



MASSACHUSETTS ENVIROTHON

2017 PROGRAM SUMMARY & EVALUATION HIGHLIGHTS

This report provides an overview of the Mass Envirothon for the 2016-17 program year. It includes descriptions of key events and new and noteworthy initiatives. Competition results, workshop profiles, and participant demographics from previous years are included for the sake of comparison. Key evaluation findings based on surveys focusing on team and coach learning are included. Mass Envirothon Council and Steering Committee lists, and names of sponsors and volunteers, are included in the printed program, attached. A financial statement and the post-competition news release are also attached.

PROGRAM SUMMARY

Events. Mass Envirothon officially organized five face-to-face events in the 2016-17 year – one field workshop for coaches, three workshops for teams and coaches and one final competition. The 2016-17 chart below provides details about these events. The 2014-15 and 15-16 charts below are provided for comparison.

Field Workshop for Coaches. This was the first time for this full-day workshop. The participants were new and experienced coaches. Individuals interested in serving as community resource people for Envirothon teams were also welcome. The intent was to provide in-depth experience with field skills in Soil, Water, Wildlife, and Forest resources, and an opportunity for face-to-face networking. The workshop was held on a Saturday at the Massachusetts Division of Fisheries and Wildlife Field Headquarters and the Wayne MacCallum Wildlife Management Area, and included a competition-size soil pit.

Fall Workshop. This workshop, held on campus at UMass Amherst on a weekday, serves as the kickoff for the Envirothon year. Sponsors include the College of Natural Science; UMass Extension/Center for Agriculture, Food, and Environment; the School of Earth & Sustainability; the Department of Environmental Conservation, and the Stockbridge School of Agriculture. All these UMass units see a high value in visibility to potential students and the teachers who advise them. This workshop introduces all areas of the Envirothon curriculum, but serves in particular as an introduction to the Current Issue for the year, with many sessions providing a variety of perspectives on the issue and how to research it in Massachusetts communities.

Winter Workshop. This workshop is held on a school day on a hilltop in the middle of the city, hosted by Worcester Technical High School's environmental studies program and its students. The workshops sessions are longer than the fall workshop to allow more hands-on activities, and sessions makes use of the adjacent Green Hill Park for outdoor experiences of wildlife, forests, water, soil, and the current issue, even in winter.

Spring Workshop. The last workshop of the year happens just over a month before the competition. In recent years Alden Lab in Holden has hosted the event on an April Saturday. The Lab's extensive campus, with a stream flowing through it and potential for a soil pit, offers significant outdoor experience opportunities. For the second time, this workshop included a "mini-Envirothon" to give new teams a sense of the competition day and what to expect.

The Competition. This is the culminating experience of the Envirothon year, when teams demonstrate the knowledge and skill they have learned. Through the morning, teams take tests at four places on the site, with questions as much as possible relating to what they can see and touch around them. Teams also make a presentation to a panel of judges on their findings and recommendations related to the Current Issue in their community. The site of the event is always a major factor in the experience, and this year the competition, with the Current Issue focus on “Agricultural Soil & Water Conservation”, was held at Mass Audubon’s Drumlin Farm and Wildlife Sanctuary in Lincoln. Lunch and networking cap off the day, with winning teams and scores announced by email in the evening.

Running a precisely timed, outdoor, newsworthy, competitive event for high school teams on a different site every year – plus keeping everyone hydrated and feeding them lunch – requires excellent planning and communication. This year’s event, held on a clear, breezy day that reached the mid-nineties, included not only 230 youth competitors and their 44 coaches, but also 21 Mass Envirothon Steering Committee and Council members, 83 judges and Current Issue volunteers, and 119 other volunteers, along with key Mass Audubon staff, for a total of about 500 participating in the event. The printed program, including lists of sponsors, and post-event news release are attached. Both are prepared by our NRCS partners.

