



A CELEBRATION OF
SCHOLARSHIP
EDINBORO UNIVERSITY

April 17, 2019

Welcome: Patricia Claster

April 17, 2019

Dear Students, Faculty, Staff, and Guests,

It is my pleasure to welcome you to Edinboro University's 7th annual *Celebration of Scholarship*! We are here to recognize a variety of outstanding student-faculty works of scholarship and creativity taking place across our campus and to show off the fruits of our academic collaborations. There are so many exceptional projects on display here today and so much to celebrate! Most importantly, this event gives the entire Edinboro community the opportunity to connect and engage in dialog with our talented students and learn firsthand more about these exciting projects that are taking place at our great University!

In closing, I would like to express my sincere gratitude to all of those who have contributed to this year's *Celebration of Scholarship*. I am grateful to be a part of such an important event. If you have any suggestions, comments, or recommendations, please don't hesitate to bring them to me or to any member of the Celebration of Scholarship Committee.

Thanks to all of the students, faculty, administrators and staff members here to celebrate these momentous accomplishments!

Best wishes,

Patricia Claster, Ph.D.
Department of Sociology
Edinboro University of Pennsylvania
Chairperson: Celebration of Scholarship Planning Committee

Acknowledgments

The Celebration of Scholarship Committee would like to thank:

Judges

| | | | |
|---------------------|----------------|---------------|--------------|
| Dan Bennett | Erik Bentsen | John Cussen | Stacy Dunn |
| Elizabeth Farbotnik | Nathan Fralick | Qun Gu | Wayne Hawley |
| Monty McAdoo | Greg Morrow | Doug Puharic | Joe Reese |
| Eric Straffin | Rick White | Roger Wolbert | |

Provost's Choice Team

Provost James Fisher Dean Denise Ohler Dean Erinn Lake Dean Scott Miller

Additional Thanks To:

- Dr. Joyce Jagielo, Dr. Gregory Morrow: Program Editors
- Dr. Joyce Jagielo: Abstract Reviewer and Judge Coordinator
- Dr. Amy McClune: Scorekeeper
- Dr. Michael Hannan, Interim President
- Dr. Denise Ohler, Dean of the College of Science and Health Professions
- Dr. Scott Miller, Dean of the College of Arts, Humanities and Social Sciences and Dean of the School of Business
- Dr. Erinn Lake, Executive Director of the School of Graduate Studies and Research
- Mr. William Berger: Celebration of Scholarship logo design

Celebration of Scholarship Planning Committee

| | | | |
|--------------------------|----------------------------------|---------------|----------------|
| Patricia Cluster (Chair) | Sheila Taylor (Provost's Office) | Eric Straffin | Gregory Morrow |
| Amy McClune | Joyce Jagielo | Qun Gu | Samuel Cluster |
| Dan Bennett | | | |



The Friends of the Baron-Forness Library Student Grant Program has been established to support both undergraduate and graduate student scholarship throughout the University. In so doing, this grants program seeks to highlight, encourage, and support student scholarly activity. Examples of scholarly activity include but are not limited to: research, performances, exhibitions, projects, and publications. Applications will be available and awards are made every Fall semester.

Eligibility

This grants program is open to any current degree-seeking student at the University with the following stipulations:

1. Undergraduate students must have completed a minimum of 75 credit hours and have a minimum of a 3.25 grade point average. Graduate Students must have completed a minimum of 15 credit hours and have a minimum of a 3.5 grade point average.
2. The student must be the primary scholar on the activity.
3. The scholarly activity must be completed under the supervision of a faculty member who must attest to its value and the ability of the student to complete the project.
4. The scholarly activity must be related to the completion of the degree and grant funding must be used to support the completion or presentation of a scholarly project related to the student's program of study.
5. The scholarly activity must be completed and funds must be expended within twelve months of the award notification.

Awards

1. The maximum award per student per degree will be \$500. (Please note that if it is a group scholarly project, the limit of \$500 will be applied to the group.)
2. The funds can be used to purchase materials, equipment, and/or to defray travel expenses related to the undertaking of the project or the presentation of the completed work.
3. Award recipients are expected to attend a Spring recognition event (typically in late April or early May) at which they will provide a poster (to the library) and a brief presentation summarizing their scholarly activity.

