2024 IMPACT REPORT

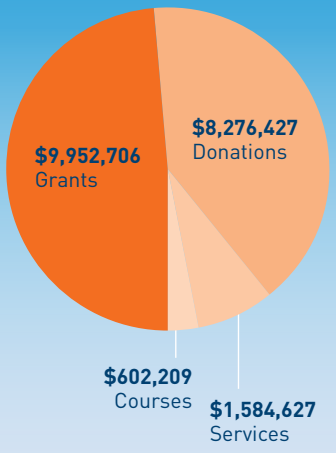
The great mysteries of ocean science are everywhere. You'll find them in sulphur-breathing microbes deep in the Earth's crust, in Maine's shifting kelp forests, and in the estimated nonillion (that's a trillion billion billion) viruses in the ocean.

Our scientists push the boundaries in each of these areas, illuminating the unknown, tackling global challenges, and creating new ways to unlock the ocean's potential. Your support makes it all possible — and is as important as ever.

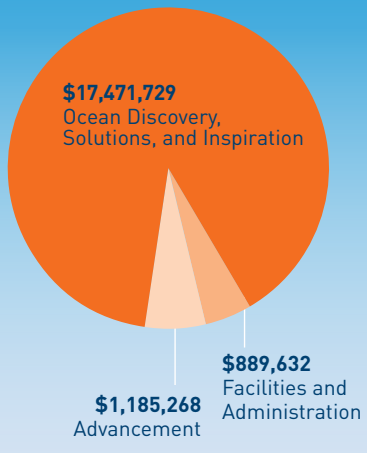
2024 FINANCIALS

JULY 1, 2023 - JUNE 30, 2024

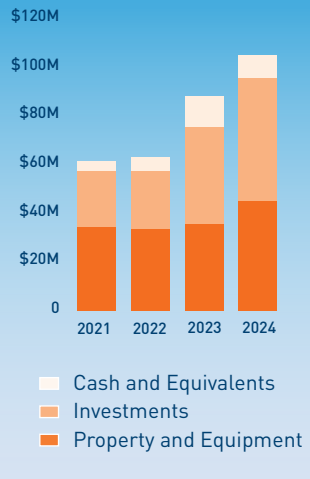
REVENUE **$ 20,415,969** Total



EXPENSES **$19,546,629** Total



ASSETS 2021 – 2024



View our audited financial report at bigelow.org/financials.

“This report includes just a few examples of the work you’ve helped enable over the past year. We hope you are as proud of them as we are.”

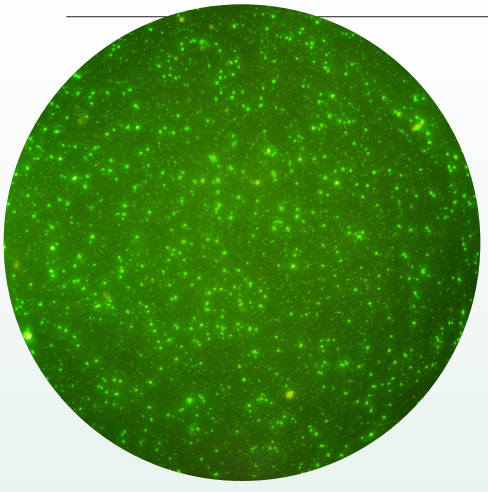
Deborah A. Bronk, Ph.D., President and CEO

Photo: Yoon S. Byun

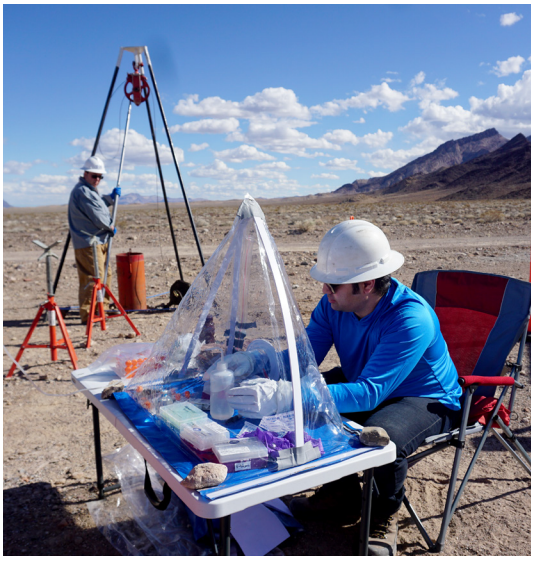
Ocean Health and Function

We reveal how the ocean works and how to better care for our planet.

