2020 Maine State Science Fair – Student Awards

1. Grand Awards
2. Scholarships
3. Category Awards
4. Experiential Awards
5. Special Awards

Grand Awards

1st Grand Award – Vetri Vel, Bangor High School, Real-time Fall Detection System for the Elderly Using Deep Learning and Thermal Imaging

2nd Grand Award – Amara Ifeji, Bangor High School, Using Biofiltration Media and Arbuscular Mycorrhizal Fungi (AMF) to Enhance the Phytoremediation of Heavy Metals from Stormwater Reconstructed Wetlands

3rd Grand Award – Patrick Wahlig, Falmouth High School, Precision and Relative Accuracy of Striped Bass Age, Proportional Length, and Origin Estimates from Both Scales and Sagittal Otoliths of Maine Striped Bass (Morone saxatilis)

Scholarships

The University of Maine

- Meaghan Caron, Bangor High School
- Hannah Dunn, Bangor High School
- Nicholas Geiser, Bangor High School
- Matthew Hafener, John Bapst Memorial High School
- Grace Kessler, Maine Coast Waldorf School
- Rachel Kingsley, South Portland High School
- Ariel Larrabee, Hancock County Technical Center
• Alexander Maker, Washington Academy
• Alexandria Morgan, Washington Academy
• Lilian Nowak, Bangor High School
• Swetha Palaniappan, Cape Elizabeth High School
• Vetri Vel, Bangor High School

**College of the Atlantic**

• Aniela Holtrop, Maine Coast Waldorf School
• Ariel Larrabee, Hancock County Technical Center

**University of Southern Maine**

• Josephine Ek, Robert W. Traip Academy
• Adam Taddia, Baxter Academy for Technology and Science

**University of New England**

• Beau Briggs, Nokomis Regional High School
• Jenna Drake, John Bapst Memorial High School
• Marian Easton, Nokomis Regional High School
• Josephine Ek, Robert W. Traip Academy
• Natalie Shields, Medomak Valley High School

**St. Joseph’s College of Maine**

• Owen Arsenault, Noble High School
• Natalie Shields, Medomak Valley High School

**University of Maine at Augusta**

• Alexandria Morgan, Washington Academy
• Wade Wahlig, Falmouth High School

**Husson University**

• Meaghan Caron, Bangor High School
• Ariel Larrabee, Hancock County Technical Center
• Alexandria Morgan, Washington Academy
• Patrick Wahlig, Falmouth High School
• Wade Wahlig, Falmouth High School

**Category Awards**

**Animal Sciences – Behavior and Ecology**
1st - Alexander Maker, Washington Academy, Using DNA Markers to Determine Source of Origin from a Mixed Stock Fishery - The West Greenland Atlantic Salmon Recreational Fishery

2nd - Lilian Nowak, Bangor High School, Assessing the Water Quality of Arctic Brook and Kenduskeag Stream Using Benthic Macroinvertebrates

3rd - Maria Castellanos, John Bapst Memorial High School, Mean Gulls: A Behavioral and Dietary Study of Larus marinus and Larus argentatus on Mount Desert Rock

Animal Sciences – Nutrition and Development
1st – Patrick Wahlig, Falmouth High School, Precision and Relative Accuracy of Striped Bass Age, Proportional Length, and Origin Estimates from Both Scales and Sagittal Otoliths of Maine Striped Bass (Morone saxatilis)

2nd – Hannah Dyer, George Stevens Academy, How Does Food Type Influence Larval Development in the Green Sea Urchin?

3rd – Amelia Jalbert, Carissa Lucas, Falmouth High School, Ocean Acidification and its Effect on Oyster Shells

Behavioral Sciences – Cognitive Psychology
1st – Molly Hale, Greely High School, Testing Reading Comprehension through Different Mediums: Paper Text vs Digital

2nd – Shruti Joshi, Jack Forester, Ben Sylvester, Falmouth High School, Relationship between Frequency of PowerSchool Logins, GPA, Difficulty of Classes, and Stress

3rd – Teagan Blackie, Old Town High School, Differences in Spatial Awareness by Gender

Behavioral Sciences – Sociology and Mental Health
1st – Isabel Harkins, Boothbay Region High School, Positive School Culture: Why it Must be Prioritized in Order to Improve the Environment and Empower the Students of Boothbay Region High School

