



**KEAN**  
UNIVERSITY  
www.kean.edu

January 25, 2012

Susannah King  
New England Interstate Water Pollution Control Commission  
Lowell, MA 01852

Gabriela Munoz  
New York-New Jersey Harbor Estuary Program Office  
290 Broadway, 24th Floor  
New York, NY 10007

Re: **Final Report:** Environmentors for the Elizabeth River  
NEIWPCC Job Code: 0355-009, 0294-002  
Project Code: S-2010-036

**Project Title:** Environmentors for the Elizabeth River

**Project Period:** June 2010 - August 2011.

**Goals:** The goals of this project were to bring university faculty and students together with groups of local high school students to collaborate on studying place-based issues of importance to the future stakeholders of the Elizabeth River / Arthur Kill estuary and watershed. The topics that were explored included: floatables and storm drains, land use and water quality; habitat restoration and invasive species, and meteorological influences on the estuarine flow. Oyster gardening was suspended due to changes in governmental regulations.

**Summary:** This project was structured around the Environmentors Program. The Environmentors program joined the National Council for Science and Environment in 2006. Kean University is an NCSE member. There are now 12 universities in the nation with Environmentor programs. Kean University, the only one in New Jersey. Our Environmentors program focused on watershed education and estuary stewardship. at the undergraduate level and in high school. The activities were place-based with an inquiry driven design that will deepen students content knowledge and critical thinking abilities. Students used technology, conducted field studies, collected quantitative and qualitative data, synthesized and analyzed data, constructed literature reviews. Some of

the specific technologies used included global positioning systems, geographic information systems, electronic probes for environmental variables, visual observations and surveys. Students presented their results to their peers and to the professional community. The culminating events, Environmental Day and the National Environmentors Chapter are the highlights of the Environmentors Program. We were able to award Kindle E-Readers to the students and their mentors of the three winning projects that represented our chapter in the national competition. These projects are listed in the Accomplishments section. Our continued participation for 2011-2012 of Kean University and the Elizabeth River / Arthur Kill Watershed at Future City, Inc in the National Environmentors Program is a testament to the successes of this stewardship project. We have been planning our 2011-2012 recruitment during Estuary Day on October 14, 2011.

**Course of Action:** The following list of events were supported by the grant to demonstrate our systemic approach to developing research projects by high school students and creating college access opportunities to potentially recruit students to major in the sciences. These events are now being sustained by Kean University and Elizabeth River / Arthur Kill Watershed.

- a. Environmentors “kick-off” event was held on October 1, 2010 at the Peterstown Community Center as part of Estuary Day, a day of learning activities for middle and high school students in Elizabeth, NJ.
- b. Mentor-Mentee Meeting at John H. Dwyer academy in December 2010
- c. Financial Aid Seminar at Kean University January 30, 2011
- d. Library Visit at Kean University in February 2011
- e. Experimental Design Workshop at Bonnell House, Elizabeth, NJ in February 2011 for students to practice experimental techniques.
- f. Planetarium Show at Kean University in March 2011
- g. Poster presentations at Kean University Research Day in April 2011 in the STEM Building.
- h. Environmental Day at the Elizabeth Marina in April 2011, including environmental boat rides with the US Army Corps of Engineers.
- i. National Environmentors Chapter Fair in Washington, DC in May 2011. Students stayed at George Washington University and presented their posters at the USDA Building.

**Accomplishments:** The following three poster projects represented Kean University Environmentors at the National Chapter Fair.

1. *Study of House Sparrow (Passer Domesticus) Feeding Preference by Affecting Native Species Pollination and Their Impact in Urban Estuary Ecosystems*
2. *Turbidity & Conductivity in the Elizabeth River*
3. *Carbon Dioxide Levels in the Air \**

\*Excellence in Atmospheric Research Award at the National Chapter Fair

Students from the university and the John E. Dwyer Technology Academy in Elizabeth, NJ stayed overnight on the campus of George Washington University, providing a college access experience. The competition was held at the Jamie Whitten Building of the US Department of Agriculture building and hosted by the US Forest Service, Division of Conservation Education. Students also participated in an outdoor classroom experience on a boat, learned to ride the Washington DC Metro and explore many exhibits including the White House, Washington Monument, Lincoln Memorial and the American Museum of Natural History. The national fair provides invaluable experiences for high school students, their teachers, and for the university and watershed association to attend and will serve as motivation to sustain the Environmentors project in future years. In addition, our chapter was recognized at the National Fair for leadership in our use of the on-line community. Our Kean University Graduate Student Assistant took a leadership role to establish a smooth transition to use of the on-line community in the future.

