The CLEAN WATER ACT at 50

1972 - 2022

The United States commemorates the 50th anniversary of the Clean Water Act in 2022.
This monumental legislation expanded Federal protection of the waters of the U.S., paving the way for policies, protections and funding for cleaner rivers, lakes and ponds. Amendments to the Clean Water Act strengthened protections for Lake Champlain and created the Lake Champlain Basin Program, which is working to improve water quality for future generations. Life in the Champlain Valley has always been deeply connected to Lake Champlain. Please join us in learning about this landmark legislation; its origins, accomplishments, and the challenges we still face.

Lake Champlain is 120 miles long with a 8,234-square-mile watershed.

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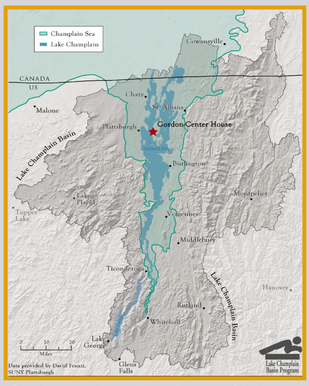
Lake Champlain Basin Program
Champlain Valley National Heritage Partnership

LAKE CHAMPLAIN MARITIME MUSEUM

Ancient Origins, Native Peoples, and European Conflict



If the Champlain Sea was here today, many of the Basin's most populated cities would be underwater.

"Water is life" is a term used worldwide. Water makes up more than 60 percent of the human body. Whether it fills oceans, lakes and ponds, or causes rivers and streams to flow, water—or the lack of it—defines ecosystems and life within them. Water is precious and requires our careful stewardship for future generations.

Ice Age Beginnings

Why does the Champlain Valley have such an abundance of fresh water? About 20,000 years ago, the glaciers of the Great Ice Age grew to more than a mile high, completely covering the highest mountain peaks. These glaciers melted and receded north about 15,000 years ago, creating Lake Vermont. This large, deep freshwater lake flowed south into the Hudson River. Two thousand years later, seawater from the St. Lawrence Valley rushed in as the glaciers retreated even further north. The Champlain Sea teemed with marine life, including beluga whales, Atlantic cod, harbor seals, and blue mussels. Today, American eel, Atlantic salmon, and sturgeon are reminders that the Champlain Valley was once a far reach of the Atlantic Ocean.

With the enormous weight of the glaciers removed, the earth's surface rebounded over thousands of years. The rising land cut off the supply of saltwater about 9,000 years ago. Melting snow and rainfall gradually transformed the Champlain Sea back into freshwater, forming Lake Champlain.

Early Arrivals

As the glaciers receded, a tundra-like ecosystem formed here. The rich nutrients of the well-watered pioneering plants attracted herds of elk, caribou, and mastodon. The earliest known people, the Paleoindians followed these large mammals into the region. The lake and its tributaries were pathways for travel and provided abundant food resources.

Cultures evolved and territories were established over thousands of years. The Haudenosaunee (Iroquois), Abenaki, and Mohican people were here long before Samuel de Champlain first documented the lake in July 1609: "The next day we entered the lake, which is of great extent, say eighty or a hundred leagues long, where I saw four fine islands, ten, twelve, and fifteen leagues long."

Water was so important to the Native people here that it is part of their creation stories. The Abenaki believed that Odzihozo rose from the earth and his imprint left behind Lake Champlain. In Haudenosaunee culture, Sky Woman created the earth while dancing on a swimming turtle's back. The word Mohican means: "people of the waters that are never still."

Waterways of War

The region's waterways drew Europeans—the French, Dutch and English—to the Champlain Valley, which served as a strategic corridor linking the Hudson River to the St. Lawrence. For two centuries after Champlain's arrival, the valley was contested in geopolitical struggles that ended with American independence and major disruption to the Native cultures and ways of life.

