



PAPER ABSTRACTS

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FOREWORD

Research represents the culmination of a learning experience and acquiring the ability to perform research is a key component of advanced degree programs. The OSU Research Symposium provides a forum for students to see the work of their peers, especially those in other departments.

The Research Symposium is a chance for students to share what they have learned through their research experiences with a larger audience. It provides a forum where students are the teachers, showcasing research projects that build on and enrich faculty work across the disciplines. It is an opportunity for students, faculty, and the community to discuss cutting edge research topics, and to examine the connection between research and education. It is a place for participants to experience the broad range of intellectual endeavors pursued at OSU.

The entire University community is invited to attend the Symposium to see the diversity of research performed by OSU graduate students. We encourage all faculty and students to attend. Some will notice that included in the abstracts are submissions by current OSU undergraduate students and students from regional colleges participating in their school's McNair Scholar's program.

One of the missions of the Graduate College at Oklahoma State University is bringing together researchers from the variety of disciplines taught at OSU. It is our hope that exposure to the breadth of research done throughout the University will provide an appreciation of the topics in fields other than our own, and perhaps even new perspectives from which to view our own work. We look forward to your participation.

PAPER ABSTRACTS

Identification Of Protective Antigens For The Control Of Ixodes Scapularis Infestations Using Cdna Expression Library Immunization.

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Presentation Subject Area: Biological Sciences

The black legged tick, *Ixodes scapularis* is the main vector of Lyme disease, human babesiosis and human granulocytic ehrlichiosis in USA and Canada. Control of tick infestations is difficult and often impractical for multi-host ticks such as *Ixodes spp.* Identification of antigens that induce an immune response against tick infestations is required for the development of vaccines against this ectoparasite. In order to identify protective antigens, a cDNA expression library from a continuous *Ixodes scapularis* cell line (IDE8) that was initially derived from tick embryos was constructed. cDNA clones were subjected to several rounds of screening in which mice were immunized with individual pools and then challenge-exposed by allowing *I. scapularis* larvae to feed on the immunized and control mice. Immunity against tick infestation was determined by the reduction in the ability of the larvae to attach, feed to repletion and molt to the nymphal stage. Individual clones in pools that induced immunity to larval infestations were partially sequenced and grouped according to their putative protein function by comparison with sequence databases. The screening identified several individual antigens that induced a protective immune response against *I. scapularis* infestations. Our studies demonstrated for the first time that cDNA expression library immunization (ELI) combined with sequence analysis is a powerful and efficient tool for identification of candidate antigens for use in vaccines against ticks.

Evaluating Cost Effective Technologies To Reduce Phosphorus Loading To The Surface Waters In The Eucha-Spavinaw Watershed

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Presentation Subject Area: Environmental Sciences

Problem Statement: Agricultural pollution caused by land application of manure is a serious environmental problem for surface water quality. This problem is apparent in the Eucha-Spavinaw watershed that is shared by the states of Oklahoma and Arkansas. Eutrophication of the area lakes, from which a significant part of municipal water supply is drawn, has been blamed on the excessive application of litter generated by the intensive poultry industry operating in the watershed. Eutrophication causes algal blooms that in turn impair the taste of the drinking water, a characteristic that is difficult and extremely expensive to improve by water treatment. Calls for regulations are abound and even lawsuits against the poultry producers are under way.

Objective of the paper is to determine the optimal combination of poultry waste management practices for the agricultural non-point sources of phosphorus loading in the Eucha-Spavinaw watershed. A specific objective is to determine the optimal spatial configuration of waste management practices that will minimize

the abatement costs to agricultural producers for a given level of phosphorus loading in the watershed. Determining the least cost transportation patterns for poultry litter within the watershed is another objective of the paper.

Data and methods: The paper combines biophysical and economic optimization modeling in order to determine least-cost allocation of litter management practices among agricultural non-point sources of phosphorus loading in the watershed. The economic modeling consists of constructing a mathematical program that maximizes income from agricultural enterprises in the watershed subject to limit on phosphorus loading. The program assigns an optimal litter management practice to each agricultural source in the watershed.

Soil and Water Assessment Tool (SWAT) software is used as a biophysical model to simulate total biomass, crop yields and total phosphorus load for a ten-year period. The simulation is run for various litter management scenarios. SWAT divides the watershed into a number of sub basins and Hydrologic Response Units (HRUs), which represent relatively homogenous units with respect to soil type, land use and climate.

Agricultural output as a function of various poultry litter management practices in each HRU is simulated using the SWAT model. Net income from agricultural enterprises is computed using the estimated agricultural output and exogenous prices. Reduction of agricultural income from its current level under alternative poultry litter management scenarios provide an estimate for phosphorus abatement costs used in the mathematical programming model.

Results: The results from the study assign an optimal management practice to each agricultural HRU in the watershed based on its spatial, topographic, climatic and economic characteristics. This combination of waste management practices achieves the requirement on phosphorus loading at minimum cost. The results identify specific agricultural crops where reduction of phosphorus loading could be achieved at fairly low cost. Land areas where phosphorus loading can be reduced at relatively low cost are also identified by topographic inclination (slope). Least cost transportation routes and optimal quantities of poultry litter transported are found. The results have clear policy implications for any regulatory attempts to improve the water quality in the watershed.

Hardware Efficient Qpsk/Bpsk Detector

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A very simple LMS based adaptive notch filter implemented in FPGA's can be used for carrier recovery of a Quadrature Phase Shift Keying signal and Binary Phase Shift Keying signal. The key aspect of our paper lies in the alternative approach in the realization of carrier frequency detection or synchronization circuit. The carrier frequency after detection is used in the conventional BPSK/QPSK detector. The demodulator has a simple hardware realization that does not require a reference signal.

Oklahoma Psychologists And Tobacco Use Interventions

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Presentation Subject Area: Social Sciences

According to the Centers for Disease Control and Prevention, more than 400,000 Americans die of tobacco-related diseases each year. Smoking is responsible for an estimated 30 percent of all cancer deaths, and smokeless tobacco use is a leading cause of oral cancer. Furthermore, about 3,000 young people become regular smokers every day, and the use of smokeless tobacco actually tripled between 1972 and 1991. Up-to-date information on what activities health professionals, and in the case of this study, psychologists, undertake and their attitudes and knowledge relating to key issues in tobacco use is needed as a basis for determining the extent of the task required to achieve widespread implementation of tobacco use assessment and intervention. The purpose of this survey study was to investigate the use of assessments and interventions in tobacco use of patients seen by practicing Oklahoma psychologists. Studies show that brief interventions with healthcare professionals decrease the rate of tobacco use within the United States' patient population. It is believed that an increase in these brief interventions with professionals in the healthcare system, including psychologists, will lead to a significant decrease in rates of tobacco use. With this research, Oklahoma psychologists' current practices concerning tobacco use were assessed and documented. Subsequently, directions for future improvement in assessment and intervention can be identified and implemented. Results of this study indicated that practicing Oklahoma psychologists generally do not implement assessments and interventions in tobacco use as a part of their usual practice. The investigators who conducted this study believe that a psychotherapy session is an appropriate setting for discussion about smoking cessation, as the therapist can tailor a message to the patient's current situation, and a psychological professional's advice can stimulate tobacco quit attempts. Studies have shown that health professionals who systematically use brief, simple clinical intervention strategies substantially improve their patients' tobacco use quit rates. Even minimal results of these in-office interventions on an annual basis translate into a significant decrease in the prevalence of tobacco use over time. The findings of this study indicate that improvements are needed in the tobacco related assessment and intervention practices of Oklahoma psychologists. Tobacco use and abuse are significant public health problems, and effective assessments and interventions are necessary for reducing the negative impacts of such use on users' lives and society at large. Studies have shown that if 100,000 health professionals help 10 percent of their patients who smoke to stop each year, the number of smokers in the United States would drop by an additional two million people annually. If the rates at which tobacco use is currently assessed and interventions are implemented can be better understood, then the areas in which improvements can be made in the future can be mapped out now.

Population Dynamics Of Black Bears In The Ouachita Mountains Of Oklahoma

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Information on the demographic characteristics and habitat use of the black bear (*Ursus americanus*) population centered in the Ouachita Mountains of Oklahoma is essential to the Oklahoma Department of Wildlife Conservation in developing a statewide management plan for bears. We studied the population of black bears in a 345 km² area of the Kiamichi and Choctaw districts of the Ouachita National Forest, Oklahoma from 2001 to 2003. We captured 51 bears (29 F, 22 M) and equipped 22 with radio transmitters. We calculated a population estimate of 84.5 ± 15.1 , and we estimated density to be 0.25 bears/km² using the

Lincoln-Petersen estimator. Preliminary analyses indicate an average litter size of 2.17 and a cub sex ratio not significantly different from 1:1 ($P = 0.405$). Home range areas for collared females ranged from 7.4 - 40.1 km². The results of this research will aid in the effective management of the black bear population of Oklahoma.

Utilization Of Microbubbles For Enhancement Of Oxygen Transfer In Xanthan Fermentation

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Presentation Subject Area: Biological Sciences

Oxygen transfer is a limiting factor in xanthan fermentation, and has traditionally been overcome by increasing agitation, which results in increased power consumption and reduced process efficiency. Microbubble sparging has been found to be an effective alternative for improvement of oxygen transfer in several fermentation studies. However, microbubble technology has not been applied to xanthan gum fermentation. The objective of this study was to investigate the use of microbubble sparging for enhancing oxygen transfer and product yield during xanthan gum fermentation. Microbubble properties were evaluated at a range of process conditions, including process times of 2-5 minutes, agitation speeds of 5000-8000 rpm, and surfactant levels of 120-500 ppm. Properties measured included gas hold-up and foam stability, biocompatibility of Tween-20 with *Xanthomonas Campestris* microorganisms, microbubble size (by a particle size analyzer), and shear resistance of the microorganisms (by standard plate counts). Fermentation studies were conducted with full air sparging and partially substituted microbubble sparging, in which microbubbles were injected for 30 minutes every six hours after the exponential growth phase (6-L production volume; constant air flow rate of 0.2 vvm). Biomass growth, xanthan production, oxygen uptake (using the dynamic technique) and power consumption were measured for each fermentation run. Microorganisms were found compatible at numerous surfactant levels and further showed considerable resistance to shear conditions in the microbubble generator. Microbubbles with a size of about 145 μm , gas-hold-up of 65%, and foam stability of about 3 minutes resulted at standardized conditions (8000 rpm, 3 minutes, 300 ppm surfactant). A comparison of microbubble and air sparging methods showed that partially substituted microbubble sparging increased oxygen uptake by about 50%, and increased xanthan gum yield by about 30%. Results indicate that *Xanthomonas Campestris* is amenable to conditions encountered within a microbubble generator, and further that microbubble sparging improved oxygen transfer and xanthan gum yield.

Learning Strategy Tendencies In Cameron University ROTC Cadets

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Presentation Subject Area: Education

The United States Army was founded in 1789 as part of the original Constitutional government. Since that time, strong leadership abilities were required for commanding soldiers in war and peacetime. This research study will measure the learning style of Reserve Office Training Core ROTC (ROTC) cadets enrolled at a four-year university located in southwest Oklahoma. To identify learning strategy profiles, cadets will be

administered the Assessing The Learning Strategies of Adults (ATLAS, developed by Conti and Kolody). Research results can be used to target and recruit potential officers for the United States Army and possibly determine effective training practices according to learning strategy profiles.

The Varying Role Of Beef In The Mexican Diet

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Presentation Subject Area: Social Sciences

Mexico is comprised of many distinct cultural and demographic regions, representing a wide diversity of languages, traditions, customs, economic profiles, education, age distribution, family size and availability to products. These differences may be associated with differing levels of beef consumption, as well as the type of beef consumed. Research (Peel & Hayes, 1998) shows that tastes and preferences of Mexican consumers greatly affect the cattle and beef industries as a whole. At the current time, there is little data clearly demonstrating regions of similar beef consumption patterns in Mexico. In order to more accurately model the Mexican cattle and beef industry, information on the differing tastes and preferences of similar areas of Mexico is needed (Peel, 2001). This project will consist of a literature review to describe the cultural and ethnic history of the diverse areas of Mexico, analysis of demographic data, as well as on-site data collection examining presentation, availability, and use of different types of beef in several regions of Mexico.

Characterization Of The Ferredoxin-1 Mrna Destabilization Element(S).

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The nuclear encoded pea ferredoxin 1 (Fed-1) mRNA contains a (CAUU)₄ repeat motif in the 5' UTR that is necessary for Fed-1 mRNA instability in transgenic tobacco. Mutation of this (CAUU)₄ repeat to a 37% GC sequence (16.1 Δ CAUU) results in the disruption of the dark-induced destabilization of the Fed-1 mRNA. In addition our Fed-1 mRNA half-life data suggests that replacement of the above mentioned (CAUU)₄ repeat with a poly U sequence also disrupts the dark-induced Fed-1 mRNA decay. Our results provide evidence that the (CAUU)₄ repeat is responsible for dark induced destabilization of Fed-1 mRNA. Further to discern the minimum number of CAUU units sufficient to confer the destabilization of Fed-1 mRNA in the dark, we added (CAUU)₁, (CAUU)₂ and (CAUU)₃ back to the poly U substituted Fed-1 mRNA and mRNA accumulation was examined in transgenic tobacco plants. We observed that the presence of either 1 or 2 (CAUU) units is sufficient for partial recovery of light-regulated mRNA accumulation. However 3 (CAUU) units is sufficient for full recovery of light-regulated mRNA accumulation. This suggests that a minimal sequence of (CAUU)₃ is sufficient to confer the destabilization of the Fed-1 mRNA in the dark. Addition of two more CAUU repeats to form (CAUU)₆ does not result in a significant increase in the light:dark mRNA accumulation ratio. We also show evidence that the 2 (CAUU) sequences conferring differential mRNA accumulation need not be adjacent to each other. Mutation of sequences adjacent to (CAUU)₄ did not disrupt light:dark accumulation. Therefore, we are testing if (CAUU)₄ can function as an independent element for light-regulated instability within other positions of Fed-1 and in other mRNAs.

Luminescence Dosimetry Of Bricks From The Semipalatinsk Region Of Kazakhstan

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Presentation Subject Area: Biological Sciences

Several populations from around the world have been unintentionally exposed to radiation either through nuclear weapons testing or nuclear radiation accidents. Radiation dosimetry devices are usually not in place at the time of these exposures, and the radiation dose received by the populations is not accurately known. We have used the technique of optically stimulated luminescence (OSL) from brick materials to retrospectively determine the accident radiation dose delivered to selected buildings from the Semipalatinsk region of Kazakhstan. The radiation exposure to the buildings was the result of atmospheric nuclear weapons testing throughout the period 1949-1963 and, our measurements are part of an epidemiology study in which it is necessary to reconstruct the radiation dose delivered to humans in this area. The total absorbed dose D_e (accident + naturally occurring background) was determined using OSL Single-Aliquot Regeneration (SAR) techniques on 90-125 μm quartz crystals extracted from cores of ten bricks. The outer 5mm of all the brick cores was removed and discarded (since the OSL signal may have been erased in these sections). Two of the cores were sliced in to ten 10 mm sections, and the D_e was measured in each of these sections to construct depth-dose profiles. For the remaining 8 bricks, only the first 10 mm slice was analyzed.