These seventeen completed projects were developed by students and shared with their teachers and peers:

1. *Water Quality in Mattano Park*
2. *Identifying Dataset Patterns for Knowledge Discovery*
3. *Effects of Compost on Native Species' Growth*
4. *Conductivity in the Elizabeth River*
5. *Salinity/Global Warming*
6. *Construction and water quality*
7. *Anaerobic Food Composting and Sustainability*
8. *Land Use/Water Quality- Passaic River*
9. *Meteorological influences on water quality of streams/estuaries*
10. *Land use effects on atmospheric variables*
11. *Food compost effect with the environment and native plants*
12. *Impacts of storms on soil quality*
13. *Relationship between pH and nutrients in streams*
14. *Blue Mapping to Improve Public Awareness*
15. *Impact of Storm Drain Marking on Litter Reduction*
16. *Comparison of Invasive and Native Species at the Elizabeth Waterfront*

## 17. *Water Quality in the Estuary*

**Project Evaluation:** The Environmentors for the Elizabeth River / Arthur Kill Watershed Association Project initiated 21 projects in summer/fall 2010. This is within the range stated in the proposal of 12-24 completed student projects. However we strived to achieve 24 projects. Therefore we completed 87.5% of the posters based on grant projected number of 24. Sixteen Projects were completed by June 30, 2011. (16/24 = 66.6% of grant target) (16/21 = 76.2% completion of projects started)

Four projects were completed during the grant extension until 9/30/11. Four of the projects were completed through a collaborative effort of Environmentors and the Elizabeth River / Arthur Kill Watershed Association. The four projects were completed in powerpoint format and will serve to inform our 2011-2012 Environmentor projects.

The four projects are:

1. Blue Mapping to Improve Public Awareness
2. Impact of Storm Drain Marking on Litter Reduction
3. Comparison of Invasive and Native Species at the Elizabeth Waterfront
4. Water Quality in the Estuary

The completion of the four projects brings our final total to twenty projects, a 95.2% completion rate for projects started (20/21) and an 83.3% (20/24) completion of the grant target of 24 projects. The group of students that completed these projects have become leaders in our Environmentors project.

Other measurable outcomes including engaging over 30 participants directly in the Environmentors Project as either Mentors (21 University Mentors) or Mentees (16 High School Students). Information for about Environmentors and the projects delivered was disseminated to over 500 students during the Estuary and Environmental Day Events and visits to the individual schools. We were not able to disseminate to professional organizations such as the Middle States Division of American Geographers since our data was not collected following a protocol appropriate for a research forum.

**Lessons Learned:** We had a very positive experience with the university mentors, who were paid by the grant, in completing the research projects, with most fulfilling their obligations to the program. The major challenge was to keep the high school students engaged. To work on this, we have been actively involved in the National Chapter and presented on issues related to the sustainability of Environmentor chapters in high schools at the National Environmentor Chapter Fair. Kean University has provided a graduate assistant for the 2011-2012 year who will meet weekly in the high schools to assist in the retention of students recruited for the program. This funding has provided the beginning for a long term viable and successful Environmentors Program at Kean University in New Jersey. We have recently been in contact with scientists at EPA Region 2 to provide new opportunities to our students.

We are grateful for the support of the EPA, NEIWPCC, and NY NJ Harbor Estuary Program and will continue to be active participants in regional efforts to preserve and sustain the cultural and physical attributes of the NY / NJ Harbor Estuary.

