

KEEP IT MOVING:
NORTH CAROLINA SEAFOOD TRANSPORTATION LOGISTICS
WITH A FOCUS ON EAST TO WEST ROUTES

September 8, 2014



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This project was supported by the Agriculture and Food Research Initiative competitive grant no. 2013-68004-20363 of the USDA National Institute of Food and Agriculture.

Acknowledgments: We appreciate the many seafood business representatives who took time to be interviewed for this study. We also thank those associated with NC Catch, NC Sea Grant, and the Center for Environmental Farming Systems at North Carolina State University for helping shape our project. Jason Gray, Willy Phillips, Rebecca Dunning, and Sara Mirabilio provided thoughtful commentary. Scott Baker of North Carolina Sea Grant provided demographic information related to seafood landings. Finally we thank the Center for Environmental Farming Systems at North Carolina State University for funding this project as part of a larger USDA-funded local foods project.

Executive Summary

The North Carolina seafood industry continues to be in a state of contraction, with a declining number of fishermen, packing facilities, and overall poundage of seafood available to marketers. The long-established supply chain to northern markets remains significant, but less availability of high-volume fisheries and a robust “local foods” movement in North Carolina has piqued interest in strengthening in-state and inland markets from east to west. This study examines how and to what extent seafood is currently being transported to in-state markets west of Interstate 95, and identifies challenges to and opportunities for improving the east-to-west supply chain.

We identified five major coastal-based seafood wholesale distributors and two inland-based distributors with established routes that serve restaurants, grocery stores, retail markets, and foods distributors in all major municipalities including locations west of I-95 and in neighboring states. Roughly one fourth of the seafood transported to inland locations by key wholesalers is wild-caught North Carolina product, the remainder being a variable mix of product from other states and countries, depending on season and availability. Smaller one-truck businesses transport seafood inland as well to CSF shareholders, farmers markets, restaurants, and specialty markets; no for-hire freight companies dedicated to seafood transport product from the North Carolina coast to locations west of I-95 at this time.

The top three challenges in moving seafood from east to west involve logistics, availability of product, and marketing/education. A primary reason that logistics is an issue is because no centralized distribution facility dedicated to seafood exists west of I-95. Logistics could be improved with the establishment of an inland distribution center

with cold storage capacity to facilitate trucking. Inconsistent availability of North Carolina seafood is a barrier because a steady volume is needed to justify the establishment of a for-hire trucking route and distribution center. This could be addressed by increasing capacity for freezing and processing, as well as the promotion and use of underutilized species. Finally, improving awareness of and appreciation for North Carolina seafood with a stepped-up marketing and education campaign would help strengthen markets throughout the state.

Introduction

The North Carolina seafood industry has been in a state of contraction since the late 1990s for reasons that are well documented.¹ Domestic market prices have been undercut by a flood of imported seafood since the late 1990s. Stringent fishing regulations and environmental factors have reduced the availability of wild caught product, all made worse by labor shortages as fishermen abandon the industry for alternative employment (Hadley and Crosson 2010). Rising fuel, insurance, and property tax costs contribute to this process of attrition, as does development pressure and loss of working waterfronts (Garrity-Blake and Nash 2012).

In response, initiatives have emerged that aim to capitalize on the local foods movement and increase profit margins on smaller volumes of North Carolina seafood products. These include “catch group” branding programs, community supported fisheries (CSFs), direct marketing, and the marketing of underutilized species and value-added products (Andreatta 2006, Nash and Andreatta 2011). Increasing processing and freezing capacity for more consistent availability is also under study (Handfield and Kunjithapathum 2009, North Carolina Rural Economic Development Center 2013).

This study is part of an effort to identify and strengthen in-state supply chains and markets as an alternative or addition to the long-standing north/south trajectory along the I-95 corridor to Baltimore, Philadelphia, New York, and New Bedford. Supplying more in-state venues with North Carolina seafood should help build brand recognition and counteract loss of value due to North Carolina product “mingling with product from other

¹In a 2011 inventory, 83 fish houses were operating in the state, representing a 36 percent decline in facilities since 2001 (Garrity-Blake and Nash 2012); 3,167 commercial fishermen reported landings in 2012, down by half compared to the late 1990s (NCDMF 2013). About 90 percent of seafood consumed in the U.S. is imported (www.fishwatch.gov).

states and foreign countries, losing its commercial identity” (North Carolina Rural Economic Development Center 2013:19).

The purpose of this study is to identify how, and to what capacity, North Carolina seafood is currently distributed to in-state markets west of I-95, and to consider ways in which inland distribution might be improved to better serve suppliers, distributors, retailers, and consumers. Revealing specific routes and vendors is proprietary information; however, we were able to portray a general depiction of distribution patterns and categories of vendors. The general consensus is that although northern markets remain most significant, and inland markets underdeveloped in comparison, markets west of I-95 have strong growth potential due to fast growing municipalities with pockets of seafood-consuming ethnic communities and local foods aficionados.² “Any market you can improve is worth it,” reflected a seafood dealer.



Seaview Crab Company, Wilmington, NC
(Photo by B. Garrity-Blake)

² Asian, Latino, and African-American communities were described as steady clientele for North Carolina seafood dealers, with a preference for whole, fresh, and/or live fish.

Methods

Drawing from an ongoing database of North Carolina seafood wholesalers (Garrity-Blake and Nash 2007, 2012), we identified the top coastal “hubs” or wholesale distributors most frequently named as buyers of local seafood.³ These distributors with their fleets of trucks determine where the product goes, or at least the next leg of the destination, for the majority of seafood landed in North Carolina; they are key to understanding the extent to which product is distributed to in-state markets west of I-95.⁴

Five coastal-based hubs reported having long-established routes to inland North Carolina and beyond (e.g. South Carolina and Virginia). We interviewed representatives from each of these five companies, inquiring about routes, trucks, product, and issues. We also identified and surveyed two inland-based companies that distribute North Carolina seafood throughout the region. In addition to coastal and inland distributors, we interviewed a sample of other seafood businesses to better understand challenges and opportunities associated with moving seafood inland (Appendix A), including three for-hire freight companies and nine coastal wholesalers, about half of which had experiences with inland customers. We also surveyed 16 inland retail shops dedicated to seafood to cross check questions of distribution from east to west (Appendix B). In all, thirty five seafood businesses were interviewed for this study, plus one inland-based produce distributor that recently began backhauling seafood for a Boston company (Table 1).

³ Two thirds of the seafood wholesalers interviewed for a 2011 inventory of North Carolina fish houses sold product to one of six larger distributors or to northern vendors via a freight company (Garrity-Blake and Nash 2012).

⁴ As I-95 is the primary north/south transportation route from Miami to New Bedford, we structured our questionnaire to focus on “west of I-95” rather than simply “inland”.

