

◇ Doherty Envirothon ◇

CLIMATE FAIR



Join us Wednesday, April 12th

in the Library!

◇ 2-3 pm ◇

(For more information, contact Ms. Hill, Room 322)

1 Ticket
♡ Doherty Envirothon
CLIMATE FAIR ☺
Wednesday, April 12th
2-3 pm
media center

In our school's
Media Center

Wednesday, April
14 after school,
2-3pm

Over 50 people in
attendance!



How did we get people to come?



Lots of snacks!!



Door prizes: Raffle for Target gift card (\$25)



“Climate Change 101”

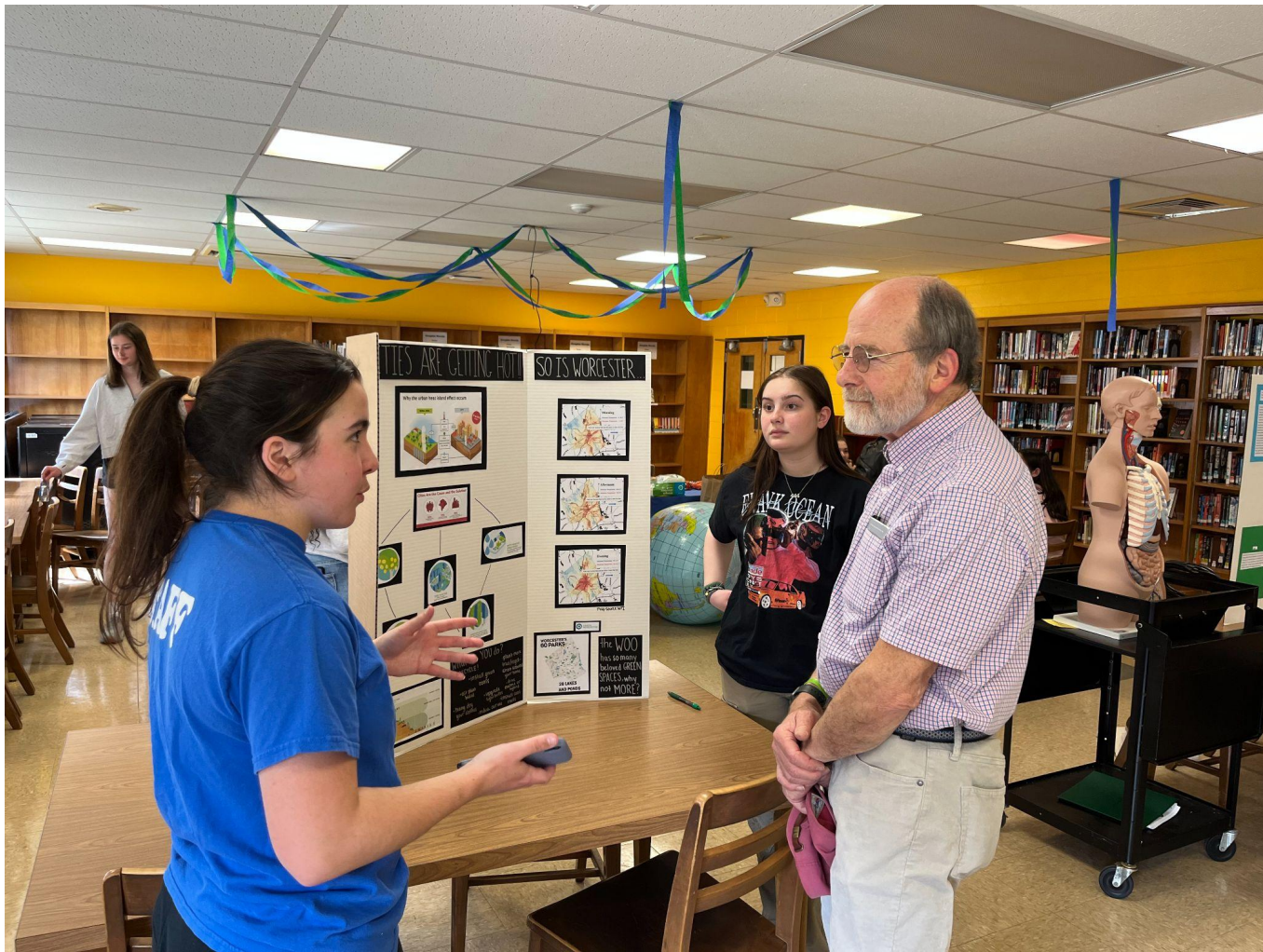
Fun quiz to test
participants' knowledge



Map of Worcester:

Put a pin to show where you live!

