Selected Thesis Abstracts

Are Captive Cattle Supplies a "Fair" Practice?
Student: Jason Elder
Major: Agribusiness
Year: Spring 2005

Competition in the domains of law and economics are extremely different. The law's goal is to govern behavior to ensure fairness, justice, legal compliance, and not efficiency. Economics' goals are to increase efficiency and performance. These two domains collided in *Pickett v Tyson Fresh Meats, Inc*.

Plaintiffs argued that Tyson's use of captive cattle supplies caused a price decrease, and this practice would be prohibited under the *Packers & Stockyards Act* of 1921. The jury found for the plaintiffs, but the decision was set aside by the judge. The case is now in the United States Court of Appeals for the Eleventh Circuit for review.

The purpose of this study was to determine the public's opinion of what were "fair" market practices. By using vignettes, the study found that 80 percent of individuals found the use of captive supplies and the resulting price decrease to be a fair practice.

Evaluation of Heat Production and Energy Utilization Related to Feeding Behavior in Broilers
Student: Anne Beckemeyer
Major: Animal Science
Year: Spring 2005

This experiment was conducted to identify the difference in heat production between mash and pelleted diets in addition to determining the amount of energy utilized by a broiler for eating behavior. Heat production (HP) in kilocalories was calculated from oxygen intake and carbon dioxide output by the broilers over the trial phase. Basal metabolic rate (BMR) was also determined for each bird over a 36-hour period prior to adding the trial feeds. Then the increase in heat production resulting from lights-on and feed stimulus was measured. The results of the experiment supported previous research, finding that light and feed stimuli increase bird activity, as well as heat production. There was little difference in heat production detected related to the feed form presented to the birds. However, higher respiratory quotients (RQ) were observed in birds on a mash feed, suggesting that there is more work required to intake and digest a mash as compared to a pellet. More research will need to be conducted in order to accurately quantify the amount of energy used for ingestive behavior.

The Designer's Method: Five Steps to Effective Visual Communication
Student: Katie Steiner
Major: Art
Year: Spring 2005

Graphic Design, like ay form of artistic expression, is subjective, but because it is primarily a commercial tool, it is bound within certain guidelines, expectations, and available resources. Although individual design styles vary greatly, every designer adheres to a specific method when working out a solution of a design problem. This book outlines the five steps of the designer's method and visuals of each step in progress. The five steps to effective visual communication are:

1. Identify the Problem
2. Brainstorm the Concept
3. Develop and Refine
4. Implement the Design
5. Construct the Solution

All five steps are illustrated with a design example from a project with multiple parts. The second section of the book looks at three design solutions in a senior capstone portfolio and the progression of each piece through the five steps. This book is intended as an educational supplement and addresses an audience of design students. It assumes that the reader is already familiar with all of the basic concepts of design including composition and layout, typography, perspective and color theory.

A Comparison of Employment Benefits Offered Among Regional Airlines
Student: Karlie Buntin
Major: Aviation
Year: Spring 2005

Regional airlines provide unique benefits to air-travelers in the United States; however, within the aviation industry, these small airlines are better known as the first place of employment for new airline pilots. Although most new pilots are satisfied to simply have a job in the aviation industry, it is important to understand the specific benefits of employment offered by each airline. The employment facets that can be very significant to new employees range from minimum requirements for employment to retirement benefits. Because each of these factors is different at virtually every airline, a total of nine regional airlines are examined in this paper. Although most pilots think of regional air carriers as passenger-only operations, there are many regional cargo carriers as well. For a more comprehensive view of employee benefits, this paper covers the benefits offered by both regional passenger and cargo airlines. This information can help commercial pilots make an informed decision about which regional airline best suites their employment needs.