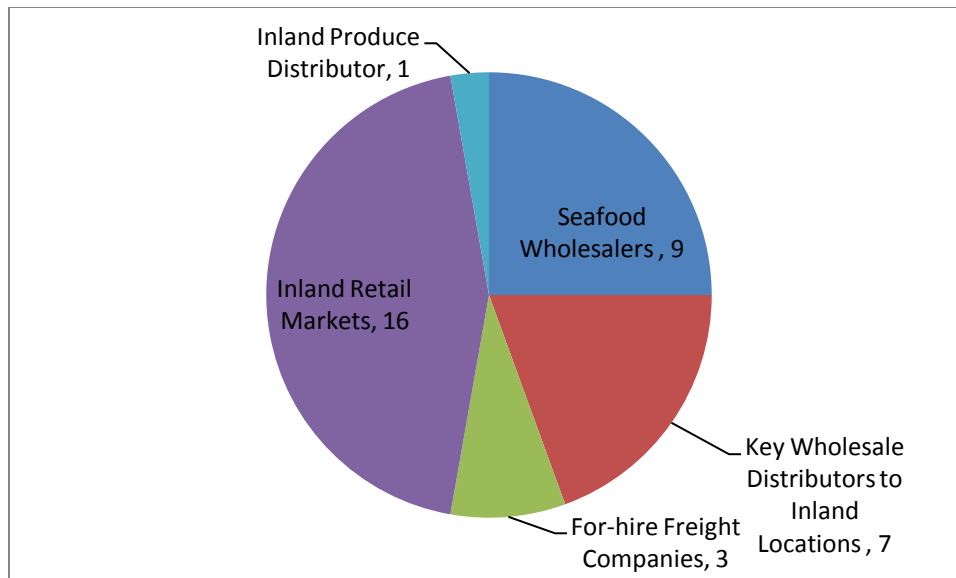


Table 1: Seafood Transportation Survey Universe

Background

Transporting seafood to inland North Carolina is not a novel concept. In the state's early history salted mullet was sailed to New Bern, Washington, Edenton, and Elizabeth City and traded for corn to mainland farms and plantations (Stick 1958, Dunbar 1956). By the early 20th century an expanding rail system facilitated the distribution of fish to inland and northern markets including the "mullet line" from Morehead City to Goldsboro (Pitts 1984). Early truck routes were established to serve textile and tobacco towns with fresh croaker, spot, trout, bluefish, and mullet. A Carteret County man recalls delivering fish via truck when he was a teenager in the late 1950s.

We stopped at every filling station from New Bern to Smithfield. [Each] had an old ice box outdoors, and sold fish to anyone within walking distance. Fish was the cheapest protein. Nobody had money so everything had to be cheap.

Inland seafood markets likely diminished with the decline of tobacco and mill towns, as well as the rising availability of convenience foods. “The textile mill closed down and the village disappeared,” reported a man from Edenton. “That was two, three hundred people who would call us for fish.”

A pipeline to northern markets gained strength throughout the late 19th and early 20th centuries; waterfowl, terrapin, porpoise oil, and salted fish were among the products getting shipped north (IAI 2005).⁵ Seafood trade along the Atlantic seaboard flourished during the 1970s with government incentives to capitalize the fishing industry following passage of the 1976 Fisheries Conservation and Management Act (now known as the Magnuson-Stevens Act). Not only were foreign fishing vessels expelled from a freshly established 200 mile EEZ, Congressional action prioritized domestic seafood processing, stimulated export markets, and encouraged capitalization of fleets with federal finance programs (National Research Council 1994). Expansion of the U.S. Interstate system and improvements in refrigerated trucking aided seafood distribution to northern markets as well, and North Carolina wholesalers moved large volumes of croaker, spot, mullet, speckled trout, weakfish, and bluefish. Northern and mid-Atlantic markets for blue crabs, scallops, clams, oysters, and shrimp had also grown to be economically significant.

⁵ Fulton’s Fish Market in New York established itself in 1822, catering to boats until trucking took over in the 1950s (<http://www.newfultonfishmarket.com/about.html>).



Wanchese Fish Company, Wanchese NC
(Photo by B. Garrity-Blake)

The North Carolina Seafood Distribution System

The system by which North Carolina seafood is distributed today has not changed much over time: it is organized according to a “hub and spoke” pattern whereby producers (fishers) sell to local packing houses (fish houses) which in turn sell to larger wholesale distributors (hubs) with their own trucks and delivery routes. For example, fish caught by Outer Banks fishermen is packed at local fish houses on Hatteras Island or Ocracoke; products not sold locally are sold to larger seafood distributors/hubs on the mainland. From the hub, seafood may be sold and transported to instate, out of state, or foreign markets; for this reason harvesters often do not know the final destination of their catch.

Although fishermen holding a dealer’s license may sell to clients of their choice, many find it expedient to offload and sell product to wholesale distributors rather than trying to determine the best markets for the day’s catch. A fisherman explained, “I

could worry about placing a little here, placing a little there, trying to get the best price – or I can just sell it all to [a distributor] at a fair price and get back fishing.” For others, particularly those with clients willing to pay top prices for high-end products like soft crabs, it makes sense to bypass the middle-man and sell directly to the vendor. To do so they might have the product picked up by the buyer, transport the product themselves, or pay a trucking company to deliver it. For-hire trucking companies, which serve a role transporting seafood to and from wholesale hubs, are neutral players in the competitive world of seafood distribution because they do not, as a rule, buy and sell product are therefore not market competitors.

Inland Distribution from East to West

Although northern markets are known for absorbing large volumes of product, a long-established network of wholesale routes moving seafood from the coast to inland exists as well. Although numerous small operators (roadside “peddlers” and other one-truck businesses) are part of the network, the bulk of product is transported by seven key wholesale seafood distributors; five located on the coast and two located inland. The coastal distributors are Nixon Fisheries and Wanchese Fish Company in the northeast part of the state, Pamlico Packing in the central region, and Blackburn Brothers and Atlantic Seafood in the southeast. The key inland distributors dedicated to seafood are Inland Seafood of Charlotte and Earp’s Wholesale of Raleigh. All of these companies have fleets of trucks, ranging from small box trucks to tractor trailers, running from once a week to daily routes. All hire drivers to deliver product; one company’s drivers work on commission and therefore have incentive to develop their own clients and routes. Table 2

shows the number of inland routes and frequency of deliveries these key companies make. Quantity of seafood delivered west of I-95 is estimated per week, usually reported as a range due to seasonal availability. Of the total quantity of seafood delivered west of I-95, about 22 percent is estimated to be North Carolina product, a rough estimate at best due to seasonal availability, co-mingling of product from multiple states, and the difficulty in deriving quantity estimates for just one segment of an inter-state route (Table 2).