The Champlain Valley is the homeland of the Haudenosaunee (Iroquois), Abenaki, and Mohican people. Lake Champlain was used for warfare and commerce by these tribes long before the 1609 arrival of Europeans. Source: LCBP

The headquarters of the Lake Champlain Basin Program is located on an ancient Native American settlement site. The woodland period people there would spend their summers living on the lakeshore and their winters inland. Source: UVM Consulting Archaeology Program

The 1814 Battle of Plattsburgh near the very end of the War of 1812 was the last time Lake Champlain was contested. Source: Lake Champlain Maritime Museum—Engraving by Benjamin Tanner.

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Commerce, Contamination, and Conservation

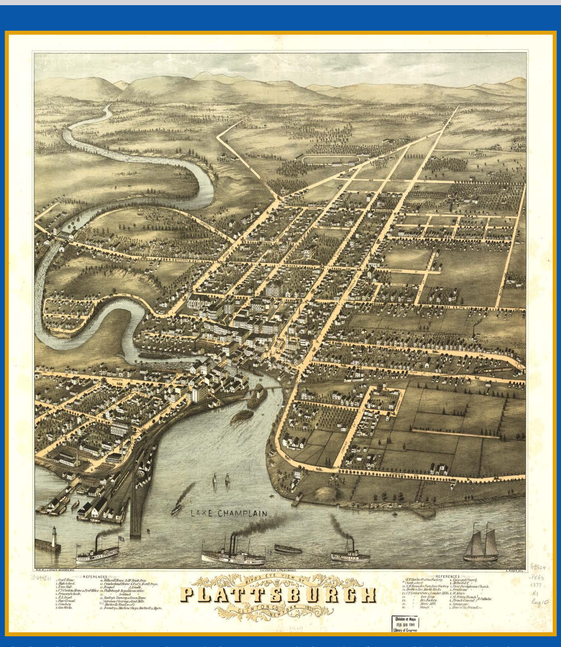
Early travelers noted Atlantic salmon thriving in Lake Champlain in the early 1800s, but dam construction and erosion from deforestation quickly took their toll. A U.S. Commission on Fish and Fisheries report noted that Atlantic salmon "had abandoned all the waters of the Champlain system" by 1838. Source: J. Clayton

The 1800s brought industrialization and pollution to the Champlain Basin, altering the landscape and polluting the water. These changes created concerns about the protection of the lake, launching an early conservation movement in the late 19th century.

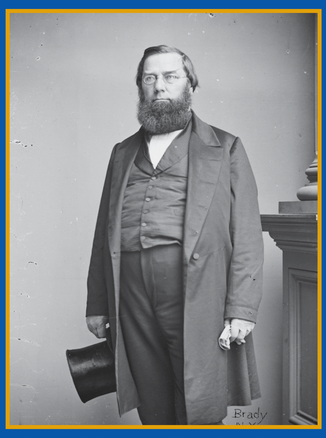
Modern commerce began in earnest along Lake Champlain after trade exploded with the opening of the Champlain Canal in 1823. By then, dams built to power mills were constructed on nearly every river flowing into Lake Champlain. The dams blocked Atlantic salmon and other fish species from swimming upstream to spawn. The overharvesting of timber in the Champlain Valley also created erosion, which added sediment to streambeds and destroyed fish spawning habitat. The factories and mills also polluted the waterways with industrial waste. Sludge accumulated in parts of the lake, depleting it of oxygen. Raw sewage was discharged directly into Lake Champlain and its tributaries. Bacteria from human and animal waste made the water dangerous to drink.

After the American Civil War, the loss of fish and wildlife species, poor water quality, and the degraded landscape alarmed writers, researchers and citizens. Conservationists and naturalists recorded their observations of the lake for scientific reports that connected industrialization with the damaged ecosystems. People began to better understand the environmental consequences of clearcutting the forests and polluting waterways, resulting in some of the earliest environmental conservation efforts in the U.S.

