

welcome

from the executive director

The Maine Discovery Museum (MDM) is a regional and state resource with a 20+ year history of serving our community. MDM helps people of all ages to discover the world around them through creative exploration and science.

In the last ten years, we've expanded in the areas of science, technology, engineering, and math (STEM), through educational outreach and programming, with much of it as STEAM programming. This includes not just our vacation camps and daily programming, but also our programs that happen outside of the museum. Some of these programs are part of a nationwide network and others are homegrown, with the most well-known example being the Maine Science Festival (MSF).

I was fortunate enough to meet up with some colleagues in the museum field recently, and we were talking about access and how we try to ensure it in different ways. One of our colleagues in Portland noted they have a goal of having 20% of their programs available at no or low charge to participants to maintain accessibility for all. I'm proud to note that MDM's programming – which is heavily focused on STEM – has been hitting well beyond this mark for years. Since 2014, we have provided 95% of our mission–focused programming free–of–charge to participants. This includes elementary school students, families, science enthusiasts, and many kids in Maine who we reach with our science education/enrichment programs that supplement the classroom instruction.

We have seen the demand for these kinds of programs skyrocket since 2015, and the growth of our STEM offerings has spread all over Maine — particularly in central, northern, and Downeast Maine. When all our programming and educational outreach is taken together, it is clear that MDM has become the central hub for science in Maine.

One of the best things we hear at our museum, and with our outside programming is, "I had no idea that we had this in Maine!" We also hear from kids that they love to explore both what we have in the museum and the programs we run. We've tried to capture that with the pictures and information found in this impact report. And we plan to keep on cultivating curiosity for years to come.

Excited for the future!

Kate Dickerson Executive Director Maine Discovery Museum







Mission: The Maine Discovery Museum helps people of all ages discover the world around them through creative exploration and science.

Maine Discovery Museum (MDM) began with a public forum in 1997 and opened its doors in February 2001. In our first 20 years, MDM has achieved far more than its founders could have imagined. We've welcomed well over one and a half million visitors, played a central role in Downtown Bangor's growth and development, and expanded our reach throughout Maine. MDM has also become a critical player in the education of Mainers from all over the state, especially in science, engineering, technology, and math.

Maine Discovery Museum has been positioning itself at the forefront of public science understanding and education in Maine, emphasizing the pursuit of scientific literacy and creative problem-solving. We have developed deep institutional knowledge around informal science education and programming and long-standing partnerships with formal educators and STEM practitioners at every level. MDM uses a collaborative approach to our education and programming focused on achieving science literacy earlier and reaching a more significant percentage of Maine's population. This results in broader education, scientific awareness, and career readiness for the 21st century.





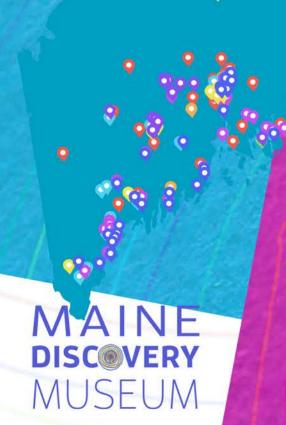
DECADES OF

discovery

The Maine Discovery Museum has a positive economic impact on the region. In the past year, the museum has generated over \$2 million in economic activity, including visitor spending and job creation.

As the hub of informal STEM education in the state, MDM reaches rural and underserved communities all year long, meeting Mainers where they are with our outreach programming, which has grown over 600% since 2017.

We bring our STEAM programming all around the state each year.





70,000 program participants outside of the Museum

2500 birthday celebrations

6300 campers

17,000 fieldtrippers21,000 miles traveled

2022: The Warming Sea, a symphonic exploration of hope in the climate crisis, premiered at the Maine Science Festival.

Science Teacher Academy was created by the Museum's education team.

2021: MDM partnered with Bangor School Department to provide hundreds of bespoke Discovery Kits to elementary schools (teachers and students) to help address some of the learning losses caused by the COVID-I9 pandemic.