Expression of Tissue Kallikrein 11 and 9 in Porcine Endometruim
Student: Jamie S. Buck
Major: Biochemistry and Molecular Biology
Year: Spring 2005

One of the major goals of the swine industry is to increase litter size by overcoming embryonic losses in the first 2-3 weeks of pregnancy. It is hypothesized that tissue kallikreins play a role in early embryonic development in porcine. Tissue kallikreins are a multigene family of serine porteases that show different patterns of tissue specific expression. Kallikrein 11 was evaluated using reverse transcriptase polymerase chain reaction and quantitative real time polymerase chain reaction to find the expression patterns in the porcine endometrium. Kallikrein 9 was also evaluated using reverse transcriptase polymerase chain reaction to find the expression patterns in the porcine endometrium. Kallikrein 11 and kallikrein 9 were found to be differentially expressed in the porcine endometrium. The results of this study suggest that kallikrein 11 and kallikrein 9 may play a role during early embryonic development in porcine.

Development of Real Time PCR Diagnostics for Phytophthora spp.
Student: Brian McWilliams
Major: Biochemistry
Year: Spring 2005

The genus *Phytophthora* is an oomycete that infects many different types of economically important plants, including potatoes, oak trees, soybeans, and many different species of shrub. The goal of this research was to develop a high-throughput means to accurately test for this genus while discriminating against its nearest phylogenetic genus, *Pythium*. Old techniques, including an enzyme-linked immunosorbent assay (ELISA) and standard PCR were either inaccurate, time-consuming, or both.

As a result, a real time PCR approach was taken, for which a primer set and probe were designed from 5.8S ribosomal DNA sequences to explicitly differentiate *Phytophthora* from other species of oomycete. Seven species of *Phytophthora* were used, including *P. cinnamoni, P. citrocola, P. parasitica, P. cactorum, P. citrophthora*, and two isolates of *P. cryptogea*. We also used two species *of Pythium* to test our procedure with, *P. ultimum* and *P. aphanidermatum*.

Our results showed that the real time PCR procedure was sensitive to all tested species of Phytophthora and did not amplify genomic DNA from plant material, which allows for direct DNA extraction from infected plant material as it is received from the field. While the procedure was able to discriminate against *P. aphanidermatum*, it was not able to select against *P. ultimim.* This was due to a slight primer misalignment and could be worked out with some further testing; however, this procedure was considered generally successful, as it accomplished most of the goals originally proposed.

Multiple-Effect Evaporation: Handbook of Theory and Design
Student: Ashleigh N. Hildebrand
Major: Chemical Engineering
Year: Spring 2005

Multiple-effect evaporation uses a series of evaporators, or effects, to concentrate a process stream. The first effect is heated by steam. Each successive effect is heated by solvent vapors from the preceding effect, greatly increasing steam economy. The system is enclosed, such that the pressure decreases in each subsequent effect. This lowers the vaporization temperature and energy necessary to evaporate the solvent. Multiple effect evaporators are widely used in the food and dairy industry and processing of various other inorganic and organic materials.

The key design specification in this process is the pressure. The energy provided by the steam then determines the amount of vapor produced in the first effect. The temperature, pressure, and composition in each effect are then determined as each effect reaches equilibrium; therefore, once the initial pressure is specified, all other operating conditions are set.

Boiling point elevation, friction effects between evaporators, and the overall heat transfer coefficient must need to be taken into consideration. There are four feed methods typically used: forward, backward, mixed, and parallel. The number of pumps necessary and the exit temperature varies for each method.

The system is best characterized by experimental data. Design of a multiple-effect evaporator, or the determination of the required area for each effect, requires assumption of an overall heat transfer coefficient, then iteration to determine the temperature difference between effects. A new heat transfer coefficient is then determined, and the process is repeated until the solution converges. Ideally, each effect should have the same area.

Capital and operating costs for the system are determined as a series of heat exchangers, pumps, and separators.