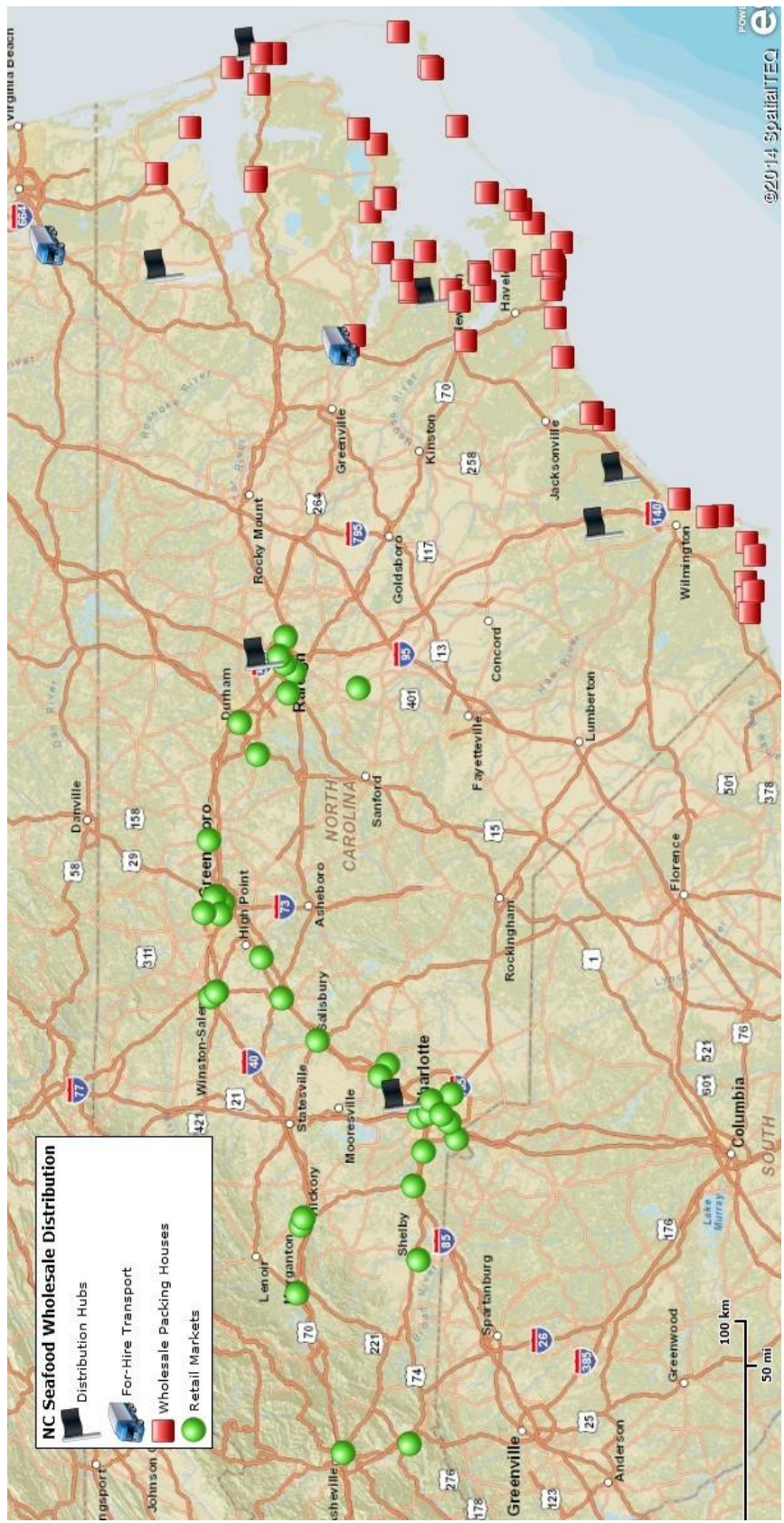
Distributors	# Inland Routes	# Runs Weekly	Pounds Weekly in Thousands	% NC Product
Distributor 1	5	6	45-50	?
Distributor 2	6	12	25-30	20-30
Distributor 3	5	12	25-30	50
Distributor 4	3	4	50-60	10
Distributor 5	2	7	40	5
Distributor 6	2	6	?	?
Distributor 7	16	23	100	20-23
Average	5.6	10	50	22

Table 2: Delivery of Seafood to Inland NC by Key Distribution Companies

The seven key distributors reported serving a variety of clients ranging from small seafood shops and restaurants to large foods distributors. For example, one company serves Sysco (Raleigh), Meat and Seafood Solutions (Greensboro), and 3fish, inc. (Gastonia), all large foods distributors. Another delivers to chain grocery stores, while others serve a variety of grocers, Asian markets, seafood retail stores, restaurants, and even a biological supply company. Although a competitive business, there is an effort to respect each other's turf. For example, a spokesman for a coastal-based company said

they provide an inland distributor with product, but “we don’t want to step on toes” by selling to buyers within the inland company’s territory. One of the coastal-based companies in the southeast region serves smaller feeder communities and clients that their neighboring competitor is “too big” to serve. Although competitors, most of these companies are known to work together and make use of for-hire transportation services (i.e. Evans Transportation), whatever it takes to keep a steady supply of product flowing to markets.

The largest coastal-based seafood distribution company reported having 38 trucks and seven routes in North Carolina; drivers work on commission and have a vested interest in building clientele and maintaining viable routes. Others have five to 15 trucks and two to six routes. “Southeastern region we go down to Georgia, North Carolina, and South Carolina when we run our routes,” explained a distributor. “We go as far west as Morganton, Shelby, Hickory, Fayetteville, Salisbury, Charlotte, Greenville South Carolina, Greer South Carolina, Spartanburg - whole western part of North Carolina and South Carolina.” As a whole, inland drop-off points are especially heavy from Raleigh-Durham to Greensboro to Charlotte to Greenville, South Carolina (Map 1); state boundaries are arbitrary in a system based on logistics and markets.