Event Profiles

Event Date 2016-17	Sponsor	Location	Number of concurrent sessions	Number of teams participating	Total youth/coach participation
Saturday, October 1	Division of Fisheries & Wildlife (MassWildlife)	Westborough	5	9	coach: 15
Wednesday November 16	UMass Amherst College of Natural Sciences	Amherst	22	18	youth: 186 coach: 20
Wednesday February 1	Worcester Technical High School	Worcester	9 (lower due to weather)	11 (lower due to weather)	youth: 75 coach: 17
Saturday April 8	Alden Research Laboratory	Holden	10 + mini Envirothon	12	youth: 59 coach: 12
Thursday May 18	multiple	Drumlin Farm, Lincoln	competition	31*	youth: 230 coach: 44

* 30 teams participated at all stations of the competition out of 39 teams registered for the year

Event Date 2015-16	Sponsor	Location	Number of concurrent sessions	Number of teams participating	Total youth/coach participation
Wednesday November 4	UMass Amherst College of Natural Sciences	Amherst	26	22	youth: 206 coach: 28
Thursday February 4	Worcester Technical High School	Worcester	11	15	youth: 131 coach: 22
Saturday April 9	Alden Research Laboratory	Holden	9 + mini Envirothon	16	youth: 50 coach: 19
Thursday May 12	multiple	Hopkinton State Park	competition	33*	youth: 246 coach: 50

* 30 teams participated at all stations of the competition out of 37 teams registered for the year

Event Date 2014-15	Sponsor	Location	Number of concurrent sessions	Number of teams participating	Total youth/coach participation
Wednesday November 5	UMass Amherst College of Natural Sciences	Amherst	23	23	Youth: 196 Coach: 33
Friday February 6	Worcester Technical High School	Worcester	9	14	Youth: 144 Coach: 21
Saturday April 11	Alden Research Laboratory	Holden	11	10	Youth: 47 Coach: 12
Thursday May 14	multiple	Quabbin Belchertown	competition	30*	Youth: 250 Coach: 41

* 29 teams participated at all stations of the competition out of 36 teams registered for the year

2016-17 Initiatives and Other News.

- **Partnership with Mass Audubon.** With the encouragement of several Mass Audubon staff who know Mass Envirothon well, representatives from the programs met to explore possibilities for collaboration. The partnership developed quickly with the experience of holding the 2017 competition at Mass Audubon's Drumlin Farm in Lincoln. We plan to hold a team workshop at a Mass Audubon site in 2018, and to collaborate on curriculum resources for the Current Issue and also for Wildlife.
- **Field workshop for coaches at MassWildlife.** This was the first year for this workshop, described in the Events section above.
- **WCCD wraps up diversity grant.** One of the ways that the Worcester County Conservation District supports the Mass Envirothon program has been to find funding to support local teams. Two years ago, WCCD applied for funds from the National Conservation Foundation to provide registration and transportation support for teams from schools in state-identified "Environmental Justice" communities. Over the two years, six teams – involving 10 educators and 80 youth – benefitted from the grant.
- **MEC pilot fundraising/development work.** With an eye toward the future and the growth of the Mass Envirothon program, Mass Envirothon Council funded an initiative in the spring of 2017 to review our fundraising materials and procedures and to implement a strategy for future fundraising. A member of the Mass Envirothon Council took on the task of leading the work. This initiative, still underway as this report is written, will include a workshop on fundraising for members of the Steering Committee and Council. Donating now is as easy as pressing a button, and it can all be done on-line.
- **Nominations for EE awards.** The Mass Envirothon Steering Committee nominated the coaches of three Envirothon teams for prestigious environmental education awards, and all were selected to receive the awards! Stacey Hill was nominated for the Mass Audubon Teacher of the Year award for her work with the Doherty Memorial High School in Worcester. Joyce Voorhis of Brockton High School and her community partners at the Wildlands Trust, and Mary McLaughlin of David Prouty High School in Spencer, and her community partner Mary Baker-Wood of the Sugden Library, were nominated for the Secretary of Energy & Environmental Affairs' Environmental Education Award. Our nominations focused on teams that demonstrate the power of strong school-community partnerships for local environmental education.
- **30th Mass Envirothon celebration.** The first Massachusetts Envirothon was held in 1988, so 2017 was the 30th competition to be held in the state. A special logo was developed (see top of this report). At the competition, storytelling and tables of memorabilia, as well as a special cake at lunchtime, marked the event. The celebration was integrated with a fundraising effort that invited contributions of \$30 from Friends of the Massachusetts Envirothon.

