

NARRAGANSETT BAY WATERSHED ECONOMY

The ebb and flow of natural capital

Methodology Overview

There is a tendency for people to congregate along coasts and waterways, and the same holds true for industries; in 2014, the coastal economy contributed 84% to total U.S. Gross Domestic Product (GDP) and 82% to total U.S. employment.¹ Within these coastal states, the shore-adjacent counties comprised 37% of overall employment on only 17.5% of U.S. land area.² This concentration of economic activity near the water is no different in southern New England within the Narragansett Bay watershed (NBW); since the earliest days, the NBW has been the center of a robust economy.

Quantifying the link between the environment and economy, however, is quite difficult. The efforts to do this began in earnest in the 1970s, and multiple approaches have developed since this time. This report uses an approach similar to one designed by the National Ocean Economics Program's (NOEP) work "to provide policymakers with reliable and consistent data on the value of the oceans and coasts of the U.S."³ The key difference between this report and NOEP's, however, is that NOEP focuses on oceans and this report focuses on a watershed. NOEP estimates the value of the goods and services supplied by the environment for which there are no prices or revenues—there are no markets to assign prices as estimates of their value. Recreational fishing is a prime example: there is no market to capture the value received by someone standing on the bank of Moswansicut Pond sand fishing for perch or the shore in Narragansett fishing for striped bass. Yet there is no question it is valued by the fishers. Methods exist to estimate nonmarket values such as these, and this will be the focus of the later reports.

This report provides an assessment of the economic sectors in the NBW that rely heavily on its natural capital. This is not equivalent to the value of the watershed; rather, this report captures the size of the economic activities that show up in markets. There are no markets that value the entire fishing experience, as many values in this experience are intangible and hard to capture (e.g., the emotional benefits fishers receive from partaking in the activity), but markets do exist that capture the value of fishers' purchase of a rod or reel from a sporting goods store, bait from a bait and tackle store, or the number of employees and wages earned by those employed in bed-and-breakfasts and museums catering to tourists. When estimating the market activity associated with the watershed, there are two important issues to be resolved: what measures of economic activity will be used and what activities will be included.

In terms of the measures of economic activity, there are two general approaches that are used in this report—some sections include both while others include one or the other. The first is the consumer approach, which is based on measures of expenditures of individuals on things such as the rod and reel, bait, or a round of golf. These would eventually show up in Gross State Product (GSP) supplied by the Bureau of Economic Analysis (BEA), which is the state equivalent of Gross Domestic Product (GDP). In 2015, GSP in Massachusetts (MA) and Rhode Island (RI) totaled nearly \$540 billion—slightly less than the GSP of New Jersey, which has the nation’s 8th largest economy. Growth in the states’ GSPs since 2000 was slower than the national rate of 28%, but that was due in large part to the slower growth in population. After adjusting for population growth, GSP per capita in the two states grew faster than the national average of 11.9%: MA at 17% and RI at 13%. This is the primary measure of economic activity at the national level.⁴ In some studies, estimates of GSP are found by employing simulation models.

The second approach is the industry approach, which is based on measures of the number of establishments, their revenue, value added from selling items such as bait, rods and reels, overnight accommodations, or food and drinks, the number of workers employed in those establishments, and the wages they earn. The stories based on these two approaches are similar: more sales translate into higher levels of production to fill the orders, which is picked up in higher levels of GSP. Higher production, meanwhile, leads to new establishments and/or additional workers, which generates higher wage income. The primary source of the data employed in this study is the Bureau of Labor Statistics (BLS), which is also used by the Labor Departments in both MA and RI and in most comparable studies. These employment numbers are based on employer surveys of wage and salary workers who are in jobs covered by unemployment insurance and are recorded at the location of the job and not one’s home, as is the case with the population numbers. In 2015, employment in the U.S. was approximately 142 million, while in MA and RI it was 3.4 million and almost 470,000 respectively.

