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McPhail Center for Environmental
Studies Presents:
The 2011 Senior Research
Symposium
May 3rd, 2011
12:00 PM



Halle Minshall

“An Analysis of Behavior and Signaling in the stomatopod *Squilla empusa*”

Advisor: Dr. Kristina Mead, Biology

Mantis shrimp *Squilla empusa* is a burrow dwelling marine invertebrate. They perform ritualized displays of aggression; this has favored the development of hieratical behavioral patterns. They engage in aggressive bouts over burrow retention which has allowed for a reliable analysis of behavior. We investigated the role of gender and size in mediating these aggressive conflicts and it was expected that size would be the deciding factor however, we found gender played a more pivotal role. In our laboratory trials, we developed a behavioral assay and then analyzed 52 interactions among 9 captive mantis shrimp. To expand our lab findings, we also conducted behavioral experiments in the field. We injected odor and fluoroscein dye into active burrows and analyzed the resultant odor currents. We noticed a trend between the speed of ex-current and the diameter of the burrow leading us to hypothesis about the role of burrows in communication between conspecifics. We analyzed the mechanisms of signaling used by *S. empusa* and explored the role of burrows in signaling individual status of the individual within. Our findings suggest that the construction and maintenance of burrows may be considered an extended phenotype employed by mantis shrimp to communicate.



Lauren Weidner

“Exploring Attitudes and Behaviors of Midwest Organic Farmers”

Advisor: Dr. Erin Henshaw, Psychology

The organic farming sector of United States agriculture, though small, is starting to emerge as environmental issues surface and consumers start to demand more organic products. The relationship between organic farmers and the U.S. government, however, is complex. This study focuses on organic farmers’ participation in government farm programs and that participation is related to their attitudes about the programs or the amount of relevant information they have access to. A survey of 259 organic farmers revealed that both attitudes and information sources play a role in government participation. Additionally, the role demographic characteristics play is an important aspect of participation.



Zachary Gaines

“Improving Ecosystems Services Through Design”

Advisor: Dr. Douglas Spieles, Environmental Studies

Until recently, the design of our built world has lacked foresight and disregarded the implications of our decisions. History shows that anthropogenic design has reigned supreme and this has resulted in the destruction of our natural resources and the very ecosystem services that humans rely on for survival. The human/nature relationship has been tipped in favor of the latter, making it appear as if man cannot effectively coexist with the natural world. This project develops a design methodology using a combination of theory from landscape ecology to demonstrate how a multidiscipline approach can be utilized to design a space that equally emphasizes man and nature. Because golf courses are notorious for heavy impacts on the environment, the Granville Golf Course was chosen as the site for



demonstrating the design methodology. The goals and values of golf course architecture further governed the methodology in order to maintain the character of the course. The final product was a multi-stage proposal that effectively worked to solve many of the environmental issues stemming from the course. This proposal also serves as a testament to the ability for an improvement of the broader

human/nature relationship through better design.

Ellen Fugate

“Perceptions of Food and Water Security among Somali Refugees in Columbus, Ohio”

Advisor: Dr. Susan Glover, Sociology/ Anthropology

Understanding perceptions of risks related to food is a prerequisite to identifying and mitigating food insecurities. Often, immigrant populations are disproportionately susceptible to food insecurity, and perceive risks related to food differently than dominant groups. My study utilizes a standardized questionnaire, hypothetical scenarios, and a drink sorting exercise to assess Somali perceptions of food



security and risk in Columbus, Ohio. The results indicate that Somali refugees perceive surprisingly high food security. However, Somalis still perceive high risk related to the quality of public drinking water and the

consumption of meat not blessed as *halal*. My findings indicate that perception of risk is variable, and is informed by past experiences, situated within socio-cultural contexts, and reinforced by community beliefs. In order to alleviate dietary insecurities in marginalized populations, it is first necessary to understand the unique experiences and social determinants underlying risk perceptions.

Kaitlyn Minich

“Wildlife Conservation in the Great Lakes Region of Eastern Africa:
The Importance of International Agencies”

Advisor: Dr. Sue Davis, Political Science

Across the world, many of the biologically diverse “hotspots” are located in areas of conflict. These hotspots are vital to wildlife conservation efforts across the world because protecting land in these areas provides protection for numerous plant and wildlife species. However, conservation efforts in conflict zones are difficult to successfully implement and enforce. My senior research project examines the Great Lakes region of eastern Africa and specifically examines conservation efforts along the Tanzania-Rwanda-Burundi border. Due to the high levels of conflict in the region, both traditional top-down conservation methods and the newly implemented community conservation practices are insufficient. As this area is part of the Eastern Afromontane hotspot and is important to protect, I argue that international agencies must take the lead in conservation efforts in this region. International agencies are the only entities that have enough resources and experience to successfully implement any type of conservation effort in an area of conflict, specifically in the Great Lakes region.



Thomas Schutlz

“Hydraulic Management Practices and Methods of Pollution Control: A Historical and Geographical Analysis of the Huai River Basin”

China's Huai River Basin is historically and geographically one of the most significant regions in China. Even though substantial investment in hydraulic engineering projects and collaboration with international institutions has improved the serious historical issues of flooding, China, as a result of rapid industrialization, now faces a more daunting problem of water pollution and difficulty in recognizing competing regional uses and interests of the water within the basin. The story of the Huai's physical geography and the historical significance in hydraulic management is crucial in demonstrating the contemporary importance of the basin as an agricultural and industrial region. This story highlights how the centralized government will continue to handle these competing interests for water that may indeed determine the limits of its ability to sustain growth and the well being of its 1.3 billion people. The history of hydraulic management practices in the Huai River Basin, from the early efforts of flood control to the modern attempts to reduce both agricultural and industrial water pollution, illustrates the Chinese government's inability to account for competing regional interests within different local communities when enacting water management policy changes.



Rachel Mattingly

“Civil Society and Development in Thailand”

Advisor: Dr. John Cort, International Studies

Following World War II, Thailand experienced rapid economic growth and was therefore hailed as one of the fastest developing countries in the world. Such a conclusion believes an assumption that "development" corresponds to measurable economic factors and ignores the political unrest and growing social and environmental problems of this era of Thai history. Members of civil society, including villager organizations, NGOs, and Buddhist movements, have all contributed to a critique of state policies and created alternative models of rural development. These groups are diverse in their structures and strategies but share several common features in their approaches,



including an emphasis on the importance of the environment to rural livelihoods. My thesis explores the similarities between these groups and how they are changing the political

and social landscape of Thailand.

Eric Hess

“The Construction and Promotion of British Masculinity in African Trophy Hunting Journals Produced in Southern African during the Victorian Era”

Advisor: Dr. Philip Misevich, History

The ideas of masculinity became increasingly developed in England due to British fears of an emasculated male population in the late-19th and early-20th centuries. Thus, authors and other scholars of the Victorian Era wrote extensively on the revival of masculinity. The British believed the practice of sport hunting was a technique used to express their White masculinity and to promote their control over other groups they saw as inferior, particularly indigenous southern Africans. As English hunters pushed further inland, they kept journals recording their experiences and encounters with the African mega fauna and indigenous communities. Along with the bounty of hides and trophies that hunters brought back to England, they frequently published and distributed their journals in order to share their adventures with the public, emanating British virility. In recent years, scholars have revisited hunting literature and they have discovered that hunters used a variety of literary methods to emanate their own masculinity to their readers.

Furthermore, hunting photographs and pictures of African communities allowed the British to legitimize their perceived notions of English superiority over their territories in southern Africa. All of these devices further supported the savage-civilized dichotomy conceptualized during the Victorian and post-Victorian Era.