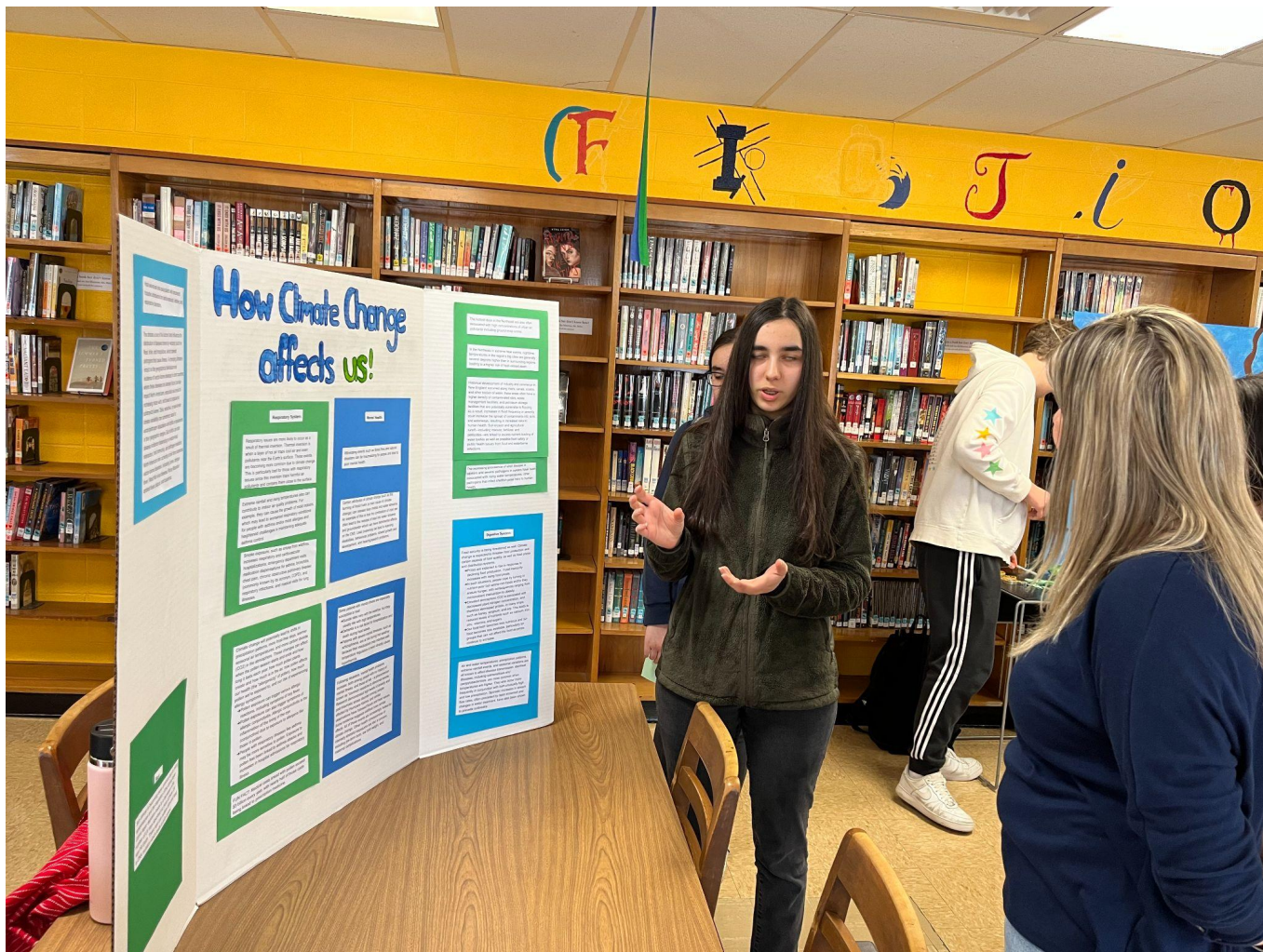
Compare areas that are prone to flooding, most impacted by heat island effect, and location of Environmental Justice populations



Impact of CC on cities (including Worcester!)

Impact of CC on oceans





Impact of CC on human health

Button making!



Pin the leaf on the tree!