In this report, a combination of the two approaches is used. The numbers reported come from primary government sources, industry data, published reports, and surveys. The approach taken and the sources of data follow, and then an overview of the economy in the watershed—what industries are there and how are they performing—is included.

Measuring the Watershed’s Economy

This report captures the economic value of the watershed through a number of industries, including:

1. Living Resources (commercial fishing, aquaculture, forestry, aquaculture, and agriculture)
2. Tourism and Recreation (hunting, recreational fishing, recreational boating, wildlife viewing, and beach use)
3. Ports and Marine Transportation and the Defense Sector
4. Research and Education

The above classification was chosen because it has been widely accepted and used in numerous studies of estuaries, bays, and watersheds including studies of the Economic Value of the Barnegat Bay Watershed, the Delaware Estuary Watershed, the Christina River Watershed (2013), and the Massachusetts Marine Economy. In the analysis of the Peconic Estuary System, Grigalunas and Diamantides focused on two broad groups.: the first group was sectors dependent on estuaries and related to marine waters, and the second group was sectors related to tourism and recreation.

Data sources

Because the NBW spans across parts of two states, there are no existing measures of its economy that are readily available. In this report, the data used to measure the industries in the regional economy are provided by the BLS's Quarterly Census of Employment and Wages (QCEW). The data are the same as used by the Labor Departments in both MA and RI and in most comparable studies. There are three primary measures of the economy's size: the number of government and private establishments, which is generally a single unit such as a store, a farm or a factory; the level of employment, including the number of jobs filled by both part-time and full-time workers who are covered by unemployment insurance; and annual wages, which provides a measure of the income generated in those jobs. It is important to note that in some instances, data included in the report for MA and RI may come from different sources, and due to differences in data collection and methodology, the two data sets may not be comparable. A note is made in the report when this is the case.

Regardless of the measure used, to estimate the size of the watershed economy, one needs data at high levels of industry detail and geographic detail, such as how many people are employed in marinas in Newport, RI. Unfortunately, while this is the most comprehensive data available, there are significant limitations that do not let us achieve this level of precision.

County level data: QCEW includes data with industry detail released at the county level, and county boundaries do not coincide with the watershed's boundaries. For example, only a small portion of Washington County, RI is in the watershed. Therefore, it is necessary to generate an estimate of activity in the watershed section of the county. In this report, county employment is adjusted based on the percentage of the county's population living within the watershed. This is done under the assumption that population is evenly distributed throughout the county. For this reason, county level data will be supplied along with estimates for the watershed.

Disclosure: There are instances where, for confidentiality reasons, certain data are not available even at the county level. For example, it would be ideal to know how many workers are employed in fish processing by communities, but oftentimes there are not enough firms in the communities for the government to disclose that information.

Industry classification: In this report, the NAICS classification of industries is used, and this does not always allow us to identify those activities tied to the watershed. For example, there is no way to separate out marine related businesses under “search, detection & navigation instruments” since this would include both nautical and aeronautical sectors.

Coverage: QCEW data are based on the quarterly reports of employers paying unemployment that is estimated to account for 90% of all employees. Major exclusions include proprietors and unincorporated self-employed, which can be significant in some of the watershed’s industries. The primary exclusions are for the self-employed, both proprietorships and unincorporated self-employed. Nationally, self-employed estimates are about 8% of those employed, but are likely to have a bigger presence in the watershed given the seasonal nature of much work and the structure of industry in the region.ⁱ There are also exclusions for some farm and domestic workers and some railroad works and retired servicemen.ⁱⁱ Included in the wage statistics are actual wages plus a number of additional forms of compensation including bonuses, stock options, severance pay, profit distributions, cash value of meals and lodging, tips and gratuities.

Of the limitations, the coverage issue is the most limiting in this analysis; because the number of excluded operations can be significant, employment estimates in the report will be underestimates. Estimates of the size of the proprietorships have been generated by the Bureau of Economic Analysis, which also is based on the employer survey in BLS QCEW data. The more restrictive measure, and the one with finer industry and geographic detail, is published by the BLS. These data are based on the number of workers in jobs covered by unemployment insurance, which excludes self-employed and any proprietorships that are included in the BEA approach.