2020: Launch of the Maine Science Podcast. Each episode is a conversation with a Mainer working in science, engineering, technology, and innovation, and a deep-dive into who they are and what they do. The format allows us to explore more about the science and the person doing it. With the Maine Science Podcast, we continue to celebrate and explore Maine science and people.

- Created and distributed Discovery Kits.
- Created MSF 5 Minute Genius[™]. Trading Cards aren't just for sports anymore! The MSF has created trading cards featuring many remarkable people who have presented at MSF Showcase Event. 5 Minute Genius[™]. Collect them all!
- IF/THEN. MDM is one of the first recipients of an IF/THEN grant. IF/THEN® activates a culture shift among young girls to open their eyes to STEM careers. IF/THEN® works to further advance women in science, technology, engineering, and math (STEM) by empowering current innovators and inspiring the next generation of pioneers.
- **2018**: Maine Invention Convention becomes a program of Maine Discovery Museum.
- **2017**: GSK Science in the Summer program outreach jumped from a target of 240 children (which we exceeded by 20%) to 640 children in 2017. In 2018, we reached over 700 children and 300 adults. As a result of these successes, MDM presented at the annual national GSK meeting in Philadelphia.

2016: MDM was awarded the Franklin Institute's GSK: Science in the Summer grant. MDM is part of a national network of organizations (one of only four in New England, the only one north of Boston) that bring STEM outreach to rural and underserved communities statewide.

This program aims to inspire the next generation of scientists by providing opportunities for children to embody science careers, think scientifically, practice authentic science techniques, and have fun!

2015: Launch of the Maine Science Festival (MSF), Maine's first and only science festival. Using a wide array of events, the MSF is an all-ages celebration of national and world-leading science currently happening in Maine. By 2023, the MSF had grown from 2.5 to 5 days, and welcomed over 70,000 festival attendees since 2015.

2010: MDM joined the National Informal STEM Education Network (NISE Network) in its first round of expansion. The NISE Network brings people together to engage in STEM, understand our world, and build a better future for everyone, which aligns with MDM's mission.







The Ripple Effect of STEAM Programming

MDM helps people of all ages to discover the world around them through creative exploration and science. Discovery often requires interactivity with in-person and hands-on experiences. MDM's programming utilizes these techniques.