The data indicate highly varied absorbed doses. Only one of the two bricks for which the depth-dose profiles were analyzed yielded data which could be interpreted as having a clear accident dose superimposed on a natural background dose. Furthermore, one of the depth-dose profiles appeared to show very little accident dose, although the data showed high uncertainties. The remaining bricks were highly varied in their OSL sensitivities (OSL produced per unit radiation dose). Results and conclusions will be presented.

A New Perspective To Evaluate The Processes Of Change: Evaluation Of A Definitional Measure

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Presentation Subject Area: Social Sciences

A central, yet understudied, construct of the Transtheoretical Model of change is the processes of change (PC). The PC can be described as behavioral (i.e., active strategies in changing behavior) and experiential (i.e., thoughts and emotions an individual might have when attempting to make a behavior change) that are used differentially across the Transtheoretical Model. PC is important because they may aide in predicting an individual's success in moving through the Transtheoretical Model. One possible reason PC is understudied is because many of the PC measures that are currently used in the literature are lengthy and often burdensome to participants who are asked to complete numerous other measures. Definitional measures are becoming more widely used in other literature as an alternative to the traditional multiple item assessment paradigm. In an attempt to match that current trend, a definitional measure of PC was created and includes a single item for twelve different processes. Each item defines the process of interest with examples. The development of a brief measure attempts to facilitate inclusion of the PC construct in future research. Thus, this study was conducted to evaluate a new brief definitional measure of the PC for smoking cessation in relation to an established measure with known psychometric properties (Prochaska, Velicer,

DiClemente, & Fava, 1988). Statistical analysis occurred in three stages. In the first stage, correlational statistics were used to evaluate the convergent validity of the definitional measure with the established measure. Statistical analyses revealed that items of the definitional measure significantly correlated with corresponding subscales of the established measure, although the range of the correlations (0.28 to 0.74) were less than ideal. In the second phase of analyses, the construct validity of the definitional measure was evaluated using factor analysis. Results showed that a two-factor solution accounted for 48% of the variance and was easy to interpret as behavioral and experiential processes. In the third phase of analyses, the construct validity of the definitional measure was evaluated by comparing scores on the behavioral and experiential scales on the definitional measure with corresponding scores on the established measure. Results revealed a similar pattern of process usage across both dimensions (behavioral and experiential) across the five stages of change in the Transtheoretical Model. In conclusion, the definitional measure of PC was statistically correlated with the established measure, although the correlations were less than ideal. Consistent with the factor solution of the established measure, the definitional measure revealed a two-factor solution that was adequate in explaining the amount of variance. Further research is warranted before replacing the existing measure with a definitional measure. Future research should evaluate item content of the definitional measure to ensure the items capture the essence of the established measure.

Organizational Network Analysis Of Al Qaeda

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Using Lewin's Field-theoretical approach, an analysis was conducted of the interdependent conditions that acted as driving forces for the Al Qaeda terrorist organization before the attacks of September 11, 2001, and the conditions that restrained the group following the attacks. Both driving and restraining forces were broken down into necessary and sufficient conditions, those that are both needed and essential. Necessary driving conditions examined here were globalization, financial assets, and strategic thinking. The sufficient condition was the idea of "true believer" status by the members of Al Qaeda. The necessary restraining conditions used were homeland security, use of military force, and the freezing of assets, while the sufficient condition was strong alliances with other countries. Four hypotheses were examined: 1) prior to September 11, 2001 driving forces exceeded restraining forces. 2) After September 11, 2001 restraining forces exceeded driving forces. 3) Both necessary and sufficient conditions are required for a terrorist act to occur. 4) The sufficient driving condition is directly related to training in the Third World. The data for this study came from secondary literature and interview sources. Methodology used was a triangulation of organizational network analysis, ethnographic analysis, and case study

Beck's World Risk Society And The Role Of Mass Media In Covering The Climate Change Debate

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Presentation Subject Area: Environmental Sciences

Climate change is an important physical process that is constructed and represented through institutions of science, government and the media. Since most people will not learn about climate change research directly from the cautious scientific lexicon, but rather from the mass media, and given the globalized nature of climate change information, the issue of global warming and the risks it represents provides a useful framework to bring under further mass media study. Beck's social theory positions mass media as fundamental to the process of reflexive modernization' reflexivity essentially being the ability to interpret and understand the world around us in a modernized context. The World Risk Society is an evolution from the industrial society into a world where our lives and social experiences are becoming controlled and defined by the risks we all confront such as global warming, radioactivity and terrorism. Beck outlines three qualities of environmental content in the mass media that creates non-reflexive information processing. First, the presence of an omnipresence of dangers, destruction and protest are symbolically mediated, and thus we must rely on the symbolic politics of the media to understand global ecological risks. Second, in acting against ecological degradation, everyone is also his or her own enemy' We all produce greenhouse gas emissions. Is the media able to interpret this reality or do they position us all as 'environmental sinners'. And third, global ecological crises breed a global, cultural 'Red Cross' consciousness. By the media responding to only the most threatening ecological dangers we become desensitized to the subtle, invisible dangers such as global warming which may be a greater risk for humanity in the long term. The mass media is identified as a key arena in which such social contests over definitions, knowledge and risk consequences are played out. As the World Risk Society develops, so does the antagonism between those afflicted by risks and those who profit from them. The social and economic importance of knowledge grows similarly, and with it the power over the media to structure knowledge and disseminate it. The World Risk Society in this sense is also the science, media and information society where new antagonisms grow between those who produce risk definitions and those who consume them. This presentation focuses on the history of the climate change debate in the U.S. and provides an analysis of the issue through Ulrich Beck's model of reflexive media representations and his 'World Risk Society.' I review the theoretical implications of the World Risk Society, the role of traditional mass media research and its ability to portray the climate change debate, and present considerations for future methodological approaches to this emerging field of study.

An Experimental Study For Individualized Ecg Compression Using Lpc And Adaptive Code Book For Long Time Recording.

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In this paper, an experimental study to capitalize the symmetry and redundancy in an Electro Cardio Gram (ECG) signal, using Linear Predictive Coding (LPC) is presented. The use of such algorithm would be for an extended period of recording, while keeping the size and cost of the monitoring device under control. We use a variable length window to extract one heartbeat per frame, which is then analyzed to obtain the LPC coefficients. The LPC coefficients are used to construct a recursive filter, and the current frame is filtered to obtain the residue. Each residue is divided into three sections, and compared with the entries in the

codebook. If the error between the original and reconstructed frame is within a predefined threshold, then that particular entry or index number from the codebook is used to represent the residue of that frame. If the error exceeds the threshold, the new residue is added to the codebook. Thus, the codebook adapts itself to any new ECG Signal. The error threshold used is the Percentage Root Mean Square Difference (PRD). An acceptable level of PRD can be set in our algorithm. We found out that for any individual person, the Codebook would saturate at a certain number of entries less than 128. Thus, by having the codebook on the receiver end, the only needed parameters to transmit per frame are the LPC coefficients, and the index of the codebook entry to get the residue. We pass this residue through the inverse filter constructed with the LPC coefficients to get the original ECG frame. Our algorithm has been evaluated on MIT-BIH Normal Sinus Rhythm Database (NSRDB) record number 16265. The original signal was sampled at 125 Hz, and 11 bps. The bits needed to be transmitted per frame for reconstruction were 2 LPC coefficients at 6 bits each plus 3 indexes of 7 bits each, for a maximum codebook size of 128 rows. This resulted in a compression ratio of more than 40:1, and a PRD of 6.92% and a Mean Square Error (MSE) of 0.15%, after the codebook has been filled. Some of the critical issues are the frame length, the order of LPC, and the quantization level. By taking more than one Heart beat per frame, the compression ratio will increase, as well as the size of the codebook.

Stochastic Analysis Of Multiple Unit Reliability Systems

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Transient state probabilities describe various characteristics and performance measures of a system. When the system performs its function, it becomes very important and necessary to study the behavior of the system over time. For example, Reliability of the system is found by obtaining the transient state probabilities of the system over time. In this paper, an approach has been made to obtain the transient state probabilities of multiple-unit reliability systems using generating function technique. In general, we discuss three-stand by viz hot, cold and warm stand by systems. In all the three cases transient state probabilities are obtained from which various performance measures are studied.

Response Of A Small-Mammal Community To Nitrogen Amendments In An Old-Field Ecosystem

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Presentation Subject Area: Environmental Sciences

We conducted a mark-recapture experiment to examine population dynamics of the fulvous harvest mouse (*Reithrodontomys fulvescens*), plains harvest mouse (*R. montanus*), and hispid cotton rat (*Sigmodon hispidus*) in response to low-level nitrogen additions (48 kg/ha/yr) and enclosure fencing in an old-field grassland. The experimental design consisted of 16, 0.16-ha plots with 4 replicates of each treatment combination (fenced, nitrogen addition; unfenced, nitrogen addition; fenced, control; unfenced, control). We predicted that densities and survival for all 3 species and reproductive success of cotton rats would be higher on nitrogen-amended plots because of greater aboveground biomass and cover. Population densities of *R.*

montanus tended to be highest on nitrogen plots, but lowest on nitrogen-fenced plots during winter 1999–2000. The opposite pattern was observed for cotton rats and may represent interspecific interaction between *R. montanus* and cotton rats. Survival of *R. montanus* and cotton rats tended to be higher on fenced plots, regardless of nitrogen amendments. Likewise, reproductive success of cotton rats was greater on fenced plots. We observed no distinct patterns in survival or density of *R. fulvescens* with regard to treatments. As low-level nitrogen amendments continue to be applied, we predict survival and densities of all 3 species on control plots, especially fenced plots with no nitrogen amendment, will eventually exceed those on nitrogen-amended plots as a result of higher plant species diversity, food availability, and better quality cover; however, we postulate that the distribution of harvest mice, especially *R. montanus*, may be affected more by indirect effects (i.e., avoidance of areas with high densities of cotton rats) from nitrogen amendments.

Qualitative Reflections Of A Multi-Year Graduate Educational Experience.

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Presentation Subject Area: Education

This research was conducted over several years within the College of Education at Oklahoma State University. It is a participant observation form of qualitative study. The researcher studied the various aspects of the graduate experience from research assistants to teaching assistants as well as graduates conducting their own research and taking classes. By using multiple sources, the researcher has uncovered both positive and negative aspects of a graduate educational experience. The researcher is hoping to use the current findings to possibly author a book on graduate survival in an academic setting.

Microcrustacean Community Assemblages In Ephemeral Wetlands Of Oklahoma

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Presentation Subject Area: Biological Sciences

Isolated ephemeral wetlands are ubiquitous and provide habitats for many unique invertebrates. By definition, these habitats are highly fragmented in space and time and do not connect across the landscape. As a result, their inhabitants exist in metacommunities. Our knowledge of local and regional patterns of species distribution, as well as the richness within these habitats, is weak, although their distribution is global. In light of the intimacy of the terrestrial landscape with these shallow (<1 m) habitats, we tested the hypothesis that terrestrial ecoregions can be used to predict community assemblages of aquatic microcrustaceans. Oklahoma's heterogeneous landscape (11 level III ecoregions) provides an excellent opportunity to assess this approach. We hope to determine quantitative criteria with which to formulate protocols for the protection of ephemeral aquatic ecosystems. In spring, 2001 and fall, 2002 we sampled 146 ephemeral wetlands across Oklahoma. Zooplankton species richness was determined for each habitat and compared within and between ecoregions. For all ecoregions there were 6.0 ± 0.2 species/pond with significant differences across ecoregions. At the extremes, there was a mean of 8.0 species/pond in the Central Oklahoma Plains compared to 4.7 species/pond in the Southwestern Tablelands. These results were similar to other studies of species richness in which common species were rare and rare species were common. Of the 95 species that were identified, 33% were unique to single habitats and another 10% to two

habitats. Only two habitats possessed as many as 15 species, while 88 wetlands had four to eight species, which may indicate limiting factors to community assembly. Invertebrate assemblages were distinctive among ecoregions based on a Bray-Curtis presence-absence similarity analysis. Overall, differences among ecoregions mean similarity values were highly significant. The Arkansas Valley and Ouachita Mountains displayed the highest similarity, and the Southwestern Tablelands, Flint Hills and Central Great Plains displayed the lowest similarity. Our results support our hypothesis that terrestrial ecoregions can be useful to discern crustacean community assemblages. The factors that allow the terrestrial landscape to impact aquatic community structure require further study and analysis.

Freshmen In Transition (Fit) At Oklahoma State University: An Evaluation

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The purpose of this formative evaluation project was to evaluate the impact of the Freshmen In Transition program. The FIT program is sponsored by the College of Agricultural Sciences & Natural Resources to provide a smooth transition for incoming freshmen from high school to college life. The specific objectives of the project were to evaluate the effects of the FIT program on the academic achievement, leadership skills development, institutional integration and loyalty, and retention of the participants. The program was successful in contributing to the academic achievement and retention of the participants, while no change was observed in the development of leadership skills or institutional integration/loyalty. The findings of the study suggest further improvements in the program, including a review of the nature and number of expectations for the student participants.

A Comparison Of A Squash Trap And At-Plant Furadanr Application For Squash Bug And Cucumber Beetle Management In Watermelon

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Presentation Subject Area: Biological Sciences

FuradanR 4F, a soil applied insecticide, and squash as a trap crop were evaluated for management of squash bugs, *Anasa tristis* DeGeer, and cucumber beetles, *Acalymma vittatum* (F.) and *Diabrotica undecempunctata* howardii Barber, in watermelon. Trap crop reduced squash bugs in watermelon. Although, FuradanR 4F treatment reduced squash bugs for the first 3-4 weeks of sampling, later squash bugs were greater in watermelon. Cucumber beetles were greater in watermelon that had squash planted on perimeter of the fields, indicating that trap crop may not be an effective management strategy for cucumber beetles in watermelon. FuradanR 4F treatment reduced cucumber beetles in watermelon. FuradanR 4F treated watermelon plants produced higher marketable and non-marketable yield than watermelon plants grown in the trap crop fields, but lower marketable yield than untreated (control) watermelon plants.

Comparative Analysis Of Wind Energy Production In Oklahoma

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Presentation Subject Area: Environmental Sciences

In the last few decades humanity has realized the necessity of developing alternative energy sources for its efficient economic development and simple survival in the future. During the last 30 years major improvements were made in renewable energy technologies and they started to become competitive with traditional energy sources (fossil fuels), especially with consideration of external costs. Among the renewable energy sources, wind energy is one of the cheapest and fastest growing.

Oklahoma is a very promising site for wind energy development considering its excellent wind resources. Developing wind energy can allow not only electricity production for in-state consumption, but also exporting to other states. The development of wind energy could encourage economic growth with few adverse impacts on the environment. However, traditional energy sources are still the cheapest and, thus, the introduction of the wind energy in Oklahoma should be critically analyzed from economic, ecological and social points of view.

The goal of this study is to conduct analysis of wind energy electricity production in Oklahoma on the three main stages:

Investment Analysis without Externalities: Calculate present value net benefits for wind energy and traditional energy, make sure that both of them are positive.

Investment Analysis with Externalities: Evaluate present value net private benefits (PVNPB) and present value net social benefit from both projects (PVNSB).

Government Subsidy Analysis: recognize the necessity of the subsidies and evaluate the amount of subsidies.