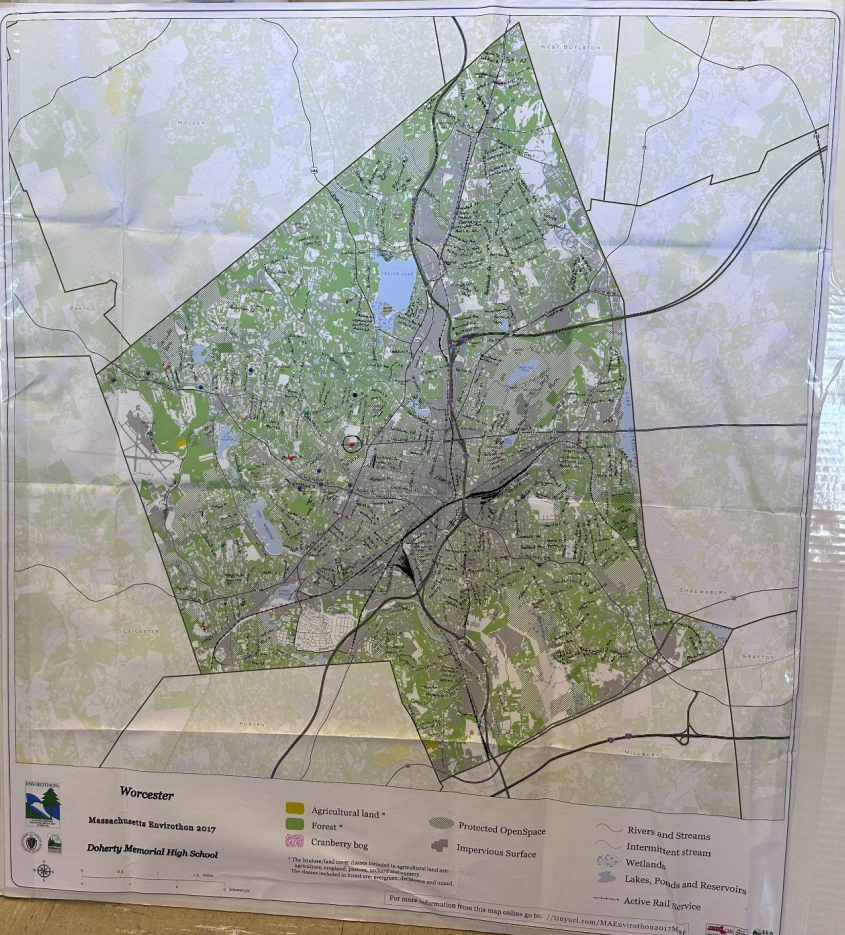
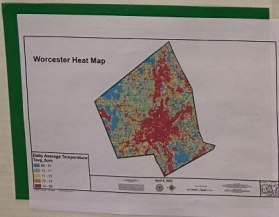
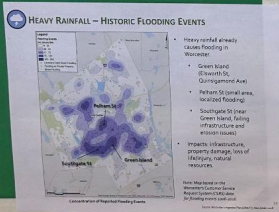
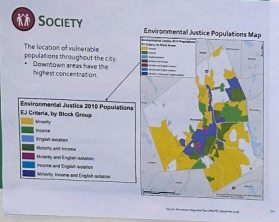


How much did it cost?

\$218 (snacks, decorations, favors, door prizes)

How did we pay for it?

Financial support from Broad Meadow Brook (thank you!)



Climate Change 101

DO OUR QUIZ



Causes and Effects of Climate Change

- Causes**
- Rapid industrialization
 - Fossil fuel
 - Agricultural practices
 - Consumer practices
 - Deforestation
 - Population
 - Deforestation



- Effects**
- Rising temperatures
 - Rising sea levels
 - Weather patterns
 - Melting glaciers
 - Land degradation
 - Loss of habitats and biodiversity

What are the most pressing climate change issues?
Disrupted patterns, rising sea levels, extreme weather, increased risk of drought, forest fires, and water shortages.

By GlobalWarming

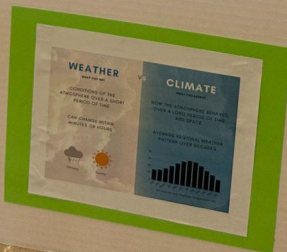
Greenhouse Effect



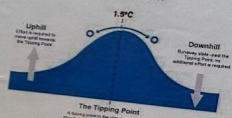
Some sunlight that hits Earth is reflected back into space. While the rest becomes heat.