Competition Results

The chart below shows the top five scoring teams, overall and in each area of the competition, for this year and the most recent three years.

	2014		2015		2016		2017	
Overall	Newton North	331.03	Newton North	347.23	Newton North	337.45	Lexington	352.88
	Quabbin	317.17	Lexington	323.47	Acton-Boxborough	326.68	Newton South	336.00
	Lexington	302.92	Quabbin	316.92	Lexington	320.34	Newton North	333.17
	4H Envirothon Club	301.25	Leominster	303.70	Mount Greylock	308.86	Acton-Boxborough	309.58
	Acton-Boxborough	287.75	Newton South	301.69	Newton South	304.96	Essex Tech	297.00
Forest	Lexington	66.00	Newton North	63.90	Lexington	68.50	Lexington	67.00
	Acton-Boxborough	64.00	Lexington	63.45	Newton North	64.75	Newton North	65.50
	Pioneer Valley	63.75	Quabbin	63.25	Newton South	62.50	Newton South	60.25
	Needham Area Homeschoolers	62.50	Acton -Boxborough	59.05	Mount Greylock	60.25	Essex Tech	57.50
	Newton North	62.00	Newton South	55.35	Pioneer Valley	59.00	Bristol Aggie	56.50
Wildlife	Newton North	64.20	Newton North	59.50	Lexington	65.67	Lexington	62.88
	Cambridge Rindge & Latin	52.70	Lexington	54.85	Newton North	59.70	Acton-Boxborough Newton South	56.25
	Lexington	50.25	Quabbin	45.17	Acton-Boxborough	59.35	Newton North	55.50
	4H Envirothon Club	48.75	Leominster	43.92	Mount Greylock	49.61	Essex Tech	54.50
	Leominster	47.45	Acton-Boxborough	41.92	Bedford	48.73	Pioneer Valley	51.88
Water	Quabbin	61.50	Quabbin	66.50	Acton-Boxborough	74.00	Newton South	71.00
	4H Envirothon Club	60.50	Leominster	66.00	Newton North	66.00	Essex Tech	70.00
	Bedford	57.50	Newton North	63.50	Mount Greylock Quabbin	63.00	Lexington	69.00
	Acton-Boxborough	57.25	Brockton/ Wildland Trust	62.00	Newton South	60.50	Newton North	68.50
	Cambridge Rindge & Latin	56.75	Ashland	60.50	Pioneer Valley	56.50	Rockland	66.50
Soil	Quabbin	60.00	Newton North	66.00	Deerfield Academy	57.00	Newton South	63.50
	Newton North Tantasqua	58.50	Lexington	58.00	Newton North Brockton/Wildland Acton-Boxborough Pioneer Valley Oliver Ames	54.00	Deerfield Academy	59.50
	Lexington Needham Area Homeschoolers	55.50	Leominster Newton South	57.00	Newton South	52.50	Lexington	58.50
	Oliver Ames	43.50	Brockton/Wildland Trust	56.00	Mount Greylock Monson	48.00	Doherty Memorial	54.50
	GCC Permaculture	40.50	Shepherd Hill	54.00	David Prouty Shepherd Hill	45.00	Worcester Tech	50.00

Current Issue	Quabbin	96.67	Quabbin	97.00	Lexington	96.67	Newton North	97.17
	4H Envirothon Club	95.00	Leicester	96.67	Greenfield	94.33	Lexington	95.50
	Springfield Central	93.67	Leominster Newton North Newton South	94.33	Newton North	93.00	Brockton/ Wildland Trust Leicester	93.83
	Newton North Pioneer Valley	91.33	Greenfield	90.33	Bedford	92.33	Shepherd Hill	93.17
	Monson	90.33	Brockton/Wildland Trust	88.67	Andover	91.67	Dighton Rehoboth	91.33

Community Awards

The Envirothon competition provides an important incentive to teams, but much important learning happens beyond the competition as well.