The final output of the study will be recommendations concerning wind energy development in Oklahoma with consideration of economic efficiency, ecological and social impacts.

Reliability Analysis Of Asynchronous Wave Pipeline

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Presentation Subject Area: Physical Sciences & Technology

Wave pipeline (also known as maximal rate pipelining) is a timing methodology used in digital systems to increase the throughput without internal physical registers in the system. It is now being increasingly used in both academic and industrial designs and three to four times of speed-up is observed. Most of previous research efforts of wave pipeline were paid to Synchronous Wave Pipeline (SWP), which is a wave pipeline using clock to control the latches operating in parallel. Recently, more researchers focused on Asynchronous Wave Pipeline (AWP), which replace clock by request and acknowledge signal or just request signal to achieve asynchronous wave pipeline operation. Basic structure of AWP was presented in [4], [5]. In this paper, we present currently the first approach to identify pulse fault, and it is then be well modeled. The fault coverage will be obtained by statistics and fault probabilities and will be verified by simulations. Finally, fault tolerance of AWP model will then be analyzed.

Space Radiation Dosimetry: The Optically Stimulated Luminescence Response Of Al₂O₃ C To Heavy Charged Particles

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Presentation Subject Area: Physical Sciences & Technology

There is an important need to develop passive personal dosimeters for astronauts. The Earth absorbs most of the cosmic radiation and prevents it from reaching the Earth's surface, thus decreases the overall exposure of an individual on the ground. However, a person flying often on high-altitude aircraft receives a considerably higher dose of radiation. The exposure increases with the altitude because of a thinner layer of atmosphere and, for astronauts, can even become life threatening. Long term Low-Earth-Orbit flights on the International Space Station and possible 1000-day missions to Mars mean that astronauts will be exposed to larger doses of radiation in space than ever before. The NCRP recently recommended (NCRP; 2002) that a set of Optically Stimulated Luminescence Dosimeters (OSLDs) be used in order to measure the low LET (linear energy transfer) component of the space radiation field. Since heavy charged particles are part of the radiation environment in Low-Earth Orbit this work involves studying the effect of the heavy charged particles (HCP) on the optically stimulated luminescence response of OSL dosimeters. The proposed material for use in the OSL detector is Al₂O₃:C. This material shows a linear response with increasing HCP dose but a decreasing efficiency with increasing LET. This presentation describes measurements of the OSL efficiency of Al₂O₃ to HCP irradiation using the high-energy accelerator at Chiba, Japan (HIMAC). We present results on the dose linearity and efficiency, and discuss possible ways to predict the average LET in mixed HCP fields.

Near Real-Time Dosimetry In The Radiotherapy Of Cancer Using Optically Stimulated Luminescence (Osl) Of Al₂O₃:C

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Presentation Subject Area: Physical Sciences & Technology

Radiotherapy represents an important tool of treating cancer. During such treatments, the patient is intentionally exposed to a large amount of ionizing radiation. A successful procedure will deliver a sufficiently high dose of radiation to kill the tumor, and at the same time will spare as much as possible from the surrounding, healthy tissue. The success of the procedure depends greatly upon delivering precisely the prescribed dose of radiation, with the required spatial distribution.

In order to confirm that the treatment scenario is accurately followed, it is necessary to devise a technique/device able to locally measure the dose of radiation delivered to the tumor with accuracy on the order of 2-3%. Such requirements can be achieved by using Al₂O₃:C as an OSL material, due to its high sensitivity, good linearity of the dose response, good fading properties, and large photoionization cross-section, which makes it suitable for optical stimulation. When used in Near Real-Time (or On-Line) mode, repeated optical stimulations applied to the Al₂O₃:C dosimeter cause the OSL signal to divert from the linear response.

This presentation addresses the mechanisms by which this non-linearity occurs, proposes an algorithm for correcting the dose response to a linear behavior and presents experimental results that confirm our predictions.

Host Suitability Of Various Stored Products Insects For Two Strains Of The Parasitoid Anisopteromalus Calandrae (Hymenoptera: Pteromalidae)

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Presentation Subject Area: Biological Sciences

Anisopteromalus calandrae (Howard) is a synovigenic solitary ectoparasitic wasp that attacks several species of stored products pests. Host suitability is one of key factors to optimize the biological control program. In this study, we investigated host suitability for the development of two strains of A. calandrae, a Laboratory strain reared on rice weevil and a Field strain reared on lesser grain borer using five different hosts: the cigarette beetle (CB) Lasioderma serricorne (F.), cowpea weevil (CPW) Callosobruchus maculatus (F.), rice weevil (RW) Sitophilus oryzae (L.), lesser grain borer (LGB), Rhyzopertha dominica (F.), and Angoumois grain moth (AGM) Sitotroga cerealella (Oliv.). The study was carried out in a no-choice design in the laboratory using Petri-dishes as test arenas with 20 last instar larvae of each host species. Mated and conditioned female A. calandrae were introduced singly into experimental arenas and allowed to sting and oviposit for 24 hours. Parasitism by the Field strain was greater than that of for the Lab. strain across all hosts. However, no wasp found on AGM for both strains in this experiment. The highest parasitism was recorded on RW (71.03%) followed by CB (59.26%) and LGB (54.61%) by the Field strain. Similarly, parasitism was highest on RW (61.49%) for the Lab. strain of the wasp. A female-biased sex ratio was observed for both strains of the wasp across all hosts. The highest number of female progeny was produced on CPW (73.04%) by Field strain and was greater than that of Lab. strain of the wasp across all hosts except higher number of female progeny was produced on RW (64.62%) by Lab. strain. This study indicates that conspecific parasitoids that are behaviorally and ecologically similar may differ in their ability to utilize the same hosts. The possible application of these results for biological control of stored products pests is discussed

Network Proximity Based Dynamic Clustering For Building Large-Scale Distributed Systems

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Presentation Subject Area: Physical Sciences & Technology

Many of interesting problems in science, especially biology, chemistry and biochemistry, remain unsolved due to their great computational complexity. The simulation of protein folding is a prime example. The simulated folding of a single large protein on today's fastest single CPU computers would require years of computation to complete. Special multiprocessor supercomputers have been designed to attack this problem (and this is the approach pursued by the likes of IBM), however this almost completely eliminates smaller organizations from participating in research of this kind. There exists alternative approaches based on harnessing the processing power from hundreds (or even thousands) of networked computers, these alternative approaches are referred to as distributed systems and are related to the concept of grid computing. The computational gains possible in large-scale distributed systems are potentially hampered by the bandwidth limitations of the central servers hosting the system (and collecting the results). While the bandwidth required by each participating client is insignificant, the potential for thousands of clients to access central servers simultaneously may trigger traffic saturation problems for central hosts. In addition, the bandwidth demands are highly volatile, with extreme peaks followed by times of relatively low activity. The aim of the presentation is to present a novel approach to building large-scale distributed systems, in

which we propose using hierarchical clustering techniques in order to reduce bandwidth requirements for central servers, and to reduce data transfer times throughout the system.

Improved Models For Pure And Mixture Property Prediction Using Qspr And Artificial Neural Networks

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Presentation Subject Area: Physical Sciences & Technology

Physical property and thermodynamic data are the basic requirements for all Computer Aided Molecular Design (CAMD) applications. The quantitative structure-property relationships (QSPR) have become the tool of choice for many academic and industrial engineers for correlating the physiochemical behavior of molecules. However, most of the QSPR work in the last decade has been carried out with co-generic subsets of pure compounds in, which just one structural feature is changed at a time. The present work deals with the application of an integrated clustering-artificial neural network (ANN) approach to QSPR model development for determining the properties of organic substances. Several physiochemical properties including boiling and melting points, critical properties and activity coefficients were investigated. A suitable set of molecular descriptors was selected from a pool of 672 indices, including topological, thermodynamic and quantum chemical indices, using self-organizing maps (SOM). The topological maps for each molecular descriptor and for the target property were classified into clusters. The final set of descriptors was obtained by choosing the representative from each cluster that had highest correlation with the target variable. Several neural network architectures, which included the back propagation, radial basis, median radial basis and fuzzy ARTMAP networks, were investigated. The ability of the neural networks to map the descriptor information provided by the SOM network to the property of interest was ascertained. The results obtained indicate that descriptor selection using SOM provided better property correlations than bayesian regularization techniques, and the computational requirements were reduced considerably. Also, the fuzzy ARTMAP algorithms proved better than the other networks in mapping the descriptor space.

Gender Differences In Attitudes Towards Erotica

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Presentation Subject Area: Social Sciences

There has been significant interest in erotica/pornography by all facets of society. The purpose of this study was to determine if male and female students at a Midwestern state university differed in their attitudes towards erotica and if those attitudes towards erotica were affected by religiosity or any other general demographics. One hundred and forty-four participants were surveyed on their attitudes towards erotica and their belief in the importance of religiosity in life. The participants were surveyed using a modified questionnaire consisting of a religiosity scale and attitudes towards erotica scale. Participant responses indicated that there are gender differences in attitudes towards erotica. The participant responses also indicated that men have a more positive attitude than do women. Additionally, religiosity was shown to affect attitudes toward erotica. These findings are significant because they increase the general knowledge of who views sexually explicit materials and how society views erotica/pornography.

Associations Of Eastern Redcedar And Community Structure Of Small Mammals

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Presentation Subject Area: Biological Sciences

Increased abundance of eastern redcedar (*Juniperus virginianus*), a native but invasive species in the Great Plains, has been associated with reduced herbaceous biomass in the canopy zone, altered species composition, and reduced understory light and soil water content. By altering the landscape and local vegetation, cedar likely is changing the suitability of habitat for small mammals. We examined effects of eastern redcedar invasion on small mammals in tallgrass prairie, old-field invaded by cedar, and crosstimbers forest habitats. Small mammals were sampled seasonally from May 2001 to August 2002 using Sherman live traps and mark-recapture techniques. The structure of the small-mammal community differed among the 3 habitat types, with higher species diversity and richness in the tallgrass prairie and cedar old-field sites. In the tallgrass prairie site, all prairie species were correlated negatively with cover of cedar; only one woodland species, the white-footed mouse (*Peromyscus leucopus*), was correlated positively with cedar. In the cedar old-field site, 3 of 4 species were associated with eastern redcedar; prairie species were correlated negatively and white-footed mice were positively associated with cedar. In the crosstimbers forest site, percent woody cover was the most important factor affecting woodland species. Overall, the small-mammal assemblage shifted along gradients of increasing eastern redcedar. In the cedar old-field and tallgrass prairie plots, most grassland species decreased with increasing cedar, whereas only one woodland species increased. Conservation of small prairie mammals will depend on controlling encroachment of eastern redcedar.

Changes In Gel Attributes Of Beef Heart When Treated By Acid Solubilization-Isoelectric Precipitation And The Surimi Process- Whiteman Award Competition

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Presentation Subject Area: Whiteman Award Presentation

Acid solubilization-isoelectric precipitation (SIP) is a meat recovery process that uses protein solubility differences to separate myofibrillar protein from collagen, fat, and bone. Previous research verified the applicability of this process on red meat by-product using beef heart as a model by validating process parameters and improvements in nutritional composition using Acid-SIP. However, quantification is needed on physiochemical changes caused by the treatment of red meat by-products with Acid-SIP. Our objective was to determine the effect of Acid-SIP on the gel attributes of red meat by-product and compare them with another meat recovery system, the surimi process. Beef heart that was untreated, prepared using Acid-SIP, or prepared by the surimi process was equilibrated for moisture at 78% and treated with or without 2% NaCl. Samples were stuffed into 21 mm cellulose casing, cooked for 30 min at 90°C in a water bath, and chilled at 4°C. Cook yield, Water Holding Ability (WHA), composition, and color were evaluated. Texture Profile Analysis (TPA) was utilized to measure additional gel attributes such as hardness, springiness, cohesiveness, gumminess, chewiness and resilience. Acid-SIP and surimi treated beef heart with or without added NaCl improved gel attributes when compared to the control (untreated beef heart). In general, cook yield and WHA of beef heart that was treated by Acid-SIP without NaCl was higher than surimi without added NaCl ($p < 0.05$) and comparable to surimi with NaCl. Acid-SIP without NaCl and surimi with NaCl showed very similar texture characteristics for all gel attributes ($p > 0.05$). However, addition of NaCl significantly ($p < 0.05$) improved the gel attributes of Acid-SIP treated beef heart as measured by TPA. Based on the

results, Acid-SIP has the ability to maintain, if not improve, gel strength properties along with reducing fat and ash.

Polymerase Chain Reaction Detection And Identification Of Immature Parasitoids In Small Grain Cereal Aphids

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Presentation Subject Area: Biological Sciences

Described polymerase chain reaction (PCR) primers were tested for detection and identification of immature parasitoids in small grain cereal aphids. PCR technique was evaluated for (1) greenhouse reared greenbugs, *Schizaphis graminum* Rondani parasitized by *Lysiphlebus testaceipes* Cresson and (2) aphids collected from winter wheat fields in Caddo county Oklahoma. For greenhouse samples, parasitism frequencies for greenbugs examined by PCR at 0, 24 and 48 hours after exposure to parasitoids, were compared to parasitism frequencies determined by greenbug dissection. PCR was unable to detect parasitism in greenbugs at 0 and 24 hours post parasitism, but was able to detect parasitoids at frequencies that were not significantly different from dissected samples ($t=0.18$, $P = 0.86$, $df=6$, SAS Proc Mixed). Field collected samples were analyzed by rearing 25 aphids from each sample and comparing parasitoid frequencies 1 mummies developed and PCR performed on another 50 aphids. Aphid samples included corn leaf aphids, bird cherry oat aphids, greenbugs and English grain aphids.

“The Hidden Agenda Of Darius I In The Behistun Inscription”

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Presentation Subject Area: Humanities

Carved on a rock face high above the road between modern Iran and Iraq, the Behistun Inscription stands as an enigma surrounding the ancient Achaemenid dynasty of the fifth and sixth centuries B.C.E. This inscription serves as the *res gestae* (the things done) during the first three years of the reign of Darius I. Its description of the seizure of power in the Persian Empire by Darius I in 522 B.C.E. provides one of the greatest stories and scandals of ancient history. From its creation, however, the Behistun Inscription has been the subject of much skepticism regarding its truthfulness. Since its modern discovery in 1835 by Sir Henry Rawlinson, scholars have examined virtually every historical fact available on the inscription and its author. As an archaeological artifact, its importance to ancient studies is inestimable. The Inscription has led to the deciphering of key ancient languages previously not translated. Ultimately, though, scholarship focused on the monument has boiled down to one simple question: Is Behistun a massive cover-up of unspeakable crimes, or is it the epic story of a king truly blessed by the gods? The man occupying the great Persian throne was himself a usurper and a murderer.