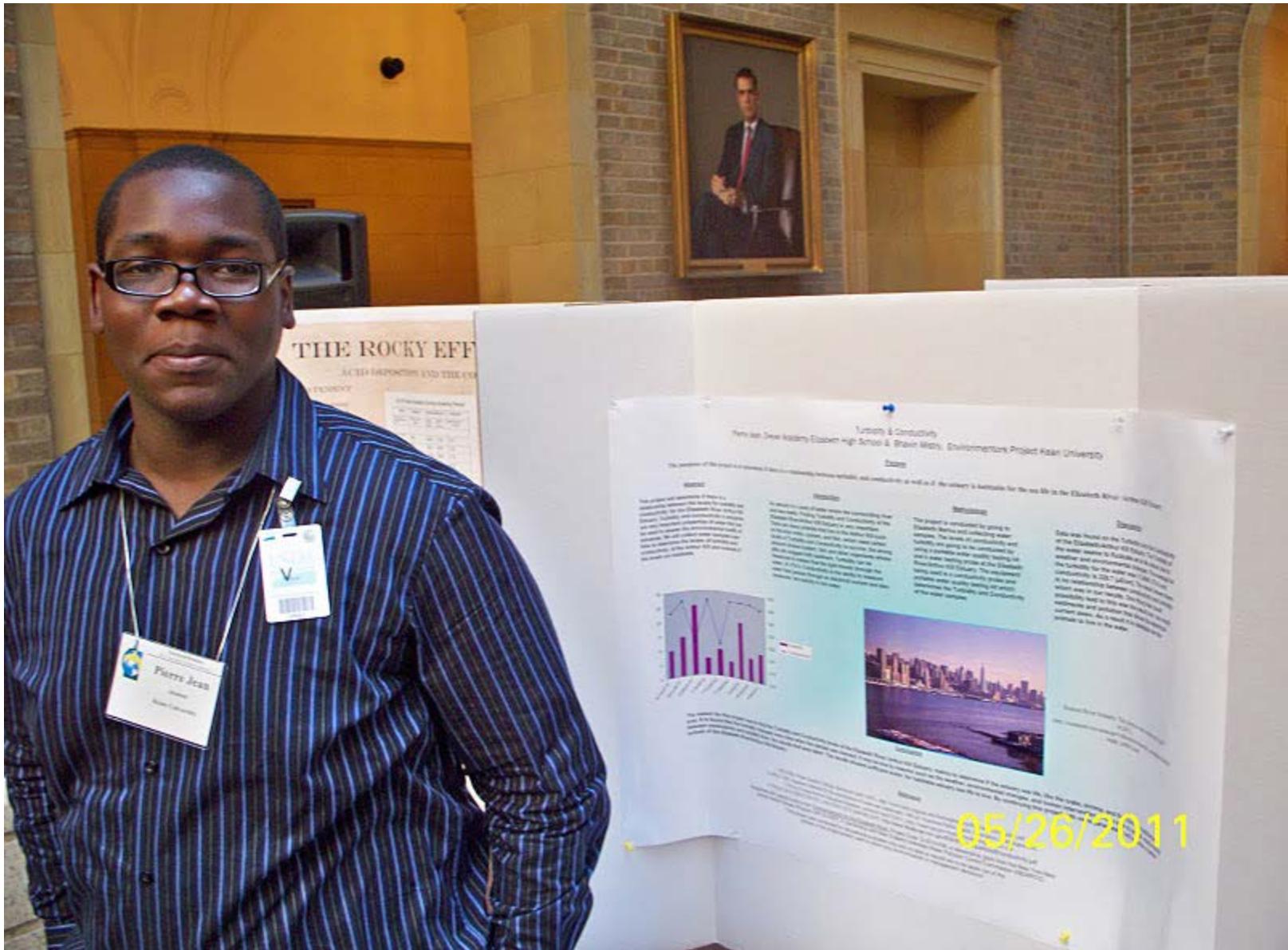
Please contact me if you have questions or need any additional information.

