ENVIRONMENT & AGRICULTURE

Pollution and Environmental Quality

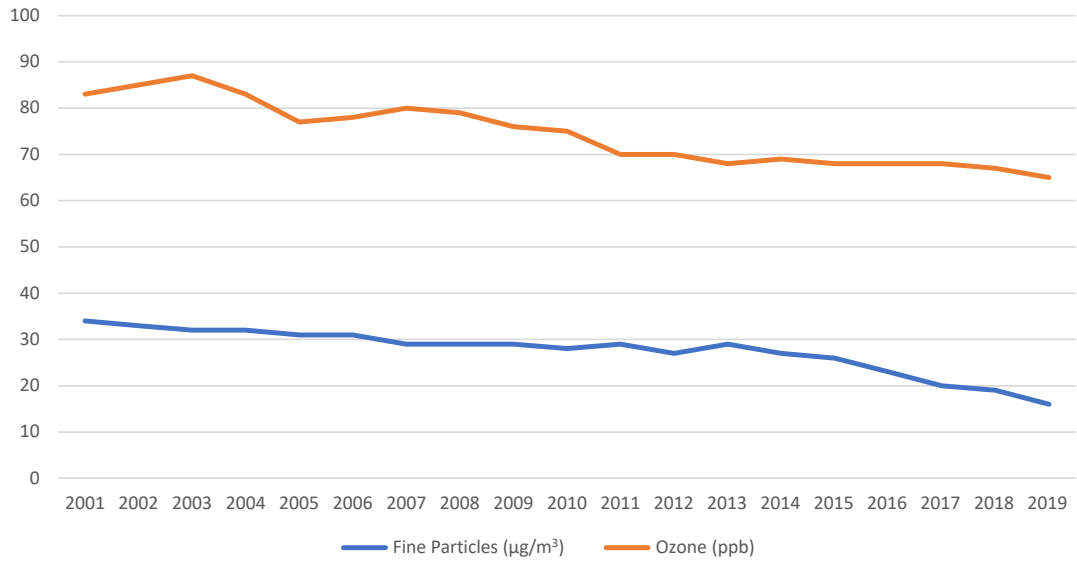
Protecting New Hampshire's lakes, mountains, forests, and beaches, along with native animals and plants is important for New Hampshire residents, as well as the state's tourism industry. Millions of visitors come to New Hampshire every year, and New Hampshire's natural features are a large reason why. Failing to protect these would have a negative impact on the state's tourism industry. For New Hampshire residents, a lack of clean air, water, and soil can cause health issues and lower quality of life.

The New Hampshire Department of Environmental Services (DES) reports several indicators that measure environmental conditions. Air quality in New Hampshire, including both fine particulate pollution in the air and ground-level ozone, meets federal standards, and has continued to improve in recent years. Particulate matter measures particles in the air that measure 2.5 micrometers in diameter and smaller, which can cause heart and lung issues when inhaled.[1] The amount of particulate matter in New Hampshire's air has declined since the early 1990s, the result of stricter standards implemented by the U.S. Environmental Protection Agency. Between 2013 and 2019, particulate matter declined from 29 µg/m^3 (micrograms per cubic meter of air) to 16 µg/m^3, a 45 percent decrease.

Ground-level ozone, formed when some pollutants are exposed to heat and sunlight, can cause respiratory issues as well. Ground-level ozone levels have declined since the late 1980s, also due to stricter federal standards. Ozone levels declined from 83 parts per billion (ppb) in 2001 to 65 ppb in 2019, although this decline has slowed since 2013.

While air quality in New Hampshire has improved steadily, water quality measures have been mixed. Advisories for cyanobacteria and/or pathogens have increased in recent years, particularly at freshwater beaches. Between 2016 and 2020, there was an average of 603 advisories, up from an average of 158 advisories between 2011 and 2015. Cyanobacteria are microscopic organisms that can reproduce