The Mass Envirothon **Community Research Award** recognizes teams who undertake – and document – extensive and thorough community research using a wide variety of sources as they prepare for their Current Issue presentation. Teams who take what they learn in this research and apply it in an action or service project in their communities can earn the **Community Action Award**. The community awards were instituted to provide recognition to the many teams who do extensive work as part of Current Issue preparation, but do not necessarily win the highest point totals for their presentations. Teams who certify that they have done the work for these awards are interviewed at the Envirothon, and a letter of congratulations is sent to their school principal, with copies to the coach, the superintendent, state legislators, community partners, local media, and the Secretary of Energy & Environmental Affairs.

In 2017, twelve teams earned the Community Research Award and ten of these teams also earned the Community Action Award. This number was down from 2016. The following is a quick summary of the teams' work:

Team	Research – an unexpected find!	Action Project
Brockton High School/Wildlands Trust	(one of five) Ground truthing the Envirothon map found land taxed at the agricultural rate with no agriculture.	Collected soil samples at potential community garden sites in partnership with Brockton's Promise.
David Prouty High School (Spencer)	Jordan Farm is planning to put in an anaerobic digester to power the farm	Interviews on soil and water issues on local cable access channel
Dighton Rehoboth High School	Interview with Steve Murray of Heart Beets Farm – an intro to deep organic practices	
Doherty Memorial High School (Worcester)	YouthGROW Farms in Worcester	Letter writing campaign to urge changes in program funding priorities
Greater New Bedford Regional Voc-Tech High School	Ray Holberger – Municipal Agriculture Commission member	Soil remediation plan, educating the community about using sunflowers as pollutant hyperaccumulators
Holyoke High School	Nuestras Raices urban farm	
Leicester High School	High water quality in drinking water reservoir	Water quality tests shared with Board of Selectmen
Lexington High School	Massachusetts law books and Code of Lexington at local library as a source of soil/water law	Initiated a partnership between the high school and local farms for community service hours
Norfolk Agricultural High School	1950 Conservation Plan for Norfolk County Agricultural High School	
Seekonk High School	Seekonk Land Trust as a source for local conservation information	Offered low cost soil testing for lead and nutrients to home gardeners in their community
Shepherd Hill Regional High School	USDA Web Soil Survey plus farmer interviews	Public education on soil health and water quality at Earth Fest in Charlton
Worcester Technical High school	USDA experts on phytoremediation of lead in soil	Planned Lead in Soil awareness video

EVALUATION HIGHLIGHTS

Paper survey forms were distributed to teams and their coaches at lunchtime after the competition. Forms were returned by 121 teams members from 18 teams, or just over 50% of youth participants. 22 coach surveys were returned, representing 44% of the 49 coaches involved through the year. We are working on a system to ensure a higher rate of survey return in future years.

Youth Self Assessment: Gains in Knowledge, Skills, and Interests. Youth participants were asked to think back over the past year and reflect on how their involvement with the Envirothon had affected their knowledge, skills, and interests:

THIS YEAR: Think back over the past year. Did your Envirothon-related activities result in an increase in your knowledge, skills, and interests in the following areas?	not at all	to a small extent	to a moderate extent	to a great extent	not sure
Your familiarity with outdoor places and ecosystems in your own community	2%	7%	53%	37%	1%
Your skills & knowledge related to Massachusetts FOREST resources	8%	25%	45%	22%	0%
Your skills & knowledge related to Massachusetts WATER resources	6%	25%	40%	30%	0%
Your skills & knowledge related to Massachusetts WILDLIFE resources	5%	23%	45%	26%	1%
Your skills & knowledge related to Massachusetts SOIL resources	6%	29%	34%	30%	1%
Your skills & knowledge about AGRICULTURAL SOIL & WATER CONSERVATION	4%	17%	40%	36%	2%
Your knowledge of how decisions about the environment and natural resources are made in your community	7%	20%	40%	33%	1%
Your ability to find and talk to people with knowledge about the environment	5%	13%	32%	46%	2%
Your ability to find environmental information using field guides, the web, etc.	3%	17%	35%	44%	0%
Your interest in spending time outdoors	4%	7%	24%	59%	2%
Your interest in taking action for the environment in your community (community service)	2%	13%	31%	51%	0%
Your ability to work with others as a team	4%	8%	29%	56%	0%
Your ability to make an effective presentation	6%	19%	32%	39%	2%
Your ability to use GIS and/or maps as a source of environmental information	12%	31%	31%	22%	0%
Your understanding of the effects of climate change and how to address them locally	4%	15%	36%	43%	1%

