

srca **STUDENT RESEARCH & CREATIVE ACTIVITY DAY** **2013**

TUESDAY, APRIL 23
HUNT UNION BALLROOM



SUNY
ONEONTA

SUNY ONEONTA

2013 Student Research & Creative Activity Day

April 23, 2013

10:00 AM – 4:00 PM

Hunt College Union

Sponsored by:

College at Oneonta Foundation, Inc.

Division of College Advancement

Grants Development Office

Office of Alumni Affairs

Division of Academic Affairs

2012/13 College Senate Committee on Research

Thomas Beal (History)

Kelly Gallagher, Chair (Chemistry & Biochemistry)

Melissa Godek (Earth & Atmospheric Sciences)

Mette Harder (History)

Jen-Ting Wang (Mathematics, Computer Science & Statistics)

Kathy Meeker, *ex officio* (Grants Development Office)

<http://www.oneonta.edu/a/srd/>





STUDENT RESEARCH & CREATIVE ACTIVITY DAY

PROGRAM

10:00 AM – 12:00 PM

*Viewing of student posters, computer displays and other exhibits
spotlighting student scholarship and creative activity*

12:00 PM – 1:00 PM

Luncheon and Keynote Address:

Joan Rolf '76

**Assistant Director for International Relations
U.S. Office of Science & Technology Policy
Executive Office of the President**

Periodic Table: Elements of a Successful Career



Joan Rolf, originally from Massapequa, Long Island, graduated from SUNY Oneonta in 1976 with a Bachelor of Science Degree in Political Science, and received her Master's Degree in International Relations in 1978 from Georgetown University. Joan's professional career took her to the U.S. Department of Commerce where she worked in the Trade Administration in the Electronics Division; she then worked at NASA for six years as Japan Team Lead, Asia Team Lead and Acting Division Director for Science in the Office of International and InterAgency Relations. From NASA, Joan joined the Executive Office of the President in 2006, where she serves as Assistant Director for International Relations in the U.S. Office of Science and Technology Policy. In between her work, Joan lived in Japan and Italy with her husband, a military officer; she has also worked in the private sector in the area of technology.

1:00 PM – 4:00 PM

Viewing of student exhibits continues

SUNY College at Oneonta
2013 Student Research & Creative Activity Day
STUDENT PARTICIPANTS

<u>Name</u>	<u>Page No.</u>	<u>Name</u>	<u>Page No.</u>
Sabine Achille.....	18	Kenneth Galazka	12
Samuel Afriyie.....	17	Marielle Genovesi	12
Michael Alavanja.....	1	Nicole Goben.....	12
Francis Alvino	1	Rebecca Goldstein.....	13
Antoinette Astuto.....	1	Kerry Goodnight.....	13
Carter Bailey.....	1	Mollie Goodwin	13
Jaewon Bang.....	2	Shawn Grove	10
Austin Borden.....	32	Nadine Guernsey	4
Brittany Braia.....	2	Michael Guerriere.....	3
Michael Branham.....	3	Emily Harrington.....	14
Angelina Burley.....	3	Megan Harrington	31
Matthew Calado.....	1	Kelly Hassett	14
Michael Caponegro.....	3	Kellee Hassman.....	15
Deanna Caracciolo.....	33	Kasey Heiser	15
Paula Carciu.....	15	Emily Herbert.....	15
Christine Cardillo.....	30	Edward Hernandez	3
Clare Carney	4	Kaylee Herzog.....	32
Naomi Carter	4	Carrie Jackson	16
Elizabeth Castle	4	Derek Johnson.....	16
Jennifer Cesar	4	Olaide Junaid.....	17
Nordia Chambers	5	Robert Kaufherr.....	11
Shing Chung Z. Chiu	5	Scott Keefer.....	17
Brittany Ciardiello	8	Thomas King	18
Chelsea Cleary	5	Sophia Kolankowski.....	18
Amanda Cochran	6	Chelsea Krieg	19
Eric Coe	6	Caitlynn Kwiecinski.....	10,19
Cassandra Conant	6	Wing Chee Lai	20
Daniel Costa.....	7	Emily Lang.....	20
Christopher Cure.....	7	Alex Lawrence	20
Erica Darpino.....	7	David Loveless	21
Tyler Darsa	8	Jason Luce	21
Stephen Dechon	24	Alyssa Lupinski.....	21
Brittany Decker.....	8	Brittany Mabie.....	15
Danielle Denny	8	Felicia Magnan	21
Dominick DeNofio	8	Diane Mancini	22
Anthony Di Pietro.....	9	Christopher Mark	3
Rachel Doery	9	Heather Matthews.....	22
Danielle Dougherty.....	13	Jessica Mayercin.....	22
Anna Downey	19	Matthew McLain	8
Mitchell Duncan	9	Devin McShane	23
Ethan Edmans	26	Kayla Mehigan	23
Colin Ellsworth.....	10	Nicole Mihou.....	23
Morgan Ennis.....	10	Myles Moore	24
Melissa Erickson.....	10	Stephanie Mullen.....	24
Emma Farison	10	Laura Munn	24
Michael Fassett	11	Samantha Myruski.....	23,25
Thomas Fenton	11	Daniel Novelli	3
Mathew Frankel.....	11	Rebekah Obenauer	20
Julia Fremante.....	12	Laura Obernesser.....	25
Jennifer Funes	8	Oluwakemi Ogunmuko	17

2013 Student Research & Creative Activity Day PARTICIPANTS

Shannon O'Neill.....	25	Rebecca Shea.....	19
Randouth Palmer.....	26	Jason Sheehan	30
Colleen Parker.....	24	Katie Sheehan.....	30
Sean Parker.....	16	Juan Soriano	18
Hillari Patschreck.....	25,26	Caitlin Stroosnyder.....	30
Christine Picucci.....	26	Gregory Talamini	33
Mary Margaret Pipher.....	18	Derek Tallman.....	28
Jessica Pizzarello	16	Andrew Tejada	31
Rebecca Poletto.....	27	Christopher Teter.....	31
Connie Randall	27	Nicholas Trimper.....	31
Susan Robinson.....	27	Zachary VanEarden.....	31
Lucas Rock	28	Ileri Vasquez	15
Rebecca Russell.....	7	Nathan Weber.....	7
Margaret E. Ryan.....	28	Joseph Westenberger	32
Serena Sackett.....	3	Danielle Willsey	32
Joanna Salvino	28	Madeleine Yakal.....	33
Lora Schaller.....	28	Crystal Young	33
Kevin Schermerhorn	29	Owen Zaengle	33
Amanda Sendkewitz	29	Shelby Zemken.....	33
Nicholas Sharr.....	29	Rebecca Zopf.....	8

FACULTY SPONSORS

Matthew Albright (Biological Field Station).....	23
Don Allison (Mathematics, Computer Science & Statistics).....	9
Nancy Bachman (Biology)	25
John Bagby (Theatre).....	31
Paul Bauer (Economics, Finance & Accounting)	12
Paul Baumann (Geography).....	1,3,7,11,28
Jacqueline Bennett (Chemistry & Biochemistry)	23,26
Tracy K. Betsinger (Anthropology)	28
Michael J. Brown (Psychology / Women's & Gender Studies).....	10,21,33
Keith Brunstad (Earth & Atmospheric Sciences)	11,17
Devin Castendyk (Earth & Atmospheric Sciences).....	24,27
Charlene Christie (Psychology)	8,15
Lisa Curch (Sociology)	27
Cynthia Falk (Cooperstown Graduate Program)	22
Leigh Fall (Earth & Atmospheric Sciences).....	18
Paul French (Physics & Astronomy)	16
Hugh A. Gallagher, Jr. (Physics & Astronomy)	9
Heike Geisler (Chemistry & Biochemistry).....	11
Melissa Godek (Earth & Atmospheric Sciences).....	9,18,21,29
Allan Green (Chemistry & Biochemistry)	3,14
Martha Growdon (Earth & Atmospheric Sciences).....	19
Sallie Han (Anthropology).....	1,22
Willard N. Harman (Biological Field Station).....	1,16,21,25,30,33
Leslie Hasbargen (Earth & Atmospheric Sciences).....	1
Jeffrey S. Heilveil (Biology).....	6,13,26,28,29

2013 Student Research & Creative Activity Day PARTICIPANTS

Kirsten Hilpert (Human Ecology).....	12,14
Thomas Horvath (Biology)	15,31,33
Karen Joest (Human Ecology)	13
Emmon Johnson (Information Technology Services).....	18
Andrew Kahl (Theatre)	31
Gina L. Keel (Political Science)	33
Cynthia Klink (Anthropology).....	15,26
Toke Knudsen (Mathematics, Computer Science & Statistics)	10,16,19,24,30,33
Sunil Labroo (Physics & Astronomy).....	12
Vicky Lentz (Biology)	23
Ho Hon Leung (Sociology).....	24
Paul Lord (Biology / Biological Field Station)	6
Shasta Marrero (Earth & Atmospheric Sciences)	24,27
Irene McManus (English)	21
James Michels (Physics & Astronomy).....	12,16
Hannah Morgan (Finance & Administration)	18
William O'Dea (Economics, Finance & Accounting).....	31
Hyejune Park (Human Ecology)	2
Florian B. Reyda (Biology / Biological Field Station)	7,29,32
Sean Robinson (Biology).....	4,20
Keith K. Schillo (Biology).....	30
Elizabeth Seale (Sociology).....	10,25
Raymond Siegrist (Secondary Education)	2
Dona Siregar (Economics, Finance & Accounting).....	7,12
Philip Sirianni (Economics, Finance & Accounting).....	8,13,31
Jason Smolinski (Physics & Astronomy).....	10,19
Dawn Sohns (Communication Arts).....	6
Gretchen Sorin (Cooperstown Graduate Program)	20
Edward Stander (SUNY Cobleskill)	17
Renee Walker (Anthropology).....	27
Betty Wambui (Africana & Latino Studies / Women's & Gender Studies).....	4,5,9,12,15,17,22,28
David Wong (Biology / Biological Field Station)	6,25,30
Mike Worrall (Psychology)	3
Qun Wu (Economics, Finance & Accounting)	7,20
Frederick Zalatan (Biology).....	4,11,14,15
Sen Zhang (Mathematics, Computer Science & Statistics)	5
James Zians (Psychology).....	4

PRESENTATION SUMMARIES

Students: Michael Alavanja, Matthew Calado

Faculty Sponsor: Paul Baumann (Geography)

Drought in the Rio Grande Basin: Elephant Butte Reservoir

Droughts are a common phenomenon throughout the Earth's surface. The southwest United States has been dealing with serious droughts over the last two decades. During 2011 the Rio Grande Basin, which extends from the San Juan Mountains in southern Colorado to the Gulf of Mexico, experienced a severe drought. Located midway along the Rio Grande is the Elephant Butte Reservoir, built in 1916 to regulate the amount of water flowing from the upper portion of the Basin to its lower sections. The Reservoir is part of the Rio Grande Project, which provides water for hydroelectric power and irrigation to south central New Mexico, west Texas and a small section of Mexico. The Reservoir provides a barometer to determine the water conditions throughout the Basin. This study used two satellite data sets—one prior to the drought and the other during the drought—to measure and illustrate how much the water level in the Reservoir had declined in 2011.

Student: Francis Alvino

Faculty Sponsor: Leslie Hasbargen (Earth & Atmospheric Sciences)

Utilizing Electromagnetic Induction to Investigate the Presence of Holocene Fire-Related Features at the Pine Lake Environmental Campus

Geophysical methods have been utilized successfully in the last few years to delineate buried stream channels and gravel bars at Pine Lake. This study examines the utility of electromagnetic induction (EMI) in archaeological investigations, to show the differences in soils that have been exposed to fires. Since heat can alter electromagnetic properties, the EMI profiler can potentially show differences in soil due to fire effects. Fires tend to dry out soils, giving them a lower electrical conductivity; however, the iron in the soil may become magnetized, making the soil magnetically susceptible and electrically resistive. Anomalies observed while surveying the Pine Lake campus seem similar to those of hearths or fire pits in shape and location of the field site. We partitioned the floodplain into seven rectangular grids and conducted EMI and ground penetrating radar (GPR) surveys at half-meter spacing for each profile. We subdivided the survey fields into several blocks for ease of visualization.

Student: Antoinette Astuto

Faculty Sponsor: Sallie Han (Anthropology)

Virginity: A Patriarchal Means of Controlling Women's Sexuality

With recent events, we have seen women's sexuality become an increasingly public agenda. Patriarchal control of fertility constricts women in many cultures, harming them physically and mentally through a socially constructed idea of virginity. Socially and culturally constructed concepts of virginity hold a value that is often medicalized, even though there is no working medical definition for "virgin." I will explore historical and cultural constructions of virginity as an asset that carries value and draw from theoretical frameworks of anthropologists Gayle Rubin and Mary Douglas. With this evidence, I will apply it further to contemporary news accounts of women bargaining in a patriarchal society, for example, through the sale of their own virginity to the highest bidder.

Student: Carter Bailey

Faculty Sponsor: Willard N. Harman (Biological Field Station)

Late-Season Algal Succession and Percent Composition of Cyanophyta: Canadarago Lake, Otsego County, NY

Canadarago Lake is the focus of a great effort that will culminate in the drafting of a comprehensive lake management plan which will serve as a long-term management tool and a vessel for obtaining lake watershed improvement grants. The data from this report, other studies (Fuhs 1973, Harr et al.

1980, Albright & Waterfield 2011), and future experiments, will all contribute to the lake management plan as a whole. Canadarago Lake (N 42.81, W 75.00) is a dimictic lake of glacial origin located in northern Otsego County, NY, within the northeastern section of the Allegheny plateau and part of the headwaters of the Susquehanna River and Chesapeake Bay watersheds. The total nitrogen:total phosphorous (TN:TP) ratio in algal biomass is generally 7:1-10:1 (Schindler & Vallentyne 2008); phosphorus limitation is expected when in-lake concentrations exceed this ratio. In temperate climates, cyanobacteria can frequently come to dominate surface waters, where they are able to outcompete other phytoplankton under eutrophic (phosphorus-rich) conditions. In Canadarago Lake phosphorus load throughout the water column is expected to be at its climax post-destratification. The onset of Fall seasonal thermal destratification took place between the dates of 2 October and 14 November, 2012. Nutrient concentrations remained relatively similar between the two sampling dates (nitrogen: 0.27-0.31mg/L, phosphorus: 16-12µg/L). The percent composition of Cyanophyta (blue-green algae) within the surface algae community showed no statistical difference between pre- and post-Fall turnover (P-Value=0.553); however, a seasonal shift in the cyanobacteria populations present was evident. Nutrient availability appeared to have a secondary (nonderivative) impact on Fall surface algal assemblages.