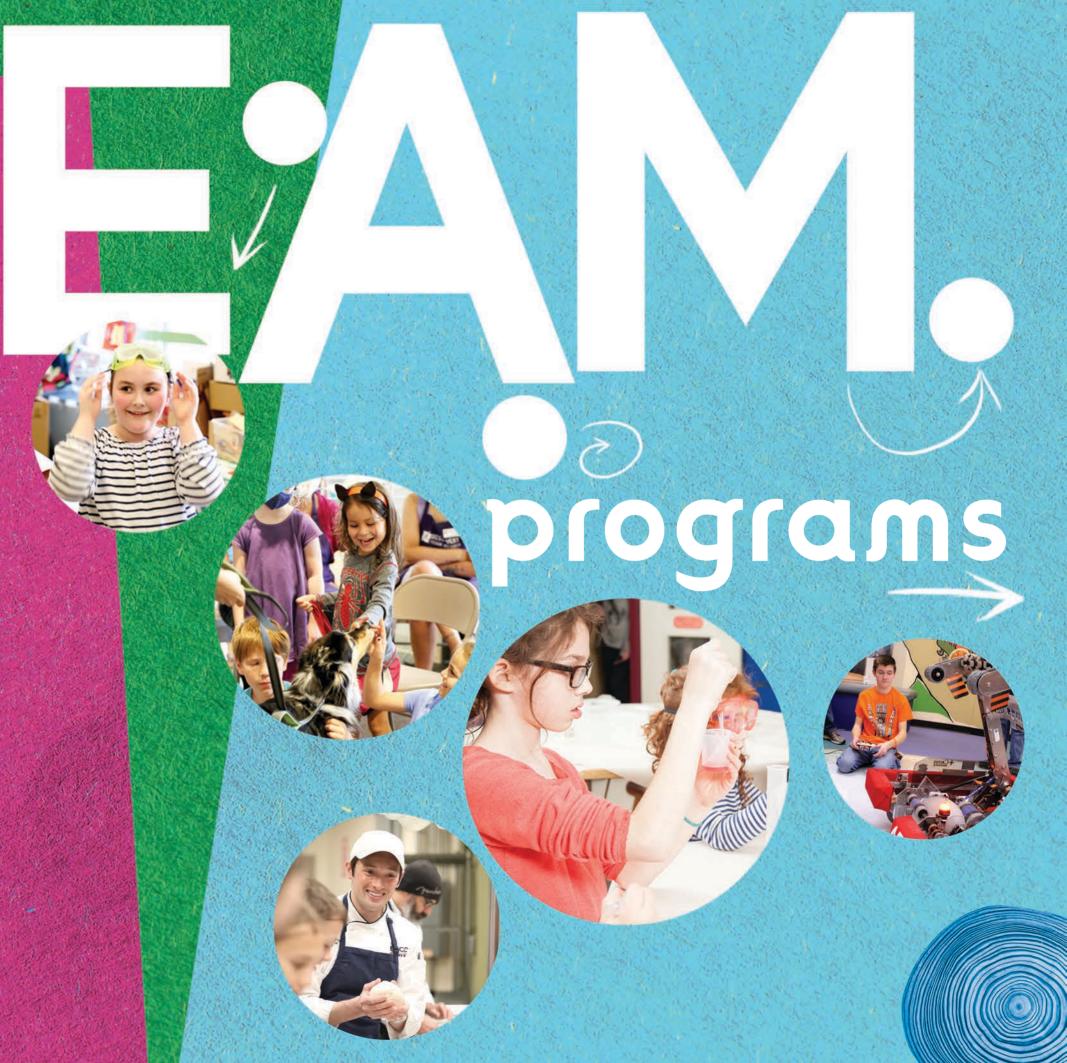
Beginning in 2012, MDM has developed programs and a focus in the areas of science, technology, engineering, and math (STEM), much of it also incorporating art and becoming STEAM programming.

Why are programs like these so important?

Research has shown that 95% of the population learns about science outside of the classroom (Falk & Dierking, 2010). And when you look at school-aged kids, more than half a child's waking hours are spent outside of formal school environments (National Science Teacher Association, 2012). A great majority of people develop an interest in science through informal learning settings such as museums and the informal education that is provided by MDM – both in our building and through our outreach programming – are vital for kids' education as well as helping others continue science learning beyond school.

We are proud to be part of the science education ecosystem in Maine, and will continue to highlight and explore the science that is critical to Maine so it is better seen and understood by the public.

MAINEDISCOVERYMUSEUM.ORG/EDU





Programs

The Maine Discovery Museum has a strong commitment to the community it serves. The museum offers a variety of programs and events that are free or low-cost to ensure that all families have access to educational opportunities. The museum partners with local schools, libraries, and community organizations to provide outreach programs and promote educational opportunities throughout the region.







Daily **Programs**

We believe introducing science, technology, engineering, art, and math (STEAM) to people of all ages, especially our youngest audience, will cultivate curiosity, inspire lifelong learning, and help Maine prosper and lead in the 2lst Century.

Camp

During school vacations, we provide a fun and safe environment for children ages 5-12, to explore science, technology, engineering, art, and mathematics. Through hands-on activities and free-play, campers can discover that science is fun. We believe that introducing STEAM concepts at a young age will inspire life-long curiosity and learning.



Each episode is a conversation with a Mainer working in science, engineering, technology, and innovation. MSP invites listeners to discover a wide range of science happening in Maine and how scientists' life and career paths lead them to their field.

Listen and subscribe wherever you get your podcasts.



My Day to Play is a grant-funded program developed in collaboration with MAIER (Maine Access to Inclusive Education) to provide children with disabilities, on the autism spectrum, and with other sensory needs with a safe, comfortable environment to explore! My Day to Play also aims to give families who face similar challenges a place to connect.



Robotics Factory is MDM's robotics afterschool club and summer camp where children design, build, and code their own robots to complete challenges. The afterschool club runs in six sessions throughout the school year, giving participants opportunities to engage with LEGO robots, 3D printers, and other technologies.