YOUR FUTURE	not at all	to a small extent	to a moderate extent	to a great extent	not sure
Are you interested in college studies and careers related to the environment?	6%	19%	29%	36%	1%

Coaches Assessment of Youth Gains in Knowledge, Skills, and Interests:

Questions about your TEAM. Has preparation/participation in the Mass Envirothon increased your team's knowledge, skills, and interests in the following areas this year? If so, how much?	not at all	to a small extent	to a moderate extent	to a great extent	not sure
Their familiarity with outdoor places and ecosystems in their community	0%	14%	38%	48%	
Their skills & knowledge of FOREST, WATER, WILDLIFE, AND resources in Massachusetts	0%	14%	43%	43%	
Their knowledge of AGRICULTURAL SOIL & WATER CONSERVATION in their community	0%	19%	24%	57%	
Their skills for assessing soil health scientifically	5%	19%	38%	38%	
Their understanding of how decisions about the environment are made in their community	5%	33%	29%	33%	
Their community research skills	14%	19%	24%	43%	
Their ability to use maps (paper and GIS)	15%	35%	20%	30%	
Their presentation skills	10%	29%	19%	43%	
Their teamwork	5%	10%	24%	62%	
Their sense of environmental stewardship	5%	10%	33%	52%	
Their engagement with their community (e.g. service projects)	24%	10%	38%	29%	
Their interest in further education and careers related to the environment	0%	35%	30%	35%	
Their understanding of the effects of climate change and how to address them	14%	10%	48%	29%	

Coaches' Assessment of Their Own Professional Development

Questions about YOU. Has your involvement in the Envirothon program led to an increase in <i>your</i> knowledge, skills, and interests in the following areas, <i>this year</i> ?	not at all (already knowledgeable)	not at all (another reason)	to a small extent	to a moderate extent	to a great extent	not sure
Your familiarity with outdoor places and ecosystems in your team's community	30%	0%	20%	30%	20%	
Your skills and knowledge related to Mass FOREST, WATER, WILDLIFE, and SOIL	19%	10%	24%	29%	19%	
Your knowledge related to AGRICULTURAL SOIL & WATER CONSERVATION	10%	10%	29%	38%	14%	
Your knowledge of how decisions about the environment are made in your team's community	10%	10%	33%	29%	19%	
Your ability to support your team's investigations of community issues	14%	0%	38%	29%	19%	
Your ability to help your group to function as a team	10%	0%	52%	19%	19%	
Your skill in coaching your team to make an effective presentation	14%	5%	43%	29%	10%	

Your interest in community action and service learning projects	14%	10%	19%	38%	19%	
Your interest in your own professional development in environmental science/policy	19%	0%	19%	38%	24%	
Your understanding of the effects of climate change and how to address them	29%	5%	24%	29%	14%	

In Their Own Words

Below are selected responses from teams and coaches to key survey questions. In addition, simple “word clouds” demonstrating the key words used in survey responses, was generated using Stanford University’s Wordsift, software that displays key words based on frequency and importance in a text.

