Determined when additional action was required based on the Harmful Algal Bloom Management Plan in order to maintain a close watch on algal blooms and toxicity levels. Analyzed bacteriological data and compiled for technical report writing. Use of ArcMap GIS for creating maps illustrating shellfish water classifications and pollution sources for use in technical reports as well as planning of field work. Coordinated and conducted shoreline surveys throughout the state to identify potential and actual pollution sources and sample when necessary, as well as determine volumetric flow rates for analyzing their bacteriological impact. Ensured compliance with FDA and EPA standards.

January 2016 – September 2016
Fisheries Specialist – APAIS Field Technician, Atlantic States Marine Fisheries Commission/RI Department of Environmental Management, Wakefield, RI

Conducted the Access Point Angler Intercept Survey in Rhode Island as part of the NOAA Marine Recreational Information Program. Visited coastal access sites throughout the state to interview recreational anglers on their catch, effort, and demographics. Conducted interviews at sea on board for-hire vessels while also measuring harvested catch and discards. Conducted outreach to the public and the recreational fishing community by attending and speaking at local fishing club meetings and larger organizations such as the Rhode Island Saltwater Anglers and the Rhode Island Party and Charter Boat Association. Assisted in overall implementation and logistics of the survey where needed.

May 2014 – January 2016 (seasonal)
Research Assistant, RI Department of Environmental Management– Marine Fisheries, Jamestown, RI

Assisted with all aspects of marine fisheries research of finfish and commercially important invertebrates in Narragansett Bay. Assisted in field surveying using commercial gear including seines, fish pots, trawls, clam dredge, SCUBA. Entered data into MS Access databases. Removed and prepped otoliths, opercula, and scales for aging various finfish.
Checked commercial fishermen logbook compliance in accordance with RI and Atlantic Coastal Cooperative Statistics Program standards. Required to work frequently on small boats and in occasional adverse weather conditions. Helped with general maintenance of equipment, survey and fishing gear (including knotting/splicing line), and boats. General office work.

Sep. 2014 – Sep. 2015 (two seasons)
Data Manager, Ocean Exploration Trust (OET), Caribbean

Participated in two one-month cruises on board the exploration vessel Nautilus using remotely operated vehicles to explore geological and biological features of the deep sea in the Caribbean and Pacific Northwest. Managed all data collected to the satisfaction of visiting scientists and while adhering to OET protocols. Managed the wet lab, processed samples, and enforced safety protocols. Ran multibeam sonar and subbottom profiler. Wrote summary reports for each ROV dive, entered data into spreadsheets, trained and supervised interns.

Feb. – May 2014
Educator, Save the Bay, Providence, RI

Taught classes on marine science to children of all ages in a variety of settings including afterschool programs, classrooms, field sites, and on board Save the Bay education vessels. Subject matter included local marine ecosystems and organisms and coastal conservation.

Sept. 2013 – Jan. 2014
Education and Aquarist Intern, Save the Bay, Newport, RI

Assisted in husbandry and general maintenance of all Narragansett Bay themed exhibits at the aquarium including feeding, water changes, exhibit design, and animal identification. Worked at admissions desk, taught both adult and child visitors about the animals in the exhibits, gave guided tours, helped children at the invertebrate and shark touch tanks. Assisted with extra educational programs (i.e. seal watching tours and beach combing activities).

October 2013
Ocean Science Intern, Ocean Exploration Trust, Caribbean

Spent one month on board the exploration vessel Nautilus using remotely operated vehicles to explore geological and biological features of the deep sea in the Caribbean region. Served as a data logger by recording observations, samples, and taking photos to document findings. Processed samples in the wet lab after each dive.

May 2012 – December 2013
Research Assistant, University of Rhode Island, Kingston, RI

Used SCUBA survey techniques and in situ as well as laboratory experiments to study the invasive macroalga Heterosiphonia japonica. Required to work independently to complete research including monitoring weather and marine conditions such as tides, winds, and wave action to determine appropriate times for diving.