Governments also took notice of the changes and created agencies to address harm done to the environment. Vermont established the Board of Fish Commissioners in 1866. A Commissioner of Crown Lands was appointed in Québec the following year. The U.S. government soon followed, creating the Federal Commission for Fish and Fisheries in 1871. In 1880, New York hired its first Game and Fish Protectors and later passed bills to create the Adirondack Park and designated some of these lands as "forever wild" to protect the region's waterways and forests. The next 50 years brought more land into conservation on the local, state and federal levels, but since polluted water flowed over political boundaries more had to be done.



The dams built on the Saranac River and other waterways in the early 19th century blocked Atlantic salmon from their spawning grounds upstream. Industrial waste from the factories and mills powered by the dams contributed to water pollution. Source: Library of Congress



Early conservationist, George Perkins Marsh, noted in 1847, "climate itself has in many instances been gradually changed and ameliorated or deteriorated by human action." His 1864 book, Man and Nature helped found the conservation movement and played a role in the establishment of the Adirondack Park. His Woodstock, Vermont, home is now the Marsh-Billings-Rockefeller National Historic Park, which interprets the early conservation and modern environmental movements. Source: Library of Congress

Soon after the Champlain Canal was completed in 1823, canal boats were carrying agricultural goods, stone, iron ore, and lumber to Hudson River ports and later, with the 1843 opening of the Chambly Canal, to communities along the Richelieu and St. Lawrence rivers. The canal boats returned with finished goods and coal, spurring more commerce. Source: Lake Champlain Maritime Museum Collection

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“Watershed” Legislation: The Clean Water Act

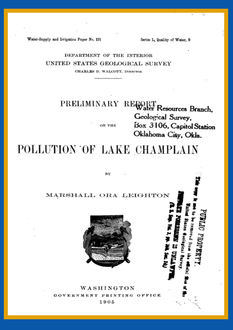
By the end of the 1960s, the Cuyahoga River in Cleveland was polluted with thick dark oil, bubbling at its surface. The river had repeatedly caught fire throughout the 1800s and 1900s due to the increasing industrialization of the area, including the fire pictured here on November 3, 1952. Time Magazine reported on yet another river fire on June 22, 1969, and used this photo. The report horrified the nation and galvanized the creation of the Environmental Protection Agency and passage of the Clean Water Act. Source: Cleveland Press Collection at the Cleveland State University Library

A series of devastating environmental events in the mid-1900s exposed the need to protect the nation’s waterways. People joined together at the local, state and federal levels to push for new regulations to protect the environment, culminating with the passage of the Clean Water Act in 1972.

A series of severe environmental disasters in the mid-20th century and growing public anxiety about air and water pollution led to the creation of the Environmental Protection Agency (EPA) in 1970. While the EPA consolidated the federal government’s environmental duties and streamlined policies aimed at protecting the environment, more needed to be done to protect our waters.

A bipartisan congressional effort introduced amendments to the 1948 Federal Water Pollution Control Act, which only protected interstate waterways. The new proposed amendments gave the EPA expanded control over water quality, allowing it to regulate and implement pollution control programs for waterways, set water quality standards, fund sewage treatment plants, and make it illegal to discharge any pollutants into waterways without permission.

After a series of revisions, the bill passed in the U.S. House of Representatives and the Senate in 1972. President Richard Nixon vetoed the bill after deeming it too costly at $24 billion dollars, but Democrats and Republicans united to override his veto. The Clean Water Act became law on October 19, 1972, setting a course to protect the nation’s waterways.



Water-Supply and Irrigation Paper No. 221 Series L, Quality of Water, 9

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
CHARLES D. WALCOTT, Director

PRELIMINARY REPORT
on the
Water Resources Branch,
Geological Survey,
Box 3106, Capitol Station
Oklahoma City, Okla.