Student: Jaewon Bang

Faculty Sponsor: Hyejune Park (Human Ecology)

The Second Generation of E-Commerce: Online-Only Fashion Retailers' E-Tailing Strategies

Global e-commerce sales passed \$1 trillion in 2012, with strong growth in the North America and Asia-Pacific regions. The growth of e-commerce has recently been fueled by retailers that sell only online, with no bricks-and-mortar stores. Despite the emergence and growth of online-only retailers, little is known about how this business model works in relation to components of online-only retailers' websites offered to consumers. This study will examine the elements of online-only retailers' websites by analyzing all identifiable components, and will also explore the consumers' experiences and value creation of online-only retailers' websites. The project will focus on the online-only retailers that sell fashion products, acknowledging that fashion is the fastest growing segment in e-commerce, driving U.S. retail e-commerce sales growth. To achieve the research objectives, a content analysis of sample online-only fashion retailers (OOFER) websites, along with a consumer survey and interviews, will be conducted. This study will assist OOFER in meeting the needs of consumers by providing a comprehensive list of website components that might be comparable to either online-only retailer websites in other product categories, or general fashion multi-channel retailers' websites. This study will also be used to minimize a knowledge gap between shoppers and retailers concerning consumers' needs and expectations for information and services in shopping experiences with OOFER.

Student: Brittany Braia

Faculty Sponsor: Raymond Siegrist (Secondary Education)

Homework

My eight-week independent study questioned whether authentic assessments were preferred by students and/or were effective. I also asked what type of assignments students were more inclined to complete when assigned homework. The study was qualitative in nature, as I tried to richly describe the answers to my research questions. Given a mathematics concentration, my independent study consisted of anonymously surveying 71 students in their math classrooms, and interviewing six students and all five math teachers of Frost Valley High School (with the approval of the superintendent of the district and principal of the high school). Students took up to ten minutes to fill out the anonymous survey. Questions included fill-in-the-blank, multiple-choice, and short-response types. During individual interviews, I had an informal conversation with teachers about their opinions of homework guided by categorical questions. In the same manner, I interviewed individual students, who had signed consent forms from guardians, asking their opinions of homework and following the questions asked on the survey in a bit more detail. I also took notes during the interviews to verify my research at later dates; I often consulted my notes for confirmation throughout the study when assessing my research question.

Students: Michael Branham, Edward Hernandez, Daniel Novelli

Faculty Sponsor: Paul Baumann (Geography)

Natural Disasters Decimate the Economic Engine Known as the Mississippi River

The Mississippi River provides a tremendous transportation network covering two-thirds of the United States. This network becomes significantly impacted during times of drought and flooding. In 2011, a large flood occurred on the Mississippi River due to rapid snow melt in the Rocky Mountains, which flooded the Missouri River, along with two major storm systems across the Ohio Valley region, making for the wettest April on record and causing heavy flooding in the upper region of the Lower Mississippi River Valley. The 2011 flood was as bad as the region had ever seen. Known economic impacts include losses of an estimated \$3 billion in combined agricultural, raw materials, and energy sources. Thousands of individuals were displaced from their homes and suffered personal losses in employment and property. This study incorporated two satellite datasets to measure and illustrate the amount of flooding in the upper region of the Lower Mississippi River Valley.

Students: Angelina Burley, Christopher Mark, Serena Sackett

Faculty Sponsor: Mike Worrall (Psychology)

Evaluation and Comparison of Two Methods of Teaching Observational Coding to Undergraduate Psychology Majors

Observational coding has been utilized in psychological research to record and measure many types of behavior, including therapist and client interactions. The coding of psychotherapy sessions allows for the improvement of therapy techniques and treatment fidelity, and the verification of successful treatment delivery; however, the process of training reliable and capable coders can be time-consuming, thereby limiting assessments of treatment fidelity and significantly slowing research procedures. Consequently, more efficient methods of training coders are necessary. Computer-based methods could provide a faster, more efficient process of training coders. The present study will compare computer-based and paper-based methods for the teaching of observational coding to undergraduates, utilizing the Validating and Invalidating Behavior Coding Scale (VIBCS). The VIBCS was selected due to its moderately complex nature. Sixty undergraduates will be recruited with a five-dollar gift card incentive and will be randomly assigned to either a computer-based or a paper-based coding tool. Subjects will be presented with a training video explaining validation scales and demonstrating use. Following the training, participants will code three mock therapy sessions, using their respective tool. Intra-class correlation coefficients will be utilized for the comparison of coding accuracy between groups and with researchers.

Students: Michael Caponegro, Michael Guerriere

Faculty Sponsor: Allan Green (Chemistry & Biochemistry)

The Effects of Oxamate and Curcumin on Glucose Uptake and Lactate Release in Adipocytes

Excess blood fatty acid concentrations are associated with many of the chronic diseases that are at epidemic levels in the United States, particularly heart disease, obesity, and type 2 diabetes. High rates of glycolysis are known to increase fatty acid release into the bloodstream. Epididymal adipose tissue of rats was digested in buffer containing 1mM glucose. Glucose uptake and lactate release of isolated fat cells were measured through spectroscopy. Previous studies suggest the addition of Curcumin and Oxamate inhibit lactate release in fat cells. We are continuing this research to further investigate this relationship as well as quantify glucose uptake in the cells. Curcumin is a yellow-pigment substance found in turmeric and has been used as an anti-inflammatory agent for years. Oxamate is a known inhibitor of Lactate dehydrogenase, which catalyzes pyruvate to lactate. However, due to Curcumin's inability to be absorbed in the blood stream, it will serve as a model for further research. If these experiments are successful, further research on fatty acid release will be pursued.

Students: Clare Carney, Nadine Guernsey

Faculty Sponsor: Frederick Zalatan (Biology)

Analysis of Bacterial Communities through DNA Sequencing

Water samples were obtained from Otsego Lake in order to analyze the bacterial species present. DNA was extracted and isolated from the samples, and segments of the bacterial DNA were amplified using the polymerase chain reaction. Experiments are in progress to sequence the amplified bacterial DNA samples. This process of environmental sequencing has the advantage of allowing for the analysis of uncultured samples.

Student: Naomi Carter

Faculty Sponsor: Betty Wambui (Africana & Latino Studies / Women & Gender Studies)

"Re-Root"--Analysis of Cultural Identity Alienation and Re-Evaluation of Self-Imagery and Concepts of "Black" Hair

Starting from childhood, many young women of color are faced with a huge predicament – they were unknowingly born with a "defect." Their "nappy" hair is "not acceptable" and must be changed. From childhood into adulthood, women of color have faced the challenge of hair acceptance. To be unaware of one's own hair's textural beauty is a direct and indirect oppression of the mind and soul, leading to the defeat of one's own self-imagery and self-esteem. This presentation examines the history of afro-textured hair, beginning with a look at African hair traditions and a review of their drastic alteration during and after the slave trade. Further, confronting present-day ideologies about "Black" hair and highlighting the view points and opinions of various women of color, the presentation will discuss the biggest fears and hindrances of "going natural." The ultimate goal is to bring awareness and to ultimately change the way afro-textured hair is valued and accepted. Re-learning to love and accept one's true self is learning to love and accept one's being as a whole. This will result in greater happiness and freedom, further empowering the current and future generations of women who will learn to love and accept their natural hair.

Student: Elizabeth Castle

Faculty Sponsor: Sean Robinson (Biology)

The Effect of Elevation on Reproductive Performance in Populations of *Sphagnum fuscum*

Given the high metabolic cost associated with sexual reproduction, and the harsh conditions of alpine habitats, asexual reproduction is assumed to be high in alpine plant populations. This is predicted to result in reduced levels of genetic variation, thereby reducing the adaptability of species over time. Given current concerns about climate change and its possible impact on such environments, alpine plant communities are thought to be at an evolutionary disadvantage. In order to test this hypothesis, reproductive performance was assessed in *Sphagnum fuscum* (Klinggr.), which occurs on the Adirondack alpine summits. Samples of this species were collected from high- and low-elevation sites in and outside of the Adirondacks. Genotypic diversity was inferred from variation at 16 microsatellite loci. In addition, samples of *S. fuscum* were collected and examined for physical evidence of sexual reproduction (gametangia and sporophyte production). Genetic analyses thus far reveal low genetic diversity in summit populations. Physical dissection of collected material found gametangia in just one sample. Fewer sporophytes were found in summit collections compared to collections from low elevations. Further analyses are being conducted to determine the extent of asexual reproduction in, and possible genetic isolation of, these unique plant populations.

Student: Jennifer Cesar

Faculty Sponsor: James Zians (Psychology)

Predictors That Improve Finding LGBT-Competent Healthcare Providers

A doctor's knowledge of patients' LGBT status supports treatment plans better tailored to meet patients' healthcare needs. This also improves relationships between patients and doctors. Having local information about available healthcare providers who are known to be LGBT-competent would benefit LGBT communities greatly and help more LGBT persons "come out" to their doctors.

Diminishing barriers to coming out to one's doctor (e.g., having someone accompany one to a doctor's appointment) was a focus of this study. Respondents (N=367) ages 21 to 83 completed a 36-item survey related to "difficulty accessing/delaying healthcare" and a 12-item survey regarding "information and strategies for identifying LGBT-competent doctors." Assessments used five-point Likert scales. Exploratory Factor Analysis using varimax (orthogonal) rotation reduced the 36-item survey to six factors. Additionally, each factor was assessed for association with the dependent variable "needing additional support when visiting a healthcare provider." Demographic variables significantly correlated with the dependent variable were entered into a multiple linear regression equation along with the significantly correlated factors. A final model predicting "needing support for healthcare provider visits" included higher income and factor 1 [characteristics of providers] ($R^2=.12$, $p<.001$). Respondents also prioritized ways they wished to receive information about LGBT-competent doctors.

Student: Nordia Chambers

Faculty Sponsor: Betty Wambui (Africana & Latino Studies / Women's & Gender Studies)

Violence, African Women and the Sexual Divide

Patriarchal structures and traditional roles of gender create social and political limitations for African women. In many parts of Africa, women's gender roles are considered subordinate to those of men, which leads to the sexual division of labor in the home, workforce, politics, and religion. Traditional roles are used to limit their participation in decision making and rewarded roles, and puts women in danger of violent acts used towards them. Theorists claim that the cultural explanation of why violent acts are used upon women includes: 1) disputes over the husband's traditional economic obligation; 2) anger over the wife's "failure" to fulfill the role of a wife; and 3) failure of the wife to conform to her "expected" behavior. This study is an examination of family life in Africa and why it might explain gender division and violence towards women.

Student: Shing Chung Z. Chiu

Faculty Sponsor: Sen Zhang (Mathematics, Computer Science & Statistics)

Kinect-Enabled Scanning Toolkit Using an AX12A Robot (Project K-STAR)

Project K-STAR involves building a prototype of a 3-D scanner consisting of both hardware and software components. The hardware component is a robot consisting of a body and a head. The body is a quadruped robot whose leg joints are built from using AX-12A servo motors. The head is a Kinect console, which can take raw infrared images of the environment and translate them into depth images. From the depth images, 3-D point cloud data can be derived and further translated into 3-D mesh models, which can be viewed in standard 3-D software packages such as Meshlab, Maya and Rapidform. A software component has also been developed to "walk" the quadruped robot. The toolkit has been used as a movable 3-D scanner that can dynamically scan a span of an extended 3-D space. As the robot moves around, a stream of depth images can be continuously collected by the attached Kinect and synchronized into a unified 3-D model. The project involved programming the application programming interfaces (APIs) of the Ax-12A servo motors, assembling the quadruped robot, using the open-source Kinect package, and investigating 3-D scanning technologies. In the future, the toolkit can be further enhanced to support more challenging applications.

Student: Chelsea Cleary

Faculty Sponsor: Betty Wambui (Africana & Latino Studies / Women's & Gender Studies)

A Biased Life: Discussing the Patriarchal Constructions of Personhood Within Modern Abortion Arguments

This thesis will discuss and outline the influence of patriarchal values on the linguistic construction of "personhood" within many modern abortion arguments. "Personhood" will be introduced as a physical property, contrary to the implications that "personhood" is exclusively connected to psychological, moral, and other such behavioral properties. The relationship between societal values and language will also be explored, in order to emphasize the constrictions of who (e.g. mother and

fetus) is considered a person and what is reduced to a non-person with regard to discussions of abortion. This thesis will support the position that the concept of "personhood," as it is used today, is expressed as a one-to-one relationship, meaning that there is one physical body and, therefore, only one person is recognized. Verbal recognition of "personhood" allows human beings access to rights and protections within social, legal, medical, and moral realms. This thesis will conclude with an outline of why this one-to-one relationship of "personhood" excludes women from gaining full access to these privileges of "personhood," and will offer solutions to allowing women equal access to "personhood."

Student: Amanda Cochran

Faculty Sponsor: Jeffrey S. Heilveil (Biology)

Paternity Testing in *Nigronia serricornis* Using Advanced Molecular Methods

In many species, multiple males compete for the opportunity to mate with the same female (Pitnick et al. 2001). In insects, however, mating success is not synonymous with reproductive success. Females can mate with multiple males, and then either store the sperm to use for fertilization after copulation (Pitnick et al. 2001), or eject the sperm from her body (i.e. cryptic sperm emission [Eberhard 1994]). Offspring from the same cohort may, therefore, have different fathers. Using advanced molecular methods, we can determine the number of males contributing to one egg mass and better understand the mating habits of *Nigronia serricornis*. This information will give us a more complete picture of the life history of this organism and be helpful in future bioassessment studies due to the fact that *N. serricornis* is commonly used as a bioindicator species in aquatic environments (Dallas & Rivers-Moore 2011).

Student: Eric Coe

Faculty Sponsors: David Wong, Paul Lord (Biology / Biological Field Station)

Canadarago Lake Steward, Northern Otsego County

The goal of this effort is to present Canadarago Lake users with a set of refined interpretive messages for the protection of their waterbody. Lake stewards are the front line in protecting New York's water bodies from infestation by non-native aquatic organisms. Canadarago Lake is located in northern Otsego County, approximately twelve miles from the SUNY Oneonta Biological Field Station. Non-native organisms are species that thrive in aquatic areas beyond their natural range, and are a serious management problem in New York State's aquatic ecosystems. As a steward for Canadarago Lake, I will prioritize non-native nuisance organisms, educate lake users on the proper transport of vessels, and answer questions concerning the protection of heretofore little impacted local lakes. Working in partnership with the Canadarago Lake Improvement Association, we will identify and train community volunteers to assist with non-native organism awareness efforts. Stewardship programs provide a direct link between education regarding non-native aquatic organisms and the public that uses the waterbodies daily. Providing refined interpretive messages to lake users is essential to averting costly non-native organism management. Once introduced, these organisms disturb native plants and fish communities and disrupt whole ecosystems.

Student: Cassaundra Conant

Faculty Sponsor: Dawn Sohns (Communication Arts)

Public Relations for the Oneonta Theatre

The Oneonta Theatre has been around since 1897, making it amongst the oldest continuously operated theatres in the United States. Due to lack of success in recent years, the theatre has been in grave danger of shutting down. In an attempt to make it an important place in the community again, hundreds of hours of planning and renovations occurred; however, the desired results were not totally achieved. Preliminary research revealed that people in communities with historic theatres feel a strong connection to them. Using this newfound information, it was decided that the Oneonta community would be the target audience for the research project. In order to get more insight into what people think of the theatre, a survey was produced and administered to members of the local

community. It served as a way to figure out how to best incorporate the Oneonta Theatre as a staple venue in the city. Through use of the survey, an appropriate public relations plan for the theatre was produced in order to bridge the gap between the Oneonta Theatre and the community.