Research Experience:

•Project PI for Assessment of Juvenile Finfish in RI Coastal Ponds and Embayments, RI DEM Division of Marine Fisheries.
•Project PI for Assessment of Shellfish Resources in RI Coastal Ponds, RI DEM Division of Marine Fisheries.
•Distribution and ecological impacts of the invasive macroalga Heterosiphonia japonica (mentor: Dr. Carol Thornber, URI) – May 2012 – December 2013.
•Relationship between wingspan and length of two species of skates in Narragansett Bay (mentor: Dr. Jeremy Collie, URI) – January 2013 – May 2013
•Size structure, otolith characteristics and reproduction of the Bermuda anchovy, Anchoa choerostoma (Mentor: Dr. Joanna Pitt, Bermuda Department of Environmental Protection) – November 2011-December 2011
•Symbiotic bacteria of Rhode Island tunicates (mentor: Dr. Steven Irvine, URI) – May 2011 – May 2012

Publications and Technical Writing:

•Rodrigue K, C McManus, P. August, A. Desbonnet & J. Sassi. 2019. The Fish of Little Narragansett Bay. In (Janice M. Sassi, Editor) The State of Napatree Report, The Watch Hill Conservancy.

•Rodrigue, K., Lake, J. 2020. Assessment of Recreationally Important Finfish Stocks in Rhode Island Waters, 2019 Annual Performance Report for USFWS Sportfish Restoration Grant, Job 3.
•Rodrigue, K., Lake, J. 2019. Assessment of Recreationally Important Finfish Stocks in Rhode Island Waters, 2018 Annual Performance Report for USFWS Sportfish Restoration Grant, Job 3. RI DEM Division of Marine Fisheries, Jamestown, RI.
•Schneider, E., Rodrigue, K. 2015. ASMFC Coastal Shark Compliance Report. RI DEM Div. of Fish and Wildlife, Jamestown, RI.
•Schneider, E., Rodrigue, K. 2015. ASMFC Spiny Dogfish Compliance Report. RI DEM Div. of Fish and Wildlife, Jamestown, RI
•Newton, C., M. Bracken, M. McConville, K. Rodrigue, and C.S. Thornber. 2013. Invasion of the red seaweed Heterosiphonia japonica spans biogeographic provinces in the western North Atlantic Ocean. PLoS ONE 8(4): e62261. doi:10.1371/journal.pone.0062261

Professional Affiliations and Certificates

•ASMFC Introduction to Stock Assessment (2020)
•FEMA courses: Incident Command System 100 and 200 and National Incident Management System 800 (2019)
•RI Boating Safety certification (2014)
•Advanced Open Water SCUBA (2011)
•American Academy of Underwater Sciences Research Diver (2011)
•Open Water SCUBA (2004)

Matthew Heyl

New Jersey Fish and Wildlife

Bureau of Marine Fisheries

Nacote Creek Research Center

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P.O. Box 418

Port Republic, NJ 08241

(609)748-2020

Matthew.Heyl@dep.nj.gov

Education

Bachelor of Science | 2008 | Richard Stockton College of New Jersey

- Major: Marine Biology

Brookdale Community College

- Major: Environmental Science

Experience

Fisheries Marine Biologist | New Jersey Division of Fish and Wildlife | 11/18 to current

- Oversee New Jersey's commercial fisherman and dealer reporting
    - Supervising the entry in the state's compliance file, entry of report in SAFIS eTRIPS, QA/QC of entry, and uploading of data to ACCSP
    - Reviewing commercial dealer reports in SAFIS eDR for accuracy
    - Reaching out to commercial fisherman via by phone, email, letter or in person to discuss reporting requirements
- Oversee New Jersey's commercial biological sampling
    - At sea observer trips for American lobster and tautog
    - Communicating with commercial fisherman for dockside sampling
    - Supervise and participate in the processing of commercially important species
- Active member on the ACCSP Commercial Technical, Information Systems, and Standard Codes committees
- New Jersey's contact for confidential data access for ACCSP's data warehouse

- Processing of data request from ACCSP and state biologist
- Participating in NJDFW field sampling
- Supervising hourly and summer employees
- Writing technical reports for ASMFC managed species
- Grant writing for proposals of funding