AIR QUALITY IN NEW HAMPSHIRE

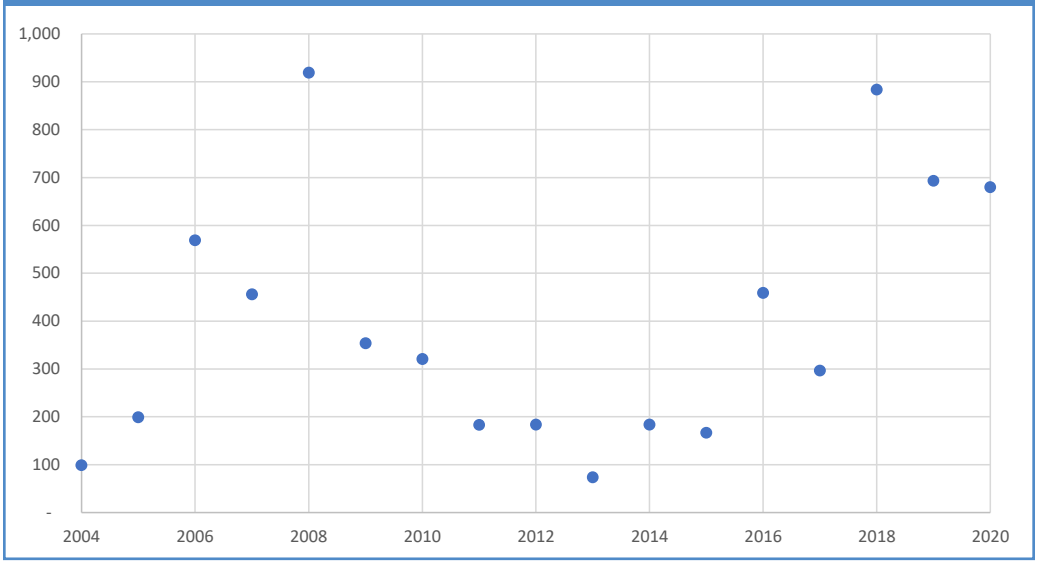


Source: New Hampshire Department of Environmental Services

1 New Hampshire Department of Environmental Services, New Hampshire's Environmental Dashboard. https://www4.des.state.nh.us/NHEnvironmentalDashboard/index.aspx.
2 U.S. Centers for Disease Control and Prevention, Harmful Algal Bloom (HAB)-Associated Illness, General Information. https://www.cdc.gov/habs/general.html.

rapidly (bloom) in warm, nutrient-rich water. Cyanobacteria blooms can sicken people who come in contact with them, and can prevent other organisms in their ecosystems from getting enough sunlight and oxygen, creating "dead-zones," where other organisms cannot survive.[2] Fertilizer runoff and wastewater can provide the nutrients to cause cyanobacteria blooms, so an increase in cyanobacteria blooms may indicate an increase in man-made pollutants in New Hampshire's lakes and rivers. The U.S. Environmental Protection Agency predicts that warmer water temperatures, caused by global climate change, will make cyanobacteria blooms occur more frequently as well.[3] DES notes that increased sampling for cyanobacteria, as well as greater public awareness of the issue, have also contributed to the recent increase in advisories.

CYANOBACTERIA ADVISORIES



Source: New Hampshire Department of Environmental Services

DES determined that there has been a statistically significant increase in the specific conductance of water in New Hampshire's rivers. Specific conductance, the electrical conductance of a substance, is affected by the presence of compounds in the water, such as sodium, nitrate, sulfate, and phosphate.[4] While conductive particles occur naturally in water, and vary depending on local geological conditions, most rivers have a fairly stable specific conductance. A change in specific conductance generally indicates a human impact, such as fertilizer runoff or wastewater discharges.