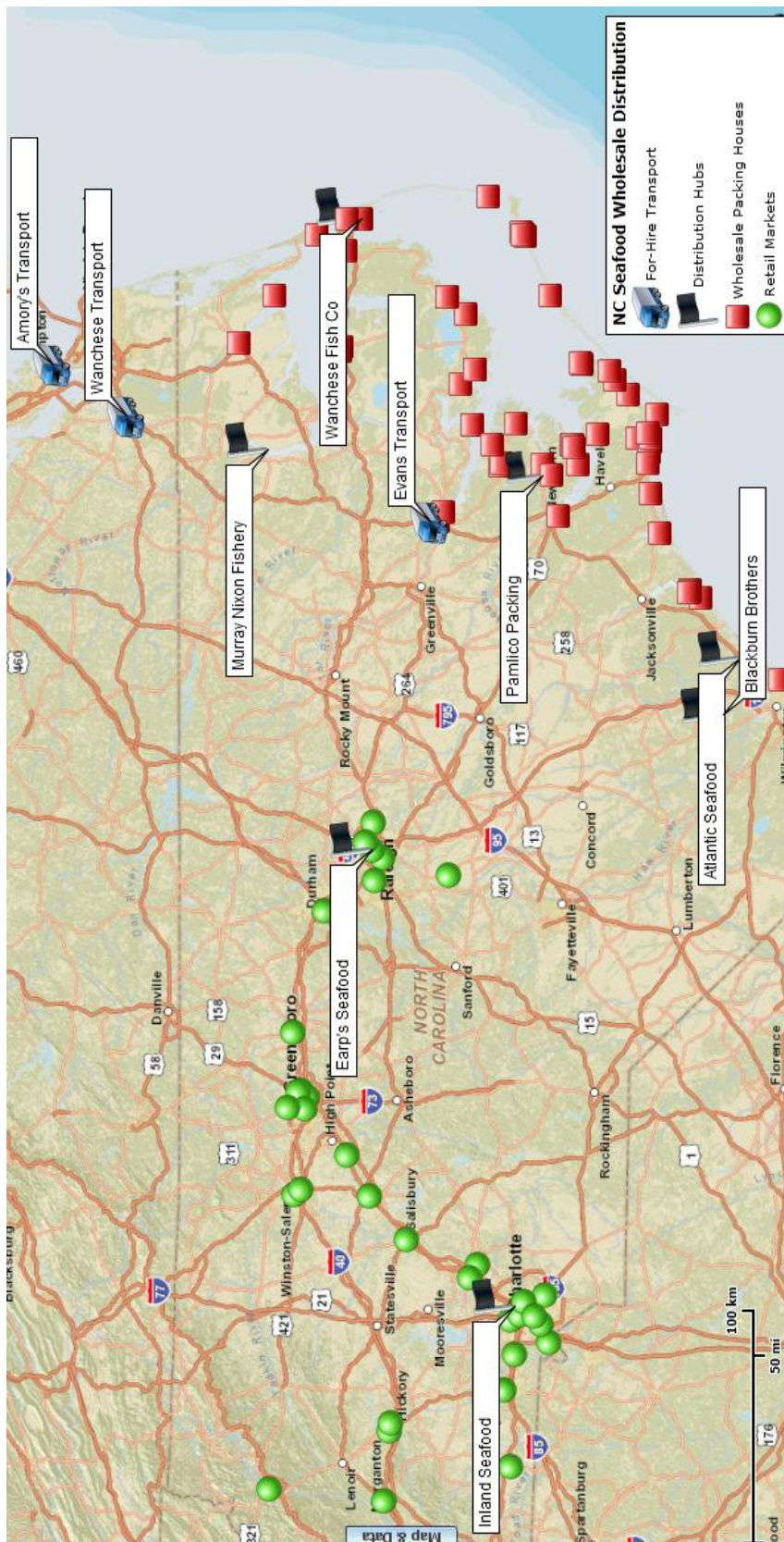


Map 1. Eastern NC Seafood Distribution Supply Chain

The five key distributors on the coast are known for specializing in particular products; for example, one buys, processes, and distributes shrimp, crabs, and other products under a company brand. Two are known for carrying fish such as croaker, spot, and sea mullet. Another distributes primarily sea scallops and flounder fillets to large foods distributors. The seafood market is highly variable, however, and wholesale distributors will sell and distribute what is available and profitable on any given day. The top four North Carolina products transported west, in ranking order of their mention, are flounder, shrimp, picked crabmeat, and croaker. Other products include soft crabs, oysters, clams, snapper, grouper, spot, mullet, and blue fish.⁶ Products may be fresh, frozen, and value-added (e.g. peeled shrimp, flounder fillets). As a general rule, fresh product is domestic and frozen product is imported.

In addition to wholesale distributors, we identified three common carrier freight companies that transport seafood for hire: Evans Seafood in Beaufort County, North Carolina, Wanchese Trucking in Suffolk, Virginia, and Amory Transportation in Hampton, Virginia (Map 2). The sole company based in eastern North Carolina, Evans Transportation of Beaufort County, does not run inland. The company picks up seafood from a variety of fish houses in the central and northern regions of the coast depending on product availability and works with the larger distribution hubs. Evans runs an eighteen wheeler to New York (Fulton's Fish Market) and to New Bedford each Wednesday, and make two runs per week to Jessup, Maryland. Wanchese Fish Company has a for-hire freight line which does not transport into North Carolina; it runs north to New York and New Bedford. The only for-hire freight company running routes in inland North Carolina

⁶ Some discussions with distributors concerned whether to count sea scallops as a North Carolina product; we decided to not count sea scallops, as North Carolina fishermen and vessels harvest them but the great majority of product is landed out-of-state in mid-Atlantic/northern ports.



Map 2: Seafood Distribution and Transport Companies (Labeled)

is based in Virginia: Amory's of Hampton runs a for-hire route twice a week to large foods distributors, making drops in Hickory, Greensboro, Charlotte, Fayetteville, Clinton, and La Grange.



Nixon Fisheries, Edenton, NC
(Photo by B. Garrity-Blake)

Other Methods of Transporting North Carolina Seafood Inland

In addition to large coastal-based distributors, other wholesalers including smaller one-truck operations transport seafood inland. Two coastal-based Community Supported Fisheries or CSFs (Core Sound Seafood and WalkingFish) send in-season product to inland “shareholders” at designated pick-up points, and one inland-based CSF (Locals Seafood) picks up product from fish houses and transports it back to shareholder pick-ups and farmers markets. CSF routes are mainly concentrated in the triangle area of Raleigh,

Durham, and Chapel Hill, but go as far west as Boone. The coastal-based CSFs hire drivers to make weekly or twice-weekly runs at an estimated cost of \$200 – \$450 per run, depending on the distance.

Other businesses transport seafood to inland specialty markets, grocery stores, restaurants, and farmer's markets via their own truck or, in the case of at least two businesses, Federal Express. Federal Express is a feasible option for small quantities of high-end fish such as sea scallops, trigger fish, and red snapper; according to a wholesaler from New Hanover County, this method makes sense for up to 40 pounds of seafood. A Boston seafood wholesale company was distributing product to North Carolina via Federal Express until demand for product increased, necessitating a partnership with an inland-based produce distributor to deliver a greater volume of seafood.

Inland Retail Markets

We surveyed 16 North Carolina seafood retail markets located west of I-95 to better understand the extent to which product is transported inland. These businesses were located in the Triangle, Charlotte, and Greensboro regions. Most (n=13) confirmed that they sold seafood landed in North Carolina. The top North Carolina products sold at these markets included flounder, shrimp, and croaker. The percentage of local seafood these businesses offered varied significantly, ranging from 5% to 90%. Some reported a decreasing supply of local product as well as increased demand for North Carolina seafood: Six retailers said that the percentage of North Carolina product in their store had decreased over time due to shrinking availability, while three retailers said that they increased the percentage of local product to meet consumer demand.

The primary method of transporting seafood to these inland retail markets was through coastal distributors, particularly Atlantic Seafood, Blackburn Brothers, and Nixon Fishery. Deliveries occurred two to four times a week although some received deliveries every day. Relationships with wholesalers seem to be cultivated over long periods of time; six retailers mentioned working with a specific wholesaler for more than 15 years. Twenty-five percent of respondents said that they did not rely on wholesalers, but picked up product themselves from fishermen and packing houses. While requiring time and effort, benefits cited included a connection with fishermen and greater control over quality.

Only 44 percent of respondents (n=7) reported labeling the origin of seafood products in their display case. When asked if they were able to charge more for North Carolina seafood, 62% replied in the negative and 37% in the positive. In fact, two of the three retailers who noted an increased demand for North Carolina seafood stated that they could not charge more. Similarly, five of the seven retailers who labeled the origin of their seafood stated that they could not sell North Carolina seafood for a higher price.

The level of awareness on the part of inland retail markets regarding where their North Carolina seafood originated was not high. Half of the 16 interviewed were able to name specific ports of origin, while five could not. The remaining respondents gave vague answers. When retailers were asked how they defined 'local seafood', some specified North Carolina (n=6), others included neighboring Atlantic coast states (n=8), and one replied "not from Asia" (n=1). This underscores the need to ramp up seafood branding and education efforts and build a consensus as to what constitutes "local".



Inland Seafood Box Truck on Route
Photo by B. Garrity-Blake

Challenges

“What’s been apparent in the last few years as volumes have declined is the attention to detail on the product and trying to find that niche that will allow you to expand your margins.”