Fisheries Specialist | Atlantic Coastal Cooperative Statistics Program |01/18 to 11/18

- Monitor multiple databases to keep track of all state and federal seafood dealers and fishermen as regulated by the Atlantic States Marine Fisheries Commission (ASMFC) and the New Jersey Division of Fish and Wildlife
- Conducting dockside sampling of marine fish from commercial and recreational fisherman
- Field sampling that includes fisheries dependent and independent surveys
- Biological sampling of marine fish while in a lab and in the field, which includes extracting otolith, operculum, and scales for aging
- Work with New Jersey seafood dealers and fishermen, and with state, federal, and ACCSP staff to implement the ACCSP Standard Atlantic Fisheries Information System (SAFIS) for electronic Dealer Reporting, and electronic Vessel Trip Reporting
- Perform entry of commercial fisheries data collected from individual fishermen for the use of stock assessment
- Provide New Jersey biologist commercial fisheries data upon request
- Supervise hourly and summer workers and proof reading and editing work before submission

Hourly Marine Biologist | New Jersey Fish and Wildlife | 05/2008 to 01/2018

- Successfully helped create and lead New Jersey's River Herring Project which resulted in much needed data and a timeline that will be used in management and regulation of the fishery
- Knowledge and experience conducting fisheries surveys of adult and juvenile saltwater, freshwater and estuarine fishes with a focus on anadromous fish
- Provide supervision and training to hourly and summer workers
- Documented and collected fisheries data while working in the field and at the office
- Created and monitored river herring field survey database keeping track of fisheries data using Microsoft office
- Certified and experienced using electro-fishing equipment
- Monitored water quality, atmospheric conditions, and flow rates of various water bodies
- Processing and aging of otoliths and scales
- Prepares time restricted reports for supervisors
- Knowledge and experience of various sampling methods including Seine Nets, Gill Nets, Otter Trawl, and Fyke Nets
- Maintenance and purchasing of nets, vehicles, boats, trailers and field equipment

Lab professor | Brookdale Community College | 09/2013 to 01/2016

- Teach college age student Oceanography and Environmental Science concepts

- Plan and lead labs and field trips
- Grade students work including lab practical, class work, and research papers

Skills & Abilities

Work Related Certificates

- ASMFC Introduction to Stock Assessment
- Rutgers University Introduction Fisheries Science for Stakeholders
- US Fish and Wildlife Electro- Fishing
- PADI – Advanced Scuba Diver
- New Jersey Safety Boating Certificate (with driver license endorsement)

Publications and Presentations

Books:

- Heyl, M. River Herring Status: Research Hold the Key, NJ Fish and Wildlife Marine Fish Digest, 2018.
- Heyl, M. It's a Short! Safely Releasing Summer Flounder Unharmed, NJ Fish and Wildlife Marine Fish Digest 2017

Presentations:

- Heyl, M. “An Assessment and Restoration Program of River Herring (Alewife and Blueback Herring) in the Rancocas Creek and Maurice River” Mid- Atlantic Chapter of the American Fisheries Society, Jacques Cousteau National Estuarine Research Reserve, Tuckerton, NJ.

Ethan S. Simpson

Biological Sampling Supervisor
Virginia Marine Resources Commission
380 Fenwick Road, Hampton VA, 23651
757-247-2272
ethan.simpson@mrc.virginia.gov

Education:

M.S. Marine Biology concentrated in Fisheries Management, 2016 University of North Carolina Wilmington, Wilmington, NC Research Advisor: Dr. Frederick Scharf
Thesis Title: "Identify Possible Bias in the North Carolina Red Drum Juvenile Abundance Index: Historical Trends and the Potential for a Partial-Replacement Design"

B.S. Marine Biology with Chemistry minor, 2014
University of North Carolina Wilmington, Wilmington, NC Honors Thesis Title: "Habitat Utilization and Size Analysis of *Trachinotus Carolinus* Surveyed on Wrightsville Beach, NC from Nourished and Non-Nourished Beach Sites"

Relevant Work Experience:

May 2019 – present
Biological Sampling Supervisor, Virginia Marine Resources Commission, Hampton VA

January 2019 – May 2019
Fisheries Management Specialist, Planner, Virginia Marine Resources Commission, Hampton VA

May 2015 – September 2018
Assistant Manager, Mott's Channel Seafood, Wrightsville Beach, NC

Contributed Presentations

Ethan S. Simpson, Lee M. Paramore, Frederick S. Scharf, "Estimation of persistence within the North Carolina red drum juvenile abundance index: performance of fixed versus partial replacement survey design"; Oral presentation at American Fisheries Society Tidewater Chapter Annual Conference, Baltimore, Maryland, March - 2016.