Effects Of Roughage Level And Calcium Magnesium Carbonate Buffer On Ruminant Metabolism And Site And Extent Of Digestion In Beef Steers Fed A High-Grain Diet

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Presentation Subject Area: Whiteman Award Presentation

Five crossbred steers (initial BW= 263 ± 9 kg) fitted with ruminal and duodenal cannulas were used in a 5 x 5 Latin square design to evaluate the effects of roughage level and calcium magnesium carbonate buffer on ruminal metabolism and site and extent of digestion in beef steers. Steers were allowed ad libitum access to a 90% concentrate feedlot diet consisting of steam-flaked corn and corn silage. Steers were randomly allotted to one of five treatments: 1) 3.8% roughage and 0% buffer; 2) 7.5% roughage and 0% buffer; 3) 11.3% roughage and 0% buffer; 4) 3.8% roughage and 1.5% buffer; and 5) 7.5% roughage and 1.5% buffer. Each period included 16 d for adaptation and 5 d for sampling. Water intake was lower ($P < 0.05$) when 7.5% roughage and 1.5% buffer were fed compared with the other treatments. Dry matter intake did not differ ($P = 0.21$) among treatments, although DMI numerically increased as roughage level increased (6.2, 6.9, and 7.5 'b 0.6 kg/d for 3.8, 7.5, and 11.3% roughage, respectively). Duodenal flow of OM followed a similar trend as intake, and was greater ($P < 0.05$) when 11.3% roughage was fed compared with 3.8 or 7.5% roughage. Neutral detergent fiber ($P = 0.09$), ADF ($P = 0.01$) and N ($P = 0.06$) intake increased as dietary roughage increased, although ruminal and total tract digestibility of these response variables did not differ ($P > 0.10$) among treatments. Ruminal fluid volume and turnover time was not influenced ($P > 0.10$) by roughage level or buffer. Feeding buffer decreased ($P = 0.07$) fluid flow rate out of the rumen. Ruminal fluid pH was not ($P > 0.10$) affected by roughage level or buffer. In our experiment, feeding calcium magnesium carbonate buffer did not appear to influence site and extent of digestion.

Conceptualizing Hospitality Students' Perceptions And Attitudes Toward Management Principles And Skills: A Pre-And Post-Test Approach

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Presentation Subject Area: Education

This study determines the role of hospitality management programs in influencing students' perceptions and attitudes on pertinent management-related competencies, considering their practical relevance related to both the students and employers. To effectively evaluate the perceptions based on the effects of the academic program, a well-structured formal management course based on classroom lecture and discussion was selected from courses in a hospitality curriculum. As a core course for hospitality major students, the course was designed to develop an in-depth understanding of management principles and analysis and decision-making skills as applied to hospitality management systems, organizations, and interpersonal relationships. From an instructional perspective, it is important for hospitality educators to decide what behavioral and action skills and competencies are particularly relevant for competent and effective managers. By assessing the students' perceived importance of those competencies prior to and after taking the management-focused course, this study examines how the course contributes to the establishment of a clear picture of hospitality students' perceived level of critical competencies. And, the study explores how the course transforms them, developing and improving their competencies required in actual business situations. Having analyzed the changing patterns of students' attitudes and perceptions toward those competencies in management discipline, it is also hoped that their perceptions of managerial and leadership competencies related to traditionally-defined notions of management and leadership are reconceptualized. A total of one hundred

forty six students participated the study. The survey questionnaire designed for evaluating the perceived importance of managerial and leadership competencies consisted of a total of thirty statements. The statements utilized ten different dimensions of managerial and leadership competencies. The dimensions of managerial competencies represent planning, teamwork, monitoring, organizing, and quality assurance. The dimensions of leadership competencies correspond to adaptability, vision, inspiration, initiative, and empowerment. The researchers will conduct a series of paired t-tests to determine if mean differences exist in each competency and dimension to identify the possible differences in students' perceptions as affected by the course. In addition, exploratory factor analyses will be conducted to compare 'conventional' and 'reconceptualized' structure of given competency dimensions.

Valuation Errors At The Time Of Security Issuance And The Market Timing Theory Of Capital Structure

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Presentation Subject Area: Social Sciences

Recent literature finds strong evidence for the role of equity market timing in the capital structure of the firm. We contribute to this research by examining the public equity vs. public and private debt issuance decision in a framework that incorporates variables that control for the static trade off, pecking order and market timing theories. Our results indicate that while there is strong evidence for the market timing hypothesis, we are unable to rule out the role of the other two theories in influencing the choice of securities issued. We also explore recent evidence provided by Frank and Goyal (2002) against the pecking order theory and examine these results in light of the market timing hypothesis. We cannot reject the pecking order theory and find that our results are more consistent with the market timing hypothesis.

Calibration Of A Soft X-Rays Digital Imaging System

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Presentation Subject Area: Biological Sciences

Radiological measurements such as X-ray attenuation are useful in evaluating quality of a range of materials, including food products. An X-ray imaging system consisting of an X-ray source tube and camera was developed. The imaging sensors are photodiode arrays covered with a phosphor scintillator screen. A digital data acquisition and control system was installed for precise control of voltage (10 - 50 kVp) and current (0.1 - 1 mA) supplied to the source tube. The source tube produces polychromatic radiation. However, mass attenuation coefficients for standard materials are available only for monochromatic radiation. Mean energy of the polychromatic spectrum must be calibrated to the peak voltage supplied to the source tube. To develop such relationship, X-ray intensity transmitted through standard materials of known attenuation coefficient and thickness were obtained by taking images. Incident X-ray energy was determined from blank images. The sensors were found to saturate at high voltages and currents, posing a problem in determining incident intensity. Sensitivity of each photodiode sensor was also different. To solve these problems, a suitable model was developed to relate intensity to applied voltage and current. For each sensor, a separate statistical regression model was fitted using sensor response at voltages and currents not causing

sensor saturation. The developed models were then used to estimate incident intensity by extrapolation. By comparing predicted attenuation coefficient using polychromatic radiation with standard attenuation coefficients tabulated for monochromatic radiation, calibration curves were developed. Other imaging characteristics such as effect of current, voltage, and integration time on intensity, signal to noise ratio, precision, and distortion were evaluated. Applications planned for the system include nondestructive determination of pecan quality and prediction of beef tenderness.

Compatibility Of Trade And Environmental Priorities And The Effectiveness Of The Wto In Addressing The Dispute Between These Issues

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Presentation Subject Area: Environmental Sciences

The debate on trade and environment is often polarizes between the interests of free trade and environmental protection. Many environmental groups have expressed concern that liberalization of trade may lead to unsustainable form of development. On the other hand, trade analysts are concerned that the use of trade measures for environmental purposes will result in trade distortions as well as act as a form of protectionism. The aim of the paper is to explore if trade and environmental issues are compatible, and if states can use trade restrictions to influence environmental policies. The other goal of the paper is to find out if the WTO is in force to address trade and environmental issues at the same time. On the one hand, it seemed that trade priorities are always higher in comparison with environmental goals, especially as far as developed countries are concerned. On the other hand, it is assumed that the WTO/GATT decisions accommodate political demands by supporting the national environmental interests, if the political pressure is high. This paper looks at three cases in order to find out if states can use trade restrictions to influence environmental policies. Two cases chosen for the analysis were addressed to the GATT framework at the beginning of 1990s, while the WTO panel had discussed the third case in 1998. This paper is organized as follows: Section 2 reviews the reasons and main arguments of trade and environmental tensions. Section 3 analyses three trade-environmental conflicts in the WTO and their effects on the WTO panel's decision making. Conclusions and some suggestions for adopting an approach that effectively integrates and balances trade and environmental objectives are presented in Section 4.

Determinants, Effects And Moderators Of Country Image

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Presentation Subject Area: Social Sciences

The purpose of this study is to determine a robust factor structure for the construct country image and test a process-level model of the impact of country image on attitudinal and behavioral consequences. The model is tested with data from 172 adult consumers. Based on the criteria of goodness of fit, parsimony and theory, we find a second-order factor model of country image to be most suitable. Our investigation into the structural relationships of country image revealed that the effect of country image on willingness to purchase is fully mediated by the effect of country image on consumers' feelings toward the product and perceptions of the quality of the product.

Test Of A Protocol For Watershed Management Policy Development

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Presentation Subject Area: Environmental Sciences

The Illinois River in eastern Oklahoma draws over 150,000 tourists annually and is an important economic and natural resource for the state. The river has become the subject of controversy in the last few decades as the number of recreationists has increased and water quality has deteriorated. Because of this controversy, the Illinois River Basin was chosen to test a protocol for watershed management policy development. The first phase of the protocol was a baseline assessment of the region to understand the natural, economic, and social impacts affecting the river basin. In the second phase, policymakers and stakeholders were engaged in an asynchronous policy dialogue similar to shuttle diplomacy. Because we believed that joint meetings would be hindered by political posturing and guarded responses, separate meetings were held for the two groups. During the first policymakers meeting, findings from the first phase of the study were presented including the stakeholders' concerns and preferences for basin management. Using this information, policymakers proposed two policies, one regarding phosphorus and one concerning riparian area protection. The next meeting involved only stakeholders who were asked to comment on the policymakers' proposals. These comments were conveyed to the policymakers in their second meeting. Next, the policymakers revised their proposals based on stakeholder comments, adding one policy proposal concerning alcohol consumption and inappropriate behavior. These three proposals were then evaluated by stakeholders in a subsequent meeting, and policymakers revised them again in a third and final meeting. Throughout the process, participants were asked to evaluate the policies (beginning with existing policies, and then each successive proposal) on three legitimacy criteria: (1) technical effectiveness, (2) administrative implementability, and (3) stakeholder acceptability. The results of these evaluations show that the protocol was successful in developing policy proposals that were rated higher on all three legitimacy criteria than the existing policies.

The Dimensions Of Serious Leisure

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Presentation Subject Area: Social Sciences

Although the word 'serious leisure' has existed for twenty years, not much research has been done to explore this phenomenon. This paper explores the dimensions of serious leisure through seven areas, including serious leisure and work, serious leisure and self-identity, serious leisure and commitment, serious leisure and flow experience, serious leisure and personal development, serious leisure and negative life events, and serious leisure and its constraints.

Incubation Temperature Does Not Affect Thermoregulation In The Red-Eared Slider Turtle (*Trachemys Scripta*)

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Presentation Subject Area: Biological Sciences

Freshwater turtles lay eggs on land in nests that are excavated by females. Eggs are subsequently buried, after which the incubation period lasts for 55-350 days. Eggs are exposed to natural thermal fluctuations during incubation, and the temperature profile experienced by the embryos has been shown to affect several physiological, behavioral and morphological traits. A characteristic of many turtle species that has garnered a great deal of attention is the presence of temperature-dependent sex determination (TSD), a trait shared by approximately 70% of turtle species, where gonadal differentiation is determined by incubation temperature. Among several theories proposed to explain the evolutionary adaptiveness of this sex-determining mechanism, but one has enjoyed broad appeal: if incubation temperature differentially affects the fitness of male and female offspring, TSD can increase parental fitness by allowing embryos to develop as the sex best-suited to the prevailing incubation conditions. Although several proximate mechanisms have been proposed, most investigations have focused on the hypothesis that incubation temperature affects post-hatching growth rate, and that high growth rates are differentially beneficial to males and females. However, the mechanisms driving observed differential growth rates have received little attention. I used the red-eared slider turtle (*Trachemys scripta*) as a model to test the hypothesis that incubation temperature influences hatchling temperature preference, which in turn affects growth rate. Eggs were incubated at 27.5, 29.0, and 31.5°C. After hatching, turtles were allowed to move freely between five aquaria containing water ranging from 20-30°C. The location of each turtle was recorded daily for 120 days, and each turtle's preferred temperature was calculated as the mean temperature that it experienced. Turtles from the three incubation treatments did not exhibit differences in preferred temperature, indicating that incubation temperature does not strongly affect thermal preference in this species. Thus, differential thermoregulation is likely not the mechanism driving incubation-induced differences in growth rate.

Coding Data For Successful Analyses

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Presentation Subject Area: Education

A challenge for any researcher in the behavioral or social sciences is determining how best to treat unanticipated responses. This is especially true when conducting survey research. The researcher is not there to clarify directions nor answer any other questions posed by the respondent. This challenge is further exacerbated when the researcher is serving as a data analyst for a project whose instruments have already been developed, data have already been collected, and whose items are not phrased to answer questions that assess the project's intent. Therefore, the purpose of this presentation is to offer strategies for overcoming such challenges before and/or after data collection. Specifically, the presenters will discuss issues related to instrument development, pilot testing and data coding to reduce redundancy and improve clarity of responses as related to the intent of the survey developers. Their presentation will be drawn from the works of Mertens (2001); Litwin (1995); and Sudman & Blackburn (1982) as well as from their own recent experiences while serving as data analysts for a statewide project.

Oklahoma's Ephemeral Ponds - Their Importance And Ecological Risk

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Presentation Subject Area: Environmental Sciences

Ephemeral ponds dry up for part of the year so that the habitat shifts from being available to being unavailable for aquatic organisms.

Ephemeral ponds are important by having a highly adapted fauna, playing host to migrating fowl, hydrology of the area, having special physical and ecological features which support diverse habitats with characteristic vegetation, aquatic invertebrates, amphibians and avian populations, and populations of sensitive taxa. Condition of ponds is influenced by human land-use involving chemical input, oil extraction, agriculture, and road runoff. Ephemeral habitats frequently have no egress, contaminants accumulate in the water and sediments providing potential for direct toxic effects on organisms or bioaccumulation and subsequent trophic transfer.

Life of temporary ponds is harsh involving desiccation and alternating extremely high or low temperatures. Continued existence in the pond involves mechanisms like dormancy, dispersal or migration. Biota of temporary ponds has evolved mechanisms that reestablish populations when the habitat becomes available again. Contaminants may be affecting survival stages in these ponds.

There is need to measure the risk exposure by organisms in ephemeral ponds by determining properties of community health like vigor, organization, and resilience.

Gene Complements Induced By Forced Shift From Glucose To Alternate Carbon Sources In *Aspergillus Nidulans*.

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Presentation Subject Area: Biological Sciences

Little is known about the extracellular enzymes *A. nidulans* produces while growing on plant cell wall polysaccharides. This study is based on a novel molecular screening method, aimed at the recovery of cDNA clones from all transcripts *A. nidulans* induces when forced to shift from glucose to a medium containing one or a range of polysaccharides, including pectin, cellulose, xylan and other plant cell wall components. cDNAs, prepared from mRNA templates extracted from glucose-grown cultures, were labeled (herein designated "glucose-grown" probes) and used to screen a cDNA plasmid library made from mRNAs extracted from plant cell wall polysaccharide-containing cultures (herein designated polymer-grown library). Isolation of condition-specific induced cDNAs was accomplished through differential DNA/DNA hybridization among a labeled 'glucose-grown' probe, membrane cross-linked 'polymer-grown' plasmid-clone library and negatives were selected for further analysis under the assumption that they were the ones induced as a consequence of the physiological shift. Thus, if selection of negatives is exhaustive, the suggested approach is comprehensive because a whole gene set activated by a specific physiological condition is recovered. We have isolated over 1,600 unique cDNA whose transcript does not appear to be present in glucose growing cultures and observed that only a fraction of polysaccharide degrading enzyme coding genes were found. Moreover, the screening data have been corroborated with time-course microarray expression profiling. This unexpected outcome suggests that significant intracellular metabolic changes take place when shifting carbon sources and that the presence of extracellular polymer degrading activities is regulated differently, not involving an exclusive induction of gene expression.