Rural Health Care Development
Student: Jonathan Teubner
Major: Economics
Year: Fall 2004

Health care has moved to the forefront of social issues in the last few years. On a federal level, Congress has attempted to revamp very large portions of the health care infrastructure. On a state level, Oklahoma Governor Brad Henry has introduced his Economic Development Generating Excellence program, which will focus on education and health care. Oklahomans have a dismal view of their health care for good reason: hospitals are shutting down, more and more stories surface about the failures of equity in health care, and Oklahomans are increasingly in need of health care as they age and decline in health. Oklahoma health care, however, is not all doom and gloom. The traditional sector of home health care has experienced growth relative to national rates;

also, telemedicine research at Oklahoma State University College of Osteopathic Medicine (OCOM) in Tulsa, Oklahoma, has created new possibilities for elderly home care that are extending into health care efficiency and the sociological issues surrounding the family. What this study seeks to understand is the feasibility of linking the two sectors to provide a higher level of care to rural Oklahomans through increased efficiency and focusing on solutions that strengthen the family unit.

Oklahoma's overall health care infrastructure is less advanced than most areas of the country for multiple reasons. Home care, on the other hand, has been the anomaly; it has sustained growth in the labor force, thus building a vital portion of the health care infrastructure. Home health care is a traditional for of health services existing throughout the state, which consists of nursing services such as Home Call in local communities.

Telemedicine, on the other hand, is a very new aspect of the health care industry. Telemedicine utilizes communication technology to transport data and educational resources to areas that have been previously deprived of the level of care of metropolitan centers. Rural Oklahoma is acutely victim to under-specialized care. Telemedicine is emerging through the research of medical specialists at OCOM to fulfill the state's need of improved health care by providing rural Oklahomans the opportunity of specialized care.

The research framework is very simple. First, the home health care sector is analyzed to determine its long-term stability and development. Economic indicators – such as the kinds, quantity, and quality of jobs created – point to the stability and development of the sector, indicating the home health care's fitness to employ telemedicine technologies. Also, geographic and demographic dispersions are properly characterized to determine the feasibility of partnering home health care with telemedicine efficiently. Secondly, the technology infrastructure – hardware, software, and bandwidth, is analyzed to determine the technology capacity of rural areas. Finally, the resources that both sectors share are analyzed to determine if the partnership will be economically and politically feasible for the state of Oklahoma.

The need for this study is clear: a partnership between home health care and telemedicine will help both the state's health care industry economically improve the level of service provided to rural Oklahomans. The increased efficiency will translate to greater dissemination of research and care techniques. Rural Oklahomans will become more attractive for retirees with the increased level of health care. Expanded choices will foster growth in areas that are geographically attractive but not always feasible because of the distance from specialized care units. Also, the elderly will be given more opportunity to stay close to family, allowing the family to become a care-unit and strengthen the bonds of family and community. Health care and technology are becoming increasingly intertwined in larger markets and Oklahoma has a growing home health care sector, unique demographics, and the educational support to facilitate this dynamic traditional sector-emerging sector link while strengthening the basic unit of civil society: the family.

The Swetnam Controversy
Student: Katie Thomson
Major: English
Year: Spring 2005

Joseph Swetnam, under the pseudonym Thomas Tell-Troth, published The Arraignment of Lewd, Idle, Forward and Unconstant Women in 1615. Though Swetnam says he intended the pamphlet to be "hurtful to none," many disagreed. It is a hostile attack on women, citing everything from their dealings with money to their use of makeup. Unsurprisingly due to its inflammatory nature, this work sparked a major pamphlet war. At least three pamphlets and one play attempt directly to rebut Swetnam's piece. This thesis will examine the historical, cultural, and literacy contexts of this debate, as well as three specific pamphlets involved in the Swetnam controversy: Swetnam's Arraignment, Rachel Speight's A Muzzle for Melastomus, and Sowernam's Esther Hath Hanged Haman. It will assess to what extent these pamphlets participated in what Linda Woodbridge calls a "literacy game" in the debate about women and will note the conventions used, including classical mythology and biblical reference.