Ethan S. Simpson, Lee M. Paramore, Frederick S. Scharf, "Evaluation of current Red Drum JAI survey design conducted in North Carolina: Fixed Station design vs. fixed with partial replacement"; Poster presentation at American Fisheries Society Tidewater Chapter Annual Conference, Emerald Isle, North Carolina, March – 2015.

Technical Skills

Field Techniques; Survey design including random, fixed, and partial replacement surveys. Multiple sampling techniques/commercial harvest methods of marine species, including seine net, gill net, and trawl operations. Acoustic tracking techniques of both a fixed station array and real-time tracking.

Lab Techniques; Removal, sectioning, and aging of otoliths from multiple marine species. Use of standard dissecting and light microscopes, as well as scanning electron microscopes. Proficient with multiple statistical analysis and database programs including excel, winbugs, access and R. Familiarity with GIS mapping and its use in survey execution. Well-versed in many fisheries-specific statistical methods. Adherent to and familiar with a wide array of lab safety protocols.

Other; Excellent communication skills and very comfortable working as a team. Supervisory skills, including scheduling and conflict mediation. Comfortable communicating with multiple fisheries user groups including recreational, commercial, governmental, and private sector groups. Proficient with the full suite of Microsoft office products. Mastery of fish cleaning/ butchering techniques.

Courses and Certifications

• ASMFC Introduction to Stock Assessment (2020)
• NOAA Shark Identification Workshop (2020)

Alan John Bianchi

NC Division of Marine Fisheries

PO Box 769, 3441 Arendell Street

Morehead City, NC 28557

(252) 726-7021

Office Email: Alan.Bianchi@ncdenr.gov

Education:

North Carolina State University, BS Degree in Zoology, graduated May 2000.

North Carolina State University, MS Degree in Zoology, graduated August 2002.

Undergraduate Honors:

- Phi Beta Kappa Summa Cum Laude
- Golden Key National Honor Society Alpha Zeta
- Phi Sigma Theta

Work Experience:

Marine Fisheries Biologist Supervisor, 12-07 to current

North Carolina Division of Marine Fisheries Trip Ticket Coordinator

- Responsible for managing three biologists, five port agents and three data clerks
- Statistical analysis of trip ticket data and evaluate program design
- Assist with the program budget and ordering of trip ticket forms and renewal of trip ticket software program
- Compile reports and presentations highlighting North Carolina Trip Ticket Data
- Serve as a member of the NCDMF Biological Review Team and represent North Carolina on various interstate teams
- Responsible for making sure all North Carolina Trip Ticket data are entered, verified, and edited in a timely fashion

· Communicate with the North Carolina commercial seafood industry and the general public

Marine Fisheries Biologist II, 9-03 to 12-07

North Carolina Division of Marine Fisheries Trip Ticket Data Analyst

· Responsible for analyzing the North Carolina Trip Ticket and commercial license data

· Compile reports and present data

· Serve on various committees representing North Carolina and the North Carolina Trip Ticket Program

Marine Fisheries Biologist I, 12-02 to 9-03

North Carolina Division of Marine Fisheries Hurricane Research Biologist

· Responsible for analyzing the North Carolina Trip Ticket and commercial license data and to determine the effects of hurricanes

· Compile reports and present data

· Serve on various committees representing North Carolina and the North Carolina Trip Ticket Program

Teaching Assistant, North Carolina State University, 12-01 to 5-01

Research Assistant, North Carolina State University, 8/00-12/01

Laboratory Technician, North Carolina State University, 5/00-8/00

Technical Reports, Presentations, Posters:

Technical Reports

Bianch, A., Salmon, B., McInerny, S. and Taggart, M. (2019). *North Carolina Hurricane Florence Commercial Fishery Assistance Program*. North Carolina Division of Marine Fisheries, Morehead City, NC.

