

2014 Environmental Summit Winners

Platform Presentation Winners



Angelica Owen – *Ulster-New Visions* (Teacher: Noah Smith)

WILL ALTERING FEEDING PRACTICES IN JUVENILE HATCHERY RAISED FISH INCREASE THEIR SURVIVAL RATE WHEN REINTRODUCED INTO THE WILD?

The survival of a species is based highly upon their ability to adapt in a rapidly changing environment. Any body of water is especially susceptible to these changes, due to the influence of the human species; this creates a continually changing habitat for fish species. According to the Zoological Society of London (ZSL) 76% of fish species listed as critically endangered are from fresh water as opposed to saltwater. The causes for the sudden decline in populations are due to pollution, damming and draining of waterways, and the effect of invasive species. All of these factors require the fish to have a rapid ability to adapt, yet hatchery raised fish never develop these skills. Removed from all variables, these fish are raised in monitored waterways, which could resemble large pools, and are hand fed. They lack the opportunity to develop necessary cognitive skills to survive in their natural habitats. In this experiment White Nile Tilapia were raised and after a period of about 6 weeks the fish experienced a sudden change in their feeding habits. Twenty-three fish had search for their food placed in one of four containers for 3 weeks. They were tested before and after the experiment began and compared to a group of fish that remained to be hand fed throughout the time period.



Helfeld, Brianna, Eric Kelly, Amanda Morrissey and Samantha Peebles – *Westhill* (Teacher: Megan Wolfe)

RECYCLING TENDENCIES IN ACCORDANCE TO AWARENESS IN SCHOOLS

Americans are guilty of throwing away nearly 28 billion bottles and jars each year instead of recycling them. In 1968, there was seven million tons of waste produced in the US per family per year. Then in 1989, this total increased to 160 million tons of waste produced per family. The purpose of this study was to raise awareness about recycling and its benefits throughout Westhill High School and determine if, after an educational intervention, the amount of garbage that is recycled is significantly higher than the amount of waste that is thrown away. Previous research has shown that increased access to recycling spots and living in an environment in which the idea of recycling is promoted contribute to an increased volume and frequency of recycling. In this experiment, awareness was spread through an increased number of recycling bins and posters giving persuasive facts to see if there was an increase in the number of bottles collected. Upon completing the control and experimental phases, the researchers discovered that after the intervention the number of bottles recycled went from an average of 10.5 to 40.7 bottles on the 3rd floor. Glass bottles and aluminum cans were not collected as frequently due to the inability to purchase these items in school. Together, these results indicate that in general, recycling increases as knowledge and access increase. This study has shown that these two factors play a significant role in determining the amount of bottles recycled by Westhill students.



Mann, Kali, Pavel Bondarenko and Autumn Cullen – *East Syracuse-Minoa* (Teachers: John and Pam Herrington) **NATURALLY CONTROLLING THE PH IN AN AQUAPONICS SYSTEM** In an aquaponics system, goldfish waste can be used to grow plants for food and other purposes. Students worked with an aquaponics system from November of 2013 to May of 2014 and were able to collect data to support the claim that pH can be effected by the aeration of the system. Students experimented with the time of aeration, manipulating the nitrogen cycle and were able to control the pH of the system.

Poster Presentation Winner



Aireyanna Kennedy – *Syracuse Academy of Science* (Teacher: Mihriban Sirin) **FILTERING HEAVY METALS FROM WATER USING ORANGE PEELS** Heavy metals are bio-accumulative, toxic at high concentrations, have neurological impacts, and some are carcinogenic. They can also interfere with chemical processes by poisoning chemical catalysts and can impact on biochemical processes by interfering with enzyme action. There are hence serious environmental, economic and social impacts associated with heavy metal pollution. That's why we aimed to clean heavy metals from water by natural products. We used orange peels to filter heavy metals from water. It is clean, green and sustainable way of cleaning water. Based on our test results, we believe that orange peels are an

effective filtering material for Barium and Copper. Our hypothesis was correct for these metals. Iron could not be filtered by orange peels due to the acidity of the orange peel. Also it was not possible to use the shorter wavelength data from the spectrometer due to the color pigment problems from the orange peel.

Student's Choice Poster Presentation Winner



Timothy Vales– *Fabius-Pompey* (Teacher: Peter Wilder) **A COMPARISON OF PH LEVELS IN PRECIPITATION IN SYRACUSE, NEW YORK BASED ON MOISTURE SOURCE OF A STORM** In this study I investigated whether pH values of precipitation change significantly based on the moisture source region of snow or rain. My hypothesis was that the precipitation from the Ohio River Valley would be more acidic than precipitation coming from Lake Ontario or the Atlantic Ocean. I collected snow from late December through March, and I collected three samples of rainfall. Each time I collected a sample I noted

the wind direction, and consulted the National Weather Service resources about a storm's track. I tested pH using a digital pH meter. The highest pH I recorded was 7.00 which was a sample from lake effect snow derived from Lake Ontario. The most acidic sample recorded was 4.40 which was also from lake effect snow. Therefore, my hypothesis was not supported. However, given that all my samples came from a single geographic location, I believe future studies should include widely distributed samples for each storm event.