Student: Daniel Costa

Faculty Sponsors: Dona Siregar, Qun Wu (Economics, Finance & Accounting)

How Does High-Frequency Trading Affect End-of-Day Price Dislocation of Stocks Following Earnings Reports?

Over the past decade, computerized trading within stock exchanges through Electronic Communication Networks has exploded, with 97 percent of trades now submitted electronically. Computerized algorithms help firms retrieve and analyze market data and initiate trades strategically. High frequency trading (HFT), a trading style based on volume and split-second timing, has emerged as a massive market force in this new trading landscape. Using the fastest servers, HFT firms hold positions for mere milliseconds, making fractions of a penny on each holding. In 2011, HFTs comprised two percent of all trading firms, but accounted for 70 percent of trading by volume. Their high activity gives them enough power to skew stock prices from their natural value; however, as sources of electronic trades cannot be observed, HFT levels of activity and price manipulation are difficult to decipher. Recent studies have used proxies to identify HFT market manipulation and impact on the stock market as an accurate way to estimate HFT activity levels within exchange markets. Our research analyzes end-of-day price dislocation, a known by-product of HFT, to measure activity levels and answer the question: How does HFT affect end-of-day price dislocation after earnings reports miss or exceed analyst estimates?

Students: Christopher Cure, Nathan Weber

Faculty Sponsor: Paul Baumann (Geography)

New Temperature Map of the Catskill Hill Region

Hill and mountain regions are generally not well portrayed on regular temperature maps. These maps typically display such regions with generalized isothermal lines, created using data from a few weather stations. The Catskill Hill Region illustrates this situation. This study attempts to produce a more detailed temperature map of the Catskill Hill Region, employing more than 2.8 million elevation and latitude data points. The data points were obtained from a Digital Elevation Model (DEM) produced by the U.S. Geological Survey (USGS). Using mean annual temperatures, elevation readings, and latitude values of the available weather stations covering the region, a multi-regression model was formulated. The results of this model, in conjunction with the DEM data set, were used to create a detailed isothermal map. The outcome of this study will be displayed in this presentation, showing both the generalized isothermal map and the map produced by the model.

Students: Erica Darpino, Rebecca Russell

Faculty Sponsor: Florian B. Reyda (Biology / Biological Field Station)

Digenetic Trematodes of the Fishes of Otsego Lake, New York

This study of digenetic trematodes is part of a survey of the intestinal parasites of fishes of Otsego Lake and its tributaries (Cooperstown, New York) from 2008 to 2012. In total, 430 individual fish were collected by hook and line, seine, gill net, or ElectroFisher, and subsequently examined for intestinal parasites and, in many cases, for parasites in other fish organs. The survey included a total of 27 fish species, consisting of six centrarchid species, one ictalurid species, eleven cyprinid species, three percid species, three salmonid species, one catostomid species, one clupeid species, and one esocid species. Digenetic trematodes were examined with light microscopy following preparation of whole mounts. Among the fish examined, seven fish species were infected with adult digenetic trematode species in the alimentary canal, whereas 18 fish species were infected with metacercaria in other organs. Adult trematodes included *Azygia longa* in five host fish species: *Esox niger*, *Perca flavescens*, *Ambloplites rupestris*, *Lepomis macrochirus*, and *Lepomis gibbosus*, and a species of *Cryptogonimus* in two fish species: *A. rupestris* and *Micropterus dolomieu*. There are ongoing efforts

to characterize the species through histology, scanning electron microscopy and possibly DNA sequence data. Attempts are being made to obtain species identification of metacercaria using the DNA barcodes in a different study. In addition to identifying parasites to species, we hope to better define the species characteristics and clarify conflicting information in the literature.

Student: Tyler Darsa

Faculty Sponsor: Philip Sirianni (Economics, Finance & Accounting)

Is There a Relationship Between a Firm's Environmental Record and its Financial Performance?

Previous research has found a direct correlation between a firm's environmental record and its financial performance. This project uses carbon disclosure ratings of firms provided by the Carbon Disclosure Project (www.cdproject.net) to construct portfolios of low and high carbon polluters within their respective industry. In particular, firms with ratings below the median carbon rating in an industry go into a "high-pollution portfolio," and firms with ratings above the median are put into the "low-pollution portfolio." I then examine the percentage returns on the portfolios, using return on assets, return on equity, and risk-adjusted stock market returns as the financial performance variables over the period from 2010 to 2011. My results show that for the majority of the financial performance variables, there is no statistically significant difference in the financial performance of the low and high pollution portfolios, except for the return on equity in 2010, for which the low pollution portfolio had higher returns. My further research will examine whether there is a significant difference in the portfolios that depends on the size of the firm (small or large cap).

Students: Brittany Decker, Dominick DeNofio, Matthew McLain, Rebecca Zopf

Faculty Sponsor: Charlene Christie (Psychology)

What is Hidden Can Still Hurt: Concealable Stigma, Social Anxiety, and Stereotype Endorsement

The purpose of this study is to explore potential relationships with regard to stereotype endorsement and feelings of social anxiety by people who belonged to a concealable stigma group of sexual orientation versus people associated with members of this group versus people who did not belong to either of the two previous groups. Our results indicated there were positive and negative correlations between the specific groups with regard to stereotypes and social anxiety.

Students: Danielle Denny, Brittany Ciardiello, Jennifer Funes

Faculty Sponsor: Charlene Christie (Psychology)

Gender Stereotyping: Embracing the Positive and Distancing the Negative

With a list of stereotypes divided into traits, roles, interests and behaviors, subjects rated each stereotype on a feminine-masculine scale. Our hypothesis suggested that more items would be rated either "very masculine" or "very feminine" than rated neutrally. Upon completing our study, we found that many traits were rated as either more masculine or more feminine, but not as strongly as we expected. It was interesting to note that there were numerous cases in which stereotypes were rated as neutral. This happened more often with negative stereotypes. Some male stereotypes that are considered negative were typically rated as more gender-neutral by men, yet more typical of males by women; the same pattern occurs for females. With positive stereotypes, a pattern was revealed indicating that positive stereotypes were often found to be more associated with the participants' own gender. In simple terms, men rated positive stereotypes to be more typical of males while females deemed them gender neutral, and vice versa for women. It was interesting to note the difference in responses based on the subject's gender, showing that people are more willing to think positively of those in their in-group, and more negatively of out-group members.

Student: Anthony Di Pietro

Faculty Sponsors: Hugh A. Gallagher, Jr. (Physics & Astronomy), Don Allison (Mathematics, Computer Science & Statistics)

Detection of Meteors in Nighttime All-Sky Images Using the Hough Transform

A white-light all-sky camera is located on the roof of the Science I Building of the SUNY Oneonta campus. The camera takes pictures of the night sky at regular intervals and records images that exhibit a significant change from the previous image. The system thus captures images of planes, satellites and meteors. Over the past two years, this camera has operated during periods of prominent meteor showers. The overall goal of this research is examine ways to automatically detect objects in the images and discriminate meteors from other objects. For this purpose, we investigated the applicability of the Hough Line Transform to detect near linear objects in the observed path. We will discuss the development of the Hough Line Transform and evaluate its strengths and limitations for detecting the observed structures.

Student: Rachel Doery

Faculty Sponsor: Melissa Godek (Earth & Atmospheric Sciences)

The Impact of ENSO and NAO on Seasonal Temperature and Precipitation Patterns in Oneonta, New York Since 1981

Located in upstate New York between Binghamton and the capital city of Albany, Oneonta is one of the State's smaller cities with a long-term record of daily temperature and precipitation data. Nevertheless, this 30-year dataset has been under-utilized and never assessed statistically for climatological influences upon the city. Local meteorologists often reference the El Niño Southern Oscillation (ENSO) and North Atlantic Oscillation (NAO) teleconnections as major impacts to upstate New York seasonal weather variability, and this dataset is useful for testing the validity of such hypotheses. The goal of this research is to examine daily rainfall, snowfall, and maximum and minimum temperatures for Oneonta using these data. Each three-month meteorological season over the past 30 years is statistically evaluated during all ENSO and NAO phases, including neutral episodes. Seasonal temperature and precipitation variability is also examined during combination phase ENSO and NAO events. Descriptive statistics of seasonal mean conditions with departures from average characteristics, standard deviation and variance, and comparisons within and between teleconnection phases are performed. Finally, the strongest ENSO and NAO event days are segmented for further analysis to determine if these represent the greatest daily departures from normal on record. Results indicate that the NAO is a more important influence on temperature and precipitation than ENSO in Oneonta. This is particularly true for the fall and winter seasons. In winter, negative NAO phases correspond to maximum temperatures that are below freezing, while positive NAO events are related to above-freezing temperatures; these findings are amplified for strong events. Generally, negative phases are related to the greatest departures from average and neutral conditions of all the NAO events, though the variability falls within the range of a standard deviation and expected variance. Maximum and minimum temperatures are below average in all seasons during a negative NAO. Daily rain and snowfall totals are above average in this phase. Times with neutral NAO dominance result in significantly higher maximum and minimum summer temperatures than all other phases.

Student: Mitchell Duncan

Faculty Sponsor: Betty Wambui (Africana & Latino Studies / Women's & Gender Studies)

Colonial Kenya, Mau Mau, and Myth-Making

The aim of this presentation is to closely examine aspects of the Mau Mau Revolt in order to uncover its effects on decolonization, specifically the decolonization of Kenya. The Mau Mau do not have a concrete place in history nor in memory. One of intentions of the colonizer was to maintain a myth of revenge that was instilled into the White settler. Thus, the Mau Mau Revolt was blown out of proportion and the myth that Black Kenyans were going to challenge White colonists by threatening to kill them was circulated throughout the British press. The notion of "the Other," the threat of the

unknown Black revolutionary, was circulated and justified White settlers arming themselves. This paper examines the notion of myth-making during the British occupation of Kenya at the turn of the 19th century.

Student: Colin Ellsworth

Faculty Sponsor: Michael J. Brown (Psychology / Women's & Gender Studies)

The Role of Homophobia and Traditional Gender Role Beliefs in Juror Decisions of Same-Sex and Opposite-Sex Statutory Rape Cases

Statutory rape laws are based on the premise that until a person reaches a certain age, that individual is legally incapable of consenting to sexual intercourse. Although there is general support for the concept of statutory rape as illegal, there is substantial debate on how vigorously such cases should be pursued, and under what circumstances. This study examines college students' perceptions of statutory rape cases in which the gender of the defendant and "victim" is manipulated. Overall, there were differences in perceptions of same- sex and opposite-sex scenarios.

Students: Morgan Ennis, Shawn Grove, Caitlynn Kwiecinski

Faculty Sponsor: Jason Smolinski (Physics & Astronomy)

International Asteroid Search Campaign: A Deeper Look Into Near-Earth Asteroids

Asteroid impacts are believed to be the primary cause for the most devastating mass extinction event in history, in which 96 percent of all marine species and 70 percent of all terrestrial vertebrate species went extinct, as well as the most recent mass extinction event, which laid waste to the dinosaurs just 65 million years ago. Even today, asteroids pose a clear danger to the continued survival of life on Earth, including humans. The detection and characterization of their orbits is the only way in which we can hope to discover and deflect asteroids that may pose a threat in the future. In our asteroid search with the Pan-STARRS Asteroid Search Campaign, headed by the International Asteroid Search Collaboration, we made provisional discoveries of two asteroids, 2012 FF7 and 2012 GB7.

Student: Melissa Erickson

Faculty Sponsor: Elizabeth Seale (Sociology)

Slut-Shaming Among College Students

This study focuses on the ways language is used to contain women's sexuality, and the ways it is used to socially discipline women into repressing aspects of their sexuality. I am primarily interested in "slut shaming" and how frequently college students engage in this behavior. I will investigate whether men or women are more likely to engage in this type of labeling, and the circumstances under which it occurs. I will use participant observation and interviews to gather information and data about the subject matter. This study is important in that it not only focuses on the effects that male-female relationships have on the suppression of women's sexuality, but also focuses on the ways females impose these norms upon each other. It is also limited to college age students, which allows me to focus on these social behaviors at a pivotal time in a person's life.

Student: Emma Farison

Faculty Sponsor: Toke Knudsen (Mathematics, Computer Science & Statistics)

Fibonacci: Beyond the Sequence

Leonardo Pisano, later called Fibonacci, has been referred to as the "first great mathematician of the western world." His life and mathematical works significantly changed the field of mathematics to make it what it is today. Fibonacci is most commonly known for the sequence that bears his name; however, he made many other more substantial advances for which he is rarely accredited, such as his work in *Liber abbaci*, *Practica Geometriae*, *Liber Quadratorum*, and other works. Fibonacci has a great legacy, but many of his works have been forgotten or left behind over time. What most people don't realize is that we can remember Leonardo Pisano's contributions to mathematics every day through every number that we see, read or write. Leonardo is responsible for making mathematics and numbers what they are today. The work of Leonardo Pisano must be recognized beyond the Fibonacci

sequence, as it is not one but all of his mathematical discoveries that earned him the nickname of the "greatest western mathematician of the Middle Ages."

Students: Michael Fassett, Robert Kaufherr

Faculty Sponsor: Paul Baumann (Geography)

Is the Salton Sea Shrinking?

Located in the Imperial Valley, the Salton Sea is the largest water body in California. Concern exists about this water body shrinking in size and the impact of this shrinkage on the natural environment. The Salton Sea is a product of human intervention, not the result of natural environmental systems. In 1901, the California Development Company, seeking to realize the Imperial Valley's potential for unlimited agricultural productivity, dug irrigation canals from the Colorado River. However, heavy silt loads inhibited water flow, which prompted engineers to create a cut in the western bank of the Colorado to allow more water to reach the valley. Unfortunately, heavy flood waters broke through the engineered canal and nearly all the river's flow rushed into the valley. With the valley floor 227 feet below sea level, the flood formed a large water body that became known as the Salton Sea. Today the sea provides a dumping area for agricultural waste water and some water tourism. Using satellite imagery this study measures the size of the sea over the last 25 years and introduces the question: "Should something on the physical landscape, created by human activities, be protected as part of the natural environment?"

Student: Thomas Fenton

Faculty Sponsor: Heike Geisler (Chemistry & Biochemistry)

Synthesis of Graphene Oxide

The synthesis of graphene oxide from graphite is the focus of this study. Graphene oxide is a single atomic layer and is used as a precursor for the synthesis of chemically modified graphene. Both materials can be used as transparent conductive films, paper-like materials, as well as in energy-related, biological and medical applications. Different drying and cleaning procedures are tested and monitored via X-ray Photoelectron Spectroscopy (XPS).