TEAMS: What were the most valuable experiences for you and your team? (Wordsift was asked to choose 25 key words out of 709 words used by teams)

- banding together to get the job done
- being able to work together as a team to better our community
- creating our current issue project and creating future plans for executing our current issue
- digging a pit
- discovering/researching information that if spread can help/aid the future of our town
- doing the testing for water and soil
- going out into our city and gaining knowledge we would never have known otherwise
- I learned a lot about the soil and how much my community is involved in the environment
- interviewing key water and soils conservationists in our community
- learning of new and innovative ways to introduce agriculture into urban areas
- learning to work with others
- looking at real life examples of life
- spending time preparing the material as a team
- spending time together and seeing real samples from the environment
- Staying and working together at school
- staying up late at night making a poster
- interviewing local farmers and gardeners and getting along as a team
- visiting farms as a team and digging holes as a team
- visiting local farmers and getting to know the land around our school together
- the competition because I learned a lot about my team mates and about the environment
- interviewing local farmers and gardeners and getting along as a team

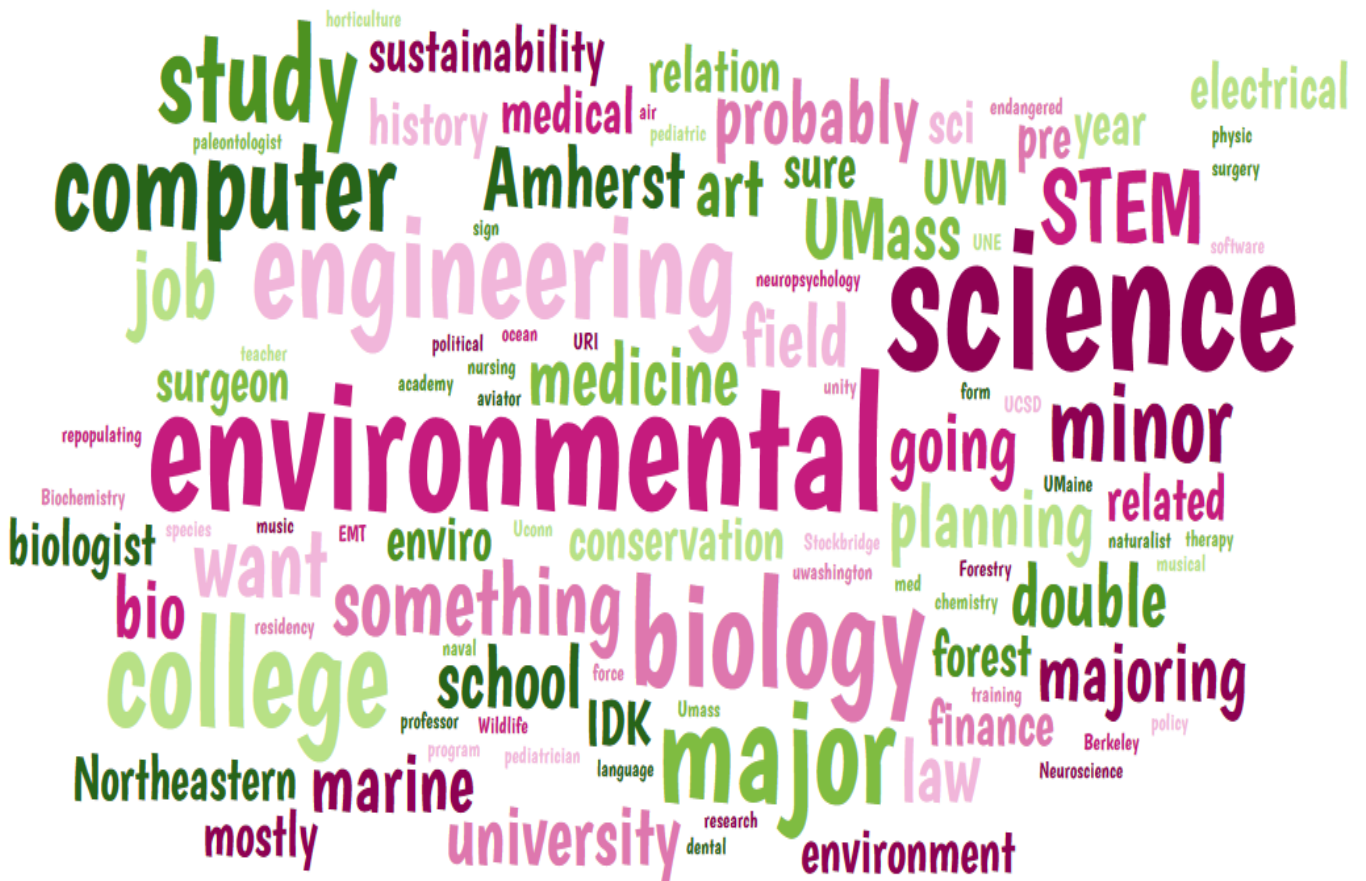


TEAMS: Would you recommend the Envirothon to students in other high schools? What reason(s) would you give? (Wordsift was asked to choose 25 key words out of 872 words used by teams)

- Because it raises awareness where it is needed, great chance to learn more about the environment around us!
- Put your knowledge to the test!
- For an enjoyable day outdoors having fun, it's a good resource, because it's very educational
- gets kids involved in community also a great learning experience
- do it, it's fun, good time outside, good skills to learn, study, best to know everything you can
- opportunity to learn more about environment with fun
- the environmental studies can be valuable to any future a student achieves to make
- You learn a lot - learn how to work a team. The program also leads to meaningful change in your community
- Because it gives you the resources to be a capable and literate member of the community and environment
- help your communities, take action, learn about the environment and how to protect it.
- Even if you don't know enough for the competition, you will learn just being there, give it a try, because it gives you a chance to learn more about the world around you
- Climate change is happening and it's going to affect all of us. Our environment directly affects us and so caring for it means we're in good hands. We shouldn't wait until it's too late
- Because it's a good way to learn and meet people with similar interests and goals
- This is not only a great experience but it feels good to help out your community
