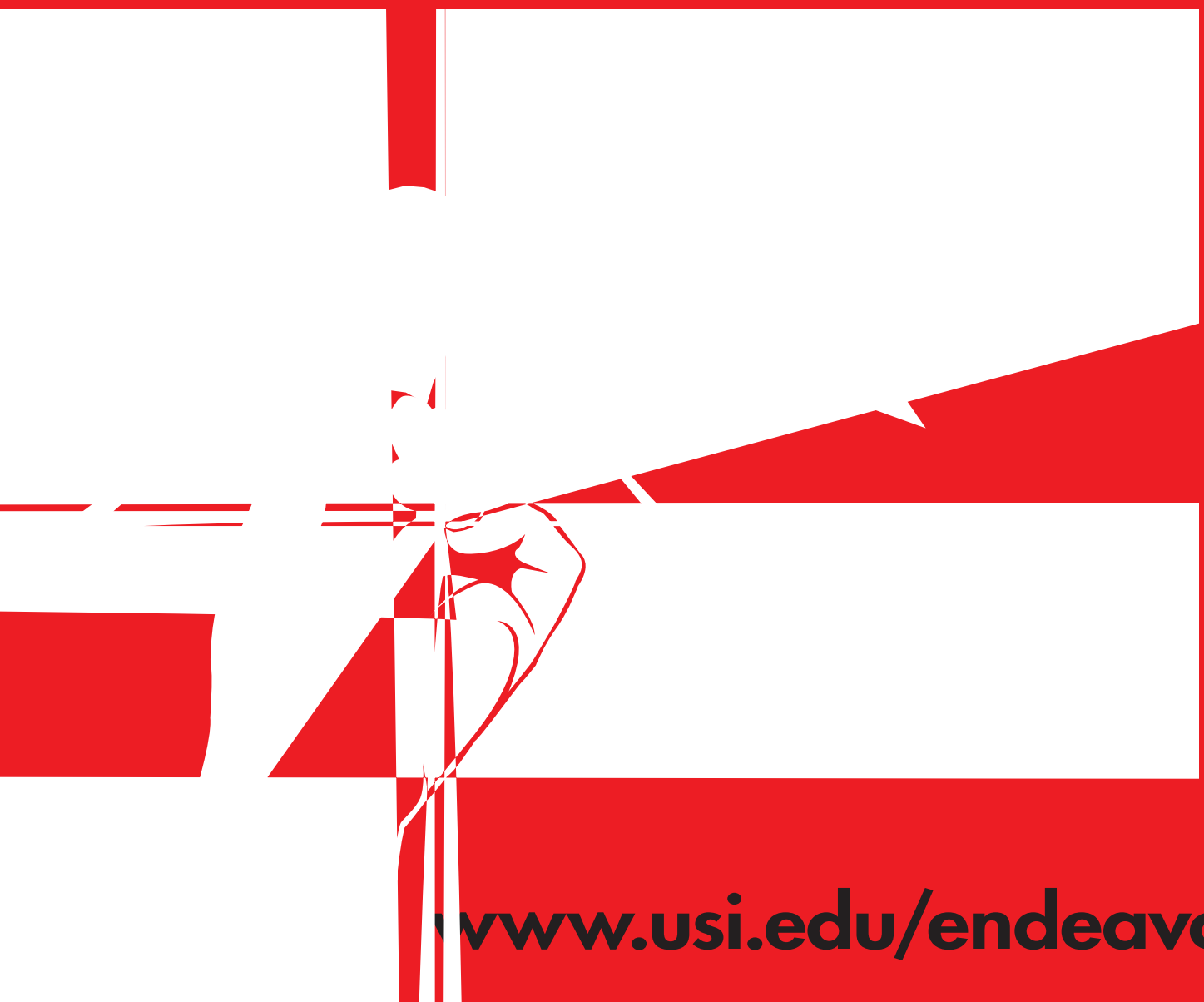

www.usi.edu/endeavor

10th Annual Symposium

2011

8600 University Boulevard • Evansville, Indiana 47712

April 5, 2011

Dear Endeavor! Symposium 2011 Presenters and Sponsors,

Welcome to the 2011 Endeavor! Symposium. Your work has swelled the number of participants to over 90 and the number of researchers and artists to more than 100. Your work has advanced discoveries in all your fields of research and creativity, and I am certain you have energized the University of Southern Indiana's educational culture.