Seafood Wholesale Distributor

The top three issues named by seafood wholesalers (including even key distributors as well as smaller wholesale businesses) regarding inland routes and markets pertain to logistics (n=10), availability of North Carolina product (n=8), and marketing/education (n=7). The question of logistics was discussed largely in comparison to the traditional Atlantic seaboard route. The issue of availability of North Carolina seafood is an industry-wide concern, but is especially pertinent to those seeking to develop niche markets including inland local foods and specialty markets. Marketing

and education is also an industry-wide concern, but was cited as being particularly important in improving in-state, inland markets.

Logistics

Distributors were quick to point out that it is logistically easier and more profitable to transport seafood to out-of-state hubs along the eastern seaboard than to traverse the 500 mile east-to-west territory of North Carolina. “I can be to Hampton (Virginia) as soon as I can get to Durham,” said a Carteret County wholesaler. The distance from the Dare County seafood port of Wanchese to Charlotte is about 360 miles, while Baltimore – a major hub en route to other major hubs - is closer at 330 miles. The largest seafood company in Wanchese has a distribution facility in Suffolk, Virginia, affording easy access to profitable markets in Maryland, Philadelphia, New York, and New Bedford. A seafood processor reflected:

The difference is, up north there's huge markets. Fulton's has 25 customers all in one group. Makes it easy for logistics. Baltimore is the same way –twelve markets in one stall...you back up and there's twelve customers that pop off right there.

Wholesalers also emphasized that inland markets are not equipped to handle large volumes of seafood, unlike Atlantic seaboard hubs with supply chains to Chicago, Canada, and beyond. “(Say you get) eight, ten thousand boxes of croakers,” said a dealer, making the point that high volumes of seafood have to be moved and the direction will likely be north. “When you get that kind of volume, you have to deal with it; it's a perishable product.” A wholesaler surmised that the development of inland markets

would likely continue along the trajectory of specialty, niche markets rather than high volume sales:

The [inland] consumer is not educated to the resources that we have, and even if they were I'm not sure they'd be willing to absorb that level of quantity. We're able to move all our product up north, whereas in-state it's a niche market and I don't believe it'll ever go beyond that.

Because of logistical reasons, the state's sole for-hire freight company does not have a route to inland locations. A spokesperson for Evans Transportation explained that the lack of a hub/aggregate distribution facility west of I-95 made such a route unfeasible.

You need a point west that you could go and drop that product off [with] a big cooler [for] restaurants to go, pick it up or deliver to them. If you had a truck go up there to just make deliveries point, point, point, time would consume you.

Evans expressed willingness to consider a route west if there was enough seafood to fill a truck and there was an inland hub for efficiency in dropping off product.

I think there's potential west – Asheville, Winston-Salem. I'd love to do it if we could make it work. You need someone to go up there and lay it out. Meet the truck up there. You need a salesmen, [someone to] coordinate the logistics for the drop offs. You can't just fill a truck up and go. You'd need to do footwork.

A spokesperson at Wanchese Transportation supported the idea of a distribution center in a central location, specifying Greensboro as a good site. “We could serve more big foods houses like Sysco, and local trucks could pick up and deliver to smaller vendors.” He added that such a center “would help everyone – there's a huge opening for one, but it will take lots of groundwork.”

Availability of North Carolina Product

Inland retailers, coastal wholesalers, and for-hire transporters all reported a declining availability of local product. “My biggest problem is product - I’m down to one or two suppliers,” said a distributor. “I’m a little mom and pop outfit that can’t supply the needs of 25, 30 customers.” Respondents typically attributed this to overly stringent fishing regulations and quotas, and the associated problem of declining numbers of fishermen. “We can’t catch enough product anymore - it’s so regulated,” a wholesaler complained. “If the fish show up, the fishermen aren’t there to catch them.” Another distributor emphasized that “You have to have a consistent product - can’t be a drop in, drop out-type market.”

With pressure to keep fleets of trucks loaded and moving, and to maintain a consistent supply of seafood to vendors, wholesale distributors have adapted to declining supplies of local seafood by looking to other states, regions, or countries for product. Ironically, the flood of imported product that began in the late 1990s, undercutting the domestic market and devastating fishermen and other businesses dependent on local, wild caught seafood, is now an important source for wholesaler distributors needing to maintain product flow. A key distributor estimated that 20 percent of his product was imported, allowing him to do whatever it takes to keep “fish on the trucks”:

You not only have to buy locally but also worldwide so you can keep a steady supply of seafood so they’ve got fish on the trucks. If I can’t get it from North Carolina, I do everything I can to buy off the east coast, and if not that then I use my import connections. I have brokers in Miami who line me up.

For-hire seafood freight companies have adjusted to the downsizing of the seafood industry as well, reducing the number and length of routes in response to fish house closures and decreasing volumes of product. “What’s changed is, instead of automatically going [to fish houses], we now call to make sure we have enough product to make the run worthwhile,” said a trucking company spokesperson. Evans Seafood has adapted by hauling or backhauling a diversity of cargo, such as frozen chickens, grain, peanuts, crab pot wire, and seafood boxes. “We try to find enough freight to pay for the fuel, make the most of a trip.”

Another important source of product making up for decreased availability of wild-caught seafood is domestic farm-raised fish. Evans Transportation reported that 80% of their business continues to be seafood and other fish products as opposed to alternative cargo like grain. But the amount of wild caught fish is now outweighed by farm raised fish. “Our main commodity on those trucks now is farm raised bass and catfish...if it weren’t for farm raised fish, we wouldn’t be able to justify the route.” At least one coastal seafood distributor has recently collaborated with a fish farmer in the mountains so that they can assist each other in supplying new accounts with their respective products.

Several respondents discussed the need for increased capacity to process and freeze seafood products so that seasonal fisheries harvested in abundance can be prepared, stored, and sold throughout the year. A dealer explains:

Once we have determined we will have this amount of volume during the course of the year, it can be flash frozen and protected and vacuum sealed. We can parcel it out and the consumer is educated that flash frozen is oftentimes a better product than fresh that’s ten days old.

Shrimp was named as a prime candidate, as it freezes well and can occur in abundance during high season months. “Shrimp goes to the Gulf to get peeled and deveined, bagged and sent back up here,” a fisherman pointed out, questioning why North Carolina has not advanced the effort to establish in-state processing. “You need a freezer, a processing, shrimp peeling, horny dog [spiny dogfish] cutting, crab picking, scallop opening, clam shucking, fish [smoking] facility!” declared a Carteret County wholesaler, emphasizing the need to increase the state’s capacity for value-added seafood production. A wholesaler who has expanded operations in recent years sees value in a shared facility given a changing economic landscape.

I think [we] need a great freezing and cold storage facility to be used as an industry, use it as a shared facility. We need the infrastructure to put things in a different format.

Marketing and Education

The seafood industry as a whole, according to a wholesaler, needs to better publicize progressive changes that have taken place over the past several years.

I think the biggest injustice to the entire seafood industry in the whole U.S. is the inability to market itself to show the innovation that it has instilled in the way it manages its fisheries, handles its product for freshness and quality, and transfer that knowledge and information to the consumer.

