

# NC STATE ECONOMIST

## THE CONTRIBUTION OF WILD-CAUGHT SEAFOOD TO NC'S ECONOMY

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Wild-caught North Carolina seafood is consumed across the state. From seafood markets in Wanchese to fine dining establishments in Charlotte, the industry provides value to consumers and a livelihood to commercial fishermen, seafood dealers, and seafood market operators.

Apart from its value to those who work in seafood or consume it, how important is the industry in aggregate to the state? With over 10 million people and economic output exceeding \$566 billion, the economy of North Carolina is diverse, large and interconnected.



When a consumer buys NC seafood, they are supporting a restaurant or retailer, as well as all the businesses and employees in the supply chain that bring the fish from sea to consumer. Thus, one consumer dollar generates more than a dollar of impact throughout the state.

In an effort to better understand the seafood industry, a team of NC researchers conducted an economic impact

analysis, or EIA, to provide a systematic accounting of the industry's economy-wide contribution. The study, funded by the NC Commercial Fishing Resource Fund Grant Program, estimates that the commercial fishing sector in North Carolina contributes around \$300 million to state gross domestic product (GDP) and over 5,500 jobs.

In this article we discuss how to interpret these numbers, explain what EIAs measure, and urge caution in the use of this and other EIA results in allocating resources and budgets.

## What is an EIA?

EIAs measure the change in a regional economy. The region is defined by the authors of a study, who essentially draw a boundary around the impact study area, such as a state or county. Economic activity within the boundary counts towards the overall impact number. The impact being measured is due to some event or change in the economy.

All impact analyses include three modes of impact: direct impacts are the changes in sales that occur due to the event; indirect impacts are those that occur due to purchases of goods and services to support the direct changes; and induced impacts are those prompted by changes in employment income caused by the event.

For example, in the commercial harvesting sector, direct effects occur from the sale of fish at the dock by the fisher. Indirect effects are the purchases of goods and services, like gas or insurance, the fisher makes to run their business. Induced effects are due to the money a harvester pays his employees, for instance wages and bonuses paid to deckhands.

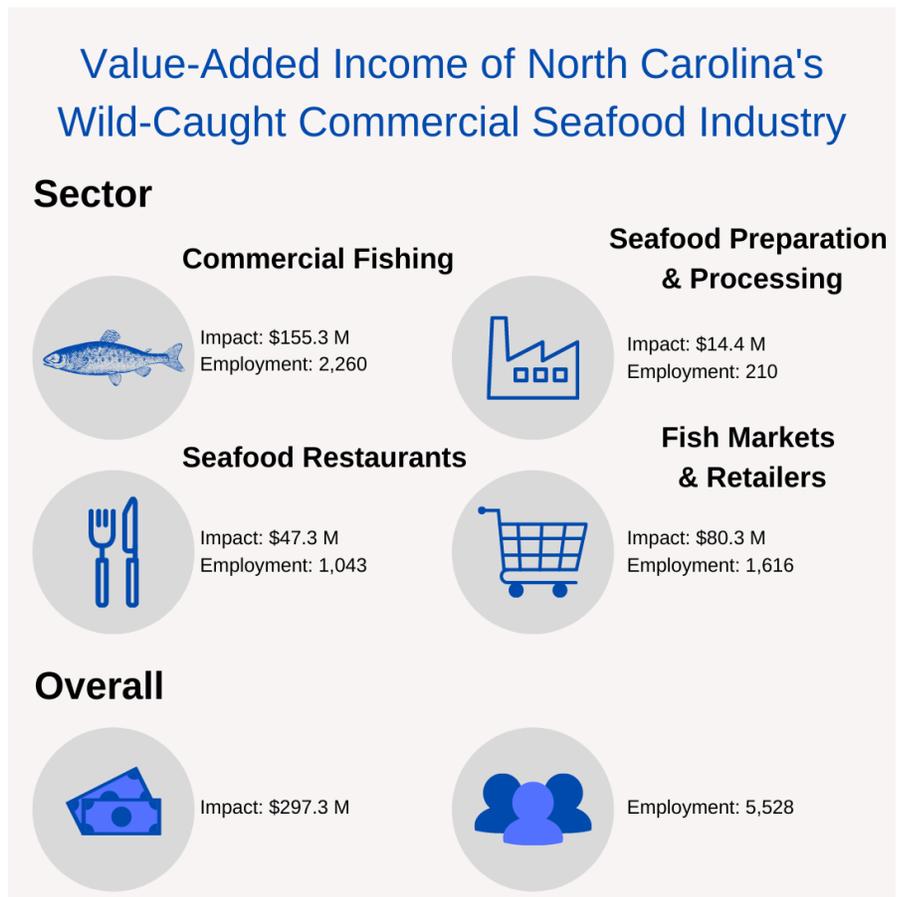
Different EIAs may emphasize different measures of economic impact. Total output adds up all the sale receipts of direct, indirect, and induced impacts. Value-added output measures the change to GDP.