Fundamental Indexing Revisited
Student: Taylor Speers
Major: Finance
Year: Spring 2005

Throughout the financial community, corporate market value is considered the most correct metric with which to weight a market index; however, Research Affiliates, LLC argue that because stock price is a factor in the weighting process, market value-weighted indexes are prone to lesser returns than can be expected from other measures of firm size.

By tracking created indexes over a 42-year period and comparing the returns to that of the S&P 500, the most celebrated of all market-value weighted indexes, Research Affiliates found that the six different metrics used for the study outperformed the S&P in terms of risk and return; however, the study did not take into account that the methods used to select firms for the S&P 500 differ from those used to create the alternative indexes.

The following study attempts to address the issues of concern resulting from the Research Affiliates study. Over the ten-year period under consideration, the alternative measures did outperform the market value-weighted index in terms of risk and return. However, due to the small number of observations, no statistical significance was found.

Overcoming Obstacles in Long-Term Marriage
Student: Julianna Weaver
Major: Human Development and Family Science
Year: Spring 2005

Because marriage in America is failing with a 50 % divorce rate, now is an important time to research and discover what has made long-term marriages last. Researchers (Stinnett & DeFrain, 1985) find that looking at marriages through the Marital Strengths Framework helps to focus research on positive aspects of marriages and thereby build on those strengths in order to model them to others. However, most researchers look at marriage from a deficit-based perspective and focus on the factors that cause marriage to fail. This study seeks the factors that make marriage last as well as ways that couples have overcome obstacles in their marriages. Results are varied and show that a positive outlook, religion, commitment, being a traditional family, and importance placed on family help a family to succeeed. This mixed methodology study uses a quantitative survey, a qualitative survey, and a semi-structured interview. Participants were gathered through purposive, convenience, and snowball sampling. Information was audio recorded, transcribed verbatim, and coded openly. Information gathered in this study will be useful for promoting the longevity of marriages.

Petrography and Stylistic Analysis of the Middle Islamic Wares in the OSU Tall Hisban Study Collection
Student: Laura Holzweg
Major: History
Year: Fall 2003

The purpose of this project is to study, through physical analysis, the Middle Islamic sherds in the OSU Tall Hisban Study collection to determine their possible places of production. The Middle Islamic period refers to the 12th through 16th Centuries AD. During this period, the Levant saw the end of the crusades and the rise of power of the Mamluks- a group of slave-soldier elites based originally in Egypt. Hisban at this time was under Mamluk control and served as both a garrison and at times as the capitol of the Belqa, a district under Damascus. Thus far, it is known that pottery was produced with in the town of Hisban; however, these pieces were simple day-to-day objects that farmers and other locals produced for their own use. These wares are called Handmade Geometric Painted or common wares. Middle Islamic wares are typified by HMGP, but also of wheel-made wares that are of a finer quality and were generally mass-produced there. It is thought that a portion of the Middle Islamic wares was produced in Damascus, however this is yet to be confirmed.

Through physical analysis, I hope to link sherds in the OSU collection with geographical regions throughout the Levant. Physical analysis will involve dividing the sherds into groups based on their characteristics. First, I will divide sherds into wares. In fact, six specific wares were chosen for this study: Sgraffito, Glazed Reflief ware, Monochrome and In-Glaze, Frit and Underglazed Painted wares, and Handmade Geometric Painted Wares. Then, with in each of these I would make further sub-divisions based on color, type of paint, size, and most importantly- petrofabric. The petrofabric is the mineral make up of clay and it is distinctive to the area where the clay was produced. A petrographer can compare the petrofabric of a sherd against the petrofabric of a kiln rod (a tool used by potters to prevent pieces from melting into each other during firing). If the petrofabric of the two samples match, then the sherds were probably produced in

the same geographic region or possibly the same kiln; however, I myself am not a petrographer. The petrographic work for this project was completed by Dr. James Puckette of Oklahoma. I analyzed his readings of the slides and compared them to work in other places.