POLLUTION OF LAKE CHAMPLAIN

BY

MARSHALL OHA LEIGHTON

WASHINGTON
GOVERNMENT PRINTING OFFICE
1905

In 1905, following a series of complaints from residents about the discharge of waste into Lake Champlain, the U.S. Department of the Interior commissioned a pollution study. The report addressed the industrial waste in the Ausable and Boquet rivers and issued a dire warning to Burlington residents. They were “drinking from their own cesspool” due to the discharge of the community’s sewage being discharged into the lake one mile from the drinking water intake pipe. Source: U.S. Department of the Interior

Former Vermont Governor, U.S. Representative, and U.S. Senator Robert Stafford (left) led efforts to override Ronald Reagan’s veto of amendments that would strengthen the Clean Water Act in 1987 and secure special funding for Lake Champlain. A staunch environmentalist, Stafford was the chairman of the Senate Environment and Public Works Committee in 1980 and fought the Reagan Administration to strengthen the Clean Air Act. In this image, Senator Stafford is joined by fellow Vermont U.S. Senator Patrick Leahy at a congressional hearing. Source: U.S. Senate Archives

On May 17, 1963, 93 concerned citizens convened the first meeting of the Lake Champlain Committee at the Middlebury Inn to discuss a proposal to create an international commercial seaway along the Richelieu-Champlain-Hudson corridor. The Committee was successful in the fight and went on to stop construction of a nuclear power plant in Charlotte, helped pass Vermont laws prohibiting phosphorus in laundry detergent and requiring that boats have sewage holding tanks, and established the country’s longest running lake monitoring program. The Committee continues to advocate for a healthy lake.

In operation since the late 1800s, International Paper Company’s (IPC) Ticonderoga Creek paper mill had discharged runoff and sludge into the lake for decades. In 1970, the Vermont Attorney General (and future U.S. Senator) Jim Jeffords spearheaded legal efforts against IPC. The company argued it wasn’t the only business in New York polluting the South Lake so it should not face financial repercussions. The case went to the U.S. Supreme Court and ended in a $750,000 settlement by IPC. The money funded a Vermont monitoring program for environmental practices of IPC’s new paper mill. Image courtesy of Bill Dolback/Ticonderoga Historical Society.

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The Lake Champlain Basin Program

The Lake Champlain Basin Program has a 28-member steering committee made up of representatives from New York, Vermont, and Québec agencies and the U.S. federal government, the scientific, education community, cultural heritage and recreation communities, and citizens groups. To date, the LCBP has provided over $17 million in grants to more than 1500 projects across the Basin. How has the LCBP helped your community? Source: LCBP

For three decades,

the Lake Champlain Basin Program has worked with governments, citizens groups, and the people of the region to benefit the Lake Champlain Basin's water quality, fisheries, wetlands, wildlife, recreation, and cultural resources.

While the Clean Water Act made tremendous strides in water quality nationwide, by the 1980s it was clear that Lake Champlain needed more help. U.S. Senator Patrick Leahy— along with fellow Vermont Senator Jim Jeffords and New York Senators Daniel Patrick Moynihan and Alfonse D'Amato—introduced the Lake Champlain Special Designation Act in 1990. The bill was an amendment to the Clean Water Act and passed as part of the Great Lakes Critical Programs Act that year. The legislation directed the federal government to work with New York, Vermont, and the province of Québec to develop the Lake Champlain Basin Program (LCBP)

The LCBP is a coordinated effort among those governmental entities and the watershed's local municipalities, the scientific community, citizens groups, educators, historians, the arts community, recreation programs, and individuals to improve, restore, and maintain the water quality of Lake Champlain. Through bi-state and bi-national cooperation, the LCBP researches the Lake and the environment, educates the public on how to play a role in protecting the lake, and funds and implements efforts to improve water quality and human health.