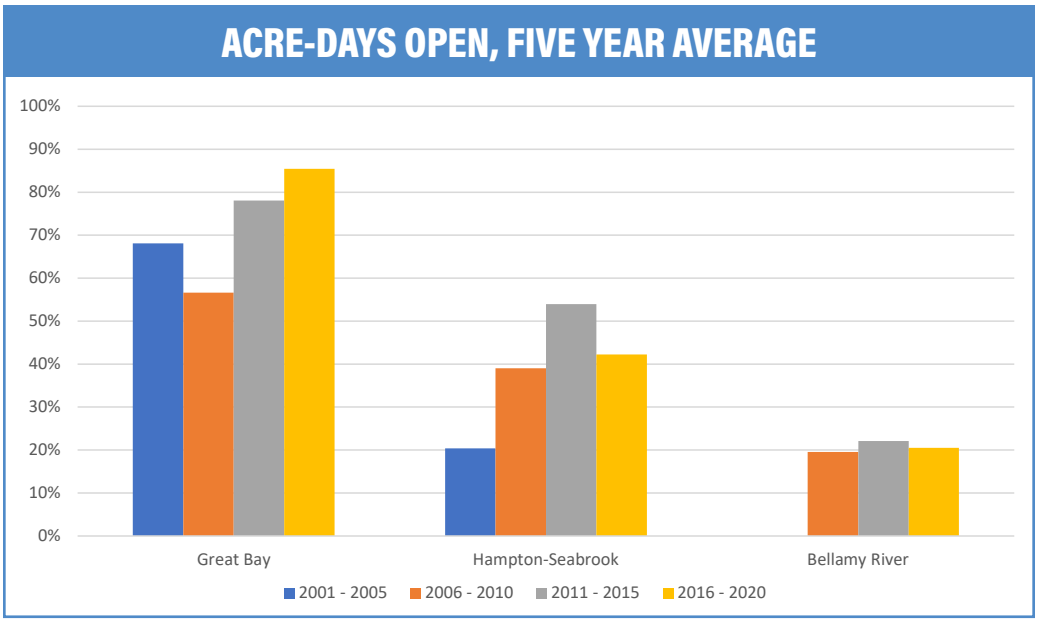
Other water quality trends have been more positive. In the fourth quarter of 2019, 92 percent of community water systems met clean drinking water standards, exceeding the New Hampshire's target of 87 percent. New Hampshire has met its target goal in every quarter since the third quarter of 2015. Drinking water quality standards include acceptable standards for organic, inorganic and synthetic organic compounds, radiological contaminants and microbiological agents.

The cleanliness of New Hampshire's coastal waters has shown improvement, as indicated by an increase in shellfish harvesting. Shellfish that are exposed to pollution cannot be harvested for consumption, so the size of coastal areas that are safe for harvest, as well as the duration of safe harvesting conditions (measured in the percentage of acre-days available for harvesting) are an indicator of the pollution levels found in coastal waters. The percentage of acre-days that shellfish beds are available for harvest has increased in recent years, particularly in the Great Bay. Between 2000 and 2011, shellfish beds in the Great Bay were open for an average of 63 percent of acre-days. From 2012 to 2020, the average increased to 83 percent of acre-days.

Shellfish harvesting in the Hampton-Seabrook area and the Bellamy River has increased since 2000, but declined slightly since 2015. The percentage of

3 U.S. Environmental Protection Agency, Climate Change and Harmful Algal Blooms. https://www.epa.gov/nutrientpollution/climate-change-and-harmful-algal-blooms.
4 U.S. Environmental Protection Agency, Water: Monitoring and Assessment, 5.9 Conductivity. https://archive.epa.gov/water/archive/web/html/vms59.html.

open shellfish beds in Hampton-Seabrook increased from 19 percent between 2000 and 2004 to 54 percent between 2011 and 2015, before falling to 42 percent between 2016 and 2020.[5] No shellfish beds were open in the Bellamy River from 2001 through 2005. In 2014 and 2015, shellfish beds were open during 31 percent of acre days. From 2016 through 2020, beds were open for an average of 21 percent of acre-days each year.



Source: New Hampshire Department of Environmental Services

PFAS Contamination

In 2019, New Hampshire became the first state in the U.S. to require local water systems, landfills and wastewater plants to routinely test and treat for four chemicals classified as per- and polyfluoroalkyl substances, or PFAS. PFAS are industrial chemicals that take decades to break down. When found in drinking water, PFAS can cause a number of health issues, affecting the immune and reproductive systems, hormones, physical and brain development in children, and increasing risk of some cancers.[6]

The Pease International Tradeport in Portsmouth and the Saint-Gobain manufacturing plant in Merrimack are the largest sources of PFAS contamination in New Hampshire, although PFAS contamination is found throughout the state. New Hampshire's Department of Environmental Services has tested private wells around the state, and found wells in in 123 New Hampshire communities that exceeded New Hampshire's standards for PFAS contamination.[7] In 2021, the New Hampshire Drinking Water and Groundwater Trust Fund approved $5 million in funding for a rebate program that would pay up to $1,500 to private well owners. This money, enough to assist 3,000 well owners, could be used to either remediate PFAS contamination or connect to a public water supply.

– Greg David

5 Excluding 2016, when the Hampton-Seabrook shellfish beds were open just 19 percent of acre-days, the average from 2017 – 2020 still fell to 48 percent.
6 Geisel School of Medicine at Dartmouth, PFAS in New Hampshire, Frequently Asked Questions (FAQ) and Responses. https://geiselmed.dartmouth.edu/epidemiology/wp-content/uploads/sites/17/2021/05/FAQ-PFAS_NH_5-3-21_Post.pdf.
7 Mara Hoplamazian, New Hampshire Public Radio, "N.H. private well users may soon have help with removing PFAS contamination," 1/25/2022. https://www.nhpr.org/nh-news/2022-01-25/nh-private-well-users-pfas-contamination-rebate.