The research on this project involved more than dividing pottery into typologies. It also involved researching what other archaeologists have found on the subject. Once I knew what others have found, I compared my data, my typologies against theirs and made inferences. Based on my readings, I chose four regions in the eastern Mediterranean for comparison: Cyprus, the Kerak Plateau, Acre/'Akko, and Northern Jordan. Within each region I further chose two to four archaeological sites, with comparable corpora for study. Some of these sites yielded answers; some did not.

The Change in the Portrayal of Women in Popular Magazines from 1984-2004
Student: Laura Nielsen
Major: Journalism and Broadcasting
Year: Spring 2005

Past research has found that the portrayal of women has not changed significantly since the 1970s. Researchers have development coding systems for analyzing the content of both print and television advertising. This study describes and compares in detail the portrayal of women in advertising placed in popular magazines from 1984 and 2004 using issues of *Redbook*, *Newsweek* and *Vanity Fair.* Results reveal that there has been little change in the portrayal of women in American popular magazines from 1984 to 2004. The categories in which there was significant change were characters portrayed, product types advertised and primary role of the primary female in women's magazines and characters portrayed, product types advertised and the ethnicity of the primary female in general interest news magazines.

MAE 4344- Design Projects Automated Serum Test Preparation
Student: Amanda Yoesting
Major: Mechanical and Aerospace Engineering
Year: Spring 2005

Dr. Neil Purdie, Oklahoma State University Chemistry Department Head, enlisted the help of four mechanical engineering senior design students to automate the patented blood serum test he and Lisa Reilly have been developing. As resources available to the students did not allow for the actual manufacture of the automation machine, existing automated liquid handler manufactures were researched and contacted. The Beckman Coulter Biomek 3000 Laboratory Automation Workstation was determined to successfully handle all aspects of the serum test preparation including: transfer of caustic reagents via pipette, shaking, filtering, and reading the absorption spectrum of the solution through the use of a plate reader.

Technology Education in Oklahoma High Schools
Student: Sheryl Kuzmic
Major: Management Science and Information Systems
Year: Spring 2004

Oklahoma is one of the 46 states that have state mandated class requirements in order to receive a high school diploma. Currently state requirements are specified for Language Arts, Mathematics, Science, Social Studies, and Arts. State legislation does not require Oklahoma high school students to pass an end of instruction test to confirm proficiency in any discipline.

Academic and general literature from the 1990's through the present has emphasized the growing necessity of computer technology knowledge. The acquisition of basic computer skills is widely believed to be essential to entering the workforce or continuing education after high school graduation. The world economies' dependence on technology is rapidly increasing. This continuous expansion of technology requires workers at all levels of organizations to possess fundamental computer knowledge.

This research evaluates the present state of technology education in Oklahoma high schools. The purpose of this study is to determine the percentage of students receiving basic computer knowledge and skills and the percentage with an opportunity to receive this instruction.

Senior Piano Recital
Student: Rachel Welch
Major: Music Education (Piano)
Year: Spring 2005

For my honors thesis, I decided to add the required elements of my senior piano recital. The elements I added included playing a full recital instead of the required half recital, researching each of my pieces and including program notes at the performance, and including some collaborative piano works, in the form of works for two pianos.

To prepare for this recital my teacher, Dr. Lanners, and I chose music in the spring of 2004, giving me nearly one year to learn and polish the music. In order to do the recital, I had to pass a recital hearing two weeks prior to the scheduled recital, and while my practice during the summer and fall usually averages one to two hours daily, as the hearing and recital drew near, my practice increased to about three hours per day.

In researching my music to write program notes, I learned many things, including the history of each piece, programmatic elements in some of the music, and even what some of the composers were going through at the times the pieces were written. In playing all of this music, I felt as it I learned something about each composer's personal style.

The music for two pianos that was included on my recital was very enjoyable, and a new experience for both my friend Chris Reed, who performed these pieces with me, and for myself. Because we played facing each other with the pianos dove-tailed, we had to discover how to give cues with only our heads and shoulders visible, and how to play

so the sound from both pianos was balanced, even though what we as performers hear is often completely different from what the audience hears.