Student: Mathew Frankel

Faculty Sponsors: Keith Brunstad (Earth & Atmospheric Sciences), Fredrick Zalatan (Biology)

Challenging Environmental Mixed Species vs. *Cupriavidus metallidurans* Biofilms With Heavy Metals for Potential Use in Bioremediation

Industrial pollution from mining, drilling and hydraulic fracturing, since the industrial revolution, has made toxic metal ions a seemingly ubiquitous pressure on the environment. The Alberta oil sands are the third largest oil reserve in the world, whose extraction process results in wastes full of heavy metal contaminants that can be toxic to surrounding environments. Biofilm formation by microorganisms has been proposed to protect bacterial populations from toxic metals. Some studies suggest that these microbes can bioaccumulate the metals, which remediates the wastewater and the concentrated metal can be processed for use. This study investigates how a mixed species biofilm of bacteria grown from Alberta oil sands tailings pond water (TPW) compare to a single species biofilm of a bacterium that is known to be tolerant to high concentrations of heavy metals. *Cupriavidus metallidurans* was tested against the TPW mixed species in increasing metal cation concentrations (Cu²⁺, Ag⁺, Cd²⁺). In all cases, TPW biofilms were found to be more tolerant; however, this tolerance may not be accurate, due to a deviation from the protocol that occurred when inoculating the TPW biofilms with metal cation solution.

Student: Julia Fremante

Faculty Sponsors: Dona Siregar, Paul Bauer (Economics, Finance & Accounting)

The Effects of the 2007-2009 Financial Crisis on the Cointegration Relationship Between Stock Markets

This paper investigates how the 2007-2009 global financial crisis impacted the relationship between stock markets around the world. The project examines the cointegration relationship between the U.S. stock market and other major stock market indices around the world. For the U.S. the Standard and Poor's 500 market index is used; its cointegration relationship is examined with the following indices: Hang Seng, FTSE 100, DAX, Nikkei 225, CAC 40, IPC, and Merval Buenos Aires. This presentation will focus on the effect that the recent 2007-2009 financial crisis had on the cointegration relationship by examining the relationships before, during and after the crisis, using the augmented Dickey-Fuller test (ADF) to test the cointegration between the stock market indexes of different countries. We found that the majority of the indices were cointegrated with the S&P 500 before and during the crisis, but were not cointegrated after the crisis.

Student: Kenneth Galazka

Faculty Sponsors: Sunil Labroo, James Michels (Physics & Astronomy)

Anomalous Hall Effect in Cu-Ni Thin Films

When an electric current flows through a conductor that is exposed to a magnetic field, a potential difference (VH) is produced perpendicular to the current and the magnetic field. This is referred to as the classical Hall effect. VH is related to the type and density of charge carriers. Prior studies on thin films of copper mixed with varying known concentrations of nickel have indicated a hysteresis in the measured Hall resistance of the samples. This trend seems to be consistent with a phenomenological model of the "Anomalous Hall Effect," in which the Hall resistance is dominated by the magnetization of the sample. In the current study, we have employed the van der Pauw measurement technique, which is designed to improve the accuracy of our results. New Hall resistance data acquired by this method will be presented.

Student: Marielle Genovesi

Faculty Sponsor: Betty Wambui (Africana & Latino Studies / Women's & Gender Studies)

The African Women's Decade: Health, Maternal Mortality, and HIV/AIDS

The convergence of the three heritages of Africanity, Islam, and The West have often been discussed under the terms of the globalization of Africa. Professor Ali A. Mazrui explains that Africa is seen as a "pawn," although it perhaps shouldn't be, and he therefore dreams of a time when Africa will be the one to help the Western world. Perhaps this time has already come; the African Women's Decade (AWD) was launched in Nairobi, Kenya in October of 2010. The foremost objective of the AWD is to "review and celebrate progress made towards gender equality and women's empowerment." This decade will allow for a review and renewal of women's movements in Africa. There are ten themes under the AWD which assure that women of Africa are not slighted or left behind by globalization, but are instead included in the further globalization and development of the continent. This Decade further provides a channel through which achievements may be celebrated and progress may continue to be made. The diverse socio-cultural aspects of Africa still create barriers in achieving gender equality and treatment of women. This project will explore in depth one of the ten "themes" of the AWD, "Health, Maternal Mortality, and HIV/AIDS," with regard to this theme's status across Africa, and the issues still faced in a globalizing continent, formulating a critique of the Decade as a fundamental tool in continuing to bridge the gender gap in Africa.

Student: Nicole Gobin

Faculty Sponsor: Kirsten Hilpert (Human Ecology)

Effect of Mobile Phone Use on Stress, Sleep and Eating Awareness in College Students

Due to the rapid upsurge in mobile phone usage, sufficient research has not yet been conducted to assess possible detrimental health effects in high-risk groups. This research investigated the extent to

which mobile phone usage impacts stress levels, quality of sleep, and eating awareness in 275 college students, ages 18-24 years. Data was collected using a questionnaire with questions from several validated surveys including the four-question Perceived Stress survey, Pittsburgh Sleep Quality Index, Night Eating Questionnaire, and ecSatter Inventory. The hypothesis is that excessive mobile phone usage is correlated with higher levels of anxiety, increased sleep disturbance, and lower levels of eating awareness and positivity. During the initial stages of our data analysis we have made several interesting findings: on average, college students send and receive 261 text messages and 16 phone calls per day, and that almost 50% have their mobile phone by their side 24/7. Also, 46% of the respondents reported that either they or someone close to them believes they use the mobile phone too much. Overall, the research findings will help determine if there is a need for education and intervention to modify mobile phone use across the campus to benefit student health.

Students: Rebecca Goldstein, Danielle Dougherty

Faculty Sponsor: Karen Joest (Human Ecology)

Community Partnering for Youth At Risk: It Really Does Take a Village

An initial collaboration between a rural school district experiencing higher than expected dropout rates and SUNY Oneonta resulted in a pilot study to examine varying risk and protective factors of students who had dropped out of high school prior to graduation. Findings suggested both push and pull factors, including a distinct lack of community resources to develop effective intervention and prevention programming. Realizing that multiple untapped resources could be utilized to begin addressing the myriad needs of at-risk youth, a community collaborative and interdisciplinary approach was established, developing a multi-pronged community partnering relationship to better meet the needs of these youth while ultimately enhancing our community.

Student: Kerry Goodnight

Faculty Sponsor: Philip Sirianni (Economics, Finance & Accounting)

Effects of Income Distribution on the Environmental Kuznets Curve

The Environmental Kuznets Curve (EKC) hypothesizes that there is an inverted U-shaped relationship between income per capita and pollution in a country; that is, there is a range of low income levels where pollution is rising, but as the country becomes wealthier, pollution falls since the population will demand (and can afford) higher levels of environmental quality. Evidence for the EKC has been mixed. Specifically, some authors find that an EKC exists for certain pollutants but not for others. I examine whether there is an EKC for carbon emissions controlling for the level of not only income per capita, but also for levels of income inequality in my multi-country, multi-year sample. I find no evidence for an EKC for carbon emissions when I use a "conventional" version of the EKC model; this finding is in line with prior research. When I control for the level of income inequality, however, an EKC exists. This suggests that, in assessing the turning point of the EKC for carbon emissions, income inequality is an important factor to consider.

Student: Mollie Goodwin

Faculty Sponsor: Jeffrey S. Heilveil (Biology)

Gene Flow and Population Sustainability of a Native Bee Species in Otsego County, NY

Genetic diversity plays a vital role in maintaining the overall health of a population. Native bees of the U.S. play a key role in the existence of many of our native plants. Without these bees, the plants would be unable to pollinate and reproduce (Batra 1992). This is why it is important to determine the population sustainability of the bees. This study examines the genetic diversity of carpenter bees, *Xylocopa virginica* (L.), in Otsego County, NY to determine whether gene flow, the exchange of genetic information between populations, is occurring. After a failed attempt with microsatellites designed for *Xylocopa frontalis* (Olivier), the nuclear gene "wingless" will be used to determine overall genetic diversity of the bees. Overall genetic variation of *X. virginica* will be examined using an analysis of molecular variance, or AMOVA. Allelic richness and HWE (Hardy-Weinberg Equilibrium) will also be tested. Mapping out patterns in diversity will allow us to determine the

health of these populations. The data will also allow us to determine how at-risk these populations are to extirpation, or localized extinction. It is possible that the impacts of European Honeybee will have left a signature in the genetic data.

Student: Emily Harrington

Faculty Sponsor: Kirsten Hilpert (Human Ecology)

Effects of Dairy Foods on Insulin Resistance

This project seeks to further investigate the role of dairy foods on insulin resistance, an aspect of metabolic syndrome, diabetes, and cardiovascular-related diseases. Epidemiological studies have recently shown a inverse correlation between dairy and/or calcium intake and insulin resistance; however, clinical studies are lacking. Previously published results of Dr. Hilpert's clinical feeding trial showed a dairy-rich diet lowered blood pressure and created an ideal intracellular ion balance. Intracellular ion balance is also theorized to influence insulin sensitivity. This study investigated the effect of dairy foods on insulin resistance. Adults with untreated hypertension (n=23) were fed three experimental diets (five weeks each) in a randomized crossover study design. Diets included a dairy-rich, high fruits and vegetables diet (D-F&V), a high fruits and vegetables diet (F&V), and an average Western diet (AWD). Blood levels of insulin and glucose were measured at baseline and after each diet period. Insulin resistance was determined through use of the homeostatic model assessment (HOMA) equation. Analysis of variance was performed using SAS to determine treatment effects. There were no significant differences between the treatments for glucose, insulin, or HOMA. Insulin levels decreased on the D-F&V diet compared with the AWD diet, but not significantly.

Student: Emily Harrington

Faculty Sponsor: Allan Green (Chemistry & Biochemistry)

Oxamic Acid Effect on Lactate Release in Rat Adipocytes

During fasting, gluconeogenesis converts lactate to pyruvate. In addition, adipocytes produce a significant amount of lactate, especially in those who are insulin resistant. Weight and Type 2 diabetes have a direct relationship with basal lactate concentration. Previous experiments with dichloroacetate (DCA) showed promising, yet not strong, control of lactate release in adipocytes. Both oxamic acid and DCA are analogues of acetic acid but use different mechanisms to influence lactate release. Therefore, we experimented with oxamic acid to ascertain if, with higher oxamic acid concentration, a lower lactate concentration will be produced by adipocytes. Epididymal rat fat pads were digested enzymatically and isolated using centrifugation. Samples were incubated with glucose, insulin, and three different concentrations of oxamic acid for varying times. We performed a lactate assay with a spectrophotometer, and samples were compared against a standard solution. We observed that the higher the concentration of oxamic acid, the lower the concentration of lactate after incubation for one, two, and three hours. Unfortunately, we were not able to replicate these results within the time available. Further study is ongoing.

Student: Kelly Hassett

Faculty Sponsor: Frederick Zalatan (Biology)

Analysis of Fatty Acid Transport in *Caulobacter crescentus*

Fatty acids are a key component in cell membranes and are essential for all organisms, including bacteria. These lipid compounds are important because of their ability to produce large amounts of adenosine triphosphate (ATP) when metabolized. Fatty acids, which are carboxylic acids with a hydrophobic tail, often diffuse through the cell membrane with the help of transport proteins. This project focuses on characterizing the genes responsible for making these proteins in the gram-negative bacterium *Caulobacter crescentus*, as well as using DNA cassettes to disrupt these genes.

Student: Kellee Hassman

Faculty Sponsors: Thomas Horvath, Frederick Zalatan (Biology)

Epifluorescent Direct Count of Bacterial and Viral Particles from Arnold Lake

Bacteria and viruses are an important part of lake ecosystems, including decomposition, trophic interactions, and biogeochemical cycles. Viruses act as parasites on all lake dwelling organisms, including bacteria. This study investigated the relationship between bacteria and viruses. Water samples were taken from five sites on Arnold Lake in February through the ice. Samples were preserved and frozen immediately after returning to the lab. Later 100uL aliquots were filtered onto 0.02uM Anopore TM inorganic membrane filters, and dyed with SYBER GOLD. Fluorescing particles were distinguished as bacteria or viruses based on size and shape. Mean viral density was $17,023 \pm 2,855$ (SEM) per μL . Cocci bacteria were $3,307 \pm 746$ per μL , and mean density of rod-shaped bacteria was 800 ± 89 per μL . There were four times as many viruses as bacteria in the lake at the time of sampling. There was not a significant correlation between bacterial and viral counts per sampling site (p-value = 0.14, $r=0.76$). Although the correlation coefficient indicates a strong positive correlation between bacterial and viral populations, only five samples were taken, which greatly increased the p-value. This data set is part of an ongoing project to monitor bacteria and viruses in Arnold Lake.

Student: Kasey Heiser

Faculty Sponsor: Cynthia Klink (Anthropology)

Do Empires Control Natural Resources? A Nasca Case Study

The site of Cocahuischo is located near the modern day city of Nasca, Peru. Temporally it is on a border between the Early Intermediate period and the Middle Horizon (550-750 A.D.). This is a dynamic period of social and political re-organization, and widespread regional cultural interaction between the state of Huari and the Nasca people. The ultimate result of this interaction is the incorporation of Nasca into the Huari state. Part of this reorganization is thought to include the restructuring of the economic system to include the controlled production and distribution of valuable resources. Excavations at Cocahuischo recovered a total of 18 intact obsidian projectile points. Obsidian would be considered an exotic material to the Nasca people as there is none locally available and the closest source is the Quispisisa source, 100 Km away in Huari territory. Analysis of the lithic material at the site supports the interpretation that there is no on-site production of projectile points; however, statistical analysis of the projectile point form suggests that these points were not produced by commissioned craft specialists in the Huari heartland.

Students: Emily Herbert, Paula Carciu, Brittany Mabie

Faculty Sponsor: Charlene Christie (Psychology)

Stereotypes of Single and Coupled College Students

This study was conducted to examine SUNY Oneonta's student body, identifying potential stereotypes towards college students who are single and college students who are in a relationship. The first phase of this study involved a pretest examining the types of behaviors and characteristics that people tend to associate with the two groups. The pretest indicated that single individuals were thought to possess both negative characteristics, such as impulsiveness, and positive characteristics, such as independence. The test also conveyed that people tend to attribute more positive adjectives, such as faithful and loyal, to individuals in a relationship. The second part of this project was designed to examine how an individual's current relationship status could potentially influence their perceptions and attitudes towards other individuals who are either single or in a relationship.