Effects Of Roughage Source And Particle Size On Feedlot Performance And Subsequent Carcass Characteristics Of Finishing Heifers

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Presentation Subject Area: Whiteman Award Presentation**

One hundred crossbred yearling heifers (initial BW = 364 + 10 kg) were fed to evaluate differences in feedlot performance and carcass characteristics due to roughage source and particle size. Diets consisted of 80% dry rolled corn (DM basis), 3% fat, a pelleted supplement, and one of four roughage treatments. Dietary treatments consisted of either 12% alfalfa hay (32% NDF; DM basis) or 4.5% cottonseed hulls (86% NDF; DM basis) as the roughage source, and diets were formulated to provide an equal concentration of NDF from roughage. Geometric mean diameter (dgw) of the roughage treatments was determined by dry sieving, and particles retained on a 1.18-mm screen or greater were considered physically effective. Alfalfa hay was fed either coarsely chopped (AC; dgw = 4.73 mm) by a Rotomix bale processor, or finely ground (AF) through a hammer mill equipped with a 1.3 cm screen (dgw = 1.13 mm). Cottonseed hulls were fed as either unprocessed (CSH; dgw = 4.78 mm) or pelleted (PCSH; dgw = 8.76 mm). The percent of roughage retained in the physically effective fraction was 99.8, 96.0, 77.2 and 34.0% for PCSH, CSH, AC and AF, respectively. Physically effective NDF from roughage was estimated to be 10.9% for AF, 24.6% for AC, 82.6% for CSH and 85.9% for PCSH. Total dietary NDF concentrations were 19.8, 17.2, 18.0 and 19.6% (DM basis) for AC, AF, CSH and PCSH, respectively. No treatment differences were observed for ADG ($P = 0.78$) or DMI ($P = 0.44$). In the initial 28-d period, heifers fed AF had greater ($P < 0.05$) ADG: DMI compared with the other treatments. However no differences were observed for feed efficiency in the subsequent periods and overall efficiency did not differ ($P = 0.84$) among treatments. Additionally no treatment differences ($P > 0.10$) were observed for any carcass characteristics. We conclude that altering roughage source (alfalfa vs CSH) or physical form does not affect performance or carcass characteristics of heifers fed high-grain diets balanced for NDF from roughage.

Growth, Survival, And Recruitment Of Juvenile Striped Bass In Lake Texoma.

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Presentation Subject Area: Biological Sciences**

The self-sustaining population of striped bass in Lake Texoma contributes \$25 million annually to the local economy and continued natural reproduction is essential to maintain the fishery. Recruitment may be determined by factors within the first months of life. For instance, early growth determines the suite of available prey and the dietary shift from zooplankton to fish has been attributed to increased growth in many piscivorous fish. Increased body size has been linked to higher lipid levels and greater over winter survival. The goals of our research are to understand factors that contribute to first year recruitment in Lake Texoma. Specifically, we will determine if winter mortality is size selective and relate winter mortality to diet shifts, growth, and energy allocation.

Effect Of Copper Level, Zinc Level And Source On Finishing Cattle Performance And Carcass Traits

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One hundred sixty heifers (BW = 317 ± 22 kg; Trial 1) and steers (BW = 341 ± 18 kg; Trial 2) were fed for an average of 140 d. Treatments were: 1) 80 ppm Zn SO₄, 12 ppm amino acid complexed (AA) Cu; 2) 80 ppm ZnSO₄, 12 ppm AA Cu, and 12 ppm CuSO₄; 3) 40 ppm ZnSO₄, 40 ppm AA Zn, and 12 ppm AA Cu; 4) 40 ppm ZnSO₄, 40 ppm AA Zn, 12 ppm AA Cu and 12 ppm CuSO₄; 5) 320 ppm ZnSO₄ and 12 ppm AA Cu; 6) 320 ppm ZnSO₄, 12 ppm AA Cu, and 12 ppm CuSO₄; 7) 160 ppm ZnSO₄, 160 ppm AA Zn, and 12 ppm AA Cu; 8) 160 ppm ZnSO₄, 160 ppm AA Zn, 12 ppm AA Cu and 12 ppm CuSO₄. Both heifers and steers were blocked by weight and assigned to 32 pens (5 head/pen; 16 pens/block). Data were analyzed using PROC MIXED of SAS with treatment, pen and block as class variables and 28 d periods as repeated measures. The model included Cu level, Zn level, Zn source and subsequent interactions. In Trial 1, no significant differences ($P > 0.10$) were observed for overall gain, DMI, or feed efficiency. From d 0 to 27, DMI tended to be ($P=0.11$) greater for heifers that consumed 320 ppm Zn vs 80 ppm Zn. No differences ($P>0.01$) were observed for hot carcass weight, ribeye area, kidney, pelvic and heart fat, marbling, quality grade, or yield grade. Twelfth-rib fat depth tended ($P<0.10$) to be greater for heifers fed 24 vs 12 ppm Cu and 320 vs 80 ppm Zn. In trial 2, no significant differences ($P<0.10$) were observed for overall gain, DMI, or feed efficiency. At 12 ppm Cu, daily gain was significantly greater ($P<0.01$) for steers consuming AA Zn vs ZnSO₄ from d 0 to 27. Dressing percent tended ($P=0.09$) to be greater for cattle fed 320 ppm Zn vs. 80 ppm Zn and was significantly greater ($P>0.05$) for steers consuming 12 ppm Cu versus 24 ppm Cu. Twelfth-rib fat depth tended ($P=0.09$) to be greater at 320 ppm Zn versus 80 ppm Zn, and was significantly greater ($P<0.05$) for steers consuming AA Zn at 320 ppm Zn versus those consuming AA Zn at 80 ppm Zn. In our experiments, there appeared to be no advantage to feeding 24 vs. 12 ppm Cu and inconsistent with other research, source of Zn had little influence on animal performance or carcass merit.

Health Benefits Of Expressive Writing And Talking

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Presentation Subject Area: Social Sciences

Several studies have demonstrated a range of psychological and health benefits associated with expressive writing. This study investigated whether benefits associated with expressive *writing* in a “best possible self” (BPS) condition can also be obtained in an expressive *talking* BPS condition. We assigned participants to one of two “best possible self” (BPS) conditions in which they either talked or wrote about their life goals. Control groups for each of the conditions allowed us to make comparisons between the benefits of both talking and writing about life goals and also talking and writing about a neutral topic.

To assess health benefits, we measured illness-related health center visits. An ANCOVA was conducted assessing group differences and interaction effects. Results showed that participants in the BPS condition had fewer health center visits than control participants. Physical illness did not differ as a function of condition (*Talk* vs. *Write*), and the interaction between content and condition was not significant.

We also explored gender differences in the experimental conditions and found that males in the BPS talking condition rated their mood after the intervention as significantly more positive than did males and females in the writing condition. Also, male controls had more post-test clinic visits than BPS males, and BPS males had fewer post-test health clinic visits than females in either condition. These findings suggest that males may have a tendency to benefit more from expressive writing than females, and they may also benefit from, or enjoy, expressive talking more than females.

We also tested the hypothesis that optimism would be a moderating variable affecting psychological and physical health outcomes associated with expressive writing and talking. We found that higher levels of pre-intervention optimism predicted a significant reduction in illness-related health center visits in BPS conditions compared to control conditions. Participant ratings in the BPS talking and writing conditions indicated a significant increase in positive mood after the intervention and positive mood ratings made by participants in the experimental groups were significantly higher than those of participants in the control conditions after each of the four sessions.

The fact that outcomes on the physical illness measure did not differ as a function of condition (*Talk vs. Write*) indicates that the physical and psychological benefits of emotional expression may extend to oral expression. A follow-up survey in our study suggested that participants perceived the experience of discussing life goals as more important and more difficult than discussing an emotionally neutral topic, regardless of whether they were in a writing or talking condition. Participants in the talking condition rated their task as more difficult than did those in the writing condition.

The present findings relative to psychological and health benefits associated with talking about life goals is important because the oral condition is more analogous to real-world experiences where people talk with personal contacts about their plans and life goals.

A Proposed Study - Conservation Ecology Of The Texas Horned Lizard: Comparative Effects Of Summer And Winter Burning

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Surveys indicate the Texas horned lizard (*Phrynosoma cornutum*) has experienced apparent declines throughout its range, particularly in Texas. The proposed work has direct conservation significance to the Texas horned lizard and perhaps other herpetofauna in the South Texas Plains. Burning is an increasingly popular land-use practice in the range of the Texas horned lizard, and this work will shed light on how summer and winter prescribed burns affect lizard ecology and population status. The objectives of this study are to compare the ecological effects of summer and winter burning on the Texas horned lizard and to evaluate habitat use at the motte level. The study will be conducted on the 6,150-ha Chaparral Wildlife Management Area (CWMA) in south Texas. The six study areas will comprise various combinations of burning (winter burned, summer burned, unburned) and grazing (ungrazed and moderately grazed [ca. 10 AUD/ac]). Selected adult horned lizards will be fitted with ≤ 3 -g radiotransmitter backpacks and relocated daily. The effects of summer and winter burning will be studied by measuring lizard survival rates, prey abundance, range size, and habitat selection. Survival rates will be estimated using the staggered entry design of the Kaplan-Meier Limit Estimator. Prey (e.g. harvester ant, *Pogonomyrmex* spp.) abundance will be determined by transects of seed bait stations. Home range size will be calculated using the Animal Movement Analysis extension for ArcView. Habitat selection will be evaluated at the microhabitat and motte level. X-Y coordinates and microhabitat characteristics for each location will be determined. Shrub cover in one study site will be mapped using a hand-held GPS unit. Habitat use will be studied by comparing

the open area to shrub clump composition of the lizards' home ranges using Patch Analyst. The results of this study will aid in the conservation of this species.

Molecular Beacon -Based Homogeneous Fluorescence Assay For The Detection Of Escherichia Coli O157

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Molecular Beacon -Based Homogeneous Fluorescence Assay for the Detection of Escherichia coli O157. The need for rapid, sensitive, and specific microbial detection of E. coli O157:H7 is supported by potential use of this agent as a bioterrorism weapon. Enterohaemorrhagic E. coli (EHEC) O157:H7 isolates harbour a 93 kb virulence plasmid designated pO157. To identify target sequences unique to the pO157 plasmid, a bioinformatics approach was used. Short 20 bp regions with base overlaps representing the entire plasmid were selected to be a query for BLAST (blastn) searches. To identify possible homologues for the query sequence, each region was compared against a nucleotide sequence database. Eleven of the query sequences showed no homology to database sequences. Several of these unique sequences were thymidine rich, and one was guanosine rich. The objectives of our research are to study the hybridization behavior of the molecular beacon (MB) made for these unique sequences to O157, and in particular, the phenomenology and thermodynamics of MB hybridization. A MB with 5'-6 FAM, 3' Black Hole Quencher -1, flanked by two five bp arms was designed using mfold server to perfectly match the guanosine rich target sequence. Melting studies using ABI thermocycler, were conducted using 25 bp synthetic oligonucleotides containing a complementary molecular beacon for determining the stability of the molecular beacon and its interaction with the target. The loop melting temperature (T_m) was found to be 60 Co, at which point the stem became open. The degree of hybridization was assessed by monitoring fluorescent emission. The signals were measured as ratio of probe-target with an internal control. The hybridization of the MB probe to its complementary synthetic target produced the expected results.

Voice Analysis, Work Personality And Interviews As Selection Devices For Employee Performance

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Presentation Subject Area: Social Sciences

Using taped interviews with 160 retail sales associates from department stores in the southwestern states, the author found that a composite of vocal interview cues in a voice index (pitch, pitch variability, speech rate, pauses and amplitude variability) correlated with supervisory ratings of total job performance ($r = .198$, $p < .01$) and that the same composite of vocal cues when combined with total interview scores correlated with total job performance ($r = .337$, $p < .001$) with an adjusted R square explaining 10.2% of the variance in total job performance. Another model was developed using only work extraversion, work agreement and vocal cues as content and process personality traits that are part of instrumental style which explained 10.1% of

the variance ($r=.344$, $p<.001$) with a Durbin-Watson value of 1.985. While these results deserve attention for their impact on performance, there are many cautions before they can be used as a selection device. Whether inadvertently or intentionally used as a selection device, it is important to discover the underlying mechanism through which vocal interview cues and personality characteristics of work extraversion and work agreement influence performance. It is important to realize that this effect is likely to be maintained inadvertently and it may be simply based on supervisors giving higher performance ratings to employees with a similar instrumental style.

The Impact Of Culture On The Spread Of Hiv/Aids In Swaziland: Its Effects On Women And Girls.

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Through interviews, focus group discussions, and document analysis, I plan to seek understanding of how women and girls understand their position in society and as key players in the spread or combating of HIV/AIDS in Swaziland. The research question(s): (1) How do women and girls understand their position in society as key players in the spread or combating of HIV/AIDS in Swaziland? (2) What are the cultural practices that promote the spread of HIV/AIDS? (3) How do these cultural practices contribute to the spread of HIV/AIDS? (4) How are women and girls positioned in the HIV/AIDS debate in Swaziland and how is this influenced by cultural practices? (5) What are the current educational programs put in place to address the HIV/AIDS issue? (6) What specific strategies and curriculum may be utilized in educational settings to protect the women and girls of Swaziland?

Anaerobic Treatment Of Livestock Wastes: Matching Environmental And Economical Aspects To Overcome Existing Barriers

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Presentation Subject Area: Environmental Sciences

Bioconversion processes are subjected to numerous internal and external factors, which may greatly impact decisions about adoption of a particular technology. Economic and social issues are the primary concerns in each situation, although they are closely associated with relevant technical characteristics. The latter is often crucial, as provides a basis for the very preliminary technology assessment thereby, may affect the choice of techniques to be used or innovation implementation.

This study examines environmental aspects of anaerobic treatment of livestock wastes within temperate climates, contrasts anaerobic digestion with other treatment options, and points out potential benefits from its applications. Practical use of these technologies is viewed based on current economic incentives, existing market barriers and benefits that may be important for producers.

Characterization Of The Function Of Septin Nucleotide Binding

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Presentation Subject Area: Biological Sciences

Septins are filament-forming proteins present in nearly all eukaryotes. *S. cerevisiae* encodes five vegetatively expressed septins (Cdc3p, Cdc10p, Cdc11p, Cdc12p, and Sep7p/Shs1p) and two sporulation-specific septins (Spr3p and Spr28p). Mutations in CDC3, CDC10, CDC11, or CDC12 result in defects in cytokinesis, cell-cycle progression, chitin deposition, and other processes. Septins may function, at least in large part, by localizing to the mother-bud neck and acting as a scaffold to direct the localization of other proteins involved in septin-dependent processes. It is probable that septin nucleotide binding and/or hydrolysis regulates septin-septin interactions or the interaction of septins with septin-associated proteins. We are addressing the role of nucleotide-binding in yeast septin function. We find that yeast septins, like septins from higher eukaryotes, bind GTP. We have made single and multiple mutations in the septin P-loop domains, which are predicted to inhibit GTP binding. Surprisingly, at 23°C all of these mutant septins localize to the neck and retain significant function. At elevated temperatures, however, most of these mutations result in defects in septin localization with corresponding defects in viability, cytokinesis, and cell-cycle progression. These data are most consistent with a role of nucleotide binding in regulating septin-septin interactions. Further biochemical and genetic characterization of these mutants will be presented.