The Endeavor! Research and Creativity Awards Program operates on the assumption that when you follow a passion, you will emerge with a better education and stronger ties to your learning than the education you develop by studying and taking tests. The synergy between research and learning is the foundation for the best learning created.

Likewise, when sponsors follow their curiosity and their students' curiosity, they become better, more insightful and grounded professors. I sincerely hope that all of you found one of your research or creativity passions and that your Endeavor! Award gave you the freedom to be curious and inventive.

Congratulations to you!

Sincerely,

Jane Johansen

Director

Endeavor! Research and Creativity Awards

Endeavor! Symposium Agenda

Tuesday, April 5, 2011
University Center

7:30 – 8:30 a.m.	Check-in for all presenters and sponsors: Receive programs and ID badges at front hall table
8:30 – 11:40 a.m.	Oral Presentations University Center rooms 205, 214, 215, 2203, 2205, 2207, 2217
9 a.m.- Noon	Poster and Artwork Sessions University Center, Carter Hall D Presenters of posters and art pieces will be available for one assigned hour.

Noon – 1 p.m.1:4Q ' cor resenters and ضponsore pr4ied y ċ ingeMo:0 Rese}cnds Cretlity ÿ sade rogra.

9 a.m. POSTER SESSIONS

Carter Hall

Roxanne Burton	The History and Influence of Guatemalan Masks
Katelyn Cordell	Color Tuning of BODIPY Derivatives by Changing the Substituents at 2 and 6 Positions of the BODIPY Core
Amanda Harrawood and Tina Kraft	Bladder Buzz
Luke Maurer	م Î —ent ty D

PRESENTATIONS

University Center rooms 205–2217

	Room 214		Room 215	
8:55 – 9:10 a.m.	Maria Jalilpour-Esfahani	Government Adjustments in Student Education Funding	Ben Sutter	Creating an Acoustic Guitar
9:20 – 9:35 a.m.			Ben Balbach and Kashif Shah	Attitude and Heading Control of an Autonomous Quad Rotor Helicopter
9:45 – 10 a.m.	Nicholas Yehl	Repossessing Yourself: A Study of Exorcism and Psychological Relevance	Brett Bueltel and Ashley Scott	2011 IMA Student Case Competition
10:10 – 10:25 a.m.	Lindsey Oakes	Understanding Politician's Use of Social Media to Manage Constituent Information	Stephen Oakley	Drug Panic, Moral Panic, or Both: Ecstasy in the Early Part of the Millennium
10:35 – 10:50 a.m.	Theodore Clunie	Sociolinguistic Analysis of Mayan Speakers in Antigua, Guatemala	Samantha Smith	Wind Power Feasibility Study
11– 11:15 a.m.	Amy Brown	The Challenge of Sustainability: Understanding the Dynamics between Multi-National Environmental Non-Governmental Organizations and Rural Communities in the Maya Biosphere Reserve Petén, Guatemala	Pietrykowski	Explorations in Traditional Lithographic Methods Through Participation in the Frogman's Printmaking Workshop

	Room 205		Room 2203	
8:30 – 8:45 a.m.	Amanda Turner	Amuletic Occurrences Ĭ r Â ى	e – ceti	

	Room 2205	
8:30 – 8:45 a.m.	Sunny Huang	A Nicotine-Induced Conditioned Place Preference Paradigm in Larval Zebrafsh
8:55 – 9:10 a.m.	Matthew Mitchell and Nicholas Marlin	Helping Others Understand the Financial Information Professions
9:20 – 10:25 a.m.	Christopher Cornwall	The Use of Formal Logic in the Malleus Malefcarum
10:10 – 10:50 a.m.	David Clayton and Alan	

