ENTOMOLOGY ACADEMIC PROGRAM REVIEW

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Periodic external reviews of all degree granting programs are conducted by the Provost’s office at Texas A&M University. The last program review was completed in 2006. This review focuses on the time period beginning with the 2006-2007 academic year (fiscal year 2007 or FY07) and concludes with summer commencement in summer (August) 2013. The Entomology department currently offers two undergraduate degrees (ENTO and FIVS) and two graduate degrees (MS and PhD in Entomology). The FIVS degree was approved in 2007 and received national accreditation by the Forensic Science Educational Programs Accreditation Commission (FEPAC) affiliated with the American Academy of Forensic Sciences in January 2012. This will be the first external review outside of FEPAC of this new degree program. This document was prepared in the form of a self-study to examine all aspects of these degree programs, from faculty participation in classroom teaching to the research enterprise which supports the MS and PhD programs in the department.

The Department of Entomology was established in 1899. The initial focus was to “devise means to control the boll weevil” which was plaguing cotton farmers since it first entered the Lower Rio Grande Valley in 1892. Fast forward 115 years and we are still working on the boll weevil; however, this devastating cotton pest, through efforts led by Texas A&M scientists, has been eradicated from all other cotton growing regions in Texas and all cotton growing states in the US except in the subtropical climate of the Lower Rio Grande Valley where the international border poses serious problems for expanding the eradication program southward and the boll weevil continues to persist in isolated areas and eradication will take new advances in pest control and deployment strategies.

The first BS degree in Entomology was granted in 1902. A graduate program was begun in the mid 1920’s with the first MS student in Entomology graduating in 1926. A PhD program was established in 1935 and the first PhD was conferred in 1943. From 1899 through summer commencement in 2013, the Department of Entomology has awarded 1,046 BS (44 FIVS and 1,002 ENTO), 455 MS, 306 PhD degrees in Entomology and 34 MAg (a discontinued degree option). Over one-fifth of our degrees awarded since 1899 have occurred in the past 7 years (375). Since 2006, 18% of the students awarded a BS degree in ENTO did so as a double major (69). These are students whose primary major is in another degree
program and the head counts are attributed to that primary degree program. However, these are students who take 17 credits in Entomology, populate our courses and labs and are a distinct student population that we serve.

The Department of Entomology has 27 faculty who are located in College Station (24 tenured or tenure-track, 1 Clinical Assistant Professor, 2 Lecturers) who are the classroom teachers for the degree programs. In addition to these teaching/research faculty there are 9 AgriLife Extension faculty and 7 AgriLife Research faculty who are part of the entomology graduate faculty but employed through one of the “Agencies” that comprise the Texas A&M System. These faculty are typically located at one of the 13 Research and Extension Centers throughout Texas giving us a total of 45 faculty. For the purposes of this review 25 faculty are considered “core faculty” which at Texas A&M is defined as faculty who have advised or co-advised a PhD student.

The Entomology department hosts two undergraduate degrees Entomology (ENTO) and Forensic and Investigative Sciences (FIVS) and two graduate degree programs in ENTO. The ENTO degree currently has 77 undergraduate majors and the FIVS program in Fall 2013 had 171 undergraduate majors. We have also developed an ENTO minor, encourage students to take ENTO as a second major, and we have developed an undergraduate certificate program in Public Health Entomology. Altogether we have 327 undergraduate students currently seeking a degree, minor, double major or certificate program in the Department of Entomology and 62 students seeking an MS or PhD in ENTO.

The MS and PhD programs in entomology are research-based degree programs. As per university policy we can use a non-thesis option for the MS degree (not available for the PhD). In the past we partnered with other departments in the College of Agriculture and Life Sciences (COALS) to offer a non-thesis master’s degree, the Master of Agriculture (MAgr) in Plant Protection or in Economic Entomology. The MAgr degree program was phased out by the College in 2010 due to low enrollment. Our last MAgr degree was granted in the 2010-2011 academic year. The faculty have determined that each graduate student in Entomology must be proficient in four foundation areas in Entomology (systematics, ecology, physiology and molecular biology) with the student’s graduate advisory committee structuring the degree plan to fit the students’ research program and desired career path.
Enrollment in the graduate program continues to expand. We actively recruit students from across the country and matriculate approximately 10 graduate students each year. Our current cohort of graduate students (45 PhD, 17 MS) reflects the university goal of focusing more resources on the PhD degree. Historically, the Entomology graduate program had equal numbers of MS and PhD students. Since the last academic programmatic review (2006/2007 – 2012/2013) 75 students have graduated with advanced degrees, 37 MS and MAgr and 38 PhD students. Growth in the graduate program is, of course, resource dependent. Nearly all of our graduate students are funded on Graduate Assistantships - either Research or Teaching referred to as GARs or GATs, respectively. A few students are self-funded through external fellowships (NSF and USDA predoctoral fellowships), have funding from their government or institution abroad, or are self-funding their graduate studies. Funding for GARs or GATs comes in the form of research grants awarded to faculty or through departmental teaching funds that support laboratory instructional assistance, respectively. We currently support approximately 30% of our graduate students as GATs.