Our scientists began intensive monitoring efforts around Casco Bay last year to understand the prevalence and impact of PFAS on Maine's coastal environment. They're relying on our newly established PFAS facility, which has significantly increased testing and research capacity for our state, to understand this family of pollutants that are of growing public and environmental health concern, known as the "forever chemicals." **bigelow.org/2024-PFAS**



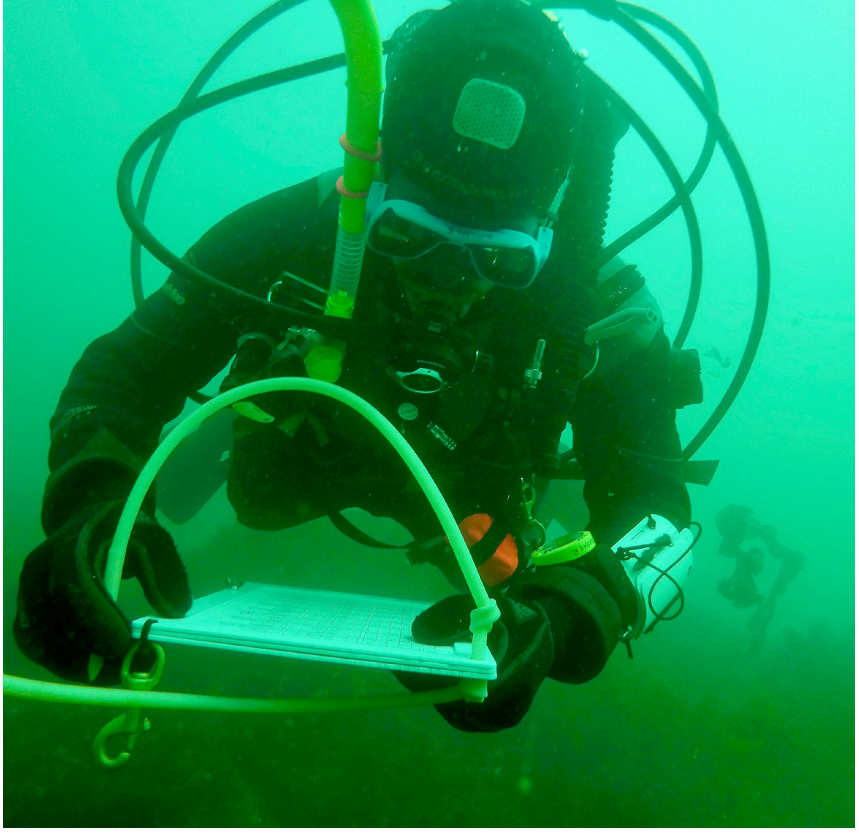
There are more viruses in the ocean than stars in the observable universe. Collectively, they have a profound influence on both microbial evolution and nutrient cycling in the ocean. Our scientists are making significant strides to illuminate the mysteries of marine viruses and develop the tools needed to study these tiny and diverse entities. **bigelow.org/2024-marine-viruses**



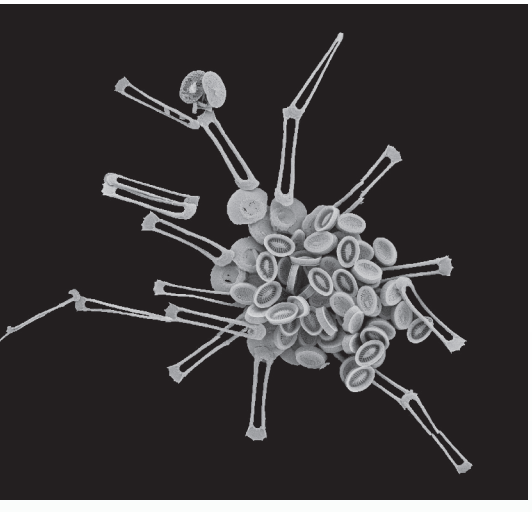
Our scientists have been working on an innovative method to link the genetics and function of individual cells living in low-oxygen environments, and last year, they refined their method with samples from an aquifer deep below Death Valley. Their approach is advancing research on the form and function of microbial communities living in extreme environments from the deep sea to space. **bigelow.org/2024-subsurface-life**

Our Quantitative Marine Disease Ecology Lab works to understand the prevalence, spread, and causes of marine pathogens — and uncover the economic and health impacts of those diseases across the ocean ecosystem. The lab hosted three interns last summer to address those questions for emerging diseases affecting the crabs and lobsters on which New England communities depend. **bigelow.org/2024-marine-disease**