	Room 2207		Room 2217	
8:30 – 9:10 a.m.	Kaitlin Fest and Travis Hatfeld	Slope Stability and Soil Development of- Cultivat ¦ F e א G t o ¦ - l o	% T	

ORAL PRESENTATION ABSTRACTS

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Ben Balbach, Kashif Shah

- Dr. Ronald Diersing

with marine fauna present above the Houchin Creek and Springfeld coals. The lithofacies below the four coals vary from laminated mudrock to tidally infuenced sandstones. This suggests the existence of variable depositional environments prior to coal formation but preserved by marine fooding. The varying lithofacies below these coal seams may impact the potential for CBM.

[illegible]

Amy Brown

- Dr. Daniel Bauer

Multi-national environmental non-governmental organizations (MN-ENGO) utilize billions of U.S. dollars annually to develop projects expected to protect fragile biologically diverse regions. Rural communities within these protected regions are often characterized by marginalized populations with high poverty rates. Large environmental institutions, which are known for administering a top-down approach, often use mitigation plans that include restricting traditional means of production which confict with the community's basic subsistence needs. This is exemplifed in the Petén region of Guatemala within the Maya Biosphere Reserve. Organizations like Conservation International and Wildlife Conservation Society (WCS) which control large areas of this 4.5 million acre rainforest reserve and attempt to balance conservation efforts with a local population of over 600,000. Natural resource exploitation in the form of industrial logging, oil exploration, mining, and large scale agriculture or ranching are also constant threats that increase forest degradation, while perpetuating social and environmental inequality in the region. This study aims to understand the progression and success of two primary conservation organizations (ProPeten and WCS) and two communities in restricted core conservation zones (Paso Caballo and Uaxactun) within the Maya Biosphere Reserve through an examination of data from literature, media, feld observation, and interviews. Both communities studied have a long history in the Peten, but each has developed very different strategies for managing resources, obviously some more successful than others. Signifcance regarding sustainability, representation, local-level participation, and equitable development is a primary focus. Field research and interviews were conducted in Guatemala and the Maya Biosphere Reserve from March 12th through the 19th of 2011. This project provides a depth of experiential education in social science research and gathered essential insight into the future of successful social and environmental sustainability projects.

[illegible]

Amy Brown

- Dr. Stephen Zehr and Dr. Rhonda Priest

In January 2010, the University of Southern Indiana offcially announced its commitment to environmental sustainability through President Bennett's commission of the USI Environmental Stewardship Council (ESC). Within the frst year, ESC developed three student internship positions to help fulfll parts of the committee's mission. One of the primary goals of the ESC is community-wide culture change toward environmental sustainability. The foundation of catalyzing an awareness and action of environmental issues is an understanding of the currently held beliefs and behaviors toward environmental sustainability within the campus population. Through sponsorship by the College of Liberal Arts and the Department of Sociology, Anthropology, and Criminal Justice Studies, an internship was developed to produce a survey instrument to measure environmental beliefs and behaviors of the USI campus population. The study sampled 136 full-time faculty through a confdential survey and interview process. The survey was designed by a sociology student intern using questions and scales of previously published studies including Indiana University's

Thomas Chambers, Ryan Voegerl

- Dr. James Durbin

The Indiana side of the Wabash River valley in Posey County, Indiana, contains evidence in the form of meander scars that the river had a different position in the past. Meander scars indicate a previous location of the river channel. These scars are easily identifed on aerial photographs and topographic maps. Our research project allowed us to examine sediments that comprise the meander scars. The goals of this research were to examine the processes that created these meanders, determine when these meander scars were created by the active river, and then calculate the rates of meander migration. We are hoping to understand the past, present, and future of the Wabash River in this particular part of the Wabash Valley. In the past, the Wabash changed from a braided river (many active channels) to a meandering river (curvy) when the glacial climate changed (Knox, 1983). By examining where the Wabash has been in the past, we can interpret possible future locations for the meandering stream. Additionally, we determined the timing and duration of meander creation, abandonment, and backflling. Funding was used for radiocarbon age dating of sediments and for materials to transport sediment core(s) back to USI.