Effects Of Exogenous Phytase Derived From Aspergillus Niger By Solid-State Fermentation On Bioavailability Of Phosphorus In Corn-Soybean Meal Diets For Growing Pigs-(Whiteman Award Presentation)

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Forty-two barrows (avg BW = 19.9 kg) were used in a 33-d study to determine the effects of the addition of a solid-state fermented phytase complex (Allzyme SSF; Alltech, Inc) to low P, corn-soybean meal diets on growth performance, P excretion, bone traits, and tissue accretion rates. Pigs were blocked by weight and ancestry, and randomly allotted to one of seven dietary treatments (6 pigs/trt). A basal diet consisted of corn and soybean meal and was adequate in all nutrients, except Ca and P. This diet contained 0.34% total P (0.07% available P), all of which was provided by corn and soybean. Treatments were the basal, the basal plus monosodium phosphate (MSP) to provide 0.05, 0.10, and 0.15% added available P, and the basal plus enzyme to provide 250, 500, and 1,000 PU/kg. All diets were formulated to 0.95% total lysine and a Ca:total P ratio of 1.2:1. Pigs were housed individually in metabolic chambers with ad libitum access to feed and water. There were two 5-d total collection periods (d 10-15 and d 25-30) during the 33-d study. At the end of the 33-d study, all pigs were killed and the femurs and 3rd/4th metacarpals and metatarsals (MM) were extracted. The remainder of the carcass was ground for ash and P analysis. Average daily gain and G:F increased (linear, $P < 0.03$) with addition of MSP or SSF. However, ADFI was not affected by either addition of MSP or SSF. The addition of 500 or 1,000 PU/kg to the low P, corn-soybean meal diet increased ADG and G:F similar to that for the highest level of MSP. Dry matter, N, and energy digestibility were not different ($P > 0.10$) among treatments, but digestibility of P increased (linear, $P < 0.01$) with addition of MSP or SSF. Compared to the basal diet, additions of SSF decreased P excretion (3.06 vs 2.47, 2.35, 1.67 g/d) by 19.3, 23.3, and 45.4%, respectively. Bone breaking strength (BS) of MM and femurs and metacarpal ash (%) increased (linear, $P < 0.01$) with increasing MSP or SSF. Based on average BS and ash, addition of

250, 500, or 1,000 PU/kg was equivalent to 0.066, 0.120, and 0.140% available P, respectively. For the carcass, the contents (%) and accretion rates of water, protein, and fat were not affected ($P > 0.10$) by either MSP or SSF. The content (%) and accretion of P and ash increased (linear, $P < 0.01$) with addition of MSP and SSF. The increase in bone strength and carcass P associated with increasing SSF was similar to that for MSP addition. These data indicate that the addition of a solid-state fermented phytase improves growth performance and P utilization, and markedly reduces P excretion of pigs fed low P, corn-soybean meal diets.

Effect Of Energy Level And A Fibrolytic Enzyme On Performance And Health Of Newly Received Shipping Stressed Calves

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Maintaining health of newly received shipping stressed calves in the feedlot continues to be problematic for feedlot managers. Diets and (or) feed additives that can improve digestibility and (or) boost the immune system might be important for the overall health and performance of newly received shipping stressed calves. The objective of this experiment was to determine the effect of increasing dietary energy with or without a fibrolytic enzyme on health and performance of sale-barn origin calves during a 56-d receiving study. Four truckloads (approximately 100 calves/load) of calves (avg initial BW = 213 ± 16 kg) were received at the Willard Sparks Beef Research Center during the months of January, February, and March 2002. Calves were blocked by weight and randomly assigned to pens with each pen having a randomly assigned dietary treatment. Dietary treatments were arranged in a 2 x 2 factorial: 1) low energy; 2) low energy + enzyme (215 mg/kg of DM); 3) high energy; and 4) high energy + enzyme (215 mg/kg of DM). The low-energy diet consisted of 60% alfalfa hay, 10% cottonseed hulls (CSH), 24% dry rolled corn (DRC), 5% molasses and 1% supplement (NEm = 1.49 Mcal/kg; NEg = 0.85 Mcal/kg). The high-energy diet consisted of 25% alfalfa hay, 10% CSH, 50% DRC, 5% molasses and 10% supplement (NEm = 1.81 Mcal/kg; NEg = 1.10 Mcal/kg). Low and high-energy diets were formulated for 180 kg medium-framed calves to gain 0.82 and 1.27 kg/d, respectively. Data were analyzed using the MIXED procedure of SAS. Feeding enzyme did not affect ($P > 0.20$) overall ADG, DMI or ADG:DMI; however ADG tended ($P = 0.06$) to be greater from d 15 through 28 for calves consuming the high-energy diets. In addition, ADG:DMI tended ($P = 0.06$) to be greater from d 15 through 28 and d 0 through 56 for calves consuming the high-energy diets. Morbidity was not influenced ($P > 0.10$) by energy level or by the addition of a fibrolytic enzyme. In our experiment, health and performance of newly received shipping stressed calves was not affected by the addition of a fibrolytic enzyme. However, increasing dietary energy improved feed efficiency by 14.6%. Because increasing energy did not negatively affect the health of calves in this experiment, we conclude that economics should dictate the receiving strategy.

Using Resistance-Gene-Pyramided Cotton Lines To Identify Genes Induced During The Hypersensitive Response

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Presentation Subject Area: Biological Sciences

Defenses against microbial pathogens in plants range from pre-existing defenses such as structural barriers to inducible defenses like hypersensitive resistance and accumulation of anti-microbial secondary metabolites. Inducible, localized responses are the most economical defenses against plant disease and require no application of agrichemicals. In cotton (*Gossypium* spp.) the only major bacterial disease is bacterial blight, a leaf spot disease that is incited by *Xanthomonas campestris* pv. *malvacearum* (*Xcm*). To identify genes whose induction is necessary for an effective hypersensitive disease resistance response, three suppression subtractive hybridization (SSH) cDNA libraries, representing early, middle, and late defense programs, were generated from resistance-gene-pyramided, near-isogenic cotton lines challenged with *Xcm*. Before sequencing, all libraries were pre-screened for highly redundant clones using macroarray technology. Plasmids were stamped in a 96-well format, in triplicate on nylon membrane and hybridized with a non-radioactive chemiluminescent probe derived from the redundant cDNA. After redundant clones were eliminated, 3011 total clones were sequenced. Of those, sequence analysis revealed approximately 700 unique genes. Using microarrays, RNA-derived cDNA from control and inoculated resistance-gene-pyramided, near-isogenic cotton lines will be used to show which genes in these libraries are truly induced during the hypersensitive response. In addition, microarrays will be used to test if the quickness of gene induction correlates with level of resistance in near-isogenic cotton lines with 0, 1, 2, or 3 race-specific bacterial blight genes.

A National Study Of Tenure-Track Business Faculty: Job Satisfaction, Continuance Commitment, And Intent To Stay

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Presentation Subject Area: Education

This study focused on retention of tenure-track business faculty in public higher education institutions. As human resources are generally accepted as the most valuable resource in an organization, examining faculty intentions to stay employed with their present institution offer both theoretical and practical implications. Presently, forces affecting the administration of higher education and the faculty work environment are shrinking financial support, and increasing interest in faculty accountability. Compounding these issues is an anticipated increase in demand for higher education, specifically for business a shortage of faculty, and a 50% decline in faculty reported levels of job satisfaction between the years 1988 - 1999. The data source was the 1999 National Study of Postsecondary Faculty. This survey was conducted by the National Center for Educational Statistics. The primary research question inquired about the predictive ability of job satisfaction and family financial responsibility on the criterion intent to stay. The result of the multiple regression analysis suggests that both predictors explain approximately 10.4% of the shared variability in intent to stay, a statistically significant amount ($F = 5.198, p < .007$). The foremost result of this study supports previous findings linking job satisfaction and intent to stay. Two implications are confirmation of the job satisfaction - intent to stay relationship for tenure-track business faculty, and information for higher education administration that underscores the importance of faculty job satisfaction as it relates to the retention of valuable human resources.

Propaganda In Primetime

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Presentation Subject Area: Social Sciences

Can all seven propaganda techniques be found in the commercials of one evening of primetime television? A brief introduction to propaganda is given and the seven techniques bandwagon, plain folks, testimonial, glittering generalities, name calling, transfer, and card stacking are outlined. The hypothesis was supported. Of the 83 commercials included in the final results, plain folks appeared 27 times, glittering generalities 18, transfer 11, card stacking 10, bandwagon, six, and name calling three. Weaknesses of the experiment are addressed in the discussion/conclusion and additional research questions are proposed.

American Violence

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Presentation Subject Area: Social Sciences

The purpose of this paper is to determine the validity of a question about violence in the workplace. I would argue that while many factors are reviewed in post violence in the workplace investigations little attention is given to gender, ethnicity and the economic effect to a community or business. Researching violence in the workplace can lead into many facets of violent behavior, as I was researching the Edmond, OK Post Office (Occurred August 20, 1986) shooting focusing on a single event of violence in the workplace may limit the scope of the impact of such an event. These limitations may occur in a lack of information into the issues of people's perception of crime, crime rates, gender, ethnicity and economic loss to businesses and communities. These factors need to be included in an investigation of this type to not only understand workplace violence but violence in general. Having completed the previous eleven projects it would be of great value to look at violence from the perspective of those who may have a role in an event, the perceptions of individuals about crime and me, participating in a public event that would generate an open socially accepted form of hostility. Results of this research found that the direction of the crime rate is down for the past ten years, however in the United States there has been a slight upswing for the most recent two year period, what people's perception of current crime activity are, what personal safety awareness issues are and beliefs about the causes of criminal behavior. The methods and sampling techniques used were a combination of interviews, sentence completion devices and participant observation in development of this paper.

The Sexual Victimization Of College Women

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Presentation Subject Area: Social Sciences

In the past, the problem of sexual victimization was overlooked. But in recent years, sexual victimization has been acknowledged as a significant problem on college campuses. The purpose of this study is to determine

the rates of reported sexual victimization and predation amongst male and female students at a mid-western junior college and university. Fifty-four participants were surveyed using the NCWSV questionnaire to evaluate the risk factors, prevalence, and rates of reported sexual victimization and predation. Using the Adversarial Heterosexual Beliefs scale, the researcher also determined how males and females at the junior college and university viewed relationships. The Hostility Toward Women scale was used to determine participants' attitudes toward women. The Rape Myth scale allowed the researcher to determine the strength of beliefs in rape myths of the participants. At both the junior college and university, there was a prevalence of victimization amongst women. Additionally, the results indicated that many of the participants had strong beliefs in rape myths. These findings are significant because they reveal the prevalence of sexual victimization and the acceptance of rape myths on these two college campuses.

Characterization Of The Interleukin-1B System During Porcine Trophoblastic Elongation And Early Placental Attachment

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Presentation Subject Area: Whiteman Award Presentation

The establishment and maintenance of pregnancy in the pig involves intricate communication between the developing conceptuses and maternal endometrium. Conceptus-uterine communication is generally established during trophoblastic elongation when the conceptus synthesizes and releases estrogen, the maternal recognition signal in the pig. We recently identified IL-1b as a gene that is differentially expressed during rapid trophoblastic elongation in the pig. The objective of the current investigation was to determine conceptus and endometrial changes in gene and ligand expression of IL-1b and other genes regulating the IL-1b system during peri-implantation development. Using quantitative real time RT-PCR, gene expression of IL-1b, IL-1 receptor antagonist (IL-1Rant), IL-1 receptor type 1 (IL-1RT1) and IL-1 receptor accessory protein (IL-1RAP) was analyzed in developing peri- and post-implantation conceptuses, as well as uterine endometrium collected from cyclic and pregnant gilts. Conceptus IL-1b gene expression was significantly greater during the period of rapid trophoblastic elongation compared to earlier spherical conceptuses followed by a dramatic decrease in post-elongated day 15 conceptuses. IL-1RT1 and IL-1RAP gene expression in conceptuses was greater in filamentous day 12 and 15 conceptuses compared to earlier morphologies while IL-1Rant gene expression was unchanged by conceptus development. The uterine luminal content of IL-1b increased during the process of trophoblastic elongation on day 12. Uterine IL-1b content declined on day 15, reaching a nadir by day 18 of pregnancy. IL-1b gene expression in porcine conceptuses was temporally associated with an increase in endometrial IL-1RT1 and IL-1RAP gene expression in pregnant gilts. Endometrial IL-1b and IL-1Rant gene expression were lowest during days 10 to 15 of the estrous cycle and pregnancy. The temporal expression of IL-1b during conceptus development and the initiation of conceptus-uterine communication suggest that conceptus IL-1b synthesis plays an important role in porcine conceptus trophoblastic elongation and the establishment of pregnancy in the pig.

Population Dynamics Of Echinacea Pallida At The Tall Grass Prairie, Oklahoma

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Presentation Subject Area: Biological Sciences
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Echinacea pallida, the pale purple coneflower, is a perennial herb native to the Great Plains. Although its relatives in the genus have been studied extensively because of the putative medicinal properties of some species and rarity of others, little is known about its biology. In a study of the population dynamics of the species, data were collected over a 4-year period from a site at the Tall Grass Prairie Preserve in northern Oklahoma. An exploratory investigation using logistic regression was conducted to explain causes of survivorship and recruitment within the population; 3651 individual plants were included in the analyses. Individuals were classified as "reproductive" (producing heads) and "vegetative" (basal rosettes only). Measured variables used in the analyses included sum of leaf lengths, maximum leaf lengths, number of leaves, and the squared values of these variables, which allowed for nonlinearity. Results of analyses confirm patterns in the data set. Recruitment from "vegetative" in one year to "reproductive" the following year was best explained by maximum leaf lengths, maximum leaf lengths squared, and number of leaves. Changes in state from "reproductive" to "vegetative" the following year were best explained by maximum leaf lengths and max leaf lengths squared. Survivorship of "vegetative" plants was best explained by maximum leaf lengths and max leaf lengths squared. Maximum leaf lengths best explained survivorship of "reproductive" plants.

Women Airforce Service Pilots Of World War II

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Presentation Subject Area: Social Sciences

This paper is about the Women's Airforce Service Pilots of World War II. The WASPs, as the organization was called, ferried warplanes throughout the U.S., as well as instructed pilots how to fly and how to combat air-to-ground and ground-to-air. Although these women were praised for their piloting abilities and risked their lives to free up men to fight overseas, they were not formally admitted to the Airforce until 1978.

Differential Gene Expression In Wheat Roots In Response To Infection By The 'Take-All' Fungus Gaeumannomyces Graminis Var. Tritici.