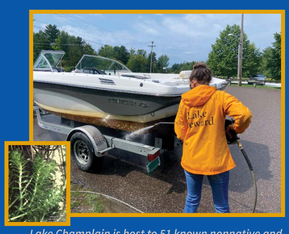
INTRODUCTION TO SUCCESS STORIES:

The LCBP has funded research, provided grants, and worked in partnership on projects that have improved Lake Champlain. These are some of the success stories from the past 30 years. You can scan the QR Code to access the 2021 Lake Champlain State of the Lake Report.

Wastewater Treatment Facilities are the unsung heroes of the fight for clean water. Improvements to wastewater facilities have decreased the discharge of phosphorus by 70 percent in New York, 92 percent in Vermont, and 96 percent in Québec since 1990. Source: Google Earth

A $36-million cleanup effort led by the State of New York in 2000 removed more than 230,000 cubic yards of contaminated sludge and 20,000 pounds of polychlorinated Biphenyls (PCBs) from Cumberland Bay in Plattsburgh, New York. The Bay was removed from the NY list of Superfund sites in 2013. Source: Mike Dowd

U.S. Senator Patrick Leahy has a strong connection to Lake Champlain, in fact he proposed to his wife, Marcelle, on its shores more than 60 years ago! Senator Leahy led the efforts to create the LCBP in 1990 and has supported the Program ever since. The Senator has also been instrumental in fighting invasive species in our forests, conserving farmland and open space, promoting ocean conservation, and establishing Vermont's only national park: Marsh-Billings-Rockefeller National Historical Park, which interprets the conservation movement. Source: LCBP



Lake Champlain is host to 51 known nonnative and invasive aquatic species. If it weren't for the sharp eyes of an LCBP Boat Launch Steward in 2019, Hydrilla verticillata *would be our latest invader! Source: LCBP*

*First introduced to the lake in the 1940s, water chestnut (*Trapa natans*), is a nonnative plant that forms dense surface mats, which crowd out other plants, disrupt habitat, and severely limit recreational enjoyment of the lake. Since 2000, the LCBP has worked with the States, Quebec, the Nature Conservancy and other partners to remove water chestnuts from the lake. While the water chestnuts aren't completely gone, the plant's spread has been reduced greatly since management of this plant began in the mid-1980s. Sources: LCBP*

The Lake Champlain Committee has been monitoring the lake since 1979—making it the oldest monitoring program in the country! Since its start, the LCBP has funded additional monitoring for cyanobacteria, mercury, and other toxins in the Lake. Source: LCBP

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The Fight for Clean Water Continues

Supporters of the Standing Rock Sioux Tribe protest the Dakota Access oil pipeline at the White House in September 2016. Source: Associated Press Images

The fight for clean water continues.

Individuals play an important role in protecting water quality by engaging in sustainable practices and protective actions. Towns and municipalities are updating their infrastructure and development regulations to protect clean water. State and federal officials are elected to uphold and create new policies that ensure a healthy water future for everyone.

Debate continues over federal regulation of waterways and water quality since the passage of the Clean Water Act in 1972. Advocates of the Act have long argued that the pollution of small waterways negatively affects wetland ecosystems and water quality, and require federal protection. Hoping to solve a decades-long debate about what constituted federally regulated waterways in the Clean Water Act, President Obama established the Waters of the United States rule in 2015 to broaden federal protections for wetlands and waterways not previously protected.

In 2020, President Trump formally rolled back these federal protections, arguing that the Waters of the United States rule was an example of federal overreach that harmed small businesses and landowners. Those in agreement with President Trump also advocated for state control over waterways, as opposed to federal regulation. In 2021, the Biden administration filed a legal action to begin the process of repealing the rollbacks from the Trump administration, aiming to restore the 2015 federal protection of small waterways and wetlands.

The political pendulum swings and debates on the scope and enforcement of the Clean Water Act continue 50 years after its passage. The country's waterways still face major threats from invasive species, climate change, stormwater runoff, waste, and pollution. Unsafe drinking water continues to plague the nation, with minority communities unfairly and disproportionally affected by failing systems.