David Clayton, Allen House

- Dr. Glen Kissel

Five Senior Engineering students are building a robot to compete in the 2011 NASA Lunabotics Mining Competition to be held in Florida from May 23-28, 2011. This robot will be the capstone project for four of the engineers on the team and is the subject of independent research for ENGR 499 for the fth member of the team. The purpose of the robot being constructed is to excavate Black Point 1, BP-1, volcanic ash that simulates the dirt on the moon's surface. USI's team will be competing against over 540 other teams from universities from around the country to dig and collect a minimum of 10 kilograms of BP-1 using an automated or remote controlled robot within the 15-minute time limit. NASA's interest in lunar regolith excavation stems from the prospect of colonizing the moon. The regolith, dirt, on the moon's surface contains many useful elements that can be separated to be used in a wide range of applications, from making building blocks for shelters to making fuel and producing oxygen for life-support.

The robot must have on-board power to operate its drive and exaction systems. USI's design uses a scoop and bucket system to dig and a four wheel system with differential or "tank" steering. The team will test the robot in a test bed to be constructed in the Business and Engineering Center. These tests will be recorded to show the functionality of the robot.

Theodore Clunie

- Dr. Norma Rosas-Mayén

My research project focused on the sociolinguistic attitudes of residents of Antigua, Guatemala, who speak Kaqchikel, the offcial Mayan language of the region. I completed several structured interviews in Spanish with the indigenous people who also speak Kaqchikel, asking questions that would shed light on the future of their language. The answers I received all pointed toward a strong decrease in the number of Kaqchikel speakers in the coming generations. One of my informants, from her own observations, said

that only about 60 percent of young people (aged 25 or younger) choose to continue speaking Kaqchikel and to wear the traditional dress that would identify them with the indigenous population. Another young indigenous girl, when asked if she spoke Kaqchikel, responded, "No. That's the language of our grandparents."

With my presentation, I will examine the reasons for the recent decrease in the number of Kaqchikel speakers and what needs to be done to stop it. After analyzing the information provided by several informants, I can conclude that with the loss of a Mayan language go many other aspects of the rich Mayan culture of Guatemala including ceremonies, traditions, and clothing. Although many of the indigenous people had difficulty articulating why the gradual loss of their language is such an important issue, nearly all of them recognized that it is indeed a problem that would negatively affect them both culturally and economically. Antigua survives on the support of tourists who come to Guatemala to experience Mayan culture and purchase authentic goods. Many vendors told me that tourists buy almost exclusively from people wearing the traditional Mayan dress because they want to support the local indigenous population. However, if the current generation continues its trend away from the Kaqchikel language and culture in favor of more modern, western culture, Antigua will likely lose it attractiveness to tourists, and therefore cause the indigenous population to suffer economically.
The gradual loss of the Kaqchikel language is a problem that requires action before it is too late to reverse the damaging effects of its decline on the indigenous residents of Antigua.

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Katelyn Cordell

- Dr. Priya Hewavitharanage

Due to their superior photochemical and photophysical properties, BODIPY (4,4'-difuoro-4-bora-3a,4a-diaza-s-indacene) dyes have found a wide variety of applications in electronic, biomedical, and various other felds. Photophysical properties of BODIPY derivatives can be fne-tuned by changing the substitutents of the BODIPY core. BODIPY derivatives with hydrogen, methyl, ethyne, ethynyltrimethylsilane, and iodine at the 2 and 6 positions were synthesized. This resulted in considerable change in absorption and emission wavelengths as well as fuorescence quantum yields. Details regarding the synthesis and the photophysical properties of these novel BODIPY compounds will be presented.