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Presentation Subject Area: Biological Sciences

Take-all [*Gaeumannomyces graminis* var. *tritici* (Ggt)], which is regarded as the most damaging root disease affecting wheat worldwide, was documented in Oklahoma in 1928-1939 in wheat, barley and rye. Control of take-all has been suggested to increase yield from 10% to 50%. This study was conducted to develop and implement procedures for examining the infection process under controlled conditions. A procedure for

surface sterilization of seeds, growth conditions, and infection time course was developed. Seeds were sterilized by sonication in 1% AgNO₃ with Tween 20 (30s), rinsed with sterile-deionized water, and placed on sterile filter paper in a cold room (4.5°C) without light for 48 hours. Imbibed seeds were then aseptically transferred to 1/5X Potato Dextrose Agar (PDA) at 25°C without light for 48 hours. Seedlings with roots approximately 2.0 to 3.0 cm long were transferred to 1/5X PDA without Ggt (control), or with Ggt lawn and placed into a 25°C incubator without light for 12, 24, and 48 hours. A time course for infection was determined with light microscopy. Analysis of root length increase indicated that there was a 40.9%, 32.2%, and 61.5% decrease in growth with Ggt at 12, 24, 48 hours, respectively, as compared to the controls. Results indicated that at 12 hours Ggt had colonized the root surface, at 24 hours root hairs were penetrated, and at 48 hours root hairs collapsed and the fungus penetrated the epidermis and cortex. At each time period, root tissue was sampled for forward and reverse normalized suppression-subtraction cDNA libraries [suppression-subtraction hybridization (SSH)] between infected and non-infected root tissues was constructed. The forward libraries use non-infected root tissue as the 'driver' and the infected root tissue as the 'tester'. The results obtained from these libraries will determine up-regulated (induced) genes (genes that are turned on upon infection). The reverse libraries use the non-infected root tissue as the 'tester' and the infected root tissue as the 'driver'. The results of these libraries will determine down-regulated (suppressed) genes (gene that are turned off upon infection). A total of 802 colonies were picked at the 12 hour time period (402 forward and 402 reverse), 750 colonies were picked at 24 hours (356 forward and 394 reverse), and 950 colonies were picked at 48 hours (475 forward and 475 reverse). These libraries were constructed to identify unique and common defense response genes in wheat roots infected with the Take-all fungus. Gene expression profiles obtained from this research will provide insight into pathogen-host interaction with the hopes of eventually developing resistance and/or tolerance to this pathogen.

Larval Striped Bass Distribution And Abundance In The Red And Washita River Arms Of Lake Texoma.

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Presentation Subject Area: Biological Sciences

Striped bass *Morone saxatilis* were initially introduced into Lake Texoma in 1965 and stockings continued annually through 1973 creating one of about ten self-sustaining reservoir populations of striped bass in the U.S. The striped bass fishery on Lake Texoma has become the most valuable recreational fishery in Oklahoma. Striped bass anglers contribute about \$25 million annually to the local economy, with 77% of these anglers coming from outside of the local region. Despite the huge economic impact and relative uniqueness of a self-sustaining reservoir population, little information is available relating environmental conditions to striped bass spawning success or egg and larval survival in the reservoir. Our objective was to estimate relative abundance of larval striped bass in the Washita and Red Rivers. We sampled larval striped bass in both arms of Lake Texoma from April 11 to May 3, 2002. Ten minute net sets were conducted on alternating days between the two rivers, using 0.5 m diameter 500 mm mesh plankton nets. Preliminary results indicate that larval production was higher in the Red River.

Diversity Leadership, Balm Or Bomb?

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Presentation Subject Area: Minority Issues

What is Diversity? The not so surprising answer to that question is that we all are diverse and differ from each other. That is why we are recognized as individuals and our uniqueness facilitates and communicates our "specialness." It is when this "specialness" varies too radically and recognizably from what might be construed as environmentally or culturally normal that the head of diversity manifests. As environments change and mutate, so will the perception of uniqueness. In organizational terms, workforce diversity simply means our businesses are perceived to be much more heterogeneous now than in the past. Popularly noted groups variably include; women, African Americans, Hispanic Americans, Asian Americans, the disabled, gays and lesbians, elderly. It is clear that this list is far from inclusive, but does give us a sense of the magnitude of differences and potential diversity. (Robbins, 2001)

In this study, we will venture into the vat of diversity with an eye on its evolutionary nature to lay an appropriate foundation and backdrop for the diversity phenomenon. However, rather than riding the traditional diversity horse, the study will quickly migrate to a less visited focus upon the often forgotten minority leader who suddenly rises from the relative comfort of the established diversity pool into a leadership position to assume management responsibilities for the very pool from which he was born. The challenges of the minority manager now appear to pale in comparison to the mere management of diversity. Although we have done a reasonable job to promote, embrace, and manage diversity, appearances seem to indicate we have failed in educating and preparing the minority manager for the management experience. The study will provide evidence of this lack of preparedness and sensitivity to the need for preparedness and will demonstrate through pre- and post-survey instruments. The value of training is to equip minority managers while providing organizational awareness for the need of specialized and focused training for those of minority groups who are promoted to leadership roles.

A model will be established from which training will be developed to fill at least one of the perceived experiential gaps. Additional research will be required to test the effectiveness of the model since the model contemplates a rather comprehensive educational training imperative agenda that mandates a more longitudinal approach. Management by minorities need not bomb but because of poorly addressed cultural issues and complexities, the desired balm may become very elusive for many budding minority managers. Whether the minority manager bombs or delivers extraordinary leadership balm to the organization will be highly dependent upon the preparation the individual receives to translate the diversity baggage into an asset rather than an anchor.

Assessment Of Ground Water Contamination From A Cafo

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Presentation Subject Area: Environmental Sciences

This study provides an integral aspect of assessment, incorporating the modeling of nitrate leaching into the aquifer; the use of geographic information systems to better illustrate the spatial data and relationship between a CAFO to a nearby public well; and an existing wellhead protection program to better manage land use within a wellhead delineation. Nitrogen flux into the aquifer was modeled using different scenarios incorporating number of effluent applications per year (3 and 4), total nitrogen (TN) in the effluent (600 and

1000 mg/L), and application depth (5, 7.5, 10 and 15 cm). The combination of 4 effluent applications per year, 1000 mg/L TN, and an application depth of 15 cm resulted in the highest concentration of nitrate flux to the aquifer. The lowest nitrate flux resulted from combination of 3 effluent applications per year, 600 mg/L TN, and an application depth of 5 cm. The higher combination produced a maximum nitrate influx concentration of 210 mg/L after 25 years of application, while the lower combination generated a maximum nitrate influx concentration of 60 mg/L within 45 years after land is applied. Other applications ranged between these values. The combination of 4 effluent applications per year, 600 mg/L TN, and application depth of 5 cm resulted in lower nitrate flux to the aquifer when compared to combination of 3 times application per year, 1000 mg/L TN, and application depth of 5 cm. The more frequent, lower concentration of effluent applications generated maximum nitrate flux of 70 mg/L to the aquifer after 40 years. The less frequent, higher concentration of effluent applied produced maximum nitrate flux of 100 mg/L after 42 years. Nitrate flux to ground water could cause the nitrate concentration in the aquifer to reach 10 mg/L, the maximum contaminant level (MCL) determined for the drinking water standard. Considering the background nitrate level in the aquifer of 6 mg/L, under these application practices, MCL could be reached between 13 and 32 years, earliest when land is applied more frequently at higher concentration and application depth.

Aptamer Selection For The O-Polysaccharide Of E. Coli O157

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Presentation Subject Area: Biological Sciences

Background: Critical to public health diagnostics are tools to increase speed of diagnosis while maintaining or enhancing specificity and sensitivity. This project examines the utility of aptamers to identify specific serotypes of *E. coli*. Aptamers are functional oligonucleotides that can be selected to bind a target molecule with high specificity and affinity. Traditionally, oligonucleotides are employed as hybridization probes. Here, the oligonucleotides bind target on a structural basis. The project strategy is to select aptamers that bind the O-polysaccharide of *E. coli* O157 lipopolysaccharide. Oriented at the surface, this structurally unique, linear tetrasaccharide polymer is present in high copy number and confers serogroup specificity. **Methods and Results:** The target was prepared through a lipopolysaccharide extraction technique. Briefly, *E. coli* O157 cells were disrupted through sonication, digested with lysozyme and nucleases, and LPS was extracted using hot phenol: water extraction. Phenol and water phases were dialyzed, the LPS was concentrated with ultracentrifugation, and finally, residual proteins were digested with proteinase K. The LPS purity was assessed with silver-stained and Coomassie blue stained SDS-PAGE as well as protein assays. The target molecule was immobilized for the aptamer selection using streptavidin-coated paramagnetic particles via biotinylated O157 LPS. O157 LPS was biotinylated using hydrazide attachment chemistry; Western transfer and blotting verified the successful attachment. The appropriate load of biotinylated LPS for the streptavidin-coated magnetic beads was determined in an ELISA-like format. Lipopolysaccharide lacking the O-PS was identically prepared using a naturally occurring O157 mutant not expressing the O antigen. Fully substituted LPS expressing the O antigen represents the positive target, and the O157 mutant lacking O antigen represents the negative target. Aptamers specific for the positive target as well as the negative target will be excluded in the final analysis, leaving a subtracted pool specific for the O-PS. Aptamers will be selected from a random aptamer pool using SELEX methodology. SELEX – systemic evolution of ligands by exponential enrichment – is an *in vitro* iterative process that isolates aptamers from the random pool having higher affinity for the target and amplifies each sequence through PCR after each round of isolation. **Status and Plan:** Positive and negative O157 LPS targets have been purified and immobilized on streptavidin-coated magnetic beads. Selection of high-affinity binding aptamers

from the random pool is now possible with the immobilized and purified targets. This process is the next step of the research plan.

Response Of Nongame Birds And Terrestrial Invertebrates To Restoration And Management Of Upland Grasslands In The Rainwater Basin Region, Nebraska

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Presentation Subject Area: Biological Sciences

Grasslands have been intensely altered primarily due to historic agricultural activities and are now among North America's most endangered ecosystems. Due to this decline in habitat, grassland birds have exhibited the greatest decline of any terrestrial bird guild in North America. During the last 10 years Nebraska Game and Parks Commission, U.S. Fish and Wildlife Service and other cooperators have used both high-diversity and low-diversity plantings to restore upland habitats within the Rainwater Basin Region (RWBR) in south-central Nebraska. Although the primary goal of restoring upland habitat adjacent to wetlands is to reduce sedimentation and pollution into the wetlands, these restored uplands also may provide important habitat for breeding grassland birds and terrestrial invertebrates. The objectives of this study are to determine grassland bird habitat-use and nest productivity in restored grasslands in the RWBR, evaluate the response of the grassland bird community and terrestrial invertebrate community to the restoration and management of uplands, and provide management recommendations for grassland bird species that use RWBR uplands. Preliminary results from the first year of this 2-year study showed the total number of species to be 12 for high-diversity uplands with a mean avian species richness of 2.44 species, and 11 species total for the low-diversity sites with a mean avian species richness of 2.61. The 3 most abundant species found in high-diversity sites were grasshopper sparrows (*Ammodramus savannarum*), dickcissels (*Spiza americana*), and western meadowlarks (*Sturnella neglecta*) and in low-diversity sites were dickcissels, grasshopper sparrows, and bobolinks (*Dolichonyx oryzivorus*). For nest productivity, 26% of the nests were successful, 60% failed (due to predation, parasitism, nest abandonment, or unknown causes), and 14% were unknown fate. Further analysis along with a second field season will aid in determining the importance of high- and low-diversity planted uplands to grassland and invertebrate communities.

Effect Of Urea Concentration In Steam-Flaked Corn Diets On Nutrient Digestion And Ruminal Kinetics.

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Presentation Subject Area: Whiteman Award Presentation

Effect of Urea Concentration in Steam-Flaked Corn Diets on Nutrient Digestion and Ruminal Kinetics. S.S. Swanek, C.R. Krehbiel, and D.R. Gill. Increasing urea concentration in isonitrogenous steam-flaked corn diets was investigated. Five ruminally and duodenally cannulated steers (initial BW 375±34 kg; 1.16±0.13 kg ADG) were used in a 5 x 5 Latin square design to determine the effects of urea concentration on intake, nutrient digestion, and ruminal kinetics. Isocaloric (NEm = 2.08 Mcal/kg; NEg = 1.31 Mcal/kg) and isonitrogenous (2.24% N) steam-flaked corn diets with urea concentrations of 0, 0.8, 1.2, 1.6, or 2.0% (DM

basis) were offered ad libitum to steers. Following nine days of diet adaptation total urine and feces were collected for four days. On day 14, ruminal fluid was collected at 0, 3, 6, 9, 12, 15, 18, 21, and 24 h after pulse dosing with Co-EDTA. Dietary urea concentration did not affect DM intake. Steers consuming diets containing 1.6% urea diets had the lowest ($P<0.05$) ADF intake, while steers consuming 0.8 and 2.0% urea diets had the greatest ($P<0.05$) ADF intake. Steers consuming diets containing 0% urea had lower ($P<0.05$) starch intake than steers consuming 2.0% urea diets, and tended ($P=0.06$) to have lower starch consumptions than steers containing 0.8% urea diets. Urea concentration had no effect on fecal output of DM, OM, and starch, or DM, OM, N, and starch digestibility. Steers consuming diets containing 1.6% urea had lower ($P<0.05$) ADF digestibility than steers consuming 0 and 0.8% urea diets. Urea concentration did not influence fecal N output, total N balance, or N balance as a percent of N intake. Similarly, liquid dilution rate and pH were not affected ($P>0.05$) by urea concentration. Our data suggests that high urea concentrations can be utilized in steam-flaked corn finishing diets without altering intake, nutrient digestion, or ruminal kinetics.

Biorefinery Feedstock Harvest Cost

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Presentation Subject Area: Social Sciences

Gasification-bioconversion technology would permit the use of a variety of lignocellulosic biomass (LCB) feedstocks to be converted into liquid fuels, chemicals, and other products. The objective of this research is to determine the harvest costs of lignocellulosic biomass, such as crop residue and perennial grasses, for use as biorefinery feedstock, and to determine the potential economies of size that might result from a coordinated structure. AGMACH\$ software was used to determine which specific type of mower, rake and baler would result in the lowest costs at intensive levels of use. MACHSEL was used to select a coordinated set of machines. Much like custom crop harvesting, the feedstock harvesters could begin early in the season with one variety of LCB and move throughout the region as other varieties mature. It was determined that potential economies of size do exist, and harvest costs are estimated as low as \$3.54 per ton. This is substantially lower than previous estimates.

Effects Of Metal Contamination On Developing Red-Eared Slider Turtles (Trachemys Scripta) And Their Implications For The Species As A Biomonitor

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Presentation Subject Area: Biological Sciences

Red-eared slider turtles (*Trachemys scripta*) lay their eggs in terrestrial substrate. When that substrate is contaminated, there is potential for eggs and developing embryos to take up those contaminants. To determine if uptake occurs, *T. scripta* eggs were incubated in metal (lead, zinc, and cadmium) contaminated substrate or exposed to metals via direct application of metal solutions to the eggshells. Total and bioavailable metal contents of substrates were determined, as were the total metal contents of eggshells, turtle shells, and turtle tissues minus the shell upon hatching. Metabolic rates of embryos within the eggs were measured weekly to determine if metal exposure altered the energetics during development. *T. scripta*

eggs accumulated zinc and cadmium from incubation substrates and from exposure to metal solutions. Uptake of zinc and cadmium was dose dependent and differential among tissues depending on exposure route. However, no differences in mass specific metabolic rates of embryos were observed. Results indicate that *T. scripta* eggs may be good biomonitors of metal contamination in terrestrial substrates.

Coverage Before Terror

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Presentation Subject Area: Social Sciences

The gatekeeping theory argues information travels through channels, and information encounters forces that determine its flow. These forces are gatekeepers. Since the media is one conduit for information, their gatekeepers determine the flow of news. Examining literature on international news coverage and its shrinking newshole in American media allows a clear picture as to how the gatekeeper theory operates in keeping news from the printed page and the consequences in keeping it from the page.