Sincerely,

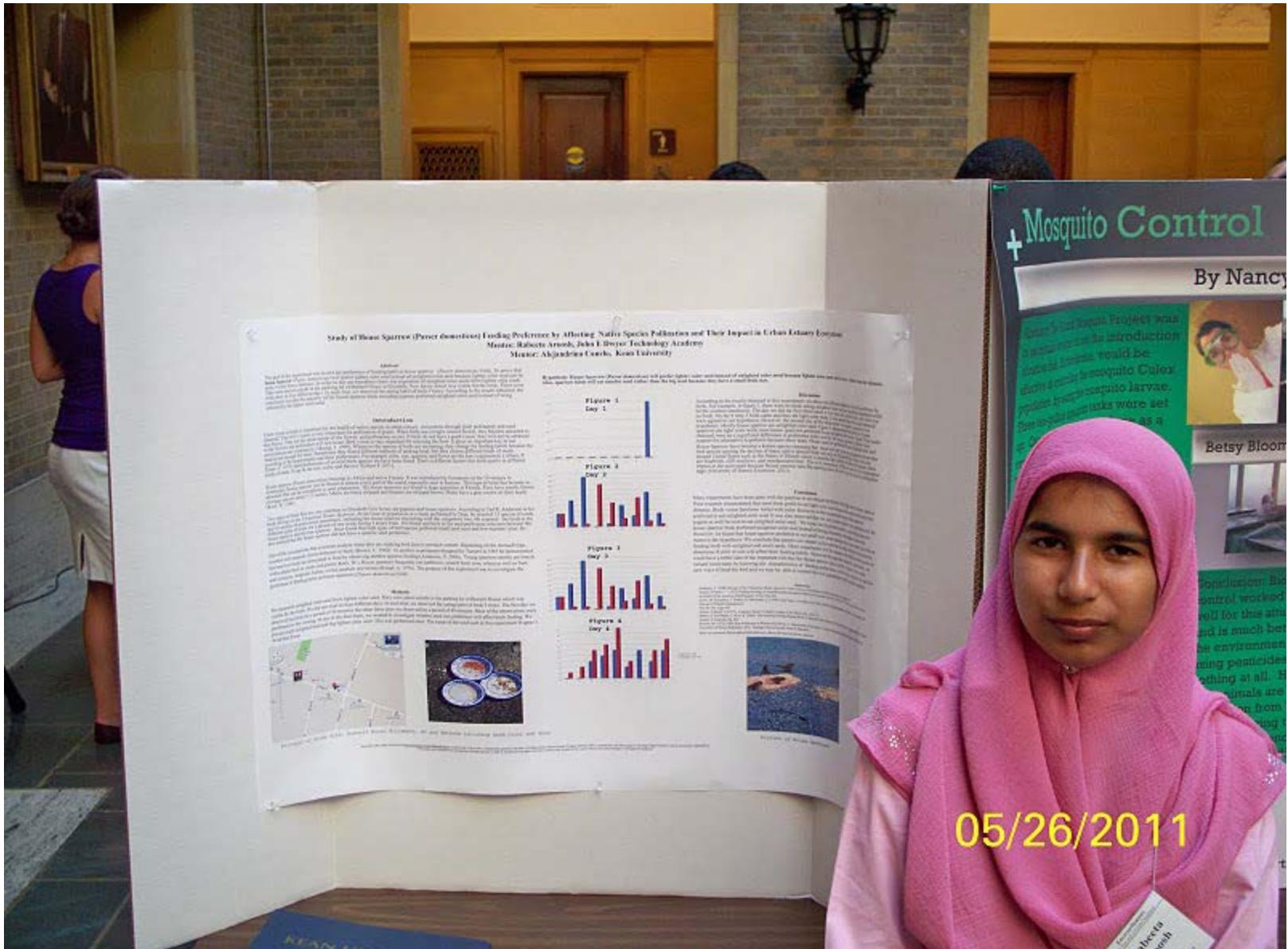
John F. Dobosiewicz, Ph.D.  
Environmentors Chapter Director  
Kean University 1000 Morris Avenue  
Union, NJ 07083  
[jdobosie@kean.edu](mailto:jdobosie@kean.edu)  
(908) 737-0333

CC: Office of Research & Sponsored Programs - Kean University  
Future City Inc. - Elizabeth River / Arthur Kill Watershed Association

Attachments:  
Pictures for Media Release



Pierre Jean, Student – Environmentor Poster Presentation



### Study of House Sparrow (Passer domesticus) Feeding Preference by Abiotic Native Species Pollinates and Their Impact in Urban Estuary Ecosystem

Mentor: Roberto Aronch, John E. Dwyer Technology Institute  
Student: Akjandrea Curok, Kean University

**Abstract**  
The goal of this experiment was to determine the feeding preference of house sparrows (Passer domesticus) for native species pollinates in an urban estuary ecosystem. The experiment was conducted in an urban estuary ecosystem in New Jersey. The experiment was conducted in an urban estuary ecosystem in New Jersey. The experiment was conducted in an urban estuary ecosystem in New Jersey.