Overall, my recital was a very educational and enjoyable experience, and I learned many invaluable things about playing and performing, both in solo piano and two piano settings, and all of the preparation that goes into a recital.

Nutritional Community Assessment of the Clients at Stillwater Life Services
Student: Cara Johnston
Major: Nutritional Sciences
Year: Spring 2005

Stillwater Life Services (SLS) is an organization that addresses the critical need of unplanned pregnancy by both providing alternatives to abortion and equipping families to adequately care for their children. SLS provides a wealth of services for women facing crisis pregnancies. Some of these include free pregnancy tests, personal counseling, childbirth preparation classes, and Bridges to Motherhood, which is an interactive parenting class that provides support, spiritual growth, family fun activities, and education about various aspects of parenthood (SLS Brochure, 2003). The Bridges to Motherhood program is hoping to expand to encompass a new aspect of parenthood education—maternal and infant nutrition—that is specific to SLS clients.

Since the clientele at SLS is extremely diverse, a community assessment is needed. The clients as SLS represent a wide range of sociocultural backgrounds. Some of the clients are recipients of government aid while others are unmarried high school or college students. Finally, due to the large international student enrollment at Oklahoma State University, some of the clients are citizens of other countries. However, regardless of age or cultural origin, the vast majority of SLS clients are unmarried mothers living on extremely low incomes (SLS Brochure, 2003). A nutritional community assessment of the SLS clients will produce detailed descriptions of their specific nutritional needs, their existing knowledge base about maternal and infant nutrition, the nutritional issues and barriers that they struggle with, and the nutritional resources that they put to use. (Owen, 1999).

The Establishment Clause and the Supreme Court
Student: Katie Oden
Major: Political Science
Year: Spring 2004

Millions of people use legal tender every day without noticing the phrase “In God we trust” that is printed on every piece whether paper or coined money. But for some reason, one November day, this phrase caught the attention of Michael Newdow, and it caused him to take a closer look at the world around him. He really began to feel the pressure of separation of church and state when his five-year-old daughter entered kindergarten and began to recite the Pledge of Allegiance. He believes that it is against

his and his daughter's freedom of religion to recite the Pledge. This case is now on the current Supreme Court docket. The Supreme Court agreed to hear the case of *Elk Grove Unified School District v. Newdow* in September 2003 and oral argument was held on 24 March 2004. The question remains; will the court decide this based solely upon the original intent of the Founders?

It is difficult to determine exactly what Madison meant by a "national religion" but it is generally believed that he did not mean for the amendment to apply to the states. Jefferson was against the establishment and support of one national religion, but not necessarily against complete separation of church and state as indicated in a letter he wrote to a Presbyterian clergyman in 1808. The ruling in *Elk Grove Unified School District v. Newdow* will possibly determine the future of religious and governmental relations. Already, one justice, Justice Souter, has excused himself from the case. It will prove to be a closely decided case and several questions remain how will this case be decided? Will this case be a 4-4 or a 5-3 decision or will it be completely thrown out all together on the grounds of standing?

The Role of Family Support in a Freshman's Success and Failure at College
Student: Kathryn Austin
Major: Psychology
Year: Spring 2005

The research investigated the role of family and peer support in the freshman college experience. Prior research has shown that students who routinely discuss issues with parents adapt better to the university setting than those who do not. Furthermore, students with low levels of parental and peer attachment have been shown to have difficulty in making career decisions. Many studies have shown that students with high levels of parental and peer attachment generally have high levels of self-esteem. In studies investigating the predictors of success in college, self-esteem levels have been found to be related to academic performance and the likelihood of engaging in risk-taking behaviors. The present study involving 93 participants showed that family support was positively correlated with self-esteem, peer support, and academic attitude and showed that family support was negatively correlated with students' involvement with a number of risky behaviors, including behaviors related to alcohol use and sex.