Questions

Please contact Dr. Monty L. McAdoo for more information (x1070, mmcadoo@edinboro.edu, Baron-Forness Library, Room 128).

All activities take place in Van Houten Dining Hall North.

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Posters

THE IMPACT OF CLIMATE-CHANGE RELATED NATURAL DISASTER ON AIRFARE UNCERTAINTY IN TEXAS

Avryn Jackson-Bonus

Business and Economics

Project Advisor(s): Dr. Jingze Jiang

The occurrence of climate-change related natural disasters has been increasing, which has resulted in social and economic loss. For the past decade, the world has seen the major natural disasters create around \$211 billion in damages and lose 76,000 human lives. One of the most affected industries is the airline business. However, limited studies have been done by scholars on how the climate-change related natural disasters, such as hurricane Harvey, have affected airline industry and its stakeholders. Therefore, this study will take a lead in examining if an abnormal hurricane would affect plane ticket prices. We are especially interested in studying the impact of hurricane Harvey in 2017 on the ticket price of flying out of Texas. Our results indicate that when comparing the ticket prices in 2016 and 2015, the price uncertainty in 2017 statistically significantly increased, which may be associated with the impact of hurricane Harvey. Upon researching what affects airfare, little to no articles were found that correlate climate-change related natural disasters to ticket price, and this project may convey that studying the effects of climate-change related natural disasters such as hurricane Harvey will help improve forecasting airfare.

Poster
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YOUTUBE DISCRIMINATION: LOOKING AT THE DIFFERENCE BETWEEN MALE AND FEMALE *LET'S PLAY* PLAYERS

Bethany Mackowski

Sociology

Project Advisor(s): Dr. Patricia Cluster

“YouTube Discrimination: Looking At the Difference Between Male and Female *Let's Play* Players” is a research project that looks at the online comments that are posted on three popular YouTube *Let's Play* channels. The purpose of this study is to analyze the viewers' assessments of the male and female *Let's Play* players and to determine if female and male players are treated fairly by viewers. Previous research suggests that women are often harassed just for being female while participating in video games. This study extends previous research concerning gender discrimination in gaming and offers its own unique contribution by specifically examining YouTube comments and the dynamics between *Let's Play* players and their viewers. The videos selected have both a male and female player simultaneously playing and are varied in length. The video comments were randomly selected at different times and on different days to see if the time of day had an impact on the amount or the type of discrimination. Several themes emerged during the analysis process that shed light on various forms of discrimination faced by female gamers. The findings of this study contribute to our understanding of gendered interactions in group video games.

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THE IMPACT OF FOOD REWARD ON THE ALTERNATION BEHAVIOR OF ADULT MALE RATS

Clayton M. Dingle, Jessica L. Barwell, Wayne Hawley

Psychology

Project Advisor(s): Dr. Wayne Hawley

Poster
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Alternation behavior is an evolutionarily conserved method of foraging and navigating novel environments that is exhibited by a variety of animals. Moreover, both food rewarded (i.e. reinforced) and non-food rewarded (i.e. spontaneous) paradigms of alternation tasks have been implemented to measure constructs such as motivation, curiosity, and spatial working memory. The neurobiological basis of this behavior appears to involve a variety of neurotransmitter systems, such as acetylcholine and glutamate, as well as a variety of brain areas important for learning and memory, such as the septum, hippocampus, and prefrontal cortex. However, research that directly compares the rates of food rewarded alternations to non-food rewarded alternations is limited. Therefore, this study was conducted to determine whether rates of alternation behavior would be greater in a four-armed cross maze if a food-reward was introduced. Food rewarded rats made significantly more alternations over the course of the 20-minute trial than non-food rewarded rats. However, food reward also tended to result in a greater frequency of arm entries. After controlling for the number of arm entries, subsequent analysis revealed that the percentage of alternations tended to decrease as the trial progressed, an effect that occurred independent of the presence of food reward. However, food rewarded rats overall exhibited a greater percentage of alternations than rats that were not provided a food reward. In addition, although both groups of rats exhibited alternation behavior that was above chance levels during the first half of the trial, only rats motivated by food maintained alternation behavior during the second half of the test. These findings indicate that food reward enhances the alternation behavior that naturally occurs independent of food reward.