Trading cards aren't just for sports anymore!
The Maine Science Festival has created trading cards featuring many of the remarkable people who have presented at our Showcase Event, 5 Minute Genius™.
Collect them all!

MAINE SCIENCE FESTIVAL

MDM's largest program is the Maine Science Festival, which is like an arts or music festival but all about science. The MSF Maine's first and only science festival, launched in 2015 and showcases the science (and technology) happening in Maine for a general public audience, using the format and structure of an arts or music festival with events for all ages. Using forums, workshops, talks, art exhibits, film screenings, and hands-on activities, we produce 70+ events over five days that focus on the science happening and being used in Maine. Since the MSF launched in 2015, we have had more than 60,000 people join us to celebrate Maine science - even through the pandemic.

The MSF audience is literally "cradle to gray," with the through-line centered on discovering the world around us. Within this large audience, we have four main audiences that we serve: families; students K-I6; science enthusiasts of every age; and the general public. We run the full MSF at no charge to attendees, except for the headliner event, and even with that, we work to keep it reasonable (for example, student tickets at \$10, others at \$15-20). Each of these audiences come to Bangor from throughout Maine (and beyond), and we are committed to bringing Maine science to the public.





Science on Tap at Mason's Brewing Company, MSF 2023



Teen Tech Night, MSF 2023



5 Minute Genius™ MSF 2023

Science is Everywhere

Every architect and engineer at our firm started out as a kid who wanted to understand how things work... and now uses science every day in (their) profession. The Maine Science Festival is a great way to spark that curiosity in learners of all ages.

Doug Whitney, WBRC Architects

As part of the MSF, we host a Field Trip Day for approximately 350 7th & 8th graders from all over the state, which is set up to show those students all the ways science and engineering is used in Maine, as presented by representatives from universities, colleges, community colleges, nonprofits, and industry. Like the rest of the MSF (other than the headliner) this is provided free-of-charge to the schools.

One of the most important parts of the MSF has been making sure we have artists and arts organizations involved in one form or another. Poetry readings, Science of Stringed instruments, Science of Dance, Your Brain on Improv, Nature Illustration, are just a few examples. This lets us reach across the artificial silos that have been built up and (hopefully) start to break them down. It also helps us reach people who may not otherwise be interested in science - the improv and dance sessions, for example, got a whole new group of people to attend the MSF.

The only requirement/theme of the MSF is that work be done in Maine. And the only excepttion to this rule has been the headliner event (which is also the only event that has a fee to attend). For that event, we bring in a nationally known person (e.g, Nate Silver from Five Thirty Eight in 2016; Robert Krulwich from RadioLab in 2018; Academy Award winning computer scientist from Pixar Tony deRose, 2015) or a show (You're the Expert in 2017 and Science Vs in 2019).



5 MINUTE SENIUS

5 Minute Genius™ is a MSF Showcase event (it happens every year). We convene "rock star" scientists/researchers from all over the state and give them five minutes to explain their work in non-jargon terms. Once the timer goes off (as rung by a cowbell - really) there's five minutes of questions from the audience (who get to feel like geniuses as a result of hearing about all the pre-

tions and the Q&A - are firm, which makes this (hands-down) the hardest job of the MSF.

Watch 5 Minute Genius[™] presentations from our past festivals on YouTube!

The MOSAIC Expedition from our past A Year in the Arctic Ice - Presented by Kevin Posman

Marc Oggier

4m 33s













SCIENCE TEACHER ACADEMY

Science Teacher Academy

James Page, Chancellor Emeritus of The University of Maine System, has called the Science Teacher Academy "...one of the most exciting, groundbreaking educational initiatives I have encountered in years." The Science Teacher Academy (STA; www.scienceteacheracademy.org) is a program to address the gap in professional development opportunities available for elementary school teachers to more effectively and confidently teach science. The STA partners with teachers, administrators, schools of education, museums, and other informal science organizations to significantly expand the science taught in elementary schools in Maine and better prepare those teachers in science teaching.