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Christopher Cornwall

- Dr. Carol Mackay

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stemmed from Roman texts such as Cicero's De inventione, by the 12th century students of moral philosophy would have been familiar with the works of Aristotle. This period began a progression of rediscovery of Aristotelian rationality in the areas of logic, physics, metaphysics, psychology, ethics, and politics. Although these theories provided theologians with the means to question and reason with what was considered as "truth," the Neo-Platonic scaffolding of Christianity remained unchanged.

This "philosophical logic" that was so integral to intellectual life became increasingly sophisticated and formalized, constituting a genre of late medieval discourse that lasted from the 12th to mid-16th century. Now, since the Malleus was published near the end of this tradition (c. 1486), its argumentative force refects the advancement of classical logic as a technique into a comprehensive theory of formal consequences. This paper will examine passages from the Malleus to show the progression of medieval logic and how it was used to defend its proposition that witchcraft is real.

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Emily Craig

• Dr. Mari Hopper

Throughout the past three decades, there have been signifcant changes in the American diet showing an increased consumption of foods high in fat and carbohydrate (CDC, 2010). This trend is closely associated with the increase of obesity. Insulin resistance is often associated with obesity and a diet high in calories, fat, and simple sugar (Hamman, 1992). The aim of this study was to determine the dietary patterns of college freshmen students and analyze relationships between diet, adiposity, and insulin resistance. A Block 2005 Nutritional analysis was performed for 26 college freshmen students (12 men and 14 women). Comparison of macromolecule distribution expressed as a percent of total calories ingested revealed that women tended to ingest slightly more carbohydrate (54.26% vs. 49.72%) and less fat (32.99% vs. 35.91%) than the men. These values are within the acceptable macronutrient distribution ranges (carbohydrate: 45%-65%; fat: 25%-35%). To further investigate the relationships between diet, percent body fat, and insulin resistance, subjects were divided into three groups: low body fat percentage (%BF) (7%-20%); moderate %BF (20%-29%); and high %BF (29%-39%). As predicted, the leanest subjects also demonstrated the lowest insulin values while those with the highest percent body also displayed the highest insulin values (9.82 µU/mL ±1.82 vs. 11.43 µU/mL ±2.51 vs. 15.19 µU/mL ±1.49). Unexpected was the fnding that the leanest subjects reported the highest caloric consumption while the highest percent body fat group was associated with the lowest total caloric consumption (low %BF=2228.48kcal; moderate %BF=1973.59kcal; high %BF=1729.46kcal). Two explanations may be posited for this discov-

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Adrienne Curtis

- Dr. Aimee Mark

The present research experiment was focused on exploring factors of healthy eating such as marketers who offer shoppers only healthy food samples or consumers who eat only healthy meals. When people taste a food sample described as “healthy” and “nutritious,” they may report feeling hungrier afterward than people who taste the same food when it is described as “healthy.” After the participants sample either the “healthy” labeled or “tasty” labeled food sample, they were asked if they wanted another snack to assess their level of satisfaction after the frst food sample. It was expected in the present study that when restricted eaters consumed a food labeled as “healthy,” they thought it was less satisfying and were more likely to eat much more to compensate than when they ate a food labeled as tasty.

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William Davis, David Fosburgh

- Dr. Brandon Eggleston and Dr. M. Jay Polsgrove

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Jesse Derrington II

- Dr. Rex Strange

Rhodopsin (Rh 1) is the light transducing protein of photoreceptive cells in the vertebrate retina. The rhodopsin protein has seven transmembrane domains similar to other G-coupled proteins. However, rhodopsin has a chromophore unlike other G-coupled proteins. The chromophore absorbs light energy and transfers the energy to rhodopsin causing a conformational shift in the protein. Interaction between the rhodopsin protein and the chromophore determine the wavelength sensitivity of the photoreceptor. Variation among the rhodopsins of different species is correlated with differing habitats and behaviors. The North American catfshes (Ictaluridae) include nocturnal species that may have unique rhodopsins as adaptations to an extreme photic environment. I characterized the Rh1 gene in fve species of catfshes to understand better the nature of the rhodopsin of the Ictalurids. PCR amplifcation of the Rh1 locus yielded 618bp from which 206 amino acids were inferred. Of the 206 amino acids, 29 were variable among the sequences generated. A few of the variable amino acid sites were functionally important and may represent “tuning sites” that determine peak wavelength sensitivity of the photoreceptor.