Student: Ileri Vasquez

Faculty Sponsor: Betty Wambui (Africana & Latino Studies / Women's & Gender Studies)

A Woman is 360 Degrees in the Community

Professor Wangari Maathai from Kenya was an environmental and political activist and founder of the green belt movement. M'bilia Belia, a Congolese rumba singer, succeeded in a male-dominated

music industry while singing about women's problems and single parenthood. Ellen Johnson Sirleaf is the president of Liberia and was awarded the Nobel Peace Prize in recognition of her non-violent struggle for the safety of women and their right to participate in peace-building work. Here, I propose, lies the problem in many countries across the world – that these women are the exception! Women are often targeted, subjugated, discriminated against, sexually abused, mutilated, starved, oppressed, sold, neglected medically, evicted from homes, and so on. Indeed, many have no voice in the political and social systems they are subject to. Jon Blanc, a journalist from Uganda, states that for many women, "their dreams, gifts, talents, aspirations were cut at the very root of the tree...locked into [systems] that treated women as leftovers, second-class citizens. Yes, there are many exceptions; yes, Africa's women have come a long way; but the mindset of a patriarchal society rules in every aspect of East African life." I propose that by looking at the leaders and activists in communities we can begin to see that to change the condition of women in these predominantly patriarchal systems, we need their voices to be heard. No one knows better the experience of the oppressed than the one being oppressed. This paper focuses on the history and the context in which women have been critical to the development of their communities through their voices, demonstrating their agency and contributions.

Student: Carrie Jackson

Faculty Sponsor: Toke Knudsen (Mathematics, Computer Science & Statistics)

Examination of Alden Room Mathematics Textbooks

The Alden Room is a special collections room located on the third floor of SUNY Oneonta's Milne Library. Among other things, it houses 18th-, 19th-, and early-20th century mathematics textbooks. This project examined this collection, looking at both the history and use of the textbooks. They provide a unique look at how the methods of mathematics instruction via textbook have changed over the past two and a half centuries. Additionally, some of the textbooks represent a piece of local history, as several of them appear to have been originally purchased and/or used locally. This project looks at the collection as a whole, as well as several notable aspects of a number of individual textbooks.

Students: Jessica Pizzarello, Sean Parker

Faculty Sponsors: Paul French, James Michels (Physics & Astronomy),

Analysis of Atwood's Machine

The ideal Atwood's Machine comprises two objects of unequal mass, which are connected by an inflexible string over a massless pulley. The objective of this study was to demonstrate how the presence of friction in an Atwood's Machine operates as a function of the velocity of the pulley and mass load. The basic measurement technique uses a constant total mass while varying the mass difference. Acquiring values for the duration time of the motion, the load of both masses, and the height difference between the masses provides enough information to calculate gravitational acceleration, pulley friction, and pulley inertia. Three theoretical analyses involving gravitational acceleration were considered for the employment of Newton's Second Law: the first method neglected pulley friction and rotational inertia, whereas the second method included pulley friction alone. The third and most realistic analysis included friction and the rotational inertia of the pulley. A specific method of data analysis was established to account for the effect of friction and inertia of the pulley. In the future, the use of a SmartPulley will enable us to determine how the frictional force depends upon the speed of the pulley as well as the mass load in an Atwood's Machine.

Student: Derek Johnson

Faculty Sponsor: Willard N. Harman (Biological Field Station)

The State of Panther Lake: Working Towards a Comprehensive Management Plan

Panther Lake is a 131-acre warmwater lake located in Oswego County, NY, in two townships (Amboy and Constantia). The lake is roughly a half mile at its widest and its greatest length is approximately one mile. The majority of the shoreline is developed with retaining walls to prevent erosion from wave action. The lake has a maximum depth of 26 feet and a mean depth of 15 feet. The lake is fed by groundwater and has one small outlet on the east end. Based on the level of

productivity, Panther Lake is a mesotrophic lake. The littoral zone plants are mainly comprised of *Myriophyllum spicatum*, Eurasian watermilfoil, and *Potamogeton crispus*, curly-leafed pondweed. The fishery is known for its productive smallmouth bass (*Micropterus dolomieu*) and panfish population. Triploid grass carp (*Ctenopharyngodon idella*) were introduced in May 2012 as a means of Eurasian watermilfoil control. A comprehensive management plan will be developed between August 2012 and May 2014, which will include assessment of the most important stakeholder concerns, Eurasian watermilfoil domination and crowding out of native plant species, the rate at which the triploid grass carp are eating vegetation in the lake, the current state of the fishery, and the water chemistry in regard to possible fecal contamination.

Students: Olaide Junaid, Samuel Afriyie, Oluwakemi Ogunmuko

Faculty Sponsor: Betty Wambui (Africana & Latino Studies / Women's & Gender Studies)

Transition in Gender Roles: Gender Roles in Pre-Colonial and Post-Colonial West Africa

The issue of transition in gender roles is an ongoing discussion across the world, especially in Africa. The West African region itself has undergone so many transitions that, in order to understand the gender roles of today, we must revisit the roles of old West Africa. The effects of slavery, colonization, globalization (migration, technology, transferring of ideas), and civilization have all impacted these changes of roles across West Africa. We seek to highlight the positives and negatives of these changes, in hopes of better understanding them. In addition, we look forward to discussing ways to form a new identity for the West African male, West African female (and other West African gender roles) by interweaving the old West African (pre-colonial) ways with the influence of Western ways (post-colonial effects) to create new identities for the West African genders in order to better the West African society.

Student: Scott Keefer

Faculty Sponsors: Keith Brunstad (Earth & Atmospheric Sciences), Edward Stander (SUNY Cobleskill)

Buried Stream Piracy Leads to Cavern Development in the Manlius Limestone, Schoharie County, NY

Secret Caverns is a natural cave situated on the northern edge of Schoharie County, NY. The cave developed as a nearly straight vadose-phreatic passage oriented at a 45° angle to the regional dip (tilt of bedding), without obvious structural or sedimentological control. Previous work by Mylroie (1977) did not explain the Cave's formation. The purpose of this project is to define the developmental history of the cave system, which could include: 1) multiple joint patterns in the rock providing a passage for water; 2) a fault running through the cave; or 3) a confining layer. In this study, emphasis is placed on answering how the cave was formed. The cave is situated within the Manlius limestone; the main conduit is formed under a number of large domes along with smaller paleokarst passages feeding it. Our current hypothesis is that the cave formed in response to a paleostream above ground that fed the domes. Post glacial isostatic rebound formed bedding plane faults in the bedrock that connected the domes forming the passages. A layer of bedrock was tested below a prominent ash layer to see if there was any sedimentological control. A bedrock control layer was sampled from an outcrop along I-88. The limestone was then dissolved in 5-molar HCl and tested against limestone from the cave. Joints were also measured to see if the cave fell along the major joint set in the area. The "confining" layer of limestone reacted 30% less than limestones of the cave passage. Measured joints show a main orientation of 25° azimuth, while the cave has a general direction of approximately 160° azimuth. This cave differs from others in the area, such as McFails and Howe Caverns, both strike-oriented passages. It can be concluded that the cave forms in the down-dip direction of the bedding with a minor component of joint control, while the initial influx of water came through joints in the rock.

Student: Thomas King

Faculty Sponsor: Melissa Godek (Earth & Atmospheric Sciences)

Assessing the Impact of Precipitation Events on Major League Baseball Game Delays and Cancellations in Open Air Stadiums

An assessment of the impact of precipitation on Major League Baseball game cancellations and delays in twenty-four open-air stadiums from 2000 to 2011 was performed. Daily precipitation data from the Automated Surface Observing Systems (ASOS), Community Collaborative Rain, Hail & Snow Network (CoCoRaHS), and the Global Historical Climatology Network (GHCN) were collected for locations near stadiums, and days with both recorded precipitation and scheduled Major League Baseball games were assessed. This project examined all games played in an open air stadium or games that were scheduled to be played in an open-air stadium but were postponed or canceled, referred to as game-rain days. Total precipitation thresholds were identified to examine the amount of rainfall required to impact games. This presentation shows preliminary results of the ongoing assessment that indicate precipitation occurred on approximately one-third of all days with games. The majority of game days received less than 0.25". In addition, precipitation impacts Major League Baseball teams in the eastern United States more than those in the Central Plains or western states, with 32-49%, 21-25%, and less than 10% of game-rain days identified. Game cancellations were also identified on days without recorded precipitation, which requires further exploration.

Students: Sophia Kolankowski, Mary Margaret Pipher, Juan Soriano, Sabine Achille

Faculty Sponsors: Emmon Johnson (Information Technology Services),
Hannah Morgan (Finance & Administration)

Environmental Impact of Information Technology

Energy consumption by information technology is an important factor when considering personal and professional use of computers. This exploratory study provides energy consumption readings for SUNY Oneonta lab and office computers across campus. Analysis of this data can assist in determining lifecycles for campus technology, and identify cost-effective solutions for e-waste and potential areas for reducing energy and e-waste. Computers of different makes and models were measured for their watt, volt, and amp outputs in both the on and off state with a Kill-a-Watt energy reader. Netflix and YouTube were used in the "on" state to simulate typical user output. The results show that the typical output for all campus computers is nearly one half or more times less than the advertised factory specs. This implies a potentially longer lifecycle and less cost to the college. Future advancements in e-waste disposal on campus may include the implementation of an e-waste collection program open to all faculty, staff and students.

Student: Sophia Kolankowski

Faculty Sponsor: Leigh Fall (Earth & Atmospheric Sciences)

An Exploratory Study of Fracture Patterns Due to Trampling on Microvertebrates

Various taphonomic mechanisms, such as trampling, reduce the number of preserved specimens found in the fossil record. This study examines to what extent bone breakage of microvertebrates is influenced by bone shape and taxonomy. Understanding the effects of taphonomic processes when examining bone assemblages will provide information on the conditions surrounding bones between burial and discovery. Under controlled conditions, mouse and fish skeletons were used to determine the weight needed to break bones and to examine the number of fragments and the types of bone fractures resulting from the applied weight. Flesh was removed by dermestid beetles to avoid unnecessary alterations that could affect bone breakage. Bones were then disarticulated and placed into the appropriate predetermined bone classification. Various fracture types were identified as each bone was broken. Exploratory analysis of the data demonstrates a relationship between bone morphology and breakage patterns. The results indicate bone morphology affects breakage patterns and number of fragment. Taxonomy may influence the breakage patterns, but not all patterns are exclusive to either the mouse or fish.

Student: Chelsea Krieg, Anna Downey

Faculty Sponsor: Martha Growdon (Earth & Atmospheric Sciences)

Would you Drink the Water? A Structural, Petrographic, and Geochemical Analysis of Arsenic Content of Drinking Water Wells of Matinicus Island, Maine

Matinicus is a 2-mi² island 23 miles off the coast of Penobscot Bay, Maine and is the home of ~50 year-round and many seasonal residents. About 25% of the drilled drinking water wells on Matinicus Island produce water that contains up to ~450 parts per billion (ppb) arsenic, well above the 10-ppb safe drinking water standard for arsenic. We surmise that the amount of arsenic concentrated in the water is dependent on the bedrock through which the groundwater flows. Field mapping (2011-2012) revealed the island lithologies are largely divided into two regions. The east side of the island is mostly coarse-grained biotite-granite, and the west side of the island is largely comprised of foliated metamorphic lithologies including biotite-quartzite, quartz-plagioclase-biotite±andalusite±garnet schist, and amphibolite±garnetite. The contact between the metasedimentary units and the granite is characterized by a moderately rusty zone with angular inclusions of metasedimentary units ranging in size from 5-150 cm. We hypothesized that the wells drilled into the granite should contain low concentrations of arsenic, and the wells drilled into the rusty metasedimentary zone should contain high concentrations of arsenic, based on the concentrations of environmentally available arsenic in bedrock lithologies (Downey et al. 2012). The presence and abundance of arsenic-bearing minerals in the dominant bedrock lithologies on Matinicus Island is being determined using thin section petrography. In addition, the drinking water well data, collected from year-round residents, was mapped and structurally analyzed through cross sections (Krieg et al. 2012). These analyses superimposed the location of arsenic-bearing wells with the lithologies of Matinicus Island to attempt to determine the source of the natural arsenic contamination in the wells. This work suggests that the granite outcropping on the eastern third of the island constitutes a thin lens with a shallowly east-dipping contact zone, with elevated concentrations of arsenic-bearing minerals that is the source of the highest levels of arsenic contamination on Matinicus Island. A new 1:24,000-scale bedrock geologic map of the Matinicus Quadrangle documenting these findings will be published in 2013.

Students: Caitlynn Kwiecinski, Rebecca Shea

Faculty Sponsor: Toke Knudsen (Mathematics, Computer Science & Statistics)

The Construction and Design of an Armillary Sphere

The development of astronomical instruments has been important in our understanding of the night sky. The purpose of this project was to research and create such an instrument. This instrument, the armillary sphere, provides guidance of the celestial bodies as seen from Earth. The basic model of this armillary sphere was created using the 3-D printer in Physical Science with the assistance of Allen Anderson, SUNY Oneonta's Science Technician. The materials used were plastic, wood and styrofoam. Our overall construction depended on an accurate blueprint of the components needed. This allowed parts of the armillary sphere to move and be adaptable to all latitudes. The end result is a basic model of an armillary sphere similar to those we have studied.

Student: Caitlynn Kwiecinski

Faculty Sponsor: Jason Smolinski (Physics & Astronomy)

Direct Imaging of Circumstellar Disks

Our understanding of the origins of the solar system is contributed by the discovery of circumstellar disks. These disks consist of mostly gas and dust orbiting around a star, and contribute to the formation of planets. Detection of these disks is possible through spectroscopy, infrared observation and direct imaging. This project renders the results of direct imaging of the star AB Aur, which is known to have a circumstellar disk. The direct imaging of two check stars and the target star (AB Aur) renders verification that a disk exists. Through the Linux program IRAF the images were modified to display the disk.

Student: Wing Chee Lai

Faculty Sponsor: Qun Wu (Economics, Finance & Accounting)

Analyst Behavior Around IPO: A Case Study on Facebook

This study examines financial analysts' recommendations issued on the Initial Public Offering (IPO) of Facebook and market reactions around such recommendations. The sample period is from May 18, 2012 to February, 2012. Preliminary results suggest that analysts at financial institutions with investment banking business issue more optimistic recommendations than those without investment banking business. There is no evidence that analysts' affiliation with IPO underwriters affects the analysts' recommendations and market reactions.

Student: Emily Lang

Faculty Sponsor: Gretchen Sorin (Cooperstown Graduate Program)

The Othering of Sharon Springs: The Jewish Summer Population in a New York Resort

Natural spring resort towns were among the first types of vacation spots in America; however, by the late 19th century, they were no longer considered desirable by many mainstream Americans. Sharon Springs, New York, found itself struggling to maintain its tourist economy based on its natural springs and baths. Through a series of circumstances, however, Jewish visitors began coming to Sharon Springs, first by the hundreds in the late 19th century, and eventually by the thousands in the 20th century. This thesis explores the visitation trends among Jews to Sharon Springs, along with the development of new hotels and structures to support this diverse population. It argues that Jewish visitors saved Sharon Springs financially, not once but multiple times. In addition to documenting the history of Jewish travel to Sharon Springs, this work examines the relationship between permanent non-Jewish residents living in this rural New York village and the seasonal Jewish population, in particular during the post-World War II years. A series of oral history interviews, ephemera, and photographs provide evidence to analyze the changing cultural and physical landscape of Sharon Springs that resulted from the interaction of residents and guests. In examining the connection between Jewish visitation and the financial well-being of the village, this thesis addresses why some relationships succeeded and, more importantly, why others did not. Through the elucidation of these complicated relationships, it becomes clear why the effects of Jewish visitation continue to define the Village today, though the large-scale stream of Jewish travel to Sharon Springs has come to an end.