THE EFFECT OF GLYPHOSATE HERBICIDE ON THE BEHAVIOR OF POLLINATORS

Donna Good

Biology and Health Services

Project Advisor(s): Dr. Nina Thumser

Poster
P-4

Industrial agriculture has been continuously developing with the use of agrochemicals since the 20th century. The pressure agrochemicals place on the environment, human and other species' health, is yet to be understood. This experiment was performed to observe pollinator behavior, to determine pollinators' preferences for or against a glyphosate contaminated food source. It was found that more yellow jackets collected Glyphosate Treated sugar-water than Non-Treated samples, while more honey bees collected from Non-Treated sugar-water than the Glyphosate Treated samples. However, no significant difference in the number of collections from each treatment sample was found overall for these pollinators. At the tested glyphosate concentration, the pollinator behavior was found to have an equal distribution, or to be without preference for either sample.

REPEATED CONDITIONING STRENGTHENS THE PREFERENCE FOR SEX-ASSOCIATED ENVIRONMENTS IN MALE RATS: THE ROLE OF EJACULATION

Haley A. Dufala, Lauren E. Kapp, Deandra E. Mosura, Wayne R. Hawley

Psychology

Project Advisor(s): Dr. Wayne Hawley

Sexual behaviors are rewarding to both sexes in a variety of species. The rewarding aspects of sexual behaviors are typically assessed using a conditioned place preference (CPP) maze in which animals learn to associate specific environments with sexual experience. Animals that find sex rewarding will spend more time in environments previously associated with sexual experience. However, the extent to which repeated sexual conditioning strengthens the preference for sex-associated environments remains to be determined. This study examined the effects of repeated sexual conditioning and the role of ejaculation on sexual reward in male rats. Half of the male rats were confined with a sexually receptive female rat to their originally non-preferred side of a three-chambered CPP maze, while the other half were confined alone to their originally preferred side. The following day the groups received the opposite conditioning procedure from the previous day. One day later, all test rats were tested on a probe trial in which they were placed back into the center chamber of the maze and allowed access to all three chambers in order to assess preference for the two end chambers. Test rats received four sets of conditioning and probe trials over the course of 12 consecutive days. Repeated conditioning strengthened the preference for environments associated with sexual reward, as indicated by an increase in the percentage of time in the sex-associated environment from the first to the second set of probe trials. Although between group comparisons did not reveal a difference in the magnitude of preference for sex-associated environments between rats that ejaculated on every conditioning trial and those that did not, only those who reliably ejaculated exhibited a preference for the sex-associated environment as conditioning trials progressed. These results have important implications from a methodological standpoint for behavioral scientists examining the rewarding aspects of sex.

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CREATIVE SELF-PERCEPTIONS AND IDENTITY

Jacob Redfield, Heather Snyder

Psychology

Project Advisor(s): Dr. Heather Snyder

Poster
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Identity development is important for individuals, as it provides the basis for a sense of purpose and direction (Erikson, 1968). This is particularly true in college, as it is a significant time of change and increased independence. Creativity is also important to develop because creativity is highly valued in the job market (World Economic Forum, 2018). Steffens et al. (2015) found that multiple identities were associated with greater idea fluency and originality. Barbot and Heuser (2017) reviewed research on shared components between creativity and identity, and suggested that divergent thinking, personality, self-esteem, identity styles, and levels of commitment are integral to creativity and identity development. Sica et al. (2017) found that identity reconsideration and commitment were positively correlated with creativity components of risk-taking and complexity. Research also suggests that identity style can influence identity exploration (Berzonsky 2006), and that personality traits, particularly openness to experience, are important predictors of both creativity (Diedrich et al, 2017), and identity (Barbot & Hauser, 2017; Dolinger & Dolinger, 2017; Steffens, et. al, 2017). Previous research on identity and creativity focused on performance of creativity tasks, but no studies were found that examined creative self-perceptions and identity. Therefore, the present study will investigate whether self-perceptions of creativity in school and everyday domains contribute uniquely to identity exploration and commitment, while taking identity style and openness to experience into account. Participants completed measures via an online survey. The survey included the Ego Identity Process Questionnaire (Balistreri, Busch-Rossnagel, & Geisenger, 1995); Identity Style Inventory-5 (Berzonsky et al., 2013); every day and school domains for the Creative Self-Efficacy Scale (Beghetto, 2006, 2009; Snyder et al., 2015), Creative Personality Scale (Jaussi, Randel, & Dionne, 2007; Snyder et al., 2015), and K-DOCS (Kaufman, 2012); the HEXACO-PI-R (Ashton & Lee, 2009); and demographic information. Results from analyses will be discussed.