2nd – Iann Leigh, Bangor High School, Identifying Shifts in Race and Income that Lead to Voting Differences in Geographically Similar Locations

3rd – Faith Foster, Nokomis Regional High School, Behavioral and Social Differences Between Autistic Males and Females Throughout the Years

Biomedical and Health Sciences
1st – Ijeoma Obi, Bangor High School, Synthesis of an Azobenzene - Based Cholesterol Mimic for Gated Ion Channel Modification

2nd – Arsh Agnihotri, Falmouth High School, Effectiveness of Conventional Environmental Face Masks

3rd – Joshua Bohm, Bangor High School, The LD50 of ECL on Worms

Chemistry
1st – Ogechi Obi, Bangor High School, CNF/Starch/Glycerol Composites Plasticized by MgCl2, NaCl, KCl and AlCl3
2nd – Erin McCarthy, Meaghan Caron, Bangor High School, Synthesis of Butadiene through Fallopia japonica and Lythrum salicaria

3rd – Naomi Noack, Bangor High School, Measuring Ocean Acidification and Possible Correlations to Stormwater

Computer Science and Mathematics
1st – Micah Pietraho, Brunswick High School, Local Search Optimization and the Virtual Keyboard Design Problem
2nd – Nhan Ngo, Simon Socolow, Bangor High School, Developing Deep Learning Networks for Dynamic Traffic Light Control
3rd – Cuthbert Steadman, Graham Glover, Beckett Mundell-Wood, Bangor High School, Using Neural Networks and Drones to Identify and Eliminate the Aquatic Invasive Plant Species Myriophyllum Spicatum

Engineering
1st – Vetri Vel, Bangor High School, Real-time Fall Detection System for the Elderly Using Deep Learning and Thermal Imaging
2nd – Oscar Hennin, Morse High School, The Study of Laminated Timbers
3rd – Minal Iftikhar, Bangor High School, Engineering a Prosthetic Hand through Additive Manufacturing

Environmental Sciences – Water Quality
1st – Jordyn Miller, Bangor High School, Using ArcGIS to Model Water Quality Relationships Based on Lake Inlet and Outlet Location
2nd – McKayla Kendall, Bangor High School, The Effects of The Bangor Mall on Water Quality in the Penjajawoc Stream
3rd – Rain Bugado, Noble High School, Risk of Algal Blooms and Hypoxia in a New England River

Environmental Sciences and Engineering
1st – Leila Davids, Bangor High School, Matlab Code that Identifies Macroinvertebrates to Assess Quality of Maine's Waters
2nd – Quinn DAlessio, Bangor High School, Calculating Phytoplankton Biodiversity using Sampling and AI to Determine Ecological Conditions
3rd – Rowan Andrews, Bangor High School, Using GIS and a Water Quality Index to Analyze Biological Contamination and Observe Chemistry Fluctuation on Littoral Zones of Seven Recreational Freshwater Lakes and Ponds in Maine

Materials Science
1st – Jaylee Rice, Nokomis Regional High School, Will it Waterproof? Creating a Waterproof Coating Without the Use of PFAS
2nd – Ariel Larrabee, Hancock County Technical Center, Biodegradable Fishing Lures
3rd – Payton Ward, Islesboro Central School, Beeswax/Pine Resin Polymer for Mycelium Lobster Buoys
Microbiology
1st – Melissa Tian, Bangor High School, The Effects of Prolonged Nitrogen and Sulfur Deposition on Spore Diversity of Arbuscular Mycorrhizal Fungi (AMF) from Bear Brook Watershed in Maine (BBWM)
2nd – Linh Nguyen, Deering High School, Testing the Effectiveness of TBAB Surfactant-Sorbents in Removing Ampicillin from Synthetic Effluent
3rd – Emma Markowitz, Boothbay Region High School, The Effects of Manuka Honey on Cultured Bacteria from Frog Infections (Thrush) in Equine Frog Tissue

Plant Sciences
1st – Amara Ifeji, Bangor High School, Using Biofiltration Media and Arbuscular Mycorrhizal Fungi (AMF) to Enhance the Phytoremediation of Heavy Metals from Stormwater Reconstructed Wetlands
2nd – Nicholas Geiser, Bangor High School, Engineering a Sensor System for the Monitoring of Blueberry Barrens
3rd – Hannah Dunn, Bangor High School, Caliciopsis Canker Damage on Eastern White Pine Trees in Maine