Students: Alex Lawrence, Rebekah Obenauer

Faculty Sponsor: Sean Robinson (Biology)

Bryophyte Reproduction and Dispersal in a Mixed Hardwood Forest

To investigate the dispersal and colonization of bryophytes (mosses and liverworts) in northern hardwood/coniferous forests, a long-term study is being established at three properties maintained by the SUNY Oneonta Biological Field Station. The objective of this study was to select appropriate sites and collect baseline data for the long-term study. Three sites at each of three locations (nine sites total) were selected, based on an initial survey of bryophyte diversity and forest composition. At the site, circular transects were established around a central point in half-meter increments to a total distance of 10 m from the central point. Each transect was surveyed for presence of bryophytes. When a patch was located, a sample was collected and identified. Here we present data from the first two sites sampled. A total of 572 specimens representing 50 species (eight liverworts and 42 mosses) were encountered and identified. The three most abundant species encountered showed high sporophyte production with 45%, 36%, and 35% of samples encountered containing sporophytes. This is an indication of greater dispersal ability and colonization rate of spore-producing species, compared to species that rely more on asexual means of reproduction and dispersal.

Student: David Loveless

Faculty Sponsor: Melissa Godek (Earth & Atmospheric Sciences)

Classification of Snowfall Events in Oneonta, NY from 1992-2012

Averaging nearly 70 inches of snowfall each winter, with snowfall ranging from 29 to 105 inches, Oneonta, NY is significantly impacted by seasonal snow events. Oneonta's situation between the much larger cities of Albany and Binghamton makes it an interesting location to analyze snowfall, especially since daily snow records have been collected for the city by SUNY Oneonta since 1982. The geography of upstate NY allows for Oneonta to receive snowfall from a variety of storm types including coastal storms, Colorado lows, and lake-effect storms. The goal of this research is to examine daily snowfall records at Oneonta over the past decade in order to identify the processes and storms that produce the most frequent and intense snowfall. This information is useful for improving long- and short-term winter forecasts in the Central Leatherstocking region of New York State. Days with measurable snowfall are classified according to storm type, using National Weather Service (NWS) Hydrometeorological Prediction Center weather map archives, and the frequency, intensity and cause for snowfall is determined (e.g., snowfall associated with localized frontal influences, pressure systems, or otherwise as the case with lake-effect snows). Preliminary results have indicated that seasonal snowfall is highly variable.

Student: Jason Luce

Faculty Sponsor: Willard N. Harman (Biological Field Station)

The State of Hatch Lake and Bradley Brook Reservoir

Lakes are beautiful ecosystems that provide a home for countless plant and animal species while enriching human life with aesthetics and activities. In order to manage, restore, and protect these freshwater systems a sound ecological understanding is needed. The town of Eaton in Madison County is home to two freshwater Class B lakes, Hatch Lake and Bradley Brook Reservoir. The two lakes are dimictic, stratifying twice a year, classified as mesotrophic, or moderately productive, and are part of the Susquehanna River drainage basin. In recent years both lakes showed a moderate number of aquatic plants, and at least two exotic plant species (*Myriophyllum spicatum*, Eurasian watermilfoil, and *Potamogeton crispus*, curly-leafed pondweed) have been found. After conducting a watershed-wide citizen survey that received over a 50% return rate, we discovered that both bodies of water were experiencing problems with weed growth, algae growth, septic systems, and exotic species. Hatch Lake and Bradley Brook Reservoir are both used for contact recreation, and mitigation of these problems is very important; excess nutrients (phosphorus and nitrogen) are the biggest threat to Hatch Lake and Bradley Brook Reservoir. Monitoring of the external and internal sources of nutrients and understanding the effects will allow potential management techniques to be selected by stakeholders and actions to be taken.

Student: Alyssa Lupinski

Faculty Sponsor: Michael J. Brown (Psychology / Women's & Gender Studies)

Sexism Among Gay Men

This study examines gender role beliefs among gays and lesbians. More specifically, we were interested in whether gay and straight men hold similar gender role beliefs. Overall, straight men had the most traditional gender role beliefs, whereas lesbians had the most feminist gender role beliefs. Gay men and straight women did not significantly differ in their gender role beliefs scores.

Student: Felicia Magnan

Faculty Sponsor: Irene McManus (English)

The Womb: A Look at the Effects of Homelessness on the Mental Health and Self-Esteem of Minority Single Mothers

According to the National Coalition for the Homeless, ~42% of the homeless population is African American. The composition of the average homeless family is a single-parent household headed by an African-American female (U.S. Conference of Mayors, 2004). The focus of my research is to

investigate how homelessness affects the mental health and self-esteem of single minority women. I depend mostly on qualitative field study, including interviews and questionnaires with single mothers in living conditions that encompass feelings of lacking a home. This includes mothers living in shelters and in overcrowded dwellings and those facing eviction. Currently, my research is concentrated in poor minority communities in the northeast, specifically in New York City and New Jersey. I anticipate conducting research in New Orleans, Detroit and Milwaukee, all of which are cities with high concentrations of poor minority communities. Current findings reveal that these mothers experience lower self-esteem, with overwhelming and constant haunting feelings of fear, disappointment and regret. Interestingly, what many of the mothers crave is a kind of support system that surpasses financial help. Ultimately, the goal of my research is to bring awareness to how prevalent homelessness is within the minority community, and to inspire people to volunteer their time to helping not only single mothers but everyone in the poverty crisis.

Student: Diane Mancini

Faculty Sponsor: Sallie Han (Anthropology)

English is My Language: The Generationally Defined Linguistic and Cultural Identities of the Raizal People of San Andrés, Colombia

During the summer of 2012 I traveled to San Andrés, Colombia to conduct ethnographic research on the linguistic and cultural identities of the Raizal people. The Raizal were brought to San Andrés as slaves in the mid-1600s and have lived on the islands ever since. Though the Raizal are now nationally recognized as the island chain's indigenous community, changes have occurred both within and to the Raizal community in the last sixty years that have created distinct generational differences in how the Raizal view their culture and their changing role in Colombian and global issues. This poster will discuss those generational differences primarily through my observations of language use within the Raizal community.

Student: Heather Matthews

Faculty Sponsor: Betty Wambui (Africana & Latino Studies / Women's & Gender Studies)

Colorism: A "Shady" Practice of Control and Complexion

In our world, people are judged by the color of their skin. This is a fact that we learn in the schoolyard, and are reminded of each day. Thus, what we derive from this is that inherit worth is due to the color and shade of one's skin. Within this paper, the complicated issues of colorism, biology, worth and gender become inter-related within an exploration of skin color in society. Not only does this take into consideration Black and White relations, but also Black-to-Black relations and White-to-White relations. In essence, this is an examination of how colorism has shaped our country since the abolition of slavery, and how colorism has kept many still enslaved in their own skin. The research is based on examples such as the paper-bag test and skin bleaching, as well as the recent phenomena of artificial skin tanning.

Student: Jessica Mayercin

Faculty Sponsor: Cynthia Falk (Cooperstown Graduate Program)

Images of (In)dependence: William Murray's Family Record Paintings, 1783-1822

Historians debate the effects of the American Revolution on social and family relationships, asking questions of how people defined and organized themselves in the new Republic. Material culture from New York's Mohawk Valley demonstrates that men emphasized their position in their households, the role they or their male relatives played in the Revolution, and their leadership in fraternal organizations. Evidence of these trends comes from the work of upstate New York artist William Murray, who created at least twenty family record paintings from 1783-1822. Superficially, these paintings displayed genealogical information: the names and birth dates of a husband, his wife, and their children, in decorative ink and watercolor. Murray's paintings also address issues of social status and gender roles. The placement of wife's names literally beneath those of their husbands is an artistic rendering of the construct of coverture. Imagery associated with the Revolutionary War and

the Freemasons indicate a heightened importance on individual accomplishment and status among the first generation of American men. Murray's family records and other paintings illuminate how people in New York visualized family relationships, legal constructs, and homosocial associations. They emphasize the role of patriarchy, memories of war, and male patterns of hierarchy following the American Revolution.

Student: Devin McShane

Faculty Sponsor: Vicky Lentz (Biology)

The Immune Response of the American Eel (*Anguilla rostrata*) to Glochidia of the Eastern Elliptio (*Elliptio complanata*) Mussel

Anguilla rostrata, American eels, are hosts to the glochidia of the Eastern Elliptio, *Elliptio complanata*. Glochidia mature on the gills of eels. Eels can distribute the glochidia throughout their habitat as they are released from the gills. The life cycle of the American eel is complicated. Larvae that have migrated from the Sargasso Sea progress from glass eels to elvers in brackish waters, and from elvers to yellow eels in fresh water. After several years, yellow eels mature into silver eels, the reproductive stage of *A. rostrata*. Adult silver eels migrate from freshwater locations to the Sargasso Sea, where spawning occurs. Dams inhibit the progress of the eel lifecycle by blocking elvers from continuing to freshwater. A consequence of the decline in eels is that the *E. complanata* young have been diminished. The complexities of this host-parasite relationship are not yet understood, as much of the eel immune system remains unknown. This study investigates the immune system response of *A. rostrata* to Eastern Elliptio glochidia. A mouse anti-European Eel monoclonal IgM is available through Aquatic Diagnostics Ltd. We are testing this antibody for cross-reactivity between *A. rostrata* and *A. anguilla*, for use in ELISA assays and additional future experiments.

Students: Kayla Mehigan, Devin McShane

Faculty Sponsor: Matthew Albright (Biological Field Station)

2012 Aquatic Macrophyte Survey of Otsego Lake

Otsego Lake is the result of the deepening of the headwaters of the Susquehanna River by glaciation; and contains appreciable nutrient quantities from both cultural and natural sources, yet remains fairly oligotrophic. Narrow shorelines combine with considerable depth to create a limited phototrophic zone. Despite the restricted area that plants grow, Otsego Lake possesses a fairly diverse range of aquatic macrophytes. Aquatic macrophyte community studies in Otsego Lake began when Muenscher completed an extensive survey on the plants in 1935. Studies conducted by Harman and Doane in 1969 continued Muenscher's work. Fluctuations in plant species abundance and distribution have been recorded. The 2005 survey shows significant variation from its 1935 counterpart. When Muenscher originally conducted the study, 23 macrophyte species were noted in Otsego Lake. As of 2005, there were 24 species of plants present. Since 1935, six species of plant have been lost from Lake Otsego while five other species have been introduced. Due to the discovery of additional invasive species in Lake Otsego, and water clarity changes as a result of the establishment of *Dreissena polymorpha*, a more recent survey was necessary.

Students: Nicole Mihou, Samantha Myruski

Faculty Sponsor: Jacqueline Bennett (Chemistry & Biochemistry)

Synthesis of Bromoalkanes via Heterolytic or Homolytic Mechanisms

Haloalkanes are important electrophiles in many reactions commonly taught in undergraduate organic chemistry. Free radical bromination of alkanes and the addition of hydrogen bromide (HBr) to alkenes are both synthetically useful reactions that produce bromoalkanes, which can then be used in subsequent reactions. The reaction between molecular bromine and an alkane can be initiated by high heat or sunlight at room temperature. In this experiment we used a homemade tubing apparatus that enabled both the substitution and addition reactions to occur concurrently. Sunlight was used to initiate the dissociation of molecular bromine. The byproduct of this reaction was captured and bubbled through an alkene to produce a bromoalkane. This reaction results in the formation of two

possible products, depending on the conditions. Students determine which product forms by analyzing their proton NMR spectra and comparing their spectra to literature sources. Our experiment is one of the few organic experiments in which all three phases are seen over the course of the reactions and where both steps in a two-step synthesis are performed separately, yet simultaneously. Additionally, this experiment encompasses unique color changes, which include the dramatic fading of a dark brown liquid to a much paler liquid while yielding a white solid product. This experiment is simple enough to be performed in an undergraduate organic chemistry laboratory and supplements reactions students learn in lecture.

Students: Myles Moore, Colleen Parker, Stephen Dechon

Faculty Sponsors: Shasta Marrero, Devin Castendyk (Earth & Atmospheric Sciences)

Presence of Mercury in Lakes and Rivers in Central New York

In 2004, a study by the U.S. Geological Survey (USGS) was released indicating that the mercury concentrations in New York (NY) were below drinking water limits. However, in a 2009 Department of Environmental Conservation (DEC) fish advisories report, several streams and rivers in central NY were classified as having high mercury concentrations in fish. Measured mercury concentrations were above the limit dictated by the DEC. The DEC routinely tested rivers and streams, but lakes were never investigated. The purpose of this study was to test three lakes (Wilber, Goodyear, and Otsego) and two rivers (Unadilla and Susquehanna) for mercury in Central New York. The water bodies were tested for methyl and total mercury. Part of the study included testing the drinking water source for Oneonta, NY. All five bodies of water were found to have traces of total mercury, and four out of five had traces of methyl mercury. Otsego Lake was the only site that had methyl mercury concentrations below detection limits. Although our results remained under state limits, it is still a concern for human health in regards to fish consumption. Our next step is to find the source of the mercury and test mercury levels in fish from the lakes tested in this study.

Student: Stephanie Mullen

Faculty Sponsor: Ho Hon Leung (Sociology)

The Identity of SUNY College at Oneonta: "Exploration Through the Lens of Architecture"

This project examines how identity and sense of belonging as a part of the SUNY Oneonta community cultivates itself through the lens of architecture. The research is an expansion from my fall 2012 social research methods class experience, which used information found through interviews regarding the significance of sense of belonging through topos and various buildings on campus. This is an ongoing project; the findings have not yet been finalized. However, our preliminary findings suggest that identity and a sense of belonging through the lens of architecture is cultivated through participation in activities such as sports, clubs, and consumer behavior. A person is more likely to have strong ties to the campus depending on what they do during their time here. For example, a student who is involved in theatre and arts will have strong ties towards the Fine Arts building because it houses their personal and collective memories of struggles and success. They develop feelings of nostalgia towards this architectural structure. Over their time on campus, the place may have become a "home away from home." Each student or faculty member who comes here develops their own niche on campus and a place where they feel that they belong. Architectural structures are the houses for their memories that define who they are. In this research, I also plan to focus on the history of our campus architecture and how this relates to identity and sense of belonging.

Student: Laura Munn

Faculty Sponsor: Toke Knudsen (Mathematics, Computer Science & Statistics)

The Perfect Economy

In economics, the input-output model is a technique used to symbolize the interdependencies between different branches of an economy, or even between different branches of competing economies. Wassily Leontief created this type of model, receiving the Nobel Prize in Economics. The International Input-Output Association was created to advance study in the input-output model,

including "improvements in basic data, theoretical insights and modeling, and applications, both traditional and novel, of input-output techniques" (Resources for Economists). Leontief referred to two models, the first a closed and the second an open model. The closed only deals with the income of each industry, whereas the open finds the amount of production that is needed to gratify an increase in demand. Leontief used a matrix representation of a nation's economy, which was very helpful. The model he used depicts inter-industry relations of an economy, showing how the output of an industry is also the input to each other industry.