BATHYMETRIC MAP OF EDINBORO LAKE, PA

James F. Kolakowski

Geosciences

Project Advisor(s): Dr. Richard Deal

Poster
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Edinboro Lake is a glacial kettle lake located in Edinboro, PA that serves as a major recreational resource for the citizens of Edinboro and the surrounding area. The goal of this project is to use Geographic Information Systems (GIS) to map the bathymetry (water depth) of Edinboro Lake. Over 1,000 latitude and longitude points with elevation measurements from a previous investigation were converted from an Excel spreadsheet into an ArcGIS shapefile. Using Surfer Software, these points were interpolated using the Kriging method and contoured to produce a bathymetric map of Edinboro Lake. GIS layers were then used that show the locations of major roads and streams within the Edinboro Lake Watershed. The educational goals include providing an easy to use bathymetric map demonstrating sound cartographic principles that can be used in future research and will be useful for boaters, fisherman, and other recreational users of the lake.

CHARACTERIZING FOREST STRUCTURE AT HOWARD FALLS LAND TRUST, A POST-AGRICULTURAL LANDSCAPE OF NORTHWEST PENNSYLVANIA

Jessica Griffin, Camryn Mosley

Geosciences

Project Advisor(s): Dr. Karen Eisenhart

The purpose of this project is to sample and describe the forest communities at Howard Falls Land Trust, a protected natural area in Erie County, Pennsylvania. Phase one was completed during summer 2018, consisting of a woody plant species inventory based on twenty fixed-size plots. Plot locations were established by overlaying a grid of points with 100m spacing over the property in a GIS, then eliminating points falling on unsampleable areas. Twenty points were randomly selected from the remaining points, and then field located using GPS. At each sample point we established a fixed-sized circular plot with a 10m radius. Oblique photographs were taken from the center toward the boundary in the four cardinal directions. All woody species with a measurable diameter at breast height were recorded by species, diameter, and whether alive or dead. Trees positions were recorded by distance and azimuth from center. Data are summarized independently for each plot, since previous work at this site identified distinct areas based on differences in time since agricultural abandonment. Plot structures were compared within and among these patches. Overall, eighteen woody species were sampled, ranging in size from less than 1cm diameter to greater than 80cm diameter. Though the highest woody species richness of any plot was eleven, average richness was 4.14. All sampled plots appear to be relatively young, with most dominated by red maple canopy. Canopy composition and diameter-frequency of dead standing trees is generally correlated with time since post-agricultural forest establishment.

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COLLEGE STUDENTS' PERCEPTIONS ON EMPLOYERS USING SOCIAL MEDIA TO SCREEN JOB APPLICANTS