Inland consumers, restaurants, and grocery stores in particular, according to wholesalers, fail to fully appreciate the value of North Carolina seafood, a problem of education that has economic implications. “You can’t [even] sell soft crabs in North Carolina for \$30 a

dozen [but] you get \$52 in New York,” remarked a wholesaler dealer. “That’s the reality of it.” Several respondents complained about grocery chains in particular. “[Grocery chains] will buy the cheapest thing they can get their hands on – [they’ll] tell you they’re dealing with local vendors, but go look at what’s in their cases.” A wholesaler related a story about trying to provide fish on a regular basis to a chain-store grocer:

He called me, said “Grouper is too high. We can’t pay \$13 a pound for grouper.” Fillets! He said [they had] to mark it up \$5.95, \$6.00, \$6.50 a pound. I said, “I’ve got to go get it, cut it, wash it, put it on ice and deliver it to you and I can’t make a dollar? We can’t be in business together.”

A wholesaler with a retail shop stressed the importance of educating his customers about how to take care of seafood, how to cook it, and how to “make the experience better.” Even one of the CSFs, providing local foods fans with fresh, local seafood, complained that some customers refrain from cooking the seafood for several days and ask how to freeze it, missing the point of a CSF. “They actually would have a better quality product if it were frozen right away.”

Some respondents cited the need for a stepped-up branding program. “I’d love to see our fish cartons say where the product came from,” said a wholesale dealer, including catch methods such as pound net flounder or channel net shrimp: “Why not label it what it is, and have different prices too? That’s an education component that we’re missing.” Stamping boxes of shrimp and scallops as “chemical free” was suggested, alerting consumers to the practice of “dipping” certain products in preservatives. “We try to keep people connected to their food source so they understand their connection to the natural

resources,” said a dealer, “and the responsibility we have as consumers to take care of those natural resources.”

The need to increase people’s knowledge about and appreciation for North Carolina seafood, according to wholesalers, extends beyond the retail counter or the restaurant into the realm of politics, given what the seafood industry sees as an increasingly unfriendly regulatory environment. Efforts to take certain species off the market with game fish designation, the elimination of trawling, and a ban on gill nets are specters that hang over the industry with each legislative session. Lack of knowledge about the seafood industry can translate into bad politics, negatively feeding back to the issue of over-regulation and the exodus of fishermen from the industry. A wholesaler pondered the difference between the pork and the seafood industry in terms of public perception and lobbying:

Look at pork producers and how much money they spend promoting ‘the other white meat’. And how much of a black eye and a stink eye does the pork industry tote with them with the lagoon problems and waste water issues?... [yet] they’re able to lobby and move forward.



Mr. Big Seafood, Harkers Island, NC
(Photo by B. Garrity-Blake)

Discussion and Recommendations

It is widely recognized that the distribution channel from the coast to inland North Carolina, described as “fragmented” in a recent supply chain analysis, would improve with expanded freezing/processing capacity on the coast and a distribution facility at an accessible inland location (North Carolina Rural Economic Development Center 2014). Ideally this could be accomplished with strategic investments, government incentives, and public/private partnerships. In addition, we have identified specific opportunities involving the use of existing equipment and infrastructure and the strengthening of collaborative partnerships with inland food suppliers.

We recommend the following short, medium, and long-term actions; short-term is what can be addressed immediately with existing resources, medium-term would require application of some new resources, and long-term would require much groundwork and significant resources.

- **Investigate locations, capacity, and availability of existing resources to move forward with shared-use cold storage/processing sites** (short-term). Cold-storage and processing, addressing the problem of inconsistent availability of local product and the need for more efficient production of value-added products and underutilized species can be accomplished at multiple sites that have operating or dormant equipment. For example, Carolina Classics, a catfish farm in Ayden, North Carolina, has a spiral blast freezer with a six – eight thousand pound per day capacity; they offer flash freezing services for .25/lb plus an additional .5 - .15 cents if size grading and packaging is needed. They do not cut fillets or head shrimp but would consider adding processing services. A number of fish houses along the coast of North Carolina have cold storage/ freezer space that is under-utilized, as well as processing equipment. This capacity should be further investigated and inventoried.

- **Strengthen partnerships between coastal seafood producers/ distributors and inland farmers/ distributors** (medium-term goal). Helping form and strengthen east/west collaborations would address the “fragmentation” issue of inland markets and the need for better defined distribution routes and logistics. Inland food producers with established routes and accounts may be interested in expanding their range into eastern North Carolina or at least joining forces with seafood distributors for mutual benefit. As mentioned above, at least one seafood distributor has formed a

partnership with an Asheville-area fish farming operation, sharing accounts and assisting in distributing product from the mountains to the shore. Likewise, North Carolina-based vegetable distributor Foster-Caviness, with 55 trucks and routes throughout the southeast, recently began backhauling seafood for a Boston wholesaler and expressed interest in doing the same for local wholesalers for a minimum of \$395 per pallet; they stressed that logistics would have to work with their routes and schedule and that protection from cross-contamination would have to be assured. The proliferation in recent years of local farm-raised products and delivery systems in North Carolina increases the potential for mountain-to-sea local foods partnerships.

- **Identify specific locations, capacity, and availability of inland food aggregate/distribution facilities that might handle seafood** (medium- to long-term goal). In addition to studying the feasibility, funding sources, and inland location for a new seafood distribution site (long-term), we recommend investigating existing facilities and potential collaborative opportunities as well (medium-term). For example, a spokesperson for Foster-Caviness, the above mentioned local produce company with distribution centers in Charlotte, Greensboro, and Raleigh, said they have refrigeration space and limited freezer storage that could be used for seafood. For-hire transportation companies such as Evans, willing to transport seafood inland if they have sufficient quantity and access to an inland drop-off point, could possibly make use of existing distribution facilities like Foster-Caviness. Other inland foods distributors should be contacted as well to determine existing capacity for seafood storage and the extent to which new capacity is needed.

- **Update/create a directory of seafood distributors available to inland**

Vendors (short-term goal). Restaurants, grocery stores, specialty markets, and consumers are not necessarily aware of long-established seafood distributors, smaller wholesalers, and CSFs that transport local seafood to inland towns and cities of North Carolina. The North Carolina Department of Agriculture’s Seafood Directory does not make clear which businesses transport seafood inland; as part of its impending directory update, a search function should be added for inland distribution that lists the companies, their distribution range, and services (<http://www.ncagr.gov/markets/seafood/seafooddirect/directory.asp>). This information could also be posted on the NC Catch website (<http://www.nccatch.org/>). We have included a list of North Carolina seafood wholesale companies and transportation services to aid the development of such a directory (Appendix C).

- **Step up seafood marketing, branding, and education efforts** (short- to medium-term goal). Seafood dealers expressed the concern that the quality and value of North Carolina seafood is not fully appreciated by retailers and consumers, particularly in in-land locations. A more aggressive and targeted education, marketing, and branding campaign should be deployed so that vendors are in consensus as to what “local” means and can better inform customers about the benefits of purchasing North Carolina seafood. Retailers should also be better aware of the diverse types of seafood that could be offered at their market, including under-utilized species, flash-frozen, and other value-added products.