**Introduction**  
The house sparrow (Passer domesticus) is a common bird species found in urban areas. It is known for its ability to adapt to human environments. The house sparrow is a common bird species found in urban areas. It is known for its ability to adapt to human environments. The house sparrow is a common bird species found in urban areas. It is known for its ability to adapt to human environments.

**Methods**  
The experiment was conducted in an urban estuary ecosystem in New Jersey. The experiment was conducted in an urban estuary ecosystem in New Jersey. The experiment was conducted in an urban estuary ecosystem in New Jersey.



**Figure 1**  
Day 1



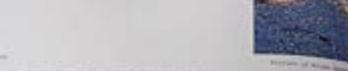
**Figure 2**  
Day 2



**Figure 3**  
Day 3



**Figure 4**  
Day 4



### + Mosquito Control

By Nancy

The goal of this project was to determine the impact of the introduction of a native species on the population of a mosquito (Culex) in an urban estuary ecosystem. The experiment was conducted in an urban estuary ecosystem in New Jersey. The experiment was conducted in an urban estuary ecosystem in New Jersey.

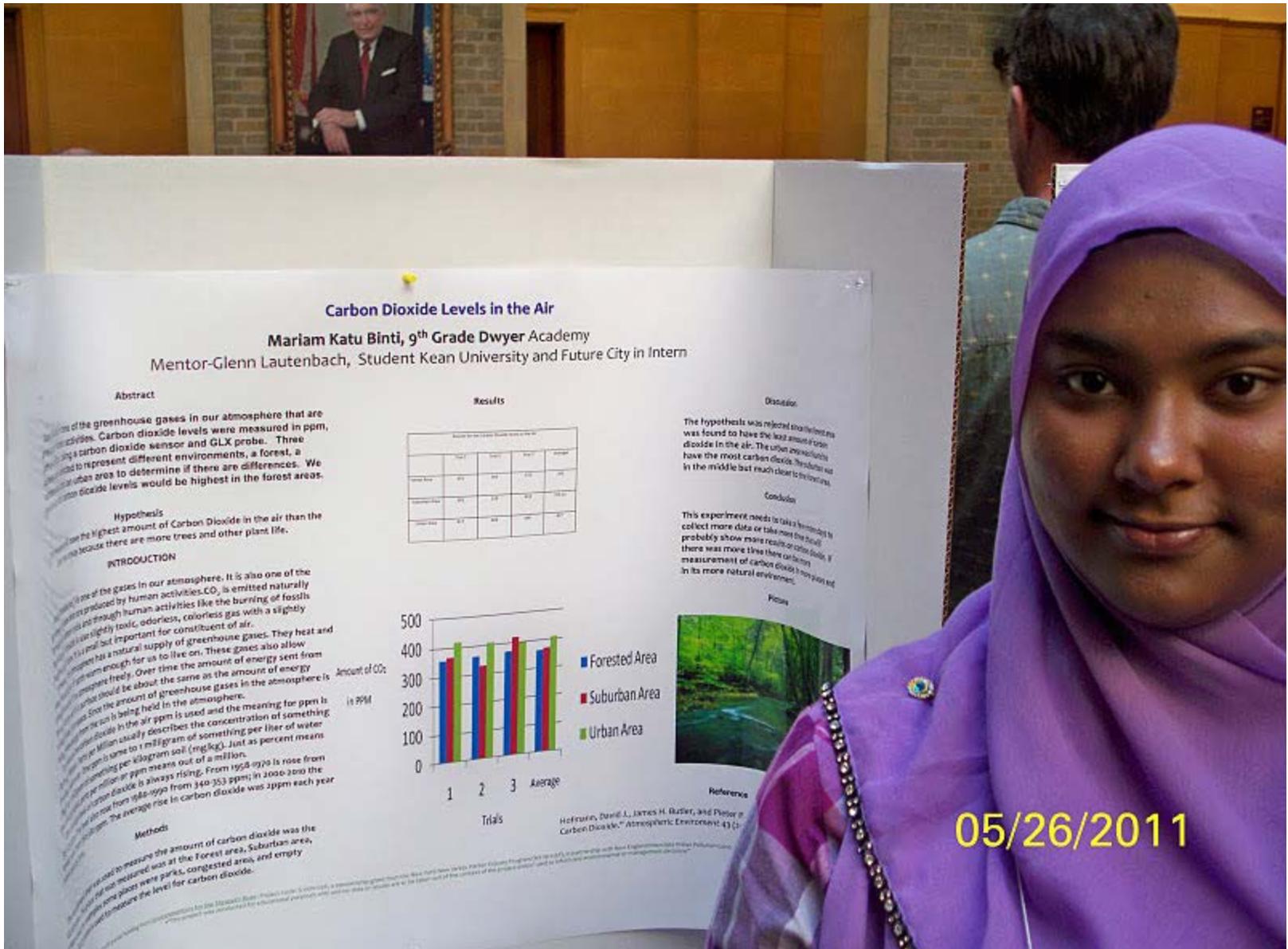
Betsy Bloom



**Conclusion**  
The experiment showed that the introduction of a native species had a significant impact on the population of a mosquito (Culex) in an urban estuary ecosystem. The experiment was conducted in an urban estuary ecosystem in New Jersey. The experiment was conducted in an urban estuary ecosystem in New Jersey.

05/26/2011

Rabeeta Arosh, Student – Environmentor Poster Presentation



## Carbon Dioxide Levels in the Air

Mariam Katu Binti, 9<sup>th</sup> Grade Dwyer Academy

Mentor-Glenn Lautenbach, Student Kean University and Future City in Intern

### Abstract

Greenhouse gases in our atmosphere that are produced by human activities. Carbon dioxide levels were measured in ppm. Three different locations were used to represent different environments, a forest, a suburban area, and an urban area to determine if there are differences. We hypothesized that carbon dioxide levels would be highest in the forest areas.

### Hypothesis

We hypothesized that the highest amount of Carbon Dioxide in the air than the other two because there are more trees and other plant life.

### INTRODUCTION

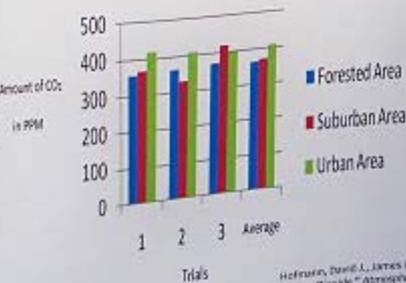