Kimberly Mosher, Thaddeus Rada-Bayne

Psychology

Project Advisor(s): Dr. Greg Morrow, Dr. Thaddeus Rada-Bayne

Poster
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With 73% of young American adults using social media daily, social networking has become an everyday resource for many, including for professionals in the workplace (Duggan & Smith, 2014). According to The Society for Human Resource Management (SHRM), 77% of their members use social media for recruiting and hiring employees (SHRM, 2013). However, research suggests that a majority of young adults do not believe that social media should be used for hiring or firing decisions (Drouin, O'Connor, Schmidt & Miller, 2015). In addition, the researchers suggest that a wider range of factors should be studied for future research in this area (Drouin et al., 2015). In this study, we surveyed and analyzed data from 169 undergraduate students and measured their opinions on employers using social media information to screen job applicants. In addition, we measured their personality traits according to the Big 5 (openness, conscientiousness, extraversion, agreeableness, and neuroticism), their average social media usage, and their political affiliation. We found that there was no correlation between the participants' perceptions of employers using social media during the hiring process and their personality traits. In addition, there was no relationship between their attitudes on employers collecting social media information and how frequently they use social media. However, a one-way ANOVA test was used to compare political affiliation to their attitudes on employers using social media for hiring. The test approached significance, which suggests that conservatives may be more critical of employers collecting social media information during the hiring process ($p = .10$). In future research, we plan to collect data from Augsburg University to test the differences between an urban and a rural college setting. We also plan to measure other variables regarding social media in the workplace in future research.

WHAT DOES FLEXIBLE SEATING LOOK LIKE IN KINDERGARTEN?

Lindsey Finlan

Early Childhood and Reading

Project Advisor(s): Dr. Karen Lindeman

Educators are responsible for many features of teaching and learning including the classroom environment. As education continues to change with the needs of students, some teachers are examining the larger role of environment through modifications such as flexible learning spaces (Kariippanon, Cliff, Lancaster, Okely, & Parrish, 2017). Flexible seating can include exercise balls, small trampolines, weighted blankets, bean bags, pillows, and partial traditional seating. These items are most successful when chosen with the student and rationale for use is provided to them. This qualitative case study sought to look closely at an early childhood classroom to answer the question ‘What does flexible seating look like in Kindergarten?’. To answer this, data were collected through multiple observations and interviews of a veteran teacher and kindergarten class in a rural to suburban Pennsylvania school. Student interviews were conducted as well as a class survey. Additionally, photos were taken to study the furniture and learning spaces more closely. Data were triangulated to develop themes which were supported to make a case for implementing flexible seating in a public-school classroom and describe in detail how this teacher was successful in use of this environment. Emergent themes were improvement in student work, increased positive behavior, and better understanding of student learning differences for both the teacher and peers. The teacher also reported change specifically in students that fell into the third tier of the Response to Intervention (RTI) model. These results were then used to form recommendations for existing classroom modifications and advocacy suggestions for obtaining financial and professional support.

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POLICING PASSHE: AN EXPLORATORY INVESTIGATION INTO CAMPUS CRIME RATES

Maddie Kopko

Sociology

Project Advisor(s): Dr. Samuel Cluster

This study analyzes data from each of the Annual Security and Fire Safety Reports from all 14 PASSHE Universities between the years 2015-2017. The purpose of this study is to analyze differences between institutions in terms of criminal and institutional violations and referrals such as drug and alcohol violations, sexual offences, property crimes, physical assault and other violations. After data were coded, descriptive comparisons and multivariate analysis were employed to understand trends in the data over time at each institution as well as at particular points in time between institutions. According to a study conducted by Project Know using data from the Department of Education, in 2016 11 of the top 25 U.S. schools for on-campus drug and alcohol arrests are Pennsylvania colleges or universities, and 6 of the top 15 are PASSHE institutions. This exploratory study seeks to understand the persistence of drug and alcohol arrests and institutional responses at PASSHE institutions.

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EVALUATION OF A FARM SAFETY EDUCATIONAL VIDEO FOR PRESCHOOLERS

Maria Petraitis, Oluwaseyi Awotodunbo, Kayla Underwood

Nursing

Project Advisor(s): Dr. Amy McClune

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Agriculture is one of the most hazardous industries in the United States. Children are frequent victims of farm accidents. A previous study asked primary care health practitioners in rural counties in Pennsylvania about farm safety accidents in children. The responses revealed that farm safety accidents occur regularly; the severity of the accidents varies; and the population with the least amount of preventative education is preschoolers (Conway, McClune, & Nosel, 2007). Based on these findings, a collaborative team of faculty and students from animation, music, early childhood education and nursing came together to develop an animated film to fill this need (McClune & Conway, 2016). The animated film, *A Barnyard Story: Adventures in Farm Safety*, is based on published evidence that supports the need for farm safety education in preschool children. A pre-test/post-test was developed to evaluate increased knowledge. In a sample of 75-100 preschoolers in rural daycares in northwestern Pennsylvania, the pre-test was given, the animated film was presented, and the post-test was given. Evaluation of the project is based on the hypotheses that there will be a significant difference between pretest and posttest scores. Evaluation of the difference will include a t-test to test the difference in pre and post test scores. A significance level of $p < .05$ will be used.