Students: Samantha Myruski, Hillari Patschurek

Faculty Sponsor: Nancy Bachman (Biology)

Luminescence Assay for Cytotoxicity of Imines in Mouse NIH 3T3 Cells

The BLONDES (Building a Legacy of Outstanding New Developments and Excellence in Science) research group has developed a green method for the synthesis of imines, chemical compounds derived from joining aldehydes or ketones with amines. We are interested in studying the biological properties, specifically the cytotoxicity, of these compounds. Work has been done previously using a Presto Blue assay to analyze some of these properties. This assay uses a compound that undergoes a color change in living cells, allowing us to measure this absorbance and get a quantitative measure of cell growth after treatment with various imines. We were concerned, however, that the color and natural fluorescent properties of some of the imines interfered with the absorbance endpoint of the assay. To resolve some of the suspected problems from this assay, we used a different assay to compare with our other data. The ATP-Glo bioluminescence assay uses an enzyme (firefly luciferase) that utilizes ATP (adenosine triphosphate) to produce light, enabling one to measure the amount of ATP available in the cell. This can be used to quantitatively determine the proportion of living cells after treatment with imines. From the data collected so far, it is evident that the ATP-Glo bioluminescence assay is more sensitive than the Presto Blue assay, showing cell inhibition even at concentrations of 10-100 µg/ml, where previously we had only noted inhibition with the undiluted imine treatments (1 mg/ml). In future experiments, we will carry out replicate treatments to improve precision of the assay. We can also test a broader sample of the imines available.

Student: Laura Obernesser

Faculty Sponsor: Elizabeth Seale (Sociology)

Ideologies of Motherhood Among Low-Income Women in Rural New York

The purpose of this study is to examine low-income women's attitudes about motherhood. Semi structured interviews were conducted with low-income women who use the Planned Parenthood Family Planning Education program. Preliminary findings suggest that the poor, disadvantaged women in the study, who are mostly White, see ideal mothers as being middle-class and living in the suburbs. Respondents claimed that a good mother would have a husband actively involved in the child's life and that the mother would stay home to take care of the children. Most respondents either considered themselves unfit to be a mother, or they were viewed by others as unfit to be a mother. Low-income women were more likely to say that they did not meet the standard they have for what a good mother would be like. This study has the potential to inform us about the role of parenting in these women's lives through the exploration of ideologies of motherhood.

Student: Shannon O'Neill

Faculty Sponsors: Willard N. Harman, David Wong (Biological Field Station / Biology)

Finding the Optimal Concentrations of Potassium Permanganate and EarthTec® to Control Zebra Mussels (*Dreissena polymorpha*) for the Cooperstown Water Treatment Plant

Invasive dreissenid mussels pose a significant problem to structures and machines submerged in the fresh and estuarine waters of the United States. With the detection of zebra mussels (*Dreissena polymorpha*) in Otsego Lake, New York in 2007, the Cooperstown Water Treatment Plant was presented with biofouling of their intake system by these creatures. As an alternative to chlorination, this project will examine the suitability of two compounds, potassium permanganate and EarthTec,®

to control the mussels. During Phase I of this project, the effectiveness of each compound at killing adult mussels and veliger larvae will be tested across five concentrations. During Phase II, the effectiveness of each compound on preventing the settling of veliger larvae on fiberglass panels will be tested. This project will contribute to the understanding of the chemical control methods available for use against zebra mussels and will serve as a framework for further research.

Student: Randouth Palmer

Faculty Sponsor: Cynthia Klink (Anthropology)

Utilizing Experimental Use-Wear Analysis as an Aid for Identifying Artifact Functions at the Pine Lake Archaeological Site

Since 2003 the SUNY Oneonta Anthropology Department has been excavating the Pine Lake Archaeological Site (PLAS), which dates to 2500-1500 B.C. As at other Northeastern sites of this age, organic material preservation is virtually non-existent; however, this site contains an abundance of lithic tools made of Onondaga chert, Esopus chert, and sandstone (OC, EC, and SS). These tools, therefore, are the only data set available to reconstruct the subsistence activities that took place at Pine Lake. Reliable use-wear analysis of lithic artifacts has the potential to provide information about ancient subsistence practices (Grace 1996); however, no studies documenting use-wear on OC, EC, and SS have been conducted, making it impossible to reliably determine the function of the PLAS tools. My research fills this gap by conducting use-wear experiments with replica tools of OC, EC, and SS for various activities, including processing meat, fish, hide, wood and grass. Results indicate the type of use-wear varies depending on lithic type and resources processed. The experimental tools and my micro-wear analyses will be archived with the Anthropology Department as a comparative collection for the analysis of lithic tools recovered from PLAS.

Students: Hillari Patschureck, Ethan Edmans

Faculty Sponsor: Jacqueline Bennett (Chemistry & Biochemistry)

NMR Sample Degradation Induced by Trace Impurities in Chloroform-d

Chloroform-d is one of the most commonly used nuclear magnetic resonance (NMR) solvents. We have found that trace impurities in chloroform-d can cause deterioration of sensitive compounds. Our research group has synthesized hundreds of imines with excellent purity using a green method we developed, but about 10% of our imines seemed to have unacceptable purity, showing significant amounts of starting materials in proton NMR. We recently discovered that our NMR solvent, not our synthesis, was to blame. Chloroform-d contains a trace amount of acid that catalyzes imine hydrolysis in sensitive imines, making them appear less pure. This process can lead to flawed NMR data, which might be an issue for others who work with similarly sensitive compounds. We are studying the kinetics of this process on several of these imines using proton NMR (JEOL 300 MHz). We will discuss the scope of the problem, including how many of our imines were affected, common structural features of these imines, and an inexpensive and effective solution to this problem.

Student: Christine Picucci

Faculty Sponsor: Jeffrey S. Heilveil (Biology)

Development and Intrafamilial Cross-Testing of Microsatellite Primers for *Acroneuria carolinensis* (Banks) (Plecoptera: Perlidae).

Numerous questions of an ecological and/or life history nature can benefit from population genetic analyses. Doing so, however, requires the development of polymorphic molecular markers, such as microsatellites. This is especially true for non-model species, such as *Acroneuria carolinensis* (Banks), a perlid stonefly. Using next-generation sequence technology, we developed polymorphic microsatellite primers for *A. carolinensis* and cross-tested them on the congeneric *Acroneuria lycorias* (Newman) and confamilial *Agnatina capitata* (Pictet) and *Agnatina flavescens* (Walsh). These markers will be used to further examine state-wide and fine-scale population structures throughout New York, as well as facilitating the work of other research groups.

Student: Rebecca Poletto

Faculty Sponsor: Lisa Curch (Sociology)

Mass Media and the Perception of Crime

Currently, there is little research on mass media's effects on perceptions of crimes, particularly among older populations and when certain types of mass media are involved. In this study, a series of interviews examined the relationship of mass media consumption and perceptions of crime. This cross-sectional qualitative study focused on how radio, television, the Internet, and video games were used across three age categories (18-30 years old, 31-64 years old, and 65 years and over). Participants were questioned on past and current mass media habits and their perceptions of crime and risk of victimization. This research found that television had the biggest impact on participants, and the news was more influential than fictional depictions of violence. Participants stated that they were more upset by violence in the news than fictional displays of violence, and were also more likely to change the television station due to violence than to change the radio station, stop playing a video game, or exit out of a website. The middle age category was the most bothered by graphic images, as well as most concerned with becoming a victim of violent crime. Despite this, the youngest were the most likely to be proactive in protecting themselves. This research builds upon the previous research on the subject and outlines the complexities of age, personal experience, and the different forms of mass media on one's perception of crime and victimization throughout the life course.

Student: Connie Randall

Faculty Sponsor: Renee Walker (Anthropology)

Prehistoric Life in the Appalachian Mountains: Subsistence and Settlement at the Griffin Site, Tennessee

The goals of this project are to investigate the faunal and shell remains from the Griffin Site (40FR151), a rockshelter in Franklin County, Tennessee. The investigations will include a summary of the types of animal remains found at the site and how this can inform us about past subsistence and settlement practices, as well as past environments. The Griffin Site, first excavated during the 1970s, was likely a temporary campsite utilized by hunting and gathering groups. Occupied during the Archaic Period, the information gathered from this site can provide valuable insight into the past lifeways of prehistoric Native Americans.

Student: Susan Robinson

Faculty Sponsors: Shasta Marrero, Devin Castendyk (Earth & Atmospheric Sciences)

Methane and 59-Ion Baseline of Franklin in Delaware County, New York

In 2009, hydraulic fracturing (the process of forcing water with chemicals into deep shale deposits to open fractures and release natural gas) was in the media because gas companies were interested in using this process locally. At SUNY Oneonta, students working with Dr. Hasbargen have determined the baseline in Otsego County. We sampled three different water sources: 225'-deep sulfur-rich well, 409'-deep hard water well, and a surface spring. In the SUNY Oneonta lab I measured for concentrations of sulfate, chloride, nitrate, and phosphate using HACH 2800 Absorption Spectrometer, plus alkalinity by titrations. At each site I recorded GPS, temperature, electrical conductivity, and pH. Samples were sent to Activation Laboratories in Ontario, Canada for concentrations of 59 ions using inductively coupled plasma mass spectrometry, and to Isotech Laboratories in Illinois for analysis of dissolved methane. Results show moderate concentrations of naturally occurring methane in deep sulfur and hard water, but no methane and very few metal concentrations in the surface spring. There is high sodium in the sulfur-rich well. The calcium, magnesium, and chlorine are high in hard water. If hydraulic fracturing begins here, the water can be resampled and compared to this study to determine if there is any measureable impact on the water.

Students: Lucas Rock, Derek Tallman

Faculty Sponsor: Paul Baumann (Geography)

Shrinking of the Northern Aral Sea

The Aral Sea has been one of the major symbolic representations of the human-environmental conflict. The Sea has been shrinking in size for over 50 years and has become a relative puddle of its former self. The shrinkage is the result of agricultural policies of the former Soviet Union that are being continued today by three former Soviet republics, now the independent nations of Kazakhstan, Uzbekistan, and Turkmenistan. These states divert water from key rivers for agricultural purposes. These rivers have historically fed the Aral Sea; however, today, little to none of the water from these rivers reaches the Sea. Evidence of the shrinkage is most pronounced in the northern section. This study used satellite data sets for the years 1985, 1998 and 2010 to measure and demonstrate the decline and change of the northern portion of the Aral Sea.

Student: Margaret E. Ryan

Faculty Sponsor: Betty Wambui (Africana & Latino Studies / Women's and Gender Studies)

NGOs in Ghana: Facilitating Development or Dependence?

Although the number of NGOs (non-governmental organizations) throughout Africa, and Ghana in particular, has grown tremendously over the past 25 years, improvements have not been made at a proportionate rate. Are these NGOs competent at solving the country's problems? Are they genuinely invested in finding solutions to the problems for which they are created to address? Are they properly equipped to enact long-term improvements? This paper will explore the history of NGOs in Africa and the damaging effects they have brought about, most notably an indirect form of re-colonization.

Student: Joanna Salvino

Faculty Sponsor: Jeffrey S. Heilveil (Biology)

The Effect of Man-Made Dams on Peripheral Stream-Dwelling Populations of *Nigronia serricornis* (Say) (Megaloptera: Corydalidae).

This project will use molecular data to determine whether the Pepacton Reservoir in Margaretville, NY has an impact on the genetic exchange, or gene flow, between populations of *Nigronia serricornis* (Say). Individuals will be collected from eight sites surrounding the Pepacton Reservoir: four in tributaries directly connected to the reservoir and four in tributaries indirectly connected to the reservoir by the Delaware River. Recently developed microsatellite markers, genetic markers commonly used in forensics and population genetics, will be used to genotype collected individuals, and determine relatedness.

Student: Lora Schaller

Faculty Sponsor: Tracy K. Betsinger (Anthropology)

The Bioarchaeology of Disease: An Examination of Human Remains

Bioarchaeology is a branch of biological anthropology that utilizes the study of human remains in an archaeological context in order to learn about past populations. This project aims to examine the remains of nine individuals and use various techniques to determine age, sex, and identify any pathological conditions present. A variety of pathological conditions may affect the skeleton of an individual during life and, therefore, can be seen on the skeleton. In this study, the remains have been surveyed for the presence of infectious disease (i.e., tuberculosis, treponematosi, and leprosy), nutritional deficiencies (i.e., porotic hyperostosis, cribra orbitalia, scurvy, and rickets) and nonspecific stress indicators such as linear enamel hypoplasias. This project aims to provide a greater understanding of the individuals being examined and the conditions in which they lived and died.

Student: Kevin Schermerhorn

Faculty Sponsor: Jeffrey S. Heilveil (Biology)

Estimating prevalence of *Borrelia* in the ticks of Otsego County

Upstate New York is home to several tick species, the most common of which is the blacklegged or deer tick, *Ixodes scapularis*, a common carrier of Lyme disease. While Lyme and its effects on humans are well documented, the prevalence of *Borrelia burgdorferi* (the bacterium that causes Lyme disease) within the tick population is often ignored. The aim of this study is to determine what percent of the tick population in Otsego County is infected with *B. burgdorferi*. Collection of ticks was carried out by dragging cloth sheets in transects through tall grasses and brush at several locations in Otsego County. Collected ticks were crushed and observed via dark field light microscopy, and presence or absence of *B. burgdorferi* was determined. Data recorded included date collected, tick location, sex, and *B. burgdorferi* status. Statistical tests are to be undertaken once all data have been collected to estimate trends in presence of *B. burgdorferi* in the tick population of Otsego County.

Student: Amanda Sendkewitz

Faculty Sponsor: Florian B. Reyda (Biology / Biological Field Station)

Cestodes of the Fishes of Otsego Lake, New York

This study is part of a survey of intestinal parasites of fishes of Otsego Lake and its tributaries (Cooperstown, New York) from 2008 to 2012. In total, 430 fishes were collected by various methods, and subsequently examined for intestinal parasites, and in many cases, for parasites in other fish organs. The survey included a total of 27 fish species, consisting of six centrarchid species, one ictalurid species, eleven cyprinid species, three percoid species, three salmonid species, one catostomid species, one clupeid species, and one esocid species. Collected cestodes were examined with light microscopy following preparation of whole mount slides. Among the fish examined, six fish species were infected with adult cestodes in the intestine. The adult cestodes encountered represented three genera in three cestode orders. The caryophyllid cestode *Glaridacris catostomi* occurred in *Catostomus commersoni*. The bothriocephalid cestode *Bothriocephalus cuspidatus* occurred in *Perca flavescens*. Finally, the game fish species *Esox niger*, *P. flavescens*, *Micropterus salmoides*, *Micropterus dolomieu*, *Salvelinus nemaycush*, and *Coregonus clupeaformis* were host to ~four species of the proteocephalidean cestode *Proteocephalus*. Each *Proteocephalus* species had distinctive scolex and bothrial features in combination with features of the strobila, but preliminary morphological examinations did not enable species identification due to taxonomic limitations.