- Absolutely/ gets kids outdoors learning about ecology in their own city. They'll learn in a way school won't teach
- It's fun, the people are great, and you might learn leadership skills
- You learn a lot and the competition and practices are fun
- It's a good chance to spend time outdoors and you meet amazing people
- Only if you like being outside
- The envirothon encourages students to research practical uses of environmental knowledge and brings people closer to the outdoors
- Develop valuable experience and skills, reach out to people in your community because they are there for you, to help you with research and give suggestions.
- yes, because unlike other science competitions the envirothon comp is very hands on and focuses on team building



TEAMS: What college, job, and career plans are you considering? (The Wordsift algorithm chose to display 181 out of 452 words used by teams)



COACHES: Would you recommend the Envirothon to other high school educators? What specifically would you say is most valuable to you about the program? (Wordsift was asked to choose 25 key words out of the 200 words used by coaches)

- Opportunity to work with students outside classroom. Opportunity to provide students with access to people/places in their community.
- Yes, students meeting experts, volunteers, and other students/teachers
- Yes! Team work, development of a community of peers
- Yes, it connects students with people and programs in their community and empowers them to get active in conservation!
- The opportunity for kids to be engaged in nature
- Yes! Giving club members an opportunity to volunteer on a state wide level. We are very involved in our community but this is extra-ordinary. So glad we get asked to help out -Terry
- Yes, especially AP Env Sci students
- YES, Students need to be outside and become involved in the community of environmental science
- Absolutely, the learning and team experience. Expansion of environmental awareness is focused and explosive :)
- Emphasis on engaging ones local community is fantastic. I love Envirothon as an introduction to learning how to be a good local citizen and how to organize a community
- Yes! The Current issue is always so pertinent.

- Yes- getting kids interested in careers in the environment.
- Yes, a chance to work with students who are there because they want to be.
- Yes, great for community service and outreach



Who Participated?

Over the course of the 2016-17 school year, 394 young people and 51 coaches representing 39 Massachusetts schools and community organizations participated in Envirothon events. Using numbers supplied by coaches completing the Envirothon survey, we estimate that an additional 74 young people were involved back at school for a total involvement of at least 468 youth. This is a rough estimate and may be low. For example, one tech school coaching team involves the whole environmental studies program in the curriculum, a total of 48 young people.