While our federal and state governments can take legislative action and fund projects to improve water quality, the actions of local communities and individuals are also immensely important in meeting the goals of the Clean Water Act. Towns and municipalities are working to meet new wastewater and stormwater regulations by widening culverts, improving road maintainance, reducing road salt, building retention ponds, and enhancing wastewater treatment facilities. Individuals and businesses are mowing their lawns higher, reducing the use of lawn fertilizers, and preventing stormwater runoff on their properties.

The Clean Water Act provides a foundation for the protection of our lakes, rivers, ponds, streams, wetlands, and their associated ecosystems, but much work remains. **Do you believe that by 2072, when we mark the centennial of the Clean Water Act, today's water quality issues will be solved? What can you do to make that happen?**

Participating in local and state politics, trying to live sustainably, and, if needed, holding your government officials accountable are just a few ways to play your part in protecting the nation's waterways. Photo from the Global Climate Strike in Burlington on September 20, 2019. Source: © Ryan Mercer - USA Today Network

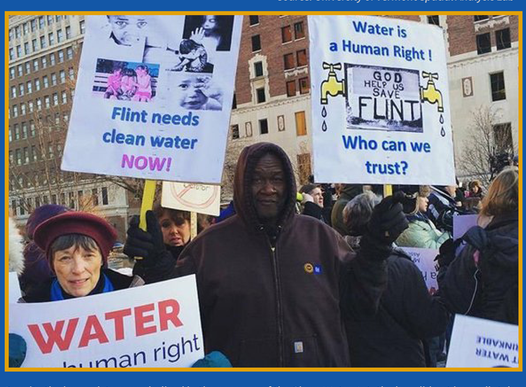
Challenges for the Lake Champlain Basin

Microplastics are everywhere—including Lake Champlain. These tiny pieces of plastic come in different forms from a variety of sources, including personal care products, microfibers from synthetic clothing, and eroded pieces of material from litter. Microplastics can pass through wastewater treatment systems and are found in the tissues of fish that are eaten by larger fish, animals and humans. Source: Wikimedia Commons

While climate change has made the Champlain Basin's winters milder, our waterways are being contaminated by road salt used to de-ice roads, sidewalks and driveways. The "salinization" of our freshwater ponds, rivers and lakes has a negative effect on fish populations. Source: ADK Action

Lake Champlain has 51 invasive species. The most recent threat, the round goby, made its way along the Erie Canal from Lake Ontario to the Hudson River in just 10 years. The fish reproduces six times per year, voraciously eats other fishes' eggs, and can spread diseases that harm other fish and birds that eat them. If it invades Lake Champlain, round goby could alter the lake forever. Source: Brian Weidel, USGS

Cyanobacteria, also known as blue-green algae, are a type of bacteria found in most water bodies around the world. They play an important role in aquatic ecosystems, occasionally outcompeting other algae by using available nutrients more efficiently. Most cyanobacteria are microscopic and go unnoticed. Under certain conditions however, cyanobactieria can grow prolifically, forming unsightly and potentially toxic 'blooms'. Source: University of Vermont Spatial Analysis Lab



Despite the large victory symbolized in the passage of the Clean Water Act, the law did not immediately remedy all water problems. Systemic racism intertwined with government inaction on water treatment, inspections and harmful industrial dumping practices in communities led to devastating water-related tragedies. These issues continue, exemplified by the Flint Water Crisis in 2014. In a cost-savings move, city and state officials in Flint, Michigan, switched the city's water source from the Detroit system to the untreated, corrosive water of the Flint River, which leached lead from unchecked pipes into the drinking water supply. Thousands of people—primarily African American adults and children—were harmed. The unequal enforcement of the Clean Water Act and the need for government officials to uphold the legislation must be addressed. Photograph by Shannon Nobles, Wikimedia Commons.

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