Bianchi, A. (2019). *Estimating Effort in the North Carolina Commercial Estuarine Gill-Net Fishery*. North Carolina Division of Marine Fisheries, Morehead City, NC.

Bianchi, A. (2019). *An Example of Cooperation to Correct Fisheries Data-The Pound Net Fishery*. North Carolina Division of Marine Fisheries, Morehead City, NC.

Gambill, M and Bianchi, A. (2019). *The North Carolina Striped Bass Commercial Fishery*. North Carolina Division of Marine Fisheries, Morehead City, NC.

Tong, A. and Bianchi, A. (2018). An Economic Profile Analysis of the Commercial Fishing Industries of State Managed Species in North Carolina. North Carolina Division of Marine Fisheries, Morehead City.

Bianchi, A. (2017). *The North Carolina Sandbar (Carcharhinus plumbeus) and Dusky (Carcharhinus obscurus) Commercial Fishery*. North Carolina Division of Marine Fisheries, Morehead City, NC.

Bianchi, A. (2013). *Validation of North Carolina Finfish and Shellfish Conversion Factors.* North Carolina Division of Marine Fisheries, Morehead City, NC.

Bianchi, A. (2012). *North Carolina/National Marine Fisheries Service Cooperative Regional Statistics Program*. North Carolina Division of Marine Fisheries, Morehead City, NC.

Bianchi, A. (2010). *Pilot Study of Conversion Factors Used by the North Carolina Trip Ticket Program*. North Carolina Division of Marine Fisheries, Morehead City, NC.

McInerny, S. and A. Bianchi. (2009). *An Economic Profile Analysis of the Commercial Fishing Industry in North Carolina Including Profiles for Interjurisdictionally-Managed Species*. North Carolina Division of Marine Fisheries, Morehead City, NC.

Burgess, C., A. Bianchi, J. Murauskas, and S. Crosson. (2007). *Impacts of Hurricanes on North Carolina Fisheries*. North Carolina Division of Marine Fisheries, Morehead City, NC.

Bianchi, A. (2006). *The North Carolina Gag Grouper (Mycteroperca microlepis) Commercial Fishery.* North Carolina Division of Marine Fisheries, Morehead City, NC.

Bianchi, A. (2005). *Changes in Landings, Ex-Vessel Value, Effort and Participation in North Carolina's Commercial Fisheries.* North Carolina Division of Marine Fisheries, Morehead City, NC.

Bianchi, A. (2004). *Interstate Fisheries Management Program Implementation for North Carolina: North Carolina Commercial Statistics System Enhancement, October 2001 – June 2004*. North Carolina Division of Marine Fisheries, Morehead City, NC.

Burgess, C. and A. Bianchi. (2004). *An Economic Profile Analysis of the Commercial Fishing Industry of North Carolina Including Profiles for State-Managed Species*. North Carolina Division of Marine Fisheries, Morehead City, NC.

Bianchi, A. (2003). *An Economic Profile Analysis of the Commercial Fishing Industry of North Carolina Including Profiles for the Coastal Fishing Counties.* North Carolina Division of Marine Fisheries, Morehead City, NC.

Presentations and Posters

2005 National AFS Meeting

Bianchi, A. 2005. Changes in Landings, Ex-Vessel Value, Effort and Participation in North Carolina's Commercial Fisheries. (Poster).

2005 Southern Division AFS Meeting

Bianchi, A. 2005. An Analysis of Using Sea Turtle Strandings to Develop Fisheries Management Strategies in Pamlico Sound, North Carolina. (Presentation).

Managing Our Nations Fisheries: Past, Present and Future

Bianchi, A. 2003. Short-term and Long-term Impacts of Hurricanes on North Carolina's Commercial Fisheries (Poster).