Conclusion

The aim of this study was to identify the extent to which North Carolina seafood is reaching inland markets west of Interstate 95. In addition to several small one-truck operations, we identified seven primary distributors (five coastal and two inland) with inland routes that provide restaurants, markets, grocery stores, and foods distributors with seafood, less than one fourth of which comes from North Carolina. We also identified a coastal-based for-hire freight company willing to establish an inland route, and an inland produce company willing to collaborate with seafood businesses. We identified specific challenges, opportunities, and logistical changes that need to be worked out to improve inland transportation of seafood.

The elements are there to strengthen seafood supply routes from east to west in North Carolina. Moving this initiative forward will require sufficient human capital to do needed groundwork: e.g. bringing together potential partners to explore cooperative agreements, gauging level of interest from the seafood industry to cultivate more business inland, and finding ways to insure, insomuch as it is possible, that there will be enough North Carolina product to meet a greater level of demand.

In the effort to strengthen in-state supply chains, retain and promote brand-identity, and increase the value of local seafood we should turn our attention to not only inland markets, but to coastal markets as well. How much local seafood, versus non-local and imported product, is available to consumers on the coast? Restaurants catering to locals and visitors do not have a strong track record for local product, according to anecdotal information; there is a need to research and determine these metrics. Given the fact that North Carolina seafood is an increasingly dear commodity, we should be asking

if there a greater return in marketing local seafood *locally*, minimizing transportation costs and enhancing a tourism-based coastal economy tied to maritime trades, heritage, and ecology.

We might also rethink how we measure value in seafood. Shooting for higher-priced niche and specialty markets has its obvious advantages. It is also important, however, to remember that fish and shellfish have long been part of the regional food system. The Southeastern North Carolina Food Systems Program (a.k.a. Feast Down East) defines local food as that which is harvested within 150 miles of its final destination (www.feastdowneast.org). From any seafood port along our coast, this range covers eastern North Carolina, a rural region just west of the beaches fraught with poverty and poor health. As a matter of a fair and just local foods system, as well as smart marketing, we should guard against any segment of the population getting priced out of access to protein-rich seafood.

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Appendix A

Questionnaire for Seafood Wholesalers

East/West Seafood Distribution in North Carolina (B. Garrity-Blake)

This survey is part of an NC State USDA-funded project examining east-to-west seafood transportation routes in North Carolina. The goal is to better understand the challenges and opportunities of transporting local NC seafood to in-state markets west of I-95. Your cooperation is greatly appreciated.

Name, company, contact info, business type (e.g. fish house, individual, CSF, transport company):

1. In getting NC seafood to markets, have your trucking/distribution patterns changed over time? How?
2. Which of your seafood products landed in NC move to markets west of I-95? Of these, what are the top three in terms of demand? **[If NONE skip to Q 9, but ask: do you know who IS running west?]**
3. What overall percentage of your NC seafood gets shipped west of I-95?
4. How frequent are deliveries (seasonal, monthly, weekly, daily)?
5. *How* is product shipped to markets west of I-95 (e.g. fresh/frozen, transport method/company)? Do you know of other trucking companies/shipping companies that provide this service?
6. Where, specifically, do your products go west of I-95 (location of drop-off points, highways used, type of businesses, names of business)?
7. Is there “backhaul” of products from western to eastern locations?
8. Can you estimate shipping costs per run (e.g. packaging, ice, fuel, truck fees)? Who pays?

9. Do you or would you use shared transportation for seafood products?
10. How do you compare east-to-west markets to more traditional North-South routes/markets?
11. What challenges does E-W pose, and how can challenges be addressed?
12. What opportunities do E-W markets present (e.g. less transport costs, higher prices paid for local foods)?
13. Are you able to cover all your costs at the prices you typically sell? What could improve your profit margin?
14. Would a centralized processing/freezer facility benefit you? Ideal location? How do you imagine you could use such a facility? (e.g. value added products)
15. Is your business listed/do you want your business listed on the NC Dept of Ag seafood directory? Would you like more/new clients?
16. Are you a member of a “Catch” group? Listed on their website? Do you have your own website/social media?
17. Any last thoughts or comments about what would best help your business, market-wise?

Appendix B

Questionnaire for Inland Seafood Retailers

East/West Seafood Distribution in NC: Retail Markets

This 10-question survey is part of a NCSU, USDA-funded project examining east-to-west seafood transportation routes in North Carolina. The goal is to better understand the challenges and opportunities of transporting NC seafood to in-state markets west of I-95. Your cooperation is greatly appreciated.

Name, company, contact info, retail and/or wholesale:

1. Can you tell me where your seafood products originate (states/countries, % domo vs. imports)?
2. How do you define local seafood?
3. Do you label your products: a) domestic vs. imported? b) NC vs. other states? d) wild caught vs. farm raised? E) other? If no, why? If yes, are consumers willing to pay more for NC, wild caught product (% markup)?
4. Of all the seafood products you offer, about what percentage is landed in NC? Has this percentage increased or decreased in the past 5-10 years?
5. Of all your NC products, what are your top three sellers? How has this changed over time?
6. Can you specifically name the origin of your NC seafood products (wholesaler/port/fisher/water body)?
7. How is NC seafood transported to your shop (method and name of transport companies)?

8. How often (daily/weekly/seasonally) is NC product shipped to you? What are your shipping costs?

9. Are there problems carrying NC seafood products (e.g. availability, quality of product, pricing, profit margin, access to/communication with suppliers, transportation)?

10. Do you want to carry more NC seafood products? If yes, what would best assist you? If no, why?

Appendix C

List of Seafood Wholesale and Distribution Companies in NC (note: will need updating)