Flight Anxiety As A Function Of Demographics And Settings

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Presentation Subject Area: Social Sciences

Since the terrorist attack of September the eleventh 2001, the use of air transportation has declined. The objective of this study is to uncover the variables and demographics correlated to flight anxiety. Three levels of flight anxiety (i.e. on the plane, before boarding the plane, and general situation relating to flying), gender, race, age, number of times flown, college grade classification, and seating status (i.e. first class, second class) were all measured by questionnaire. Subjects were either Cameron University students or people in DFW airport. We hypothesize that flight anxiety will be related to some demographic variables and that anxiety levels will be higher for those people in the airport. Some significant relationship and differences were found. The Social Definition Of Debt And Loans Among College Students In Oklahoma

The Social Definition Of Debt And Loans Among College Students In Oklahoma

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Presentation Subject Area: Social Sciences

As economic conditions change, and the culture of America continues to encourage a society based on instant gratification, it becomes important to examine the attitudes associated with a credit-driven culture. The following research examines the attitudes of colleges students concerning different types of financial credit, specifically, government funded student loans, and credit cards. This research draws heavily from

semi-structured interviews of students from two college campuses in Oklahoma. All the students in this study rely at least somewhat on credit cards as a means to finance their college education. The findings of this research indicate that the social definition of what constitutes a "loan" is of paramount importance when deciding how to pay for college costs. This study interprets these results through the perspective of classical and contemporary sociological theory.

The Effect Of A Secondary Methods Class And Student Teaching On Preservice Secondary Teacher Efficacy

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Presentation Subject Area: Education

The purpose of this study was to investigate the effect of a secondary methods class and student teaching in science, social studies, English and math, on teacher efficacy. The specific areas of teacher efficacy that were looked at were 1) efficacy in student engagement, 2) efficacy in instructional strategies 3) efficacy in classroom management and 4) overall efficacy. Participants in the study consisted of 59 preservice secondary education students who were enrolled in a) a secondary methods course during the Fall semester of 2001 and b) student teaching during the spring semester of 2002 at the study university. Each participant completed the Ohio State Teacher Efficacy Scale at the beginning of the methods class, after the methods class and after student teaching. ANOVA's and confidence intervals were used to analyze the Likert-scale responses for twelve hypotheses. Findings and Conclusions: No significant change was detected in overall teacher efficacy from the beginning of the secondary methods course until the end of student teaching. It should be note that overall efficacy did increase significantly after the secondary methods course but by the end of student teaching had returned to its original pre-secondary methods class level. Classroom management efficacy over all three test times was unchanged. Instructional strategies efficacy was shown to be statistically significant and positively affected by the secondary methods class but no significant change in instructional strategies efficacy was detected after student teaching. No significant change in student engagement efficacy was found during the methods course but student engagement efficacy significantly decreased after student teaching.

Conducting Team Research On High Skill Work Force Development In Tulsa

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Presentation Subject Area: Education

Collaboration and partnerships are increasingly emphasized in higher education. Collaborative efforts are necessary as projects increase in complexity and cross the traditional academic boundaries. This report focuses on the collaborative team process used in conducting a research study of a high-skill work force development process. The team examined the business-higher education partnerships that created an infrastructure to develop an information technology (IT) workforce in Tulsa, Oklahoma. This project was completed in a graduate course where students first learned about conducting research and then practiced their learning by conducting the actual study. The team was comprised of graduate students from several

disciplines and led by a professor in the College of Education. The research questions for the graduate research project were 1) How did the high-tech workforce in Tulsa develop? 2) What characteristics did the leaders have? and 3) How did the individuals interact during the workforce-development process? This presentation describes the team research process. Specifically, the presentation describes the team's action science approach and collaborations that were important in implementing the study (i.e., between faculty and students, among students, and among business and educational institutions). The multiple payoffs for the team were that the members (1) gained appreciation of the research process, (2) learned the skills needed to work with a team of researchers on a complex project, (3) developed a support network, (4) learned the answers to the research questions, (5) experienced the rigor and rewards of scholarly writing and presentations.

Water Quality Impacts On Invertebrate Development In Ephemeral Ponds

Sara Watt and Joseph R. Bidwell
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Presentation Subject Area: Environmental Sciences

Water Quality Impacts on Invertebrate Development in Ephemeral Ponds Sara E. Watt and Joseph R. Bidwell Department of Zoology Oklahoma State University The hot arid and semi-arid zones of Oklahoma are characterized by an abundance of ephemeral ponds. These habitats exhibit significant fluctuations in their hydrological regime that directly affects the physical and chemical conditions of the aquatic system. The fauna present in these shallow bodies of water are uniquely adapted to survive the fluctuating and often extreme temperatures, pH, dissolved oxygen, salinity, and turbidity. Many of the invertebrates form resting stages to endure dry periods and then emerge as the pond fills with water again. The primary source of water in ephemeral ponds is precipitation and run-off, which significantly ties water quality to surrounding land use. Runoff may contain contaminants such as heavy metals and pesticides, which would also be deposited in the pond. The presence of these contaminants could alter the invertebrate community that develops in an ephemeral pond by influencing emergence and/or survival of the organisms. This could have serious implications for other species that feed on invertebrates such as waterfowl and amphibians. The objective of this study was to determine the impact of a chemical stressor (copper) on the emergence and survival of invertebrates derived from sediments of ephemeral ponds. Laboratory microcosms containing pond sediments were hydrated with clean water or solutions of copper chloride. Initial results indicate significant changes in the number and type of invertebrates emerging in microcosms exposed to the lowest copper concentration tested (100 ug/L) as compared to controls. Additional investigations will characterize between-replicate variability in emergence and further describe the comparative sensitivity of the dominant taxa present in the microcosms.

Comparison Of Dry And Liquid Protein Supplements Fed To Stocker Cattle Consuming Low-Quality Native Grass: Performance, Digestibility, And Rumen Kinetics.

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Presentation Subject Area: Whiteman Award Presentation

Two studies were conducted to determine the effect of differing amounts of degradable intake protein (DIP) from liquid or dry supplements on performance, site, and extent of digestion by stocker cattle consuming low-quality forage. A metabolism study was conducted utilizing seven ruminally and duodenally cannulated steers (initial BW = 250 kg). Steers were allowed ad libitum access to low-quality forage (LQF; % N = .8). Steers were randomly allotted to one of four treatments in a crossover design: 1) no supplement (CON), 2) .73 kg h⁻¹ d⁻¹ of liquid feed (molasses/urea; NPN) formulated to provide .33 kg h⁻¹ d⁻¹ of DIP (LIQ1), 3) a liquid feed (molasses/feathermeal; natural protein) formulated to provide .20 kg h⁻¹ d⁻¹ of DIP (LIQ2), 4) or a cottonseed meal/soybean (natural protein) meal blend to provide .20 kg h⁻¹ d⁻¹ of DIP (DRY). Supplements consisting of a natural protein source (DRY, LIQ2) increased forage OM intake (FOMI) compared to CON. All supplemental treatments increased total digestible OM intakes (DOMI) compared to CON (2.17, 1.85, 2.48 and 1.56 kg/d, respectively for DRY, LIQ1, LIQ2, and CON; P<.05). Ruminal OM and ADF digestibility were not changed with the addition of DIP from supplements, however total tract digestibilities of OM, ADF, and N were greater than CON (P<.05). Faster particulate passage rates for the cattle receiving supplements (4.78, 5.55, 5.19 and 3.59% h⁻¹, respectively for DRY, LIQ1, LIQ2 and CON; P<.05) supports the differences observed in intakes and digestibilities. Ruminal ammonia- nitrogen concentrations were significantly greater (P<.01) for cattle receiving supplemental N compared to CON with LIQ1 producing more free ammonia than DRY and LIQ2. There was a significant (P<.10) diet and time effect for total volatile fatty acid (VFA). During an individual feeding study, 50 steers (initial BW = 195 kg) were randomly assigned to one of the same four treatments as used in the metabolism study. Steers grazed tallgrass prairie five days per week and fed supplements in individual stalls. All animals remained in the stalls for one and no more than four hours. Average intake was only 41 and 82% of feed offered for LIQ1 and LIQ2, respectively. Total gain and ADG were greater (P<.05) for supplemented steers than for CON, and steers receiving DRY had greater (P<.05) total gains and ADG than steers receiving LIQ1 and LIQ2. There was no difference (P>.05) between LIQ1 and LIQ2 for total gain or ADG. These data suggest that the lower supplemental N intakes of the cattle receiving LIQ1 and LIQ2 limited their performance compared to DRY and CON. Additionally, different amounts and/or sources of nitrogen will influence digestion and performance of steers grazing low-quality forage.

A Proposed Field And Laboratory Behavior Assessment Of Organophosphate Pesticide Exposed Tadpoles

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Presentation Subject Area: Biological Sciences

Global amphibian declines have recently become cause for concern in regard to loss of biodiversity. Major advances in understanding the mechanisms of this phenomenon are hindered by deficiencies in knowledge of basic life history of some species as well as absence of baseline historical amphibian population data. Declines in California are among the more severe; however, they have been reasonably well documented and consequently better studied. Principle hypotheses for global declines include habitat destruction, acid

precipitation, chemical pollution, introduced species, climate change, and UV-B radiation increases. Several of these hypotheses have been tested in the California declines with some success. Atmospherically transported pesticides have been implicated in declines among species that inhabit the foothills and mountains of the Sierra Nevada range. Recent work there has indicated some populations of tree frogs have reduced activity of cholinesterase (ChE), an enzyme directly inhibited by organophosphate pesticides and commonly used as a biomarker for recent exposure to them. Although reductions in enzyme activity indicate exposure to the pesticides, the ecological mechanism for declines by means of pesticide exposure remains unclear. In other vertebrate groups, depression of ChE levels above certain critical thresholds is often associated with reductions in ecologically relevant activities such as foraging and feeding. Determining whether the observed inhibition of ChE activity in *P. regilla* tadpoles is similarly correlated with impaired behavior is the next critical step in determining the role pesticides are playing in the decline of amphibian populations in the Sierra Nevada range. The proposed study will address this issue through a combined laboratory and field assessment.

Indexing Content In A Travel Support System

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Presentation Subject Area: Physical Sciences & Technology

In the past decade the travel services market has developed a hugely diverse presence on the Internet in terms of both resources offered (hotel rooms, rental cars, dinner reservations, golf tee times, "general tourist information," etc.) and approaches to offering them (e.g. aggregation, personalization, mobile delivery). Ideally, a travel support system should be able to combine information available in a variety of travel-related repositories and act as a filtering and organizing intermediary between travel consumers and the suppliers of these resources. The role of such a system is to locate travel information that is most relevant to the customer and deliver it in a well-organized and intuitive way. In order to support this role the system must explore the Internet and other sources to dynamically construct and manage a supply of travel content from known and previously unknown providers. To support this function of the system we have selected an indexing-based approach. The aim of the proposed presentation is to describe the ebXML Registry/Repository based system for cataloguing travel information from the Internet. First, we will cover the basic issues involved in content delivery. Second, we will discuss the most important features of the ebXML Registry / Repository and how we plan to use them in support of our e-travel system. Finally, we will present results of our early experiments in implementing the system.

Personality Drives Leisure? Leisure Drives Personality?

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Presentation Subject Area: Social Sciences

Personality is a term that has been widely used in our everyday conversations. It is viewed that leisure behavior is strongly correlated with personality factors. Personality determines the kinds of leisure activities one chooses; in turn, leisure influences social identity formation. Research on personality trait points out that individual differences are strongly associated with leisure behaviors and preferences. The differences can be

used for predicting leisure interests and even for targeting the market to potential program participants or resource users. These individual differences may influence how people perceive the actual choice available to them, and therefore, may help to examine and modify their leisure experiences. On the other hand, research also indicates that personality dispositions and traits are a function of social experiences as well as innate predispositions. Leisure-specific personality dispositions such as leisure motive and needs are strongly influenced by the socialization process and a variety of social factors. Different process of socialization (class, gender, identity formation and conflict solving) leads to different choices of leisure activities, which in turn results in personality difference to develop. This paper concludes that the relationship between leisure choices and personality development is discursive, reciprocal and interwoven. Every leisure activity choice contributes to a unique personality characteristic development. Certain personality characteristics will affect certain leisure choices one makes next time.

The Effect Of Outdoor Adventure Pursuits On Self-Efficacy

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Over the past 20 years an enormous amount of research has accumulated to address the effects of self-efficacy and adventure-based programs. Much of the research has been focused on the relationship among outdoor adventure-based programs and social cognitive theory, sources of self-efficacy, self-efficacy beliefs, and outcome expectations of self-efficacy. Much of the research is concerned with the success of Outward Bound programs; however, in the past 10 years studies have centered on the challenge ropes courses in outdoor recreation/adventure programs. The purpose of this study is to review the historical and theoretical foundations of self-efficacy, and outdoor adventure pursuits as well as the relationship between the two. Self-efficacy is the personal judgment of one's capabilities to organize and execute courses of action to attain designated goals, and one seeks to assess its level, generality, and strength across activities and contexts. Outdoor adventure activity is based on risk-taking and challenge-seeking, which involves an interaction with natural environment. Outdoor adventure activities also provide the feelings of success through the engagement even for those people with physical limitations. Many studies focus on self-efficacy or self-concept as an important factor affecting cognitive development and achievement. Much of the research has supported the linkage between self-efficacy and outdoor adventure. Involving an outdoor adventure program could be a significant methodology for increasing participants' self-efficacy. Studies that focused on aspects of adventure programs reported that participants' self-efficacy has substantially improved immediately following the outdoor adventure experience. Research has also reported that participating in a high-risk sport could increase self-efficacy directly. With a significant increase in self-efficacy, we can find more direct benefits of participating in outdoor adventure activities. Self-efficacy improvement encourages a positive attitude toward risk-taking and challenge-seeking. The improvement in self-efficacy levels found in outdoor adventure-based activities has a number of implications for program setting in outdoor recreation, outdoor education, and outdoor adventure pursuits. Outdoor adventure programs can combine with the self-efficacy models to attain a better understanding about the transmission of self-efficacy improvement to the benefits of outdoor adventure pursuits.

Economic Impact Of The Firms Assisted By The Oklahoma Food And Agricultural Products Center

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The Oklahoma Food and Agricultural Research and Technology Center was established in 1995 to provide technical and business information to stimulate and support growth of the value-added food and agricultural products processing in Oklahoma. The purpose of this study was to determine the economic impact of the firms assisted by the Center. The information needed for the study was gathered via a telephone survey conducted by the Oklahoma State University Bureau for Social Research. A 72% response rate was achieved. The survey provided data on services provided by the Center, current economic data including the number full- and part-time employees, 2001 sales and 2001 payroll, five-year economic data and firm demographics. An IMPLAN state model was used to determine economic multipliers for eight categories of firms, meats processing, fruits and vegetables, bakery and confectionary goods, grain processing for food, prepared and specialties food, grain and other processing for feed, fats and oils processing and other. Based on the categories multipliers were used to determine the direct, indirect and induced effects of the firms assisted by the Center. Based on the census results of the telephone survey, there were 8,383 total direct jobs, which account for almost 21% of the total direct food processing jobs in the state of Oklahoma in 2000. Also there were total annual sales of \$544,915 with account for nearly 30% of the states total food processing sales in 2000. Based on the findings of the study, the firms assisted by the Center have a significant impact on the food processing industry in Oklahoma.