TOXIC RELEASE INVENTORY	2016	2017	2018	2019	2020
On-site Disposal or Other Releases (Pounds)					
New Hampshire	179,057	148,227	208,472	145,104	100,194
Annual percent change	-45.3%	-17.2%	40.6%	-30.4%	-31.0%
New England	8,830,719	12,437,243	11,548,475	9,316,051	7,767,592
Annual percent change	-11.6%	40.8%	-7.1%	-19.3%	-16.6%
U.S. (1,000 pounds)	3,178,841	3,554,214	3,282,126	2,962,499	2,694,112
Annual percent change	7.1%	11.8%	-7.7%	-9.7%	-9.1%
Off-site Disposal or Other Releases (Pounds)					
New Hampshire	155,399	165,435	232,302	247,866	348,013
Annual percent change	-28.9%	6.5%	40.4%	6.7%	40.4%
New England	7,777,043	6,383,692	7,349,050	7,259,112	6,459,243
Annual percent change	11.7%	-17.9%	15.1%	-1.2%	-11.0%
U.S. (1,000 pounds)	404,195	389,076	419,906	422,962	348,506
Annual percent change	-14.5%	-3.7%	7.9%	0.7%	-17.6%
Total On-site and Off-site Disposal or Other Releases (Pounds)					
New Hampshire	334,456	313,661	440,774	392,970	448,207
Annual percent change	-38.8%	-6.2%	40.5%	-10.8%	14.1%
New England	16,607,763	18,820,934	18,897,526	16,575,162	14,226,834
Annual percent change	-2.0%	13.3%	0.4%	-12.3%	-14.2%
U.S. (1,000 pounds)	3,583,036	3,943,290	3,702,032	3,385,461	3,042,618
Annual percent change	4.2%	10.1%	-6.1%	-8.6%	-10.1%

Source: U.S. Environmental Protection Agency, ELMI Analysis. Last Update 12/15/2021

FOREST INVENTORY DATA	2016	2017	2018	2019	2020
Number of all live trees on forest land by Species group and Tree class code (in number)					
Growing stock	3,769,424,988	3,747,237,184	3,735,483,767	3,733,910,625	
Rough cull	502,748,347	504,200,124	500,825,911	469,425,181	
Rotten cull	23,063,794	23,082,695	22,536,693	21,223,651	
Total	4,295,237,129	4,274,520,003	4,258,846,371	4,224,559,456	

Source: U.S. Forest Service, ELMI Analysis. Last Update 8/28/2020

MAPLE SYRUP PRODUCTION	2016	2017	2018	2019	2020
New Hampshire (1,000 gallons)	176	160	163	148	154
United States (1,000 gallons)	4,184	4,385	4,199	4,180	4,372

FRUIT AND VEGETABLE CROPS	2016	2017	2018	2019	2020
Apples[1] Yield per Acre[2] (Bushels)					
New Hampshire	255	469	314	321	302
New England	264	367	NA	324	269
Strawberries Yield per Acre[3]					
New Hampshire	5,950	6,800	5,900	5,700	5,800
New England	1,975	NA	2,490	1,700	5,500
Pumpkins Yield per Acre[4]					
New Hampshire	8,700	14,300	12,500	18,000	11,700
New England	10,400	11,900	8,900	9,800	10,300
Tomatoes Yield per Acre[4]					
New Hampshire	11,100	13,000	13,700	11,600	13,000
New England	10,900	13,000	10,600	9,100	9,400
Sweet Corn Yield per Acre (Dozen[5])					
New Hampshire	741	906	800	824	776
New England	718	718	800	765	718

[1] Apple production from commercial orchards with 100 or more trees.

[2] Yield based on total production, which includes unharvested production and fruit production but not sold due to market conditions"

[3] Total tabulated pounds produced per bearing acre harvested.

[4] Total tabulated pounds produced per acre harvested.

[5] Standard weight used for a dozen ears is 8.5 pounds

Source: USDA - National Agricultural Statistics Service, ELMI Analysis. Last Update 12/15/2021

Prepared by: New Hampshire Employment Security, Economic and Labor Market Information Bureau

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