STEVEN T BROWN

Education

1982-Pres. Graduate course work at Scripps Institution of Oceanograhpy, La Jolla, California and the University of South Florida, Marine Science, St. Petersburg,
Florida in Fish Biolgy, Biological Statistics and Age and Growth of Fishes.

1978-1982 University of California, San Diego, La Jolla, California

Graduation: March 1982

Degree: Bachelors in Biology

Related courses: Marine Ecology, Sociobiology and Ethology (animal behavior),
Invertebrate Zoology, Community Ecology, Field Ecology, Biology of fishes (graduate course), Computer Programming in Biology

Employment and Research Experience

1988-Pres. Associate Research Scientist, Florida Fish and Wildlife Conservation Commission, Florida Marine Research Institute, St. Petersburg, FL. Analyze fishery dependent information for temporal and spatial trends to advise management agencies; research impacts of fisheries on marine resources for publication in peer-reviewed journals; keep current on harvest patterns by assisting with editing of commercial landings data; supervise assigned personnel; design and conduct surveys (including field sampling) concerning recreational and commercial fishing activities and their impact on marine resources; assess the status of fishery stocks; coordinate work with other staff on creating and maintaining fisheries databases.

1986-1988 Fishery Reporting Specialist, National Marine Fisheries Service, Terminal Island, CA. Gather, compile, and analyze data; design and implement surveys; plan and implement computer programs, and prepare publications and reports concerning the Southwest Region fisheries and seafood trade.

1984-1986 Biological Technician, National Marine Fisheries Service, Tuna/Porpoise Program, San Diego, CA. Aboard U.S. commercial tuna purse-seine vessels, assess the effectiveness of present procedures required under the marine mammal regulations by (1) obtaining accurate mortality data under all conditions and establishing baseline life history parameters for all species involved, and (2) collect oceanographic, mechanical and biological data during sets, record observations pertaining to regulations, record conditions which may lead to improved porpoise rescue methods, keep an accurate record of fishing effort, and collect data on distribution and density of marine mammal species. Also, process and summarize data gathered and assist in preparation of materials for reports.

1982-1984 Marine Ecologist with the Vantuna Research Group, Occidental College, Los Angeles, CA. Designed and performed laboratory and field studies, with computer analysis, comparing behavioral observations of invertebrates. Participated in natural and artificial reef studies of invertebrates and bony fishes, assessing species variance and population densities near and around nuclear power plants and generating stations.

1979-1982 Research assistant with Scripps Institution of Oceanography, University of California, San Diego, La Jolla, CA. Participated in the collection and analysis of data on the schooling behavior of the scalloped hammerhead shark, Sphyrna lewini, in the Gulf of California. Collected stomach contents and reproductive samples; aquired behavioral data using an underwater video system; participated in day and night tracking of individuals with ultrasonic telemetric equipment and depth receiver; deployed identification tags for migrational observations; analyzed size and sex of individuals in the schools using stereophotography.

Selected Publications

Brown, S.T. 1999. Trends in the Commercial and Recreational Shark Fisheries in Florida, 1980-1992, with Implications for Management. North American Journal of Fisheries Management, 19:28-41.

Donley, P.J. and S.T. Brown. 1986, 1987. Fishery Market News Report. National Marine Fisheries Service, Southwest Region.

Klimley, A.P. and S.T. Brown. 1983. Stereophotography for the field biologist: Measurement of length and three-dimensional positions of free-swimming sharks. Marine Biology, 74(2):175-183.

Klimley, A.P. and S.T. Brown. 1982. A stereophotographic technique for the determination of lengths of free-swimming sharks. CIBCASIO Transactions, 6:110-137.

Patton, M.L., S.T. Brown, R.F. Harman and R.S. Grove. 1991. Effect of the anemone *Corynactis californica* on subtidal predation by sea stars in the southern California bight. Bulletin of Marine Science, 48(3): 623-634.