Student: Nicholas Sharr

Faculty Sponsor: Melissa Godek (Earth & Atmospheric Sciences)

A Classification of Flood Intensity Along the Delaware River

Major flooding along the Delaware River has become much more frequent over the past decade. A better flood forecasting method can help give an earlier warning to further prevent the future loss of life and property. This examination creates a classification of intensity for flooding events along the Delaware River within the past ten years. The classification scheme involves eight different parameters that are important factors to both flood frequency and intensity. These parameters are separated into a basic point scale, with a scale of 5 being the most likely for flooding, and a scale of 1 being the least likely for flooding. The parameters include precipitation, discharge before rainfall, soil moisture anomalies, and prior precipitation anomalies. Out of these eight parameters, only three would need to be forecasted before a potential flooding event. The other five parameters would be examined before a rainfall event even began, giving forecasters a simple method to accurately predict a potential flood event. The reliability of the classification scale was analyzed with the flooding events from 2004, 2005, 2006, and 2011. The total number of points for each event was compared to the number of stations that the River crested above flood stage.

Students: Jason Sheehan, Christine Cardillo

Faculty Sponsor: Keith K. Schillo (Biology)

The Effect of Wheatgrass Consumption on Unloading of Oxygen and the Accumulation of Lactic Acid in a Group of Collegiate Athletes During Exercise

Our laboratory previously demonstrated that wheat grass juice (WG) enhanced the decrease in blood oxygen saturation (SpO_2) that occurs during aerobic exercise. This effect may be due to more efficient unloading of oxygen from blood to muscle tissue. Such an effect would suppress anaerobic metabolism, thereby suppressing lactic acid production. The goal of the current experiment is to confirm our previous results and determine the effects of exercise and WG on blood lactate concentrations. Thirteen athletes (10 men and 3 women) were subjected to two consecutive days of testing. During tests subjects received either WG dissolved in 59 ml of vehicle, or 59 ml vehicle alone. The order of treatments was randomly assigned. Within 20 minutes following ingestion of fluids, subjects ran on a treadmill until they reached a peak heart rate of 85% maximum. SpO_2 and pulse rate were measured before, during (at peak heart rate) and immediately after exercise, whereas blood lactate concentrations were measured before and immediately after exercise. Exercise caused a decrease ($P < .0001$) in SpO_2 and an increase ($P < .01$) in blood lactate concentrations. WG did not augment either of these effects ($P > .1$). Our results lend no support to the claim that WG promotes oxygen unloading during exercise.

Student: Katie Sheehan

Faculty Sponsor: Toke Knudsen (Mathematics, Computer Science & Statistics)

History of Mathematics in the Classroom

In high school, many students go through the motions of learning, but rarely think conceptually about the information that is being taught. As a future educator, my goal is to help students comprehend the material by teaching them the origins of theorems. My research supports that associating mathematical principles with real people in history will give the students context surrounding the complicated principles. This method will help students better understand the theorems because they will realize that they were used for a reason. By teaching background material, students are not just memorizing formulas to prepare for tests, but rather learning the importance of the material.

Student: Caitlin Stroosnyder

Faculty Sponsors: Willard N. Harman, David Wong (Biological Field Station / Biology)

Goodyear Lake, Otsego County, NY, Management Plan

Goodyear Lake in Otsego County, New York, was formed in 1907 by flooding the Susquehanna River Valley with the construction of Collier's Dam. North and south shallow slopes support littoral zones, while east and west steep slopes support fishing. Its water supply originates from the Susquehanna River and three smaller tributaries, Red, Oaks and Cherry Valley Creeks. Goodyear has a 352 sq. mile watershed, which is large relative to its 365-acre surface area and maximum depth of 12 meters. It is a dimictic lake. Trophic status parameters including total phosphorus $> 20 \mu\text{g/l}$, chlorophyll $a > 8 \mu\text{g/l}$ and Secchi disk transparency < 2 meters indicate it is a eutrophic lake. An abundant amount of energy is available for desirable and undesirable organisms. Poor oxygen levels, 0-4 mg/l, in the summer hypolimnion also signify it is a productive lake. Preliminary stakeholder concerns are sedimentation, excessive nutrient loading, algal growth and invasive species (Eurasian watermilfoil, Curly-leaf pondweed, Zebra mussels and Water chestnut). My research will focus on the development of a science-based lake and watershed management plan for the Goodyear Lake Association. It will include initial implementation of the plan to address short-term goals and the future ecological sustainable functioning of the Lake.

Students: Andrew Tejada, Megan Harrington

Faculty Sponsor: Andrew Kahl (Theatre)

Identity Play Reading Series

In this year's Identity Play Reading Series, we searched for works that would open doors to identities not yet explored. We selected plays that respectively addressed female body image, social unrest and racial inequality, cultural prejudices and stereotypes, and intend to conclude with a reading that focuses on religion. For each reading, we sought out individuals who identified with the characters and the content to perform and inhabit leadership roles. This has allowed us to connect with fellow students, professors, and community members from a wide variety of backgrounds. After each reading, an open talkback session took place between actors, directors, producers, and audience members. These discussions created a forum in which frustrations could be expressed and experiences could be shared. Our work has inspired other students to continue the project and encouraged our campus and the Oneonta community to celebrate diversity, which was the mission we set out to accomplish.

Student: Christopher Teter

Faculty Sponsor: Thomas Horvath (Biology)

Survey for the Hemlock Woolly Adelgid in Otsego County, New York

The hemlock woolly adelgid (*Adelges tsugae*) is an invasive species introduced to the United States from Japan in the 1920's that causes high mortality among both the Carolina hemlock (*Tsuga caroliniana*) and Eastern hemlock (*Tsuga canadensis*) across their range. This species attaches itself to the pedicel of hemlock needles to feed on the sugar produced by the tree through photosynthesis, and can proliferate so rapidly that within only five years the tree will perish. This survey has been conducted to identify the first infestation recorded in Otsego County, New York. Using a handheld Garmin GPS unit and close-range binoculars, I investigated public places (parks, wildlife refuges, and public land trusts) along the south-eastern border of Otsego County. The first infestation was discovered in a stand of hemlocks on the southern edge of Goodyear Lake, and encompassed only a few small branches. The infrequency of infestation leads me to believe that the presence of this species is still new to the region. Its identification may allow local regulation and conservation efforts to slow the damage caused by this insect to Otsego County's ecological, economic, and recreational hemlock resources.

Student: Nicholas Trimper

Faculty Sponsors: John Bagby, Andrew Kahl (Theatre)

Fuddy Meers Set Design

In the play *Fuddy Meers*, the characters almost always exist in a thick haze of confusion and ignorance. This is particularly present in the character Claire, who has a form of psychogenic amnesia. Claire wakes up every day not knowing who she is or anything about her past. As the play moves forward, she learns more and more about her family's history, and some of the events that have made her the woman she is today. I wanted to incorporate the idea of inconsistent thoughts and visions within the actual scenery for the show. Locations are constantly shifting into completely different locations, and if one location happens to be revisited, it may not necessarily be exactly how it was originally. In order to accomplish this, the set had to act as a folding/assembling/disassembling machine. Each piece of scenery could be transformed into a different piece of scenery for a different location. I believe that the nature of the play, as well as the space the performance took place in, made way to seeing these ideas expressed successfully.

Student: Zachary VanEarden

Faculty Sponsors: Philip Sirianni, William O'Dea (Economics, Finance & Accounting)

Put Your Money Where Your Carbon Is

We conduct a survey of commuters to the SUNY Oneonta campus to elicit their willingness to pay for the carbon emissions associated with their commutes. Along with demographic information, we

gather from respondents the year and type of their cars, the miles driven one way, and the number of trips to campus per week. Using this information, we then provide each respondent with a dollar amount of the total environmental damages for the semester that are associated with his/her commute, and ask whether the respondent would be willing to pay for some or all of these damages in the form of a higher parking fee, given that the funds collected above and beyond the normal parking fee would be used to offset the damages (such as by planting trees or purchasing carbon offsets). A major advantage of this approach is that we are able to extrapolate our survey results to the greater campus community to estimate the total emissions of commuters to campus, a component of Scope 3 emissions, which many institutions have a difficult time estimating. We argue that our survey methods are a useful tool for consistently estimating not only the willingness to pay for damages, but also for conducting accurate greenhouse gas inventories.

Students: Joseph Westenberger, Austin Borden

Faculty Sponsor: Florian B. Reyda (Biology / Biological Field Station)

Nematodes of the Fishes of Otsego Lake, New York

This nematode study is part of a survey of the intestinal parasites of fishes of Otsego Lake and its tributaries (Cooperstown, New York) from 2008 to 2012. In total, 430 individual fish were collected by hook and line, seine, gill net, or ElectroFisher, and subsequently examined for intestinal parasites (and in many cases, for parasites in other fish organs). The survey included a total of 27 fish species. Intestinal nematodes were studied by light microscope examination of specimens that were whole-mounted using conventional methods. A minimum of five species of nematodes were encountered in the alimentary canal of fishes examined. These include *Spinitectus gracilis* in Rock Bass, Smallmouth Bass, and Redbreast Sunfish, *Spinitectus carolini* in Smallmouth Bass and Rock Bass, *Spinitectus micracanthus* in Bluegill, Pumpkin Seed, Redbreast Sunfish, Rock Bass, Yellow Perch and Smallmouth Bass, and *Dichelyne cotylophora* in Yellow Perch. There is an ongoing attempt to further identify additional nematode species that were found using light microscopy, scanning electron microscopy and histology. In addition, there was a diversity of nematodes found outside of the alimentary canal. For example, *Eustrongylides tubifex* was found in the body cavity of Pumpkin Seed, Bluegill, Redbreast Sunfish, Chain Pickerel, and Yellow Perch.

Students: Danielle Willsey, Kaylee Herzog

Faculty Sponsor: Florian B. Reyda (Biology / Biological Field Station)

Morphological Diversity of Rhinebothriinae new genus 3 (Cestoda: Rhinebothriidea)

Recent survey work on elasmobranchs and their parasites has revealed the presence of multiple new cestode genera. One new genus, referred to as Rhinebothriinae new genus 3 by Healy et al. (2009), has been found in 28 species of batoid elasmobranchs and is distinguished from other rhinebothriidean genera by its possession of teardrop-shaped bothridia that possess a posterior row of loculi that are longer than wide. Based on microscopic examination, it is evident that the specimens of Rhinebothriinae new genus 3 collected from the 28 species of batoid elasmobranchs represent multiple species. In order to guide ongoing taxonomic studies of this new genus, morphological features that vary intra-generically were identified. Bothridial features that vary within the genus include, for example, whether the bothridia is wider than long or longer than wide, or constantly constricted. Proglottid features that vary within the genus include the morphology of different sexual organs. Combinations of these features have aided in recognizing several potential species within the genus. Although cestodes of this genus are known to infect nearly 30 elasmobranch species, they have conserved characteristics of the bothridia, and only a few key morphological features can be used to concretely separate one species from another.

Student: Madeleine Yakal

Faculty Sponsor: Toke Knudsen (Mathematics, Computer Science & Statistics)

A Sanskrit Fable: The Brahman and the Mongoose

For the past 3,000 years, Sanskrit, an ancient Indian language, has been used as a medium for Indian civilization and culture. It is typically written in the Devanagari script. It was originally transmitted orally, and then on birch-bark or palm-leaves, before finally being recorded on paper after 1000 A.D. Sanskrit is part of an assemblage of languages called "Indo-European," which began east of Lithuania and spread to most of Europe, Iran, and northern India; therefore, words in English, like "brother," appear similar to words in Sanskrit of the same meaning, such as "bhrātar." Sanskrit has been written in many different modes that are still read today: epic poems, plays, treatises on astronomy and mathematics, and religious hymns and the moral conduct of Hinduism. The most famed Sanskrit works are the Indian fables. This includes the Hitopadesa, a collection of stories featuring animals in prominent roles. The fables typically tell stories of the culture of India, featuring local fauna, geography, and people. Their purpose is to teach statecraft and little lessons. Sanskrit fables were so popular in the past that they spread across the globe and were translated into Arabic, Hebrew, Latin and, eventually, English in 1570 A.D.

Student: Crystal Young

Faculty Sponsor: Michael J. Brown (Psychology / Women's & Gender Studies)

Mock Juror Perceptions of Online Sexual Harassment

As the Internet solidifies its importance in every aspect of our lives, online criminality is becoming an increasingly pervasive concern. Prior research suggests that online interactions have the potential to evoke emotional responses that are similar to those in in-person interactions. Thus, harassment that takes place online may be just as distressing as harassment that takes place in person; however, it may not always be viewed as such. This research examines how mock jurors perceive a lawsuit involving a case of online sexual harassment.

Student: Owen Zaengle

Faculty Sponsor: Willard N. Harman (Biological Field Station)

Defining Reference Conditions in Grass Lake: Moving Towards a Comprehensive Management Plan

In order for effective and efficient management of natural resources, both managers and stakeholders must understand what one can realistically expect when a resource responds to manipulation. The concept of the reference condition is often used as a framework to build this understanding. Reference conditions can be defined as the ecological characteristics of a system prior to anthropogenic impacts. Since lakes are very complex, a comprehensive reconstruction of these conditions is nearly impossible and natural resource managers are left to analyze the available data to define that point of reference. At Grass Lake, located in St. Lawrence/Jefferson County, New York, this point was determined through analysis of quantitative and narrative historical data, watershed characteristics, lake morphometry, and a comparison with other lakes in the region. With these reference conditions in mind, it is now possible to set goals and implement monitoring programs as we move towards a comprehensive management plan.

Students: Shelby Zemken, Gregory Talamini, Deanna Caracciolo

Faculty Sponsors: Gina L. Keel (Political Science), Thomas Horvath (Biology)

SUNY Oneonta's Garbage to Gardens Initiative

In 2010, Americans threw away 34 million tons of food. Less than three percent of food waste was recovered and recycled in 2010, making it the largest sector of municipal waste to go to landfills. Landfills account for 20 percent of all U.S. methane emissions. Methane is the most effective heat-trapping greenhouse gas. SUNY Oneonta's recent commitment to sustainability suggests that further exploration is necessary to better understand environmental problems, and to marshal stewardship on campus. Four waste audits over the course of the fall 2012 semester at the Wilsbach campus dining

hall show food waste totaling 26,000 pounds per semester. In collaboration with the Wilsbach staff, we are developing an aerated static-pile composting system with the capacity to divert and recycle 2,600 pounds of food waste per semester into a valuable soil amendment for campus use. Further investments in source reduction initiatives save money on waste removal, divert food waste from landfills, stimulate student engagement, influence stewardship and environmental education, and provide carbon sequestration to mitigate global climate change.



Grants Development Office
Morris Conference Center
Oneonta, NY 13820
Phone: 607.436.2632

<http://www.oneonta.edu/advancement/grants/>