Of the 121 young people responding to the survey (53% response rate) at the 2017 competition, 68% (up from 67% in 2016) were participating in their first Envirothon competition . 70% (down from 75% in 2016) were juniors and seniors in high school.

Young people and coaches from 39 high schools and community organizations, representing at least the following 57 Massachusetts communities, were involved in Envirothon events during the year:

Acton	Deerfield	Holyoke
Andover	Dighton	Hull
Ashland	Dracut	Lakeville
Assonet	Dudley	Leicester
Attleboro	E. Brookfield	Lexington
Berkley	Easton	Leyden
Beverly	Fairhaven	Lowell
Billerica	Foxboro	Lynn
Boxborough	Framingham	Middleboro
Braintree	Georgetown	Milford
Brockton	Gloucester	Millbury
Canton	Granby	Monson
Charlton	Greenfield	New Bedford
Chelmsford	Groton	Newton

Northfield
Peabody
Plymouth
Reading
Rehoboth

Rockland
Saugus
Seekonk
Sharon
South Hadley

Southbridge
Spencer
Springfield
Taunton
Worcester

152 out of 229 youth at the May competition provided gender/racial/ethnic identification data on a separate “diversity check” form. The percentages listed below are thus only suggestive.

Returned forms indicated that Envirothon teams this year were 57% female (down from 63% in 2016) and 42% male (up from 37% in 2016).

Racial/ethnic identification is changing in American society. Some participants in this survey marked more than one category. The numbers below suggest that Mass Envirothon needs to intensify its outreach to communities with larger African American and Hispanic populations:

% of total	2010	All Mass Schools 2010	2011	2012	2013	2014	2015	2016	All Mass Schools 2016	2017
African American	0.6	8.2	4.1	4.3	7.3	3.5	4.5	5.6	8.8	3.9
Asian	6.7	5.3	10.9	12.9	15.2	14.3	19.1	14.5	6.5	17.7
Hispanic	1.3	14.8	0.6	4.3	3.0	6.0	3.5	12.9	18.6	6.5
White	78.3	69.1	82.8	79.8	71.3	69.4	62.6	59.5	62.7	62.1
Native American	2.0	0.3	2.7	.7	2.4	2.0	2.5	-	.2	1.3
Native Hawaiian, Pacific Islander	0.6	0.1	0.6	-	0.6	1.0	.5	-	.1	
Multi-Racial	6.0	2.2	2.7	3.5	5.4	3.8	6.0	9.8	3.2	3.9
Other	5.4	-	-	2.8	6.7	-	1.0	1.0	-	3.9

2010-2017 Participation Numbers

Team participation in the Mass Envirothon program over the past six years is charted below. Numbers of individual participants (c = coaches, y = youth) are in parentheses. Duplications are eliminated (e.g. if a student or coach attended more than one workshop, each is still counted as one) Community award participants are youth only.

Year	Registered Teams	Teams Attending Workshops	Teams Competing	Teams earning Community Awards	Total participation in all events
2010	42	38 (c + y = 265)	41 (y: 250 c: 53)	12 (78 youth)	(c + y = 374)
2011	38	23 (c + y = 221)	33 (y: 174 c: 39)	9 (57 youth)	(c + y = 324)
2012	33	26 (c + y = 245)	30 (y: 158 c: 38)	12 (84 youth)	(c + y = 326)
2013*	34	24 (c + y = 255)	28 (y: 215 c: ?)	14 (116 youth)	(c + y = 362)
2014	34	24 (c + y = 247)	31 (y: 246 c: 38)	18 (147 youth)	(c + y = 368)
2015	36	26 (c + y = 332)	30 (y: 249 c: 43)	14 (123 youth)	(c + y = 440)
2016	35	28 (c + y = 344)	33 (y: 247 c: 49)	16 (121 youth)	(c + y = 443)
2017	39	28 (c + y = 288)	31 (y: 229 c: 44)	12 (95 youth)	(c + y = 407)

* A 10 member team format has been in place since 2013 (before that, teams had 5 competitors but some team alternates and guests attended the competition as well). The 10 member format works with 40 or fewer teams at the competition.