The difference in the two can be significant. In 2015, based on the BEA data, there were over 190 million people employed in the US, with 22% of those in proprietorships—about the same percentage as in MA and RI (Table 1). This share of employment in proprietorships is growing and this growth is expected to continue. Between 2000 and 2015, employment in partnerships increased 53% nationally, more than seven times as fast as in wages and salary jobs. In the two watershed states, the differential was even higher, especially in RI where all employment growth was in proprietorships. In MA, two-thirds of all new jobs were in proprietorships.

ⁱ At the BLS site there is a description of the characteristics of the data.
<https://www.bls.gov/cew/cewbultncur.htm#Comparison> There are also a report on the size of the self employed
<https://www.bls.gov/spotlight/2016/self-employment-in-the-united-states/pdf/self-employment-in-the-united-states.pdf>

ⁱⁱ A description of the QCEW data is available at <https://www.bls.gov/opub/hom/cew/concepts.htm>

**Table 1: Total State Employment: 2015
BEA Wages & Salary and Proprietorship Employment**

	US	RI	MA
BEA Employment	190,195,400	623,519	4,542,723
Wage & Salary	147,634,000	498,383	3,608,821
Proprietorships	42,561,400	125,136	933,902

Source: BEA

At the county level, there is considerable variation in the scope of proprietorships in both states. The counties in both states with the historically important core manufacturing centers have a below average share of employment in proprietorships: 18% in Providence, RI and 19% in Bristol, MA (Table 2). At the other end of the spectrum are Bristol, RI and Plymouth, MA where proprietorships account for 33% and 25% of employment.

**Table 2: Total County Employment: 2015
BEA Wages & Salary and Proprietorship Employment**

	Total	Wage & Salary	Proprietors
Bristol	22,895	15,265	7,630
Kent	98,401	79,017	19,384
Newport	56,495	43,485	13,010
Providence	366,821	301,649	65,172
Washington	78,907	58,967	19,940
Bristol	288,580	232,403	56,177
Norfolk	472,337	363,606	108,731
Plymouth	266,297	199,252	67,045
Worcester	446,874	355,777	91,097

Source: BEA

There is also quite a bit of variability in growth rates across the counties. In three counties in RI, growth in proprietorships outweighed employment losses in wages and salary jobs (Kent, Newport, and Providence), while in MA the share of job growth in proprietorships ranged from 87% in Bristol County to 46% in Plymouth County (Table 3).

**Table 3: Total County Employment Growth: 2001-2015
BEA Wages & Salary and Proprietorship Employment**

	Total Employment	Wage and Salary	Proprietors
Bristol	6.5%	0.0%	44.4%
Kent	2.8%	-3.4%	39.2%
Newport	4.1%	-1.6%	29.5%
Providence	4.6%	-1.8%	50.2%
Washington	22.7%	17.2%	42.7%
Bristol	6.7%	1.0%	39.0%
Norfolk	14.6%	5.0%	65.0%
Plymouth	18.8%	12.8%	41.0%
Worcester	9.8%	3.9%	41.0%

Source: BEA

It is also possible to identify the sectors where proprietorships are most numerous by comparing BLS and BEA employment data at the state level. The sectors in both where total employment is at least 50% higher than wage and salary employment are construction and arts and recreation. In MA, this is also the case in finance and insurance, while in RI, it is the professional, scientific, and technical services sector. The sectors in both RI and MA where there is very little difference between the two measures—where proprietorship and self-employment are small—are accommodations and food services, manufacturing, health care, and wholesale trade.

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¹ Source: Center for the Blue Economy, n.d.

² Source: Kildow et al., 2014.

³ Source: Center for the Blue Economy, 2017.

⁴ Source: BEA, n.d.

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