MAINE INVENTION CONVENTION

Maine Invention Convention

The Maine Invention Convention provides students with the opportunity to plan, design, and create inventions that solve real world problems. The invention process promotes innovative problem solving and inventing by Maine middle school students.

Our mission is to provide Maine students with the opportunity to explore, design, and invent creative solutions to problems in their own world. The skills learned through the invention process are lifelong skills that students will be able to carry with them throughout their lives.

The Invention Convention Curriculum uses a framework that follows the seven steps of the invention process. This process introduces students to entrepreneurial concepts to get them thinking about what happens beyond the invention process. Students complete step-by-step lessons to develop an invention that is original and well-constructed and that solves a real-world problem.



MAINE DISCOVERY MUSEUM





GSK Science in the Summer

Sponsored by GSK and offered in partnership with The Franklin Institute (FI), this program aims to increase children's value of and confidence in doing science and pursuing STEM careers, especially for children from underrepresented backgrounds in STEM fields. As one of 50 program leads nationwide, MDM reaches more than 800 2nd-6th grade students from diverse communities each summer. In 2021 the FI told MDM that our program is the most successful in the network, consistently exceeding our enrollment goals while delivering hands-on STEM enrichment Maine-wide.

Learning Ecosystems Northeast (LENE)

MDM is one of 11 science center partners working with the Gulf of Maine Research Institute through a NASA grant who are developing ways to engage science center visitors in data-rich investigations of changing ecosystems using locally relevant examples. This work is centered around a community of practice, where science centers throughout the Northeast can work in collaboration to achieve a shared commitment to building climate and data literacy in their communities.

Mission2Mars

MDM is building upon our existing relationship with the Franklin Institute, and we are one of five partners the Franklin Institute is working with for cohort two. Mission2Mars is a nationwide program developed by The Franklin Institute Science Museum and hosted by MDM. It catalyzes community partnerships between museums, amateur astronomers, and community-based organizations (CBOs) to deliver astronomy and space exploration activities to youth and families, with the primary subject content is NASA's upcoming Artemis missions, returning humans to the moon by 2028.

Connected Learning Ecosystems

Connected Learning Ecosystems (CLE) focuses on building partnerships and pathways that provide youth with opportunities to engage in locally relevant climate-connected learning experiences. MDM is creating a Bangor region CLE as part of our work in the LENE project. With this program expansion, MDM is working in three different areas of this NASA / GMRI project: working on our own exhibits/projects, anchoring a CLE in the Bangor area, and being a state-wide resource for all the CLEs around Maine.

NISE Network

MDM has been part of the National Informal STEM Education (NISE) Network since 2010. The NISE Network brings people across the world together to engage in STEM, understand our world, and build a better future for everyone.

We have collaborated with the NISE Network to bring several activities and exhibits to the museum including NanoDays kits, Nano exhibit, Making Stuff kit, Building with Biology kit, Frankenstein200 kit, Earth, Space, and Universe kit and exhibit, Moon Adventure Game, and Build a Mars Habitat exhibit

We are very fortunate to have partners like you; the few that have been with us the longest and continue to find new ways to engage your community with our resources. Thank you for your participation, your collaboration, and for sharing back about your wonderful work so we can all learn from it!

Christina Leavell, NISE Network Community Manager



Discovery Kits A Pandemic Pivot

To fullfill our mission during the COVID-I9 pandemic, we designed and assembled a variety of Discovery Kits featuring themes including chemistry, biology, oceanography, and climate change.

Over IOOO Discovery Kits were delivered around the state, including the six most underserved schools in the Bangor area.



Pages from past Discovery Kits activity books



For Maine to prosper and lead in the 21st Century, it's clear that science understanding, appreciation, and education need to reach as many Mainers as possible.

The Maine Discovery Museum is an invaluable resource for the community it serves. The museum's commitment to education and community outreach has made a significant impact on the region. The Maine Discovery Museum is poised to continue its important work in the years to come, inspiring the next generation of scientists, engineers, and creative thinkers.