Graduates from our MS and PhD program have been quite successful in the marketplace. Of the 38 PhD graduates, all are employed where they are using their degree in their current position. Of the 37 MS students a similar trend is seen, with 13 students pursuing a PhD (35%) and another 20 (54%) are employed by various government agencies, as educators (K-12 through community college) or in the private sector. We have lost contact with 5 MS students (14%) or they are employed in an unrelated field.

Altogether, we believe we have vibrant degree programs that produce a highly skilled workforce that fills a critical need in business, educational institutions, or in government service. Texas A&M University is the sole institution in the State of Texas which offers a degree in Entomology and we are the only undergraduate degree in Forensic Science and the only nationally accredited undergraduate program in the state of Texas. We present here the data that support this conclusion and we welcome your insights so that our degree programs remain relevant in the future.
INTRODUCTION

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1. INTRODUCTION

1.1 Welcome

Howdy! On behalf of the Entomology Department let me welcome the review team to the great State of Texas and to Texas A&M University.

We are so very grateful for the hours you have already spent familiarizing yourself with the University, the College, and the Department of Entomology. As you read through our self-study and the websites and supplementary documents, our hope is that we have painted a true and complete picture of our academic programs – both strengths and weaknesses. Our goal is to provide to you the necessary background you need to conduct a thorough review of our academic programs within the context of Texas A&M University strategic plan, Vision 2020, and the Grand Challenges identified by the College of Agriculture and Life Sciences. We have provided a brief history of our 115 years as an academic unit at Texas A&M. We seek your analysis and conclusions how to best position the Entomology Department at Texas A&M University to serve future Aggies in the degree programs we offer.

We are well aware of the time commitment we asked of each of you to familiarize yourself with a different academic institution, to review our curricula, courses, syllabi, faculty qualifications, and degree programs. I can assure you that as a faculty we are looking for guidance with respect to the resources, facilities, and curriculum to meet the task of educating the next generation of entomologists and forensic biologists. You were selected for this task because each of you have specialized expertise that is needed to thoroughly understand the nuances of our degree programs. We look forward to your visit to campus in April. If you have questions prior to your visit, we are at your service and will do our utmost to help you find the information you seek. We hope your visit will be productive and enriching. I’m confident that your evaluation of our degree programs will help us focus on what we do best and how we can position ourselves to serve the University and our profession in the future.

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1.2 Charge to the Review Team

The Academic Program Review (APR) process at Texas A&M University provides the occasion for academic units to plan strategically, assess the quality and efficacy of their programs, and determine the best courses of action for ongoing improvement. APR is at the heart of our institutional commitment to excellence, and we thank you sincerely for assisting us. This letter provides you with the charge to the committee and a brief overview of the department.

**Peer Review Team Charge.** Please examine the department and its programs and make recommendations that will help in planning improvements. Your resources are a self-study report prepared by the department, copies of materials from the program's last review, information you gain through personal interactions while visiting Texas A&M University, copies of strategic plans and goal-setting documents at the department, college, and/or university level, and any additional information requested by you or by the department. Within the broad charge of recommending ways the department can continue to improve are some **specific questions that we would like you to address**:

- Based on the data information provided in the self-study report or gathered by the review team, what are the department's overall strengths and weaknesses?

- How well do the department's strategic goals align with those of its college and with those of Texas A&M University?

- How would you compare this department with its peers?

- What improvements (including student learning and faculty development) has the department made since the previous program review?

- With only current resources or a modest infusion of new ones, what specific recommendations could improve the department's performance, marginally or significantly?

We look forward to meeting with you during your time on campus. If you have any questions or require additional information prior to your visit, please contact Dr. Pamela R. Matthews, Vice Provost, at p-matthews@tamu.edu