Carbon dioxide is one of the gases in our atmosphere. It is also one of the greenhouse gases produced by human activities. CO<sub>2</sub> is emitted naturally from plants and through human activities like the burning of fossils fuels. It is highly toxic, odorless, colorless gas with a slightly acidic taste. It is a natural but important for constituent of air. The atmosphere has a natural supply of greenhouse gases. They heat and warm enough for us to live on. These gases also allow the sun's rays to warm freely. Over time the amount of energy sent from the sun to the atmosphere should be about the same as the amount of energy that is reflected back into the atmosphere. Since the amount of greenhouse gases in the atmosphere is being held in the atmosphere. Carbon dioxide in the air ppm is used and the meaning for ppm is parts per million usually describes the concentration of something in a liquid. For example, 100 ppm means out of a million, there is something per kilogram soil (mg/kg). Just as percent means out of 100. Carbon dioxide is always rising. From 1958-1979 it rose from 315 ppm to 325 ppm. From 1980-1999 it rose from 340 ppm to 369 ppm. The average rise in carbon dioxide was 2ppm each year.

### Methods

The amount of carbon dioxide was measured at the Forest area, Suburban area, and Urban area. The places were parks, congested area, and empty area to measure the level for carbon dioxide.

### Results

Location	Trial 1	Trial 2	Trial 3	Average
Forest Area	350	380	400	377
Suburban Area	320	340	360	340
Urban Area	300	320	340	320



### Discussion

The hypothesis was rejected since the forest area was found to have the least amount of carbon dioxide in the air. The urban area had the most carbon dioxide. The forest area was in the middle but much closer to the forest area.

### Conclusion

This experiment needs to take a longer time to collect more data or take more time to collect more data or take more time to collect more data. There was more time there carbon dioxide. If measurement of carbon dioxide is more precise and in its more natural environment.

### Picture



### Reference

Holman, David L, James H. Butler, and Peter P. Carbon Dioxide. Atmospheric Environment 43 (2003): 1-10.

05/26/2011

Mariam Kantu-Binti, Student – Environment Poster Presentation



Environmentors at the Smithsonian, Washington, DC