Greenhouse gases absorb and reflect heat that is lost by Earth, preventing it from escaping into space.



Tipping Point Effect



The Tipping Point

A tipping point in the climate system is a point at which a small change in the system leads to a large change in the state of the system.

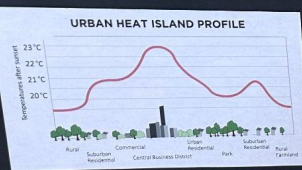


CITIES ARE GETTING HOT!!

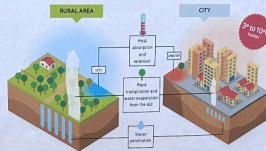
URBAN HEAT ISLAND PROFILE

Temperature after sunset

Zone	Temperature (°C)
Rural	20.5
Suburban Residential	20.8
Commercial	21.5
Central Business District	22.8
Industrial	21.8
Park	20.8
Suburban Residential	21.2
Rural	20.5



The diagram illustrates the wastewater treatment process. It starts in a 'RURAL AREA' with a house and a well. A line labeled 'Pump 1 (raw sewage and effluent)' leads to a 'CITY' area. From there, a line labeled 'Pump 2 (raw sewage and effluent)' leads to a 'Water purification' stage. Finally, a line labeled '99% 100% 100%' leads to a large building in the city.



map source: WPI



Cities Are the Cause and the Solution

- 55% of the world's population lives in cities
- 75% of the world's population lives in cities
- 70% of the world's population lives in cities



What can YOU do?

- RECYCLE!
- install green roofs
- eat plant based
- upgrade light bulbs
- hang dry your clothes
- reduce car use
- plant more trees/vegetation around your home
- drive electric or hybrid
- install cool roofs

**WORCESTER'S
60 PARKS**



**20 LAKES
AND PONDS**

the WOO
has so many
beloved GREEN
SPACES, why
not MORE?

Heat waves are also associated with increased hospital admissions for cardiovascular, kidney, and respiratory disorders.

The climate is one of the factors that influence the distribution of diseases borne by vectors such as fleas, ticks, and mosquitoes, which spread pathogens that cause illness. A changing climate's impact on the geographical distribution and incidence of vector-borne diseases in other countries where these diseases are already found can also impact North Americans, especially as a result of increasing trade with, and travel to tropical and subtropical areas. Daily, seasonal, or year-to-year climate variability can sometimes result in vector/pathogen adaptation and shifts or expansions in their geographic ranges. Such shifts can alter disease incidence depending on vector-host interaction, host immunity, and pathogen evolution. North Americans are currently at risk from numerous vector-borne diseases, including Lyme, dengue fever, West Nile virus disease, Rocky Mountain spotted fever, plague, and tularemia.

How Climate Change affects us!

Respiratory System:

Respiratory issues are more likely to occur as a result of thermal inversion. Thermal inversion is pollutants near the Earth's surface. These events are becoming more common due to climate change issues since this inversion traps harmful air pollutants and contains them close to the surface.

Extreme rainfall and rising temperatures also can contribute to indoor air quality problems. For example, they can cause the growth of mold indoors which may lead to worsened respiratory conditions for people with asthma and/or mold allergies and heightened challenges in maintaining adequate asthma control.

Smoke exposure, such as smoke from wildfires, worsens respiratory and cardiovascular health. Hospitalizations, emergency department visits, chest pain, chronic obstructive pulmonary disease (commonly known by its acronym, COPD), and respiratory infections, and medicine visits for lung diseases.

Mental Health:

Widespread events such as forest fires and natural disasters can be traumatizing for people and lead to poor mental health.

Certain attributes of climate change such as the burning of fossil fuels (a main cause of climate change) can release toxic metals into water streams. An example of this is that the construction of coal can often lead to the release of lead into water streams and groundwater which can have detrimental effects on the CNS. Lead poisoning can lead to learning disabilities, behavioral problems, slowed growth and development, and hearing/speech problems.

The hottest days in the Northeast are also often associated with high concentrations of urban air pollutants including ground-level ozone.

In the Northeast in extreme heat events, nighttime temperatures in the region's big cities are generally several degrees higher than in surrounding regions, leading to a higher risk of heat-related death.