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Nick Earls

- Dr. Priya Hewavitharanage

Photochromic compounds change their color reversibly when exposed to different wavelengths of light. Among all the organic photochromic compounds, 1, 2-dithienylethene (DET) compounds are gaining ever-increasing attention due to their unique properties. DET can act as a molecular switch. When a fuorescent molecule is attached to the DET, fuorescence of the molecule can be modulated by switching on or off the DET molecule. The change of fuorescence can be used in optical data recording. These systems have advantages such as high resolution, high speed of data recording, and high storage capacity. The devices that use these compounds will be thinner, lighter, and highly energy effcient as well as much faster than the devices used today. We have designed novel photochromic molecular switches by covalently attaching DET to the fuorescent molecule BODIPY. Progress toward the synthesis of these novel molecular switches will be discussed.

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Preston Edge, Logan Schmitt

the form (2n+1) ± (2n-1)h where n = 2^k and k is an integer and k B 0, are not prime but only irreducible. Perplex numbers that are the product of one or more irreducible non-primes often do not have a unique factorization, meaning that they factor into more than one set of perplex numbers that cannot be reduced any further. We developed a division algorithm and are currently investigating the sum of divisors and the count of divisors, all while trying to further our understanding of the irreducible non-primes and to develop patterns for their factors.

(slope steepness) of 5.6% which was less than that of Site 2 at 12%. The data indicate that the quantified factors influencing soil erosion are different between the two sites. Site 1 did not have a dominant catchment channel whereas Site 2 had a channel 1-3 foot wide for water flow. The lack of a confining channel for runoff allows movement of water across the slope with the possibility of greater sediment loss. Quantitative measurements of erosion are in progress, but qualitative observations of erosion occurring at the two sites suggest that factors such as tilling practices, slope steepness and drainage patterns may have a greater influence on soil erosion than do infiltration rates.

Sharona Fowler, Kelly Fitzgerald

- Ms. Allison Skinner

Each year, 35 percent of civil cases involve litigation based on injuries resulting from car accidents, making automobile accidents the most common type of civil case (Langton and Cohen, 2008). The purpose of this research is to investigate potential jurors' beliefs about drivers involved in automobile ac

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- Dr. Cindy DeLoney-Marino

The marine bacterium Vibrio fscheri has an exclusive symbiotic relationship with the Bobtail Squid Euprymna scolopes, newly-hatched juveniles of which must acquire the bacterium from the surrounding seawater. Previously Ruby and Asato determined the minimal number of V. fscheri cells required for 100

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Andrew Kern

- Dr. Sid Hall

What began as an ambitious, objective study of an underrepresented population slowly devolved into an exploratory pretest of said population. The present study initially aimed to answer the question as to what factors, if any, would cause bicycle mechanics to delay the amount of time it takes to complete a service job. Such factors included bicycle condition, familiarity of the customer, type of service to be completed, etc. However, due to the limitations faced by the researcher in collecting data to measure those variables, the study shifted its focus to understanding the mechanics' perceptual likelihood to show preference to certain customers on the basis of need, age, loyalty, etc. and how likely a mechanic would be to complete a service job "on the spot." Data were collected via spreadsheets provided to the shops