Important Resource

Our outreach programs include the Maine Science Festival, Maine Science Podcast, GSK Science in the SummerTM, and Discovery Kits, STEM outreach to rural communities, with all of these also reaching many disadvantaged and underserved youth. We have seen the demand for these kinds of programs skyrocket over the past five years as the growth of our STEM offerings has spread all over Maine—particularly in central, northern, and Downeast Maine. In many areas, these programs fill a gaping hole in science education in our state. But they also encourage lifelong learning and continued exploration by people who are well beyond the years of formal learning.





You brought fun, hands-on science to our community that most parents and children had never even heard of! Thank you for really broadening our kid's "science horizon"!

Joanne Ewell, Pittsfield Science in the Park Festival

MDM's Science of Baking event
Eastern Maine Community College, 2023



Thanks to our Partners & Supporters

A/Z Corporation Acadia Brass Ensemble Acadia Hospital Acadia National Park Alba-Technic Americans Who Tell The Truth Axiom Backyard Farms Bangor Area Community Archives Project
Bangor Area Stormwater Group
Bangor Arts Exchange
Bangor Daily News
Bangor Greendrinks
Bangor Land Trust Bangor Makerspace Bangor Parks & REC Bangor Police Department Bangor Public Library **Bangor Savings Bank Bangor School Department** Bangor Symphony Orchestra Bates College Belgrade Regional Conservation Alliance Bicycle Coalition of Maine Biddeford School Bigelow Laboratory for Ocean Sciences Black Bear Brewing Blue Hill Heritage Trust

bluShift Aerospace

Boys & Girls Club of Bangor Brewer Robotics

Caleb Charland (artist)

Camden National Bank

Central Street Farmhouse

Challenger Learning Center of Maine Fran Hodgkins (author)

Children's Museum in Portland Christine B Foundation

Chuck Carter

City of Bangor
Climate Change Institute
Coastal Maine Botanical Gardens

Colby College
College of the Atlantic
Consigli Foundation
Cornerstones of Science

Craig Brook National Fish Hatchery

Criterion Theatre Cultural Alliance of Maine Curran Homestead

Dana Strout (attorney) Danielle Kennedy (actor) Darling Marine Center

Dermarus, Inc.

Digital Equity Center
Double Blue Analytics
Dover STEM hub

Downeast Salmon Federation

Eastern Maine Community College
Eastern Maine Development Corporation
Eastern Maine Medical Center/Northern Light

Educate Maine

Efficiency Maine Elizabeth Whalen Designs

Etna Elementary School - Summer school

Fireside Inn and Suites

Flagsuit LLC

FMI/Spirit Aerosystems

Fogler Library Forest Society of Maine Fork and Spoon

Gary Hoyle (artist) **GE Power** Geaghans General Dynamic Bath Iron Works George J. Mitchell Center for Sustainability Solu-**Girl Scouts of Maine** Glenburn Summer REC

Frank Manzo (artist)

riends of Casco Bay

GoLab Good Shepherd Food Bank

Gordon Smith (Maine State Government) Governor's Energy Office

Great Pond Mountain Trust Gulf of Maine Research Institute Habitat for Humanity, Bangor

Hammond Street Senior Center

Hampden Academy Harbor House

Hardshore Distilling Company

Hartland Public Library Hermon Elementary School REC

High Altitude Ballooning - University of Maine

High Touch Courses Hirundo Wildlife Refuge

Hudson Museum

Humane Society of Bangor

Hurricane Island Center for Science and Leadership Husson University

Husson University - Rho Chi Honor Society

Husson University - iEX Center Husson University - College of Science & Human-

ities and School of Nursing

IDEXX Insource Renewables Invention Convention

Jill Pelto (artist) Karen Talbot (artist)

Katie Coppens (author) Kennebunk Free Library

Kim Bernard (artist)

Kim Ridley (author) Kingfish Zealanc

Kinotek Kleinschmidt

Lee Academy Liz Cutler (artist)

Lobster Unlimited

Lucas Richman (Composer)
Mad Science of Maine
Maine Aquaculture Association
Maine Audubon

