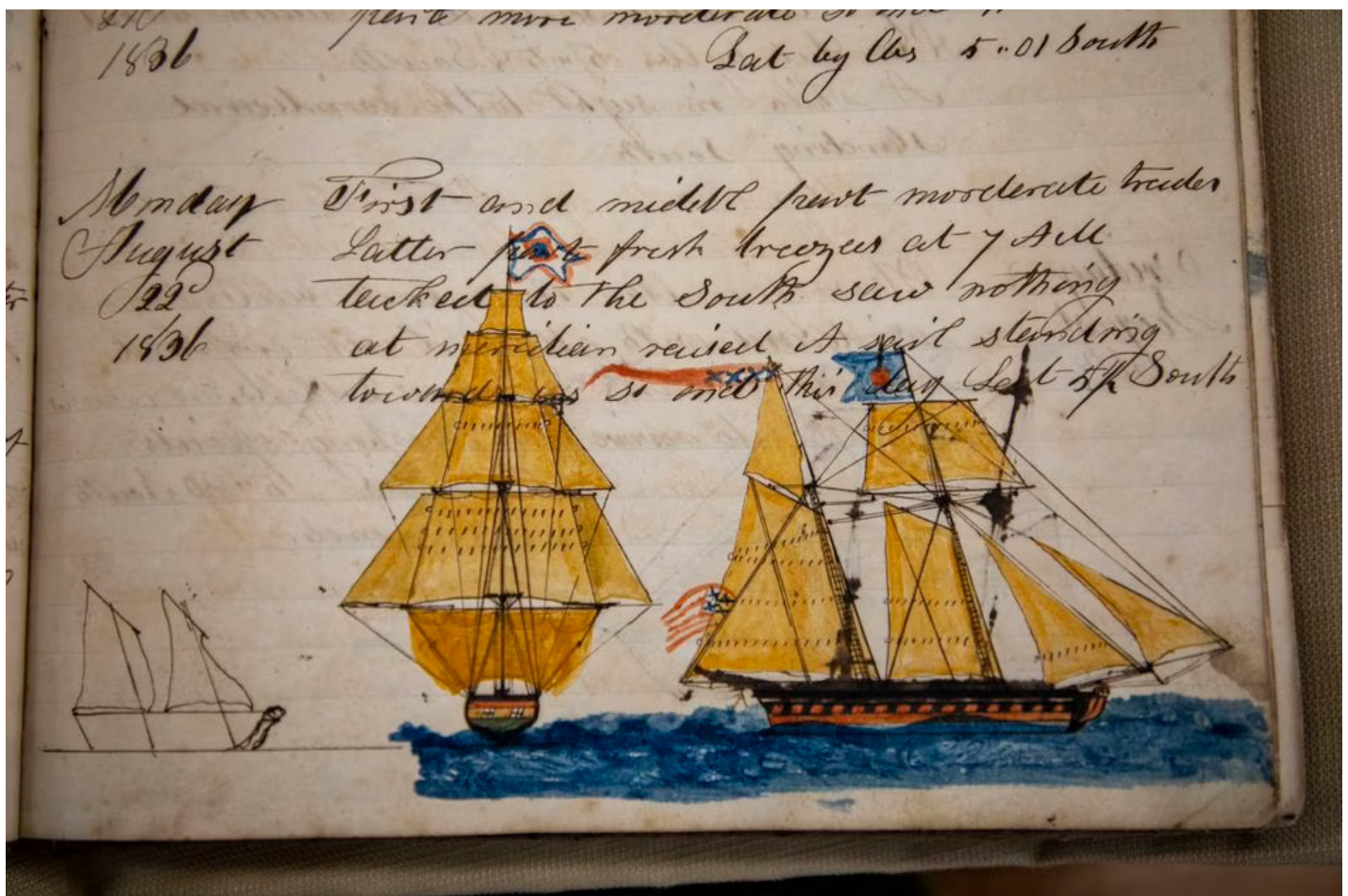


New England researchers use 'treasure trove' of historic whaling logbooks to study climate shifts

By [Kate Armanini](#) Globe Correspondent, Updated April 19, 2023, 27 minutes ago



A whaling logbook at the Providence Public Library. New England researchers are using information from the logs to study how weather patterns have evolved. JAYNE DOUCETTE/WOODS HOLE OCEANOGRAPHIC INSTITUTION

Centuries ago, whalers would spend three to five years at sea, traveling across the globe as they hunted whales for meat and blubber. Sailors would meticulously record their ship's positions, the wind force, and the weather conditions on their journeys.