Photos, clockwise from top left: Christoph Aeppli, Duane Moser, Reyn Yoshioka, Julia Brown



Kelp forests are a foundational — and essential — feature of Maine's rich coastal ecosystem. But they're vulnerable to overfishing and, increasingly, rapid ocean warming. Last year, our scientists put together the first in-depth census of Maine's kelp forests in almost 20 years, showing widespread collapse along parts of the coast, as well as significant regional differences that could inform management and resilience efforts. **bigelow.org/2024-shifting-kelp**



Our scientists recently examined decades of data on plankton communities to find out how the proportion of mixotrophs — microbes that can shift how they feed in response to their environment — is changing over time. Their findings provide insight into both the role of mixotrophs in marine ecosystems and how those systems may respond to changing ocean conditions. **bigelow.org/2024-flexible-feeders**

Our Changing Planet

We focus on key species to predict, combat, and adapt to environmental change.

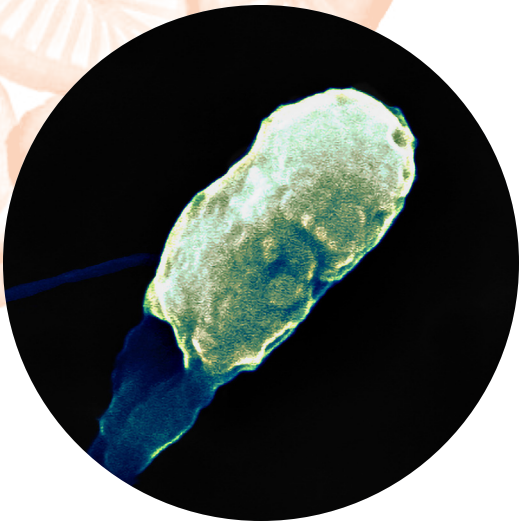
For 25 years, the Gulf of Maine North Atlantic Times Series has been an invaluable tool to document the rapid changes underway in this vital body of water. Last year, our scientists secured new funding that, coupled with Bigelow laboratory's new research vessel, will enable them to continue GNATS and revamp it with the latest advances in satellite oceanography. **bigelow.org/2024-GNATS**

Zooplankton may be the smallest animals in the ocean, but they have an outsized role in the marine ecosystem. Our scientists have been studying zooplankton like copepods to understand how these microscopic, abundant, and vitally important animals will respond to a warming ocean — and what that could mean for the marine food web that depends on them. **bigelow.org/2024-zooplankton**

Photos, clockwise from top right: Cath Mitchell, David Fields, Colin Fischer

The Ocean's Potential

We develop the tools needed to unlock the opportunity of the ocean.



Last year, our scientists published research showing how a group of single-celled algae called glaucophytes use chemical cues to communicate stress information, an ability once thought unique to plants. The discovery sheds light on the evolutionary history of microalgae and their role in aquatic ecosystems. It could also open the door to new research on algae-based products leveraging glaucophytes' unique characteristics.
bigelow.org/2024-cell-communication

Many researchers have begun looking more seriously at the possibilities of leveraging natural ocean processes to remove excess carbon dioxide from the atmosphere with techniques like ocean iron fertilization. Our scientists have continued to engage in difficult discussions on the potential benefits and consequences of these different strategies, including publishing a high-profile op-ed last year on the urgent need and priority questions for this strain of research.
bigelow.org/2024-iron-fertilization

Our scientists have partnered with the USDA Agricultural Research Service and a federal interagency working group for the past three years on a comprehensive evaluation of U.S. farmed seaweeds and seagrasses. Their new report, unveiled last year, highlights the needs and opportunities to responsibly leverage the emerging seaweed industry to enhance ocean health and drive economic activity on the working waterfront.
bigelow.org/2024-seaweeds

Last year, our scientists received a significant award from the National Science Foundation to fund the new Maine Algal Research Infrastructure and Accelerator project. MARIA will strengthen biological research infrastructure, create education and workforce development opportunities, and bring together interdisciplinary teams to tap into the endless possibilities of algae and get algae-based solutions to market.
bigelow.org/2024-algae-solutions

Photos, clockwise from top left: John Burns, European Space Agency, Greta Rybus

BIGELOW LABORATORY FOR OCEAN SCIENCES is an independent, nonprofit research institute that studies the foundation of global ocean health and uses our discoveries to improve the future for all life on the planet.

LEARN MORE about our ocean discoveries, solutions, and inspiration at **bigelow.org**.

Bigelow LABORATORY / NEXT 50

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