Maine Brewer's Guild

Maine Center for Coastal Fisheries

Maine Climate Council

Maine Coast Heritage Trust Maine Community College System Maine Contemporary Archives

Maine Education Association

Maine FabLab

Maine Forest and Logging Museum

Maine Geography Alliance Maine Hackers/Hacktivate

Maine Heritage Timber

Maine IT Maine Lakes Society

Maine Maritime Academy

Maine Math and Science Alliance

Maine Medical Center Research Institute

Maine Partnership for Environmental Stewardship

Maine Robotics

Maine School of Science and Math

Maine Science Teachers Association

Maine SeaCoast Mission
Maine Space Grant Consortium

Maine State Museum

Maine Technology Institute
MaineHealth Institute for Research

Manufacturing Association of Maine Margaret Chase Smith Policy Center Margaret Shaw Chernosky (geospatial educator) Marin Skin Care

MDI Biological Laboratory

ME Board of Pesticides Control |

Department of Agriculture, Conservation, & Forestry

ME House of Representatives

ME House of Representatives
MedRythms
Mercy Hospital
Millinocket Library
Millinocket Regional Hospital
Mossy Ledge Spirits
Mt. Blue Middle School - Summer School
Mt. Washington Observatory
Muriel Hendrix (author)

Nate Silver - FiveThirtyEight National Weather Service (NOAA)

Nature Conservancy NESCOM - Husson University

Newport Cultural Center

NOAA Fisheries

Old Town Canoe

Orono Brewing Company
Owls Head Transportation Museum
Pemaquid Oyster Co./Pemaquid Mussel Farm
Penobscot Community Health Care

Penobscot County Bee Keepers

Penobscot Home Improvement

Penobscot Theater Company

Pittsfield Public Library

Pratt & Whitney

Project>Login
Pulp & Paper Foundation
Puritan Medical Products

Queen City Cinema Club

Rafael Grossman (Surgeon, Health Care Futurist

Rock & Art Shop

Rocky Coast Consulting

Saco River Dyehouse Schoodic Institute at Acadia National Park

Science Around ME

Science Dogs of New England

Sea Coast Vegetables Sea Dog Brewing Company Sea Farm Explorer

Somerset Elementary School Southern Maine Community College Spirit Aerosystems (prev Fiber Materials Inc.)

Texas Instruments
The EDGE Program
The Jackson Laboratory
The Nature Conservancy
The Neighborhood - Winslow
The Neighborhood - Vassalboro
The Telephone Museum
Thomas College

Town of Stonington
Transportation Infrastructure Durability Center

Tremont Condolidated School

UK Science & Innovation Network - British Consulate

United States Department of Agriculture Unity College University of Maine

Advanced Structures and Composites Center

Aquaculture Research Institute
Center for Cooperative Aquaculture Research
College of Education and Human Development

College of Engineering and Computing
College of Liberal Arts & Sciences
Cooperative Extension

Department of New Media
Department of Anthropology
Department of Chemistry Department of English

Department of History
Department of Mathematics & Statistics
Department of Physics and Astronomy

Food Science Club Foster Innovation Center Intermedia Programs

Maginnis Lab
Office of the Vice President for Research and
Dean of the Graduate School
School of Biology & Ecology
School of Economics
School of Food and Agriculture
School of Forest Resources
School of Marine Sciences
Virtual Environment and Multimodal Interaction (VEMI) Laboratory
WiSe-Net Lab
Zillman Art Museum

WiSe-Net Lab
Zillman Art Museum
University of Maine at Farmington
University of Maine at Fort Kent
University of Maine at Machias
University of Maine at Presque Isle
University of Maine System
University of New England
University of New England - Chemistry Club
University of New England - School of Mathematical and Physical Sciences
University of Southern Maine
Valentine Footwear
Valt Enterprises

Versant Power Astronomy Center and May nard Jordan Planetarium Wabanaki Youth in Science (WaYS) Program

Waterville Public Library Waterfront Concerts

Wells Nature Preserve Wild Cow Creamery

You're the Expert

Winterport Boot Shop WLBZ

Woodward Curran York County Community College You Be The Chemist