In performing an EIA, the authors are responsible for estimating the direct event effects and modeling the indirect and induced effects. The economic impact of direct sales on impact measures is often represented as a multiplier, which is the sum of all the direct, indirect, and induced impacts divided by the direct effect.

## The Commercial Seafood Industry

The summary results from our study shows that the commercial harvesting sector, concentrated in NC's coastal counties, provides over \$155 million to state GDP. Processors and dealers help prepare and distribute fish across the state to restaurants and retailers, contributing \$14 million. Combined, restaurants and retailers provide in excess of \$127 million to state GDP though the sale of NC seafood alone.

About half the economic impact occurs beyond harvesting. These impacts primarily occur due to sales of NC seafood at inland seafood restaurants and retailers. Of the combined statewide impact from restaurants and retailers, around \$107 million occurs inland.



<b><u>Commodity</u></b>	<b><u>Impact</u></b>
<i>Soybeans</i>	<i>\$2,183M</i>
<i>Tobacco</i>	<i>\$1,357M</i>
<i>Cotton</i>	<i>\$555M</i>
<i>Wild Seafood</i>	<i>\$297M</i>
<i>Wheat</i>	<i>\$254M</i>
<i>Peanuts</i>	<i>\$167M</i>

### Commodity Value-Added in NC

A comparison to the production impacts of select agricultural commodity crops provides additional context for the relative contribution of the seafood harvest. The largest agricultural commodity crop produced in North Carolina is soybeans, with an estimated contribution to GDP of over \$2 billion. The wild-caught seafood industry is most comparable in contribution to the impact of the production of wheat and is about twice that of other regionally important commodities like peanuts.

The primary downstream channel for in-state impact differs between species due to consumer preferences. North Carolina consumers more often buy shrimp from seafood retailers to cook at home and prefer ordering oysters at restaurants. While finfish are both consumed in the state's restaurants and purchased from retailers, the majority of the blue crab harvest is shipped directly out-of-state.

### How We Studied NC Fisheries

To perform the EIA, we evaluated the economy relative to a world where NC seafood does not exist, but everything else is identical. We identify four key sectors that rely on fish harvested from NC coastal waters: commercial harvesters (fishers), seafood dealers and processors, seafood retailers, and seafood restaurants. Using an extensive set of surveys, we estimate the total sales in each sector related to NC seafood and then use multipliers to find the value-added and employment impacts.

For commercial harvesters, we use total landings data from the 2019 NC Division of Marine Fisheries (DMF) License and Statistics Annual Report as well as the Commercial Harvesters Survey led by team member Chris Dumas at UNC-Wilmington. We estimate total sales by region and create custom models to calculate the multipliers of indirect and induced effects by region and sector.

### Total Income of North Carolina's Wild-Caught Commercial Seafood Industry

Type	Impact	Primary Channel
	<b>Impact: \$99 M</b> <b>Employment: 1,837</b>	<b>Restaurants &amp; Retail</b>
	<b>Impact: \$62 M</b> <b>Employment: 1,102</b>	<b>Retail</b>
	<b>Impact: \$28 M</b> <b>Employment: 532</b>	<b>Restaurants</b>
	<b>Impact: \$47 M</b> <b>Employment: 887</b>	<b>Limited In-State Sales</b>

*Note that the summation of these types is slightly less than the overall impact, the result of impacts that could not be assigned to a particular species.*