Company Name	Contact	Phone	County	Inland Sales
Frog Island Seafood Frogislandseafood.com	399 Caratoke Hwy, Barco NC 27917	252.453.2879	Currituck	
Quality Foods from the Sea	173 Knobbs Creek Dr, Eliz City, NC 27909	252.338.5455	Pasquotank	
Quality Seafood	177 Knobbs Ck Dr, Eliz City, NC 27909	252.338.2800	Pasquotank	
Murray Nixon Fishery	3010 Rocky Hock Rd. Edenton, NC 27932	252.221-4115	Chowan	X
Full Circle Crab Co.	1366 US 64, Columbia, NC 27925		Tyrrell	
Captain Neil's	508 North Road St., Columbia NC 27925	252.796.0795	Tyrrell	X
Endurance Seafood	1497 Colington Rd., KDH, NC 27489		Dare	
Billy's Seafood	1341 Colington Rd, KDH NC 27948	252.441.5978	Dare	
Wanchese Fish Co	4701 Mill Landing Rd. Wanchese, NC 27981	252.473.5001	Dare	X
Etheridge Seafood	P.O. Box 77, Wanchese, NC 27981	252.473.5272	Dare	
Graybeard's	4315 Mill Landing Rd Wanchese, NC 27981	252.475.9888	Dare	
O'Neals Seafood Harvest	P.O. Box 708, Wanchese, NC 27953	252.473.4535	Dare	
Daniels Seafood	7824 S. Virginia Trail Nags Head, NC 27959	252.441.5027	Dare	
Benny's Seafood	5810 Old Ferry Dock Rd, Manns Harbor NC 27953	252.473.3755	Dare	
Avon Seafood	40073 Harbor Rd, Avon NC 27915	252.986.2090	Dare	
Avon Seafood	Hatteras village	Auxiliary	Dare	
Wanchese Fish Co	Hatteras village	Auxiliary	Dare	X
Jeffrey's Seafood	58195 NC 12 Hatteras NC 27943	252.986.2800	Dare	
Endless Days	1922 Wilkins Rd, Belhaven, NC 27819	252.964-3400	Beaufort	
Bay City Crab	1131 Main St ext Aurora, NC 27806	252.322.5291	Beaufort	
Crystal Seas	Hwy 306 Main, Bayboro, NC	252.745.7711	Beaufort	
Aurora Packing	655 Second St. Aurora, NC 27806	252.322.5232	Beaufort	
Fosters Seafood	220 Loop Rd Belhaven, NC 27810	252-964-2411	Beaufort	
Washington Crab and Oyster	321 Pierce St. Washington NC 27889	252.975.5797	Beaufort	
Mac Jones Seafood	748 Mimosa Shores Rd Washington, NC 27889	252.945.5395	Beaufort	
Carolina Seafood Co	161 Muddy Creek Rd, Aurora, NC 27806	252.322.5455	Beaufort	
Evans Transport	Washington	252. 946.7173	Beaufort	
Rose Bay Oyster Co	7794 US Hwy 264, Swan Quarter, NC 27885	252.926.2722	Hyde	
Hobo Seafood	235 Landing Rd, Swan Quarter, NC 27885	252.926.1415	Hyde	
Gull Rock	P.O. Box 280, Engelhard, NC 27824	252.925.1951	Hyde	
Williams Seafood	192 Hill St. Engelhard NC 27824	252.925.1872	Hyde	
Newmans Seafood	644 Landing Rd Swan Quarter, NC 27885	252.926.1288	Hyde	
Mattamuskeet Seafood	Hwy 264, Swan Quarter NC 27885	252.926.2431	Hyde	
Engelhard Seafood	269 Goshen Back Rd Engelhard, NC 27824	252.925.1851	Hyde	
Ocracoke Seafood Co	416 Irvin Garrish Hwy, Ocracoke, NC 27960	252.928.5601	Hyde	
Point Pride Seafood	101 S. Ct., Oriental, NC 28512	252.249.0123	Pamlico	
Pamlico Packing	PO Box 336, Grantsboro, NC 28529	252.745.3688	Pamlico	X
Garland Fulcher Seafood	308 Hodges St. Oriental, NC 28571	252.249.1341	Pamlico	
Williams Seafood	2383 Don Lee Rd., Arapahoe NC 28510	252-249-1242	Pamlico	
R.E. Mayo Fish Netting	183 Mayo Rd Hobucken, NC 28537	252-745-5331	Pamlico	
Endurance Seafood	Oriental		Pamlico	
Fresh Ketch	2492 NC 306 S. Grantsboro, NC 28529	252.745.5826	Pamlico	

B&J Seafood	PO Box 3321 New Bern, NC 28564	252-637-1552	Craven	
Beaufort Inlet Seafood	476 Old Causeway Rd, Beaufort NC 28516	252-504-2036	Carteret	X
R.W. Jones Fish Co.	150 Jones Landing Rd Newport, NC 28570	252.726.8158	Carteret	
Morgan Creek Seafood	5050 Hwy 70 W. Morehead City, NC 28557	252.241.2008	Carteret	
Cape Point Fisheries	1465 NC 101, Beaufort, NC 28516	252-728-4365	Carteret	
William Smith and Sons	515 Morehead-Beaufort causeway, Beaufort, NC 28516	252-728-4155	Carteret	
Crystal Coast Fisheries / Blue Ocean Market	2010 Bridges St, Morehead City, NC 28557	252-726-4886	Carteret	X
Homer Smith and Son	101 Cedar St. Beaufort, NC 28516	252-725-3550	Carteret	
Pittman Seafood	Merrimon Rd., Beaufort, NC 28516	252.728-2361	Carteret	
Coastal Seafood	200 Cedar Creek Rd, Sea Level NC 28577	252.723.7955	Carteret	
James Styron Fish Co	100 S. Harbor Dr, Davis, NC 28524	252-729-7101	Carteret	
T.A.Taylor and Sons	554 Nelson Neck Rd, Sea Level, NC 28577	252-225-3151	Carteret	
Luther Smith and Son	PO Box 67, Atlantic, NC 28511	252-225-3341	Carteret	
Quality Seafood	2851 Cedar Island Rd Cedar Island, NC 28520	252-225-0073	Carteret	
Captain Jim's Seafood	4665 Arendell Street, Morehead City	252.726.3454	Carteret	
Mr. Big Seafood/Core Sound Seafood CSF	1254 Island Rd. Harkers Island, NC 28531	252.725.9507	Carteret	X
Fishtowne Seafood Center/WalkingFish CSF	300 Wellons Drive, Beaufort 28516	252.728.6644	Carteret	X
Clyde Phillips Seafood	Hwy 24 E, Swansboro, NC	910-326-4468	Onslow	
Grants Oyster House	1142 Old Folkstone Rd, Sneads Ferry, NC 28460	910-327-3351	Onslow	
Mitchell's Seafood	235 Wheeler Ck Rd. Sneads Ferry, NC 28460	910-327-7741	Onslow	
B.F. Millis Seafood	816 Mullet Ln Sneads Ferry, NC 28460	910.327.4571	Onslow	
Davis Seafood	155 Davis Ln Sneads Ferry, NC 28460	910-327-4081	Onslow	
Motts Channel Seafood	120 Short St. Wrightsville Beach, NC 28480	910-256-3474	New Hanover	
Atlantic Seafood	14775 US Hwy 17 N, Hampstead NC 28443	910.270.3331	Pender	X
Blackburn Brothers	19929 NC Hwy 210, Rocky Point, NC 28457	910-675-3474	Pender	X
Blackburn Brothers	440 N. Lake Park Blvd., Carolina Beach, NC 28428	910-458-9001	New Hanover	
Seaview Crab Co	6458 Carolina Beach Rd, Wilmington	910.793.0404	New Hanover	
Tatums Seafood	8864 River Rd Southport, NC 28461	910-457-0088	Brunswick	
Robinson and Robinson	3 Fisherman Rd SW Supply, NC 28462	910-842-8822	Brunswick	
Beacon 1	1 Fisherman Rd SW Supply, NC 28462	910-842-2203	Brunswick	
Garlands Fresh Seafood	2 Fisherman Rd Supply NC 28462	910.842.6424	Brunswick	
Holden Beach Seafood	2224 Holden Beach Rd, Holden Beach NC 28462	910.842.6276	Brunswick	
Larry Holden Seafood	3783 Bill Holden Rd SW Shallotte, NC 28470	910.754.8201	Brunswick	
Haag and Sons	7901 East Oak Island Dr., Oak Island, NC 28465	910-278-1234	Brunswick	
Captain Pete's Seafood	101 South Shore Drive, Holden Beach 28462	910.842.6675	Brunswick	
Locals Seafood	1209 Farmers Mkt Dr., Raleigh, NC 27603	919.675.2722	Wake	X
Earps Wholesale	4 Fenton St., Raleigh, NC 27604	919.856.1380	Wake	X
Inland Seafood	3725 N. Davidson St., Charlotte, NC 28205	704.332.3474	Mecklenburg	X