Experiential Awards

Acadia Institute of Oceanography, Advanced Marine Science Camp

- Hannah Dyer, George Stevens Academy

Hurricane Island, Advanced Marine Biology

- Erin McCarthy, Bangor High School

Special Awards

American Meteorological Society

- Naomi Noack, Bangor High School, Measuring Ocean Acidification and Possible Correlations to Stormwater
- Chloe Grant, Addison Bracken, Rachel Kingsley, South Portland High School, South Portland Air Quality Analysis
- Ogechi Obi, Bangor High School, CNF/Starch/Glycerol Composites plasticized by MgCl2, NaCl, KCl and AlCl3
- Melissa Tian, Bangor High School, The Effects of Prolonged Nitrogen and Sulfur Deposition on Spore Diversity of Arbuscular Mycorrhizal Fungi (AMF) from Bear Brook Watershed in Maine (BBWM)
Association for Women Geoscientists

- Ginny Hunt, Bangor High School, Identifying and Classifying Plastics and Microplastics in Sediments
- Jordyn Miller, Bangor High School, Using ArcGIS to Model Water Quality Relationships Based on Lake Inlet and Outlet Location

Society for Science and the Public Community Innovation Award

- Isaac Burtis, Brunswick High School, Dissolved Oxygen from Kelp

The Jackson Laboratory Promising Scientist Award:

- Margaret Kastelein, Lincoln Academy, Stereotypes and How They Effect Snap Judgement
- Anthony Ayer, Harpswell Coastal Academy, Analyzing the Effects of Various Climate Conditions on the Overall Efficiency of a Solar Panel
- Jett Lindelof, Islesboro Central School, How Does the Method of Crosslinking of Sodium Alginate Mixed with Calcium Chloride Effect it's Performance as a Waterproof Coating in The Marine Environment?
- Aleah Sebrey, Medomak Valley High School, Lytic Tendencies of Bacteriophages Found in Water on Escherichia coli
- Hazel Van Dis, Islesboro Central School, 3D Printing with CNF and Wood Flour

Office of Naval Research Naval Science Award

- Sydney Sheehan, Old Town High School, Ropeless Lobster Trap
- Vetri Vel, Bangor High School, Real-time Fall Detection System for the Elderly Using Deep Learning and Thermal Imaging
- Nathan Chatterton, Boothbay Region High School, Predictive Machine Learning Model for Estimating Driving Force of a Sailboat Using Rigging Data
- Oscar Hennin, Morse High School, The Study of Laminated Timbers

The Reach Award from the Maine Mathematics and Science Alliance

- Kylie Brown, Boothbay Region High School, The Effect of Grade Obsession on How Students Learn, and How a New Grading System Has the Potential to Reverse These Effects
- Collin Peterson, Islesboro Central School, Biodegradable Additives and the Effects on Wood Pellets
- Thomas DiPhilippo, South Portland High School, Researching Green Alternatives to Mercury for the Clemmensen Reduction
- Elizabeth Chattley, Hancock County Technical Center, Blueberry Bushes as an Alternative to Lawns
• Adam Nussbaum, Brunswick High School, Mathematical Analysis of the Ability to Transition to Underground Wiring

Stockholm Junior Water Prize

• Jordyn Miller, Bangor High School, Using ArcGIS to Model Water Quality Relationships Based on Lake Inlet and Outlet Location
• Rain Bugado, Noble High School, Risk of Algal Blooms and Hypoxia in a New England River
• McKayla Kendall, Bangor High School, The Effects of The Bangor Mall on Water Quality in the Penjajawoc Stream
• Mia Wang, Gould Academy, Microplastics
• Amber Halligan, Medomak Valley High School, How Run Off from Different Brands of Fertilizer Impact the Eutrophication Process
• Liulu Yue, Gould Academy, Airborne EM Technology and its Application in Detection of Underground Water

United States Agency for International Development (USAID) Award

• Amara Ifeji, Bangor High School, Using Biofiltration Media and Arbuscular Mycorrhizal Fungi (AMF) to Enhance the Phytoremediation of Heavy Metals from Stormwater Reconstructed Wetlands
• Ogechi Obi, Bangor High School, CNF/Starch/Glycerol Composites Plasticized by MgCl2, NaCl, KCl and AlCl3