Historical development of industry and commerce in New England occurred along rivers, canals, coasts, and other bodies of water. These areas often have a higher density of contaminated sites, waste management facilities, and petroleum storage facilities that are potentially vulnerable to flooding. As a result, increases in flood frequency or severity could increase the spread of contaminants into soils and waterways, resulting in increased risks to human health. Soil erosion and agricultural runoff—including manure, fertilizer, and pesticides—are linked to excess nutrient loading of water bodies as well as possible food safety or public health issues from food and waterborne infections.

The increasing prevalence of shell disease in lobsters and several pathogens in oysters have been associated with rising water temperatures; other pathogens that infect shellfish pose risks to human health.

Digestive System:

Food security is being threatened as well. Climate change is expected to threaten food production and certain aspects of food quality, as well as food prices and distribution systems.

- Prices are expected to rise in response to declining food production. Food insecurity increases with rising food prices.
- In such situations, people cope by turning to nutrient-poor but calorie-rich foods and/or they endure hunger, with consequences ranging from micronutrient malnutrition to obesity.
- Elevated atmospheric CO₂ is associated with decreased plant nitrogen concentration, and therefore decreased protein, in many crops, such as barley, sorghum, and soy. This leads to reduced levels of nutrients such as calcium, iron, zinc, vitamins, and sugars.
- Our food both becomes less nutritious and our food becomes less available, particularly for groups that can not afford the food as prices continue to increase.

Air and water temperatures, precipitation patterns, extreme rainfall events, and seasonal variations are all known to affect disease transmission. diarrheal diseases, including salmonellosis and campylobacteriosis, are more common when temperatures are higher. They also occur more frequently in conjunction with both unusually high flow rates, often preceded by rapid snowmelt and changes in water treatment, have also been shown to precede outbreaks.

Skin

Skin cancer is becoming more common due to rising temperatures and the depletion of the ozone layer. Ozone layer depletion leads to an increase in the number of UV rays absorbed so more of these UV rays hit Earth. These rays can mutate cells and lead to DNA mutation which leads to skin cancer.

Climate change will potentially lead to shifts in seasonal air temperatures, and more carbon dioxide (CO₂) in the atmosphere. These changes can affect when the pollen season starts and ends and how long it lasts each year. How much pollen plants make and how much is in the air, how pollen affects our health (the "intensity" of pollen), how much allergy symptoms.

Pollen exposure can trigger various allergic reactions, including symptoms of hay fever, allergic conjunctivitis, allergic rhinitis, and inflammation of the lining of the eye (conjunctivitis) due to exposure to allergens like those in pollen.

People with respiratory illnesses like asthma may be more sensitive to pollen. Exposure to pollen has been linked to asthma attacks and increases in hospital admissions for respiratory illness.

CON FACT: Medical costs linked with pollen exceed \$3 billion every year, with nearly half of those costs being linked to prescription medicine.

Some people with mental illness are especially susceptible to heat.

- Heat waves can vary with the weather, but they usually rise with high temperatures.
- Heatstroke is a risk factor for hospitalization and death during heat waves.
- Patients with severe mental illnesses, such as schizophrenia, are at risk during hot weather because their medications may interfere with temperature regulation or even directly cause hyperthermia.

Following disaster, mental health problems increase, both among people with no history of mental illness and those at risk—a phenomenon known as "common reactions to abnormal events." Post-traumatic stress disorder among people affected by Hurricane Katrina, and similar situations have followed floods and heat waves. Some evidence suggests wildfires have similar effects. All of these events are increasingly fueled by climate change. Other health consequences of intensifying stressful exposures are also a concern, including pre-term birth, low birth weight, and maternal complications.

Sea Level

• The increase in Ocean temperature has caused the sea level to rise, which leads to flooding



Coral Bleaching

• Ocean temperatures rising stresses the coral and lose its algae
- The coral will turn white
- If the temperature doesn't decrease, the coral will die

The Effects Of Climate Change On Oceans

An increase in:

- The use of fossil fuels
- Deforestation
- Industrial Agriculture



Have increased the amount of Greenhouse Gases, like CO_2

The ocean absorbs this excess heat in order to keep the Earth cool, over 90% of the heat and 25% of the CO_2



Habitats

- A decrease in Oxygen levels causes the fish to suffocate in their natural habitats
- Ocean Warming can contribute to melting the polar ice caps
- This all causes a decrease in biodiversity



Acidification

- The ocean absorbing CO_2 leads to ocean acidification which harms organisms with shells such as:
 - Shellfish
 - Coral
 - Oysters





Re-joining the Paris Agreement

The Paris Agreement is a global framework made to avoid reaching deadly warming temperatures—anything above 2°C. It hopes to unite the world in climate action.