Lawrence Ronald Beerkircher

Education:

May 2000: M.S. Marine Biology/Coastal Zone Management, Nova Southeastern University, Davie Florida
December 1996: B.S. Fisheries and Aquaculture, University of Rhode Island, Kingston RI

Experience:

National Marine Fisheries Service, Miami, Florida (2010-Present). Supervisory Fisheries Biologist (ZP-IV) Chief, Fishery Sampling Branch. Responsible for the supervision of the Federal Port Agents in the southeast as well as supervising the staff of the Pelagic Observer program. As Trip Interview Program (TIP) Coordinator, responsible for database table updates and extractions.

National Marine Fisheries Service, Miami, Florida (1998-2010). Research Fisheries Biologist Various positions within the Pelagic Observer Program (ultimately Program Coordinator 2006-2010). Duties include coordination of observer deployments with commercial fishermen and observers, training of observers in pelagic fish species and sex identification, and sea safety training. Responsible for debriefing of observers and maintenance and quality control of observer database. Produce technical memoranda (program data summaries) for publication as required. Produce both white and grey literature as time permits.

South Florida Aquaculture, Florida City, Florida (Jan 1997- July 1998; July 1998 – Dec 2001 consultant) Commercial fish culture operation, duties include all aspects of fish systems maintenance, product harvest, and delivery. Develop/oversee water quality monitoring program, diagnose and treat disease, research new species and technology for future use at the facility. Identify and remove/control exotic vegetation on the property. Job site outdoors adjacent to the Everglades National Park.

Achievements, Memberships, and Training:

2020 NMFS Employee of the Year Award (Management Category), 2011 NMFS Employee of the Year Award (Supervisor Category), 2011 Department of Commerce Bronze Medal Award, 2004 Department of Commerce Bronze Medal Award, 2000 Nova Southeastern University Distinguished Student of the Year (Oceanography), 1996 URI L. Robert Crandall Scholarship, 1996 URI Durfee Scholarship. Member, Phi Kappa Phi Honor Society. CPR certification (American Red Cross), fishery observer certification (National Marine Fisheries Service), marine safety instructor certification (Alaska Marine Safety Education Association), associate fisheries scientist certification (American Fisheries Society). Attended sea turtle handling/gear removal trainings 7/26/01, 6/5/02, and 5/27/03.

Selected Publications:

Beerkircher, L., E. Cortes, and M. Shivji. 2003. A demographic analysis of the silky shark, (*Carcharhinus falciformis*): implications of gear selectivity. *Fishery Bulletin* 101:168-174.

Beerkircher, L., E. Cortes, and M. Shivji. 2008. Elasmobranch bycatch in the pelagic longline fishery off the southeastern U.S., 1992-1997. *in* Sharks of the Open Oceans. Ocean Wildlife Campaign.

Beerkircher, L.R. 2004. Characteristics of blue, *Prionace glauca*, and shortfin mako, *Isurus oxyrhinchus*, shark bycatch observed on pelagic longlines in the northwest Atlantic, 1992-2003. *ICCAT SCRS/2004/106*.

Beerkircher, L. R. 2004. Length to weight conversions for wahoo, *Acanthocybium solandri*, in the northwest Atlantic. *ICCAT SCRS/167.*

Beerkircher, L.R., D.W. Lee, and G.F. Hinteregger. 2008. Roundscale spearfish *Tetrapturus georgii* (Lowe 1840); morphology, distribution, and relative abundance in the western North Atlantic. *Bull. Mar. Sci.* 82(1):155-170.

Beerkircher, L., C.A. Brown, and V. Restrepo. 2009. Pelagic observer program data summary, Gulf of Mexico bluefin tuna (*Thunnus thynnus*) spawning season 2007 and 2008; and analysis of observer coverage levels. *NOAA Technical Memorandum NMFS* SEFSC-588

Beerkircher, L, F. Arocha, A. Barse, E. Prince, V. Restrepo, J. Serafy, and M. Shivji. 2009. Effects of species misidentification on population assessment of overfished white marlin *Tetrapturus albidus* and roundscale spearfish *T. georgii*. *End. Sp. Res.* 9:81-90.

Beerkircher, L. R., and J.E. Serafy. 2011. Using head measurements to distinguish white marlin Kajikia albida from roundscale spearfish Tetrapturus georgii in the western North Atlantic. *Bull. Mar. Sci.* 87(1):147-153.

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