## Value-Added Impacts by Coastal Region

### North Coast



Commercial Fishing	\$65.8M
Seafood Preparation and Processing	\$5.4M
Fish Markets and Retailers	\$5.3M
Seafood Restaurants	\$2.1M
<b>North Coast Total</b>	<b>\$78.6M</b>

### Central Coast



Commercial Fishing	\$48.6M
Seafood Preparation and Processing	\$3.2M
Fish Markets and Retailers	\$0.6M
Seafood Restaurants	\$5.0M
<b>Central Coast Total</b>	<b>\$57.5M</b>

### South Coast



Commercial Fishing	\$21.6M
Seafood Preparation and Processing	\$1.8M
Fish Markets and Retailers	\$1.0M
Seafood Restaurants	\$6.0M
<b>South Coast Total</b>	<b>\$30.3M</b>

For dealers and processors, we use total wholesale purchases of NC seafood extrapolated from the survey of restaurants and retailers led by this article's authors. For restaurants and retailers, we use the total sales of NC seafood extrapolated from the survey. We focus on valued-added and employment impacts. For the commercial fishing sector, value-added is total output. For the other three sectors, it is the value of sales minus the cost of non-labor inputs. This allows us to directly compare our impact estimates with measures of regional GDP. Studies that report total output exclusively cannot be compared to GDP or other sectors, because of the potential for double-counting impacts.

### Regional Comparisons

The \$300 million contribution of the commercial seafood industry represents a small fraction - around 0.05% - of the state's \$570 billion GDP. However, given the geographic concentration of economic activity in the sector, it makes sense to break these numbers by coastal region.

When we narrow the scope of our defined impact "region," the relative impact to overall GDP is much larger. The North Coast sees

a \$78 million contribution to that region's \$7 billion GDP, over 1% of the total. The Central Coast sees a \$57 million NC seafood contribution to its overall \$9.6 billion GDP, around 0.5%. The South Coast sees a \$30 million contribution to \$30 billion GDP, or around 0.1%.

Another interesting comparison is the impact of commercial versus recreational fishing. A 2017 NOAA study estimated that marine recreational fishing contributes \$1.25 billion to the state's GDP. Of this amount, about \$1 billion is due to shore-based fishing.

As for sustaining working ports and fishing jobs, around \$211 million of economic impact is due to boat-based recreational fishing, with \$60 million of impact from for-hire boats and \$151 million from private boats.

## What EIAs Miss

EIAs provide a snapshot of overall economic impact and a tool for policymakers to understand the distribution of economic activity and jobs. However, caution is required if using EIAs to allocate resources:

- All EIAs rely entirely on the assumptions made by their authors, especially the estimates of changes in sales and the multipliers the study uses. In credible EIAs, sales and multiplier assumptions will be justified using data.
- EIAs commonly report one or more of total output, value-added output, total employment, employment income, and tax revenue impacts. All these measures overlap and should not be added together. Across studies, care should be taken to compare the same impact measure.
- EIAs provide no comparison for a different allocation of resources, what economists call opportunity cost. EIAs contain limited information on whether the assessed project or sector provides more return for a dollar spent than a different project or sector.
- An EIA is a static measure that does not provide information on what value is potentially at risk with changing conditions.

In North Carolina, the last two points are critical. There is an ongoing policy debate over the allocation of certain species (like Southern Flounder) between commercial and recreational fishers. Sector-wide EIAs are aggregate assessments and provide no insight into the tradeoffs of allocating small changes in catch. Nor does an EIA project future changes due to warming temperatures under climate change or degrading fish habitats due to water pollution or overfishing.

Finally, we note that our work in this study was based on past trends and outcomes. COVID-19 has dramatically altered the retail and restaurant landscape in the state. Time will tell if the trends observed in the wake of the pandemic, including restaurant closures and a shift to retail seafood sales, will continue.

## Links

**Project webpage:** <https://go.ncsu.edu/NCSeafoodDemand>

**Cooperative Extension Factsheet:** <https://content.ces.ncsu.edu/the-economic-impact-of-north-carolinas-wild-caught-commercial-seafood-industry>

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