National Climate Task Force

- Hopes to:
- reduce U.S. greenhouse gas emissions by 100% below 2005 levels by 2035.
 - 100% carbon free electricity by 2035.

* Sponsored by the White House!

HOW EFFECTIVE ARE THEY?

The answer really depends. Optimistically, these are great! Pessimistically, these don't do anything. All in all though, these are steps in the right direction.

CAPITALISM = DEATH

Climate Change Policy. What can we do?

WHO TO AVOID.

bp oil...

BP oil, or British Petroleum, is a leading oil and gas company. They're the sole reason why so many oil spills plagued our oceans. ^{ocean} Responsible for the "BP oil spill".

Shell...

The most egregious example of "greenwashing". Shell produces an insane amount of gasses and releases it into our environment.

HOW TO HELP?

- Vote, and know who you're voting for and what they stand for.
- Educate yourself and others
- Climate activism groups



Willow Project

The Willow Project is an oil-drill project on the North Slope of Alaska. Oil drilling leads to effects such as disruption of migratory patterns and degradation.

Germany's Automotives

Germany is single-handedly stopping the EU from going full electrical due to the power they hold in the oil-run automotive industry. Germany will keep using these cars because of the high profit yield.

YOUR "CARBON FOOTPRINT"

Obviously one of the biggest 21st century screams, the "carbon footprint" is a hoax. This is an idea made and fed to the population by big corporations.

Recycle!

Recycle!

Recycle!

Recycle!

Recycle!

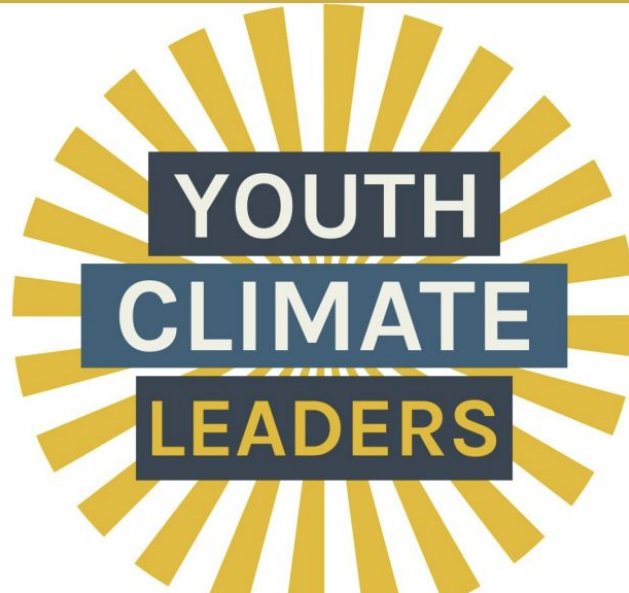
Recycle!

Recycle!

Recycle!

Central Massachusetts Youth Climate Action Showcase

[Download](#)



Thursday, April 27
2:30-3:30 PM

Broad Meadow Brook Wildlife Sanctuary
414 Massasoit Road, Worcester, MA 01604

**Join us in person or via Zoom to celebrate
and amplify youth climate action!**

Please contact sbertrand@massaudubon.org for more information.

What are you proud of? What's been successful?

- Successful: People came! People stayed! There were many engaging conversations, people asking questions. It was FUN!
- Proud of: The work we did to prepare for the fair; so many team members participated in making a poster, the quiz, the trivia box, the games, etc. Everybody showed up prepared! So many community members supported us: teachers and students who attended, outside supporters (Paul, Christine, Sarah)

What's been challenging?

- Gathering information; having enough time to make preparations; ensuring we had a good number of attendees but not too many

What are your next steps?

- Doing it again?! Making it an annual event?! (Holding a fair about the current issue each year, not necessarily a Climate Fair?)
- Using the information gathered and the posters for our presentation at the Envirothon Competition

How can this community and the broader regional community support you?

- Continued financial support for future events (snacks, prizes, decorations, etc.)
- Come to the fair!
- Publicize the event with good press to show what youth are accomplishing

Saturday, Jan. 28
9:30am-2:00pm

Meet at Doherty at 8:50am
Return to Doherty at 2:15-2:30pm



What to bring:
Refillable water
bottle
Warm clothes
Sturdy shoes
Notebook/pencil

If you have any last minute questions or emergencies, call/text Ms. Hill at 508-612-5228.