EFFECTS OF ST. JOHN'S WORT PLANT AND EXTRACT ON ANHEDONIA IN THE CHRONIC MILD STRESS MODEL OF DEPRESSION IN RATS

Mikaela A. Whalen, Angela Mosebarger

Psychology

Project Advisor(s): Dr. Peter McLaughlin

A common treatment of moderate depression, St. John's Wort (SJW), is believed to get its neurological properties from the two active chemicals hypericin and hyperforin. These chemicals were extracted from over-the-counter capsules containing ground SJW plant material. The material in the capsules was dissolved using methanol, and then the methanol was removed with a rotary evaporator. Column chromatography was used to purify the sample with a solvent system consisting of methanol, acetone, and dichloromethane. Two fractions were expected in the purification: hypericin and hyperforin, but only one was eluted. This sample was assumed to be a mixture of both chemicals, and was tested for psychological effects using a valid rodent model of depression, chronic mild stress (CMS). The CMS model exposes rats to numerous unpredictable stressors. They were then tested for anhedonia (loss of pleasure, a common depression symptom) by conducting preference tests which measured consumption of a chocolate solution compared to water. A small group of male rats (N=12) received one of three conditions given daily for four days: intraperitoneal injection of the SJW extract (0.5 mg per kgrat), a control injection, or an orally (p.o.) ingested food mash containing raw SJW plant material (200-300 mg). It was hypothesized that the extract of hypericin and hyperforin, and also the p.o. SJW plant material, would increase drinking of the chocolate solution relative to the control group. Analysis was not statistically significant, however, this may be due to the small sample size, as preference test data indicated that p.o. plant material caused rats to consume almost twice as much chocolate solution when compared to both the vehicle and extract conditions. Further testing is needed to determine if the dose and time course of the extract was sufficient, or if other natural components of SJW are needed to reduce anhedonia.

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ANTAGONISM OF MUSCARINIC BUT NOT ESTROGEN RECEPTORS IMPAIRS DIVIDED ATTENTION IN MALE RATS

Nathan Pistory, Paige Nicklas, Miranda L. Groft, Kimberly Zimmer, Deandra E. Mosura, Wayne R. Hawley, Peter J. McLaughlin

Psychology

Project Advisor(s): Dr. Peter McLaughlin

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GPR30 is a central, membrane-bound estrogen receptor that is expressed in the basal forebrain cholinergic cells, which regulates outflow of acetylcholine in hippocampus. The receptor plays a role in spatial working memory that may be mediated by muscarinic acetylcholine receptors. Divided attention (DA) is an understudied cognitive domain that may be increasing in health relevance with added distractors in daily experience. We developed an operant, crossmodal model of DA in male rats which featured an auditory sustained attention (SA) component, with an unpredictable, low reinforcement-rate visual distractor task. Experiment 1 compared effects of the muscarinic antagonist scopolamine on both SA and DA (i.e., SA with distractor) tasks. The DA task was found to be more challenging, as evidenced by lower stimulus sensitivity (d'). Scopolamine impaired performance similarly on both tasks. However, a floor effect may have been present, due to low baseline performance of the DA task. After Experiment 1, auditory signal durations were increased in order to reduce attentional load. In Experiment 2, the GPR30 antagonist G15 (0.5 and 1.0 mg/kg) was given subcutaneously, both alone and prior to administration of a dose of scopolamine (0.05 mg/kg) that was subeffective in Experiment 1. It was hypothesized that G15 would impair DA alone, or potentiate the effect of low-dose scopolamine. In Experiment 2, only DA was assessed, using the version with longer stimulus durations. G15 was ineffective; however, scopolamine impaired DA, in line with the proposed floor effect in Experiment 1. The inability of G15 to alter effects of scopolamine on DA may indicate that GPR30 is not involved in DA. There may also be a lack of endogenous tone of estrogen in cholinergic regulation. In any event, these results suggest a limited role of GPR30 blockade in attention on the presence of increased distraction.