New England researchers are now studying those historic whaling logbooks, using centuries-old weather observations to explore how the climate has evolved.

“The idea that you could use whaling logbooks to unlock secrets about weather hundreds of years ago had not occurred to the ocean scientists that I knew,” said Timothy Walker, a history professor at the University of Massachusetts Dartmouth and guest investigator at the Woods Hole Oceanographic Institution. “It just seemed to me that this was a treasure trove of documentation that can be really used well for informing climate science.”

Since 2018, Walker and Caroline Ummenhofer, an associate scientist at the Woods Hole Oceanographic Institution, have been compiling and analyzing whaling logs to track historic weather and wind patterns.

“The project came out of the realization that there are all these extraordinary records sitting unused,” Walker said. “With the data that we can collect from these whaling records, we get a snapshot of how early industrialization begins to impact the climate of the planet.”

The whaling industry reached its peak in New England and on Long Island from the 1840s to 1861, with more than 700 ships and 20,000 crew members, Walker said. The industry declined as coal and other fuels gradually replaced whale oil during the Industrial Revolution — the last whaling voyage from New Bedford departed in 1927.



Researchers have studied about 100 whaling logbooks to analyze historic climate patterns. JAYNE DOUCETTE/WOODS HOLE OCEANOGRAPHIC INSTITUTION

The logbooks, handwritten records on yellowed paper, are housed mainly in the New Bedford Whaling Museum, which has the largest collection of whaling records and journals in the world, about 2,500 logbooks, Walker said.

Each book tells a story, Walker said. Scattered across the pages are whale stamps, each signifying a catch. And the writers often go beyond basic observations to detail their harrowing journeys.

“Every logbook keeper is kind of quirky and has their own style,” Walker said. “Some of them are more loquacious and more chatty than others.”

Most logs include the date and time, longitude and latitude, nearby landmarks, wind direction and force, the sea conditions, weather, and ocean currents. After the researchers input the information by hand, it’s sent to Ummenhofer, who uses the data to plot and analyze weather patterns on a map.

“In many of the remote ocean areas, it’s sometimes even hard to assess what [was] the status quo,” Ummenhofer said. “So, what is our baseline? How are things changing? And that is how these records can be particularly useful, because they give us this long arc of what’s shifted.”

For example, scientists have documented a marked southward shift in the westerly winds in the past 60 years, a product of climate change that has left the southern regions of Africa and Australia with significantly less precipitation, Ummenhofer said.

“But what we cannot tell is how far back this shift goes. Where were the winds 200, 250 years ago?” she said. “And that is something we can actually get from the whaling data, so that has been quite exciting.”

Unlike other vessels, whaling ships would deviate from regular ocean routes to follow whales. That makes the data particularly valuable, Walker said.

“It’s gradually filling in the void of ignorance that science has about weather in certain parts of the ocean,” he said.

A lack of standardized observation methods have posed a challenge, Ummenhofer said. Wind strength, for example, is based on descriptive terms, so researchers are relying on the Beaufort Wind Scale, which translates observations to quantitative wind speeds. A “light breeze” means that winds are traveling 4 to 7 miles per hour. A “gale” would mean between 39 and 46 miles per hour.

So far, researchers have pored through approximately 60,000 daily weather entries, Ummenhofer said. The team has gone through about 100 logbooks of the approximately 4,500 in New England.

The project was slowed when the pandemic temporarily shuttered the doors of the New Bedford Whaling Museum and other libraries, and remains in its early stages. But

Ummenhofer and Walker hope to eventually expand their research, exploring whaling logbooks from beyond the United States.

“I think it will keep us busy for the next decade for sure,” Ummenhofer said. “The more data we have, the more there is to compare for our understanding of climate variability.”

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