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Alex Love

• Ms. Patricia Aakhus

In times of danger and turmoil brought on by either famine or war, man has looked to his intellect and tools to fnd the keys to his survival, but for confdence and security early man has often had to look beyond the physical nature of such items. A weapon to its wielder can become something much greater than the sum of its parts when belief that a higher power is entwined into these weapons. Any man can grasp a spear and fnd solace, but if that same man picks up a spear he believes to hold the power of his ancestors, he can fnd much more. He can fnd courage, power, and even heroism. Even in our oldest cultural stories this rings true. Achilles went to battle with no normal shield, and Arthur fought with no common sword. And even with no real mystical powers such belief has allowed man to accomplish things he had never thought possible, which brings us to our focus: two spears. Two spears may seem normal enough on the outside, but to the wielder of these spears, they meant so much more. Spears have historically held a duality to them. They can be used as an object of necessity, used as a tool of hunt to feed one's family or village, to nourish from that which was slain. The second part of the duality is that of hostility. Spears through many centuries have been a mainstay in the forefront of war. The two spears I have chosen refect this. One spear for hunting, which for the purpose of my research I will refer to as "necessity," and the second for the purpose of warfare, which I will call "hostility." I will be examining many aspects of these two spears. I will be going into the cultural importance, their esoteric value, the belief systems which granted these items their extraordinary traits as well as the importance of the physical and symbolic components that form these items. I do this to further reinforce the need to research the esoteric importance of such artifacts.

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Heather Manley

• Ms. Patricia Aakhus

This research seeks to bring a deeper understanding to the external ritualistic form of worship in Hinduism. By exploring different visual representations of Hindu artifacts, this investigation will serve to give a broader understanding of how Hinduism operates in physical form. Hinduism combines both mental and physical worship and thus can confuse non-Hindu observers. However, by comprehending how material worship leads to a better insight of mental worship, a deeper appreciation of Hindu practices can be reached.

This research will discuss many forms of worship and the artifacts used in worship. Such topics as the use of amulets in prayer and devotion will be covered. The presentation also examines many images of gods and goddesses and the purpose they serve in worshipping. Also to be discussed is the use of rosaries in connection with mantras and Holy Scriptures. An investigation of the puja ritual in the Hindu context will discussed as well.

The presentation strives to enlighten audiences by developing a deeper understanding of physical representations within Hinduism that will expand the over knowledge of Hindu practices. The presentation will incorporate many images as well as scholarly sources to clarify how each physical item is used in Hindu practices. The research will also cover a brief description of Hindu ideologies and geographical information that will better serve for the context of the artifacts discussed.

Luke Maurer

• Dr. Eric McCloud

Dung beetles (Scarabeidae: Aphodiinae) are polyphagous, feeding on multiple types of dung. Some dung beetles have a high preference for cow dung, but few experiments have attempted to distinguish between different types of cow dung. We compared the attractiveness of grass-fed cow dung to veal calf dung. Beetles were captured in eight pairs of pitfall traps baited with veal calf dungw ent tyt¾ ctiveness of gra

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Matthew Mitchell, Nicholas Marlin

- Dr. Mehmet Kocakulah

The Lambda Mu Chapter of Beta Alpha Psi at the University of Southern Indiana has a growing commitment to helping others understand exactly what it is that financial formation professionals do. The goals of the Lambda Mu chapter specifcally lie in increased awareness in the financial information felds on campus and in the community through local high schools; increased membership in Beta Alpha Psi and the university feeder club, Accounting Club; increased number of students obtaining a bachelor of science degree in accounting, finance, and computer information systems at the University of Southern Indiana; and mentoring of lower-classmen in their pursuit of an accounting, finance, or computer information systems degree. The Lambda Mu chapter expects the overall chapter membership and community involvement to grow substantially, the number of students in financial information majors to increase greatly, and majors to better accountants through mentoring relationships and group studies.

All members of the Lambda Mu chapter are encouraged to be involved by actively seeking new candidates whether for Beta Alpha Psi or Accounting Club as well as for the financial information majors at the University of Southern Indiana. Those involved in mentoring and study groups will spend various hours on the project depending on the need of the individuals involved.

The overall benefts of the project are increased awareness of Beta Alpha Psi in the community, increased membership in the Lambda Mu chapter, and increased enrollment in financial information majors at the University of Southern Indiana. By increasing membership in the chapter, the capabilities and resources of the chapter will also increase. The members of the Lambda Mu chapter will increase the number of students in the financial information departments at the University of Southern Indiana, creating a need to keep improving the various departments, and ending in the production of better accountants.