C.H.A.R.M PARK: COOPER HALL ARBORETUM AND RAINWATER MANAGEMENT PARK

Nathen Carr, Natalie Heiser, James Kolakowski, Niah Laughery, Angela McKinney

Geosciences

Project Advisor(s): Dr. Karen Eisenhart

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Students from the Geoscience Department came together to create C.H.A.R.M Park, Cooper Hall Arboretum and Rainwater Management Park, a stormwater management plan to mitigate the frequent flooding experienced near Cooper Hall. Cooper Hall houses several departments in the College of Science and Health Professions. The main goals for the project site were to reduce flooding by infiltrating stormwater and snow melt runoff, provide recreational space for the campus and local community, and create educational opportunities to demonstrate the benefits of stormwater management, native biota, and energy-wise landscaping. We integrated three green infrastructure techniques: rain gardens, porous pavement, and bioswales. Using calculations based on the rational method, we estimate that these features will reduce runoff by 40%. The chosen techniques were selected to be sustainable and low-maintenance to alleviate the current workload of the Facilities Department. The site could be mainly funded by Edinboro University from money allotted for infrastructure projects and would be attractive to grants for environmental projects with education goals.

INVESTIGATION OF BENZO(a)PYRENE (BaP) IN ENVIRONMENTAL SAMPLES/CONSUMER PRODUCTS

Nichole Moore, Hannah Burwell, Emily Yablonski

Chemistry

Project Advisor(s): Dr. Qun Gu

Benzo(a)pyrene (BaP), a polycyclic aromatic hydrocarbon (PAH), is a widespread environmental pollutant. BaP is listed as a Group 1 carcinogen by IARC (International Agency for Research on Cancer). BaP is formed during incomplete combustion or pyrolysis of organic materials. It can be found in air, water, soil and sediments, food, and pharmaceutical products. Sources of BaP include residential wood or biomass burning, forest fires, industrial emissions, coal tar, automobile exhaust fumes, cigarette smoke, and even grilled meats. Besides occupational exposure, the general population could be exposed to BaP through various channels related to the sources. Our goal is to determine BaP in samples collected locally in different matrices such as soil, sediments, and asphalt pavements, as well as selected consumer products. Optimization of BaP extraction and sample was performed. Effective experiment procedure was developed for analysis of BaP using GC-MS along with other spectroscopic methods.

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EXPLORING THE FOUNDATION OF PRESQUE ISLE

Roman Carrion, Nick Helfer, Eric Straffin, Tamara Misner

Geosciences

Project Advisor(s): Dr. Eric Straffin

Presque Isle, in Erie, Pennsylvania, is the most visited state park in Pennsylvania, yet little is known about the geologic history of this important feature. The name “Presque Isle” means “almost an island” in French and the site has been one several times. The peninsula is composed of ancient beaches, wind-blown dune ridges, and ponds. It began primarily as a sand spit around 6,000 years ago, and continues to develop today. Erosion, transport, and the deposition of sand and other fine sediment has molded the shape of Presque Isle over time. The purpose of this study is to determine the internal geometry of deposits, and to examine the relationship of these deposits to changing lake levels. Major landforms were delineated with LIDAR topographic data to guide the geophysical study and location of cores. Ground penetrating radar (GPR), using 250Mhz and 100Mhz antenna, were used to image the subsurface layers. Core sampling permits verification of GPR data by identifying sediment and soil types to correlate with processed GPR data interpretations. Cores and GPR were collected from ancient dune ridges at three separate locations at Presque Isle. After collection of field data on March 29th, the GPR data was processed to become more legible and easier to interpret. Topography was also used to develop a cross section across the dune and beach ridges. Cores and GPR images show the changes of Lake Erie’s water levels while being supported by the physical evidence of beach and wind-blown deposits.

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Student Authors

Awotodunbo, O., 8

Barwell, J., 2
Burwell, H., 11

Carr, N., 10
Carrion, R., 11

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* Indicates External Advisor