The Art of Revision: Teaching Revision in the Classroom
Student: Joshua Taylor
Major: Secondary English Education
Year: Fall 2003

This paper ventures define and clarify revision while giving innovative strategies to help better teachers understanding and teaching of revision.

The thesis begins by defining revision. Revision is a constant act, not just the last step in the writing process. Often most writers will select what to discuss and what not to discuss in their writing long before they ever write a word. Thus, these writers revise before they ever begin writing.

A common misconception concerning revision is that revision and editing are the same event. However, most students never learn from editing. Editing consists of the teacher marking all of the mechanical errors in a piece and then handing it to the students. The students quickly change all of the errors, without knowing what they are doing or why, and hand the paper back to the teacher. This process is editing, NOT revision.

Revision is looking at one's writing from a different perspective. Taking a new vision. Seeing anew. This process takes critical thinking skills that are essential for student to develop. Revision requires students to think about their writing and make conscious choices. This act will improve their writing. Students will not improve their writing until they begin to revise. The old cliché "practice makes perfect" is incorrect, at least when applied to writing. If students write constantly, but they never know is their writing is good or bad, or where it needs to improve, then they will never improve; however, perfect practice will make perfect. Revision affords students the opportunity to look at their writing and receive help that will improve their writing ability.

Finally, this thesis concludes with innovative techniques to teach revision in the classroom. These techniques come from public school teachers at the middle school and high school level as well as university teachers and writing specialists. The hope of this segment of the paper is to give teachers new ideas and to encourage them to make revision a focus in their classrooms.

Effects of Fish Stocking on Naiad Population Dynamics at Emergence in the Damselfly Genus Enallagma (Okonata: Coenagrionidae)
Student: Nick Rasmussen
Major: Zoology
Year: Spring 2005

In this study, we examined the effects of stocking fish on populations of damselfly naiads of the genus *Enallagma.* During 2003 and 2004, field experiments were conducted using artificial ponds, half stocked with green sunfish (*Lepomis cyanellus)* and half remaining fishless. Samples of exuviae were collected from these ponds andused to determine the sex, size, and number of naiads emerging from ponds. We determined that a sample size of 30 to 60 exuviae was needed to get a sex ration representation of the population, and found that, regardless of treatment, the sex ration did not deviate from 1:1 in any pond. There were, however, between pond differences in the size of emerging naiads correlating with the presence or absence of fish and amount of time the pond remained filled. Naiads emerging from fishless ponds were larger than those from fish ponds, and naiads emerging from more recently established ponds were larger than those from long-established ponds. In almost all cases, there was no size difference between the sexes within a pond. Laboratory behavioral studies were conducted to investigate the possibility of sex-specific difference in activity levels, but no significant differences between the sexes were found.

Ponds and wetlands are often stocked with fish as a means to improve their perceived recreational value. The influence of such stocking events on the indigenous invertebrates in these systems has not been extensively investigated, although fish predation could significantly alter the population structure of a species. A previous laboratory study that examined the effects of sex on the behavior of *Ischnura vericalis* naiads indicated that male naiads spent more time moving and moved greater distances than did females (Baker et al, 1992) which could result in differential susceptibility to capture. We conducted laboratory experiments to determine if these results were supported by our populations. If males are more susceptible to fish predation than females, this could have serious implications for damselfly populations subjected to predation by introduced fish, since a skewed sex ratio could have severe impacts upon population viability. We hypothesized that fish would prey more heavily upon male naiads than female naiads resulting in a female-biased sex ration. We also investigated the effects of fish predation on the size of naiads at emergence, hypothesizing that naiads emerging from ponds containing fish would be smaller than those emerging from ponds without fish. This hypothesis is based on the idea that either the fish would cue in on larger naiads and remove them from the population, or naiads would sacrifice a certain amount of growth to emerge earlier and reduce the time exposed to fish predation. The emergence from fish ponds of naiads at a reduced size could be caused by a combination of these factors.