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Tulsi Modi

- Dr. Jeff Seyler; Volunteer: Ms. Alice Kendall

Molecular hydrogen, H2, is a promising alternative to hydrocarbon fuel for the future. Storage and on-demand production of hydrogen remains one of the challenges to this promise. Several researchers have demonstrated that iridium pincer complexes show potential for onboard generation of hydrogen from hydrocarbon sources. To study catalytic activity of these iridium-based complexes, it is common to use hydrogen acceptors in a transfer dehydrogenation process. An understanding of the mechanism in this process can aid in the development of new catalysts. We have used computational chemistry to model several processes believed to occur in the catalytic cycle. This presentation will provide our results comparing alpha and beta carbon-hydrogen bond activation in simple alkanes using iridium pincer complexes.

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Becky Morris

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Stephen Oakley

- Dr. Todd Schroer

Concern over the club drug ecstasy has increased and decreased dramatically over the past few decades. Ecstasy, which was relatively benign in the 1970s, attracted attention from media and politicians in the 1980s, starting a war against this substance. Two of the most visible groups creating concern over this drug were politicians and the media. Several legislative acts concerning this particular drug have been proposed since the 1980s, and the media has published many stories about this drug's user population and perceived benefits and harms. After looking at newspaper coverage over this issue as well as congressional records, it appears that this substance has becomes a concern intermittently throughout

brought to light the fact that privilege is highly complex, stemming from many angles. While it seemed that traditionalists have a patriarchal advantage, they may have an educational or financial disadvantage when compared to feminists. I categorized common stereotypes attributed to both groups, discussed their predictable origins, and challenged contradictory opinions through the privileges each group has obtained in American society.

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Adam Powell, Tina Bledsoe, Morgan Devine

• Dr. James Durbin

The University of Southern Indiana (USI) and the Indiana Department of Transportation (INDoT) are in the planning phase of constructing a wetland on university property in Vanderburgh County, IN. This research reports the quantitative and qualitative characteristics of the watershed that feeds the proposed wetlands. Factors addressed include land use, morphometric parameters, discharge behavior, and sediment transport. Discharge measured during a 0.7" rainfall on 11/16/10 was found to be 0.173 m3/sec at the location furthest downstream. Suspended sediment in the trunk stream was measured and calculated to be 16,441.92 Kg/Day. Bedload sediment mobilized by the 11/16/10 event was found to have an average grain size of 1.65 Phi (medium sand) at the upstream location and 1.36 Phi (medium sand) at the downstream location. Total volumes of sediment recovered were 430g and approximately 2.1kg respectively. The suspended sediment appeared to be silt sized. These results are not unexpected when source terrain is considered. The trunk stream dissects and erodes the loess-mantled Inglefeld sandstone that is dominated by silt (loess) and medium grained sand. Although calculated suspended sediment totals per day are substantial, the precipitation event was not large and the stream did not achieve bankfull conditions. Larger rainfalls as well as land use practices will influence the sediment load and discharge of the stream. An accurate record of pre-construction basin characteristics and stream behavior will facilitate planning of the wetland, and provide future researchers a baseline for assessing potential changes to the area.

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Brad Roberts

- Dr. Kenneth Walsh

Reductive Amination is a two-step synthetic method used in the conversion of ketones and aldehydes into amines. The Leuckart-Wallach Reaction has shown that formic acid can be used as both a catalyst and a reducing agent for this type of reaction. However, the Leukart-Wallach Reaction has for the most part been only performed using formamide and a few substituted formamide derivatives or with amines and carbonyl compounds at high temperature. The method we have developed is a milder synthetic procedure which involves slow addition of the formic acid to a solution of the amine and carbonyl at much lower temperatures without the use of more hazardous chemicals such as sodium cyanoborohydride or heavy metals which are normally used in reductive amination reactions. This method D iœd}c ds ds }D
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Jacob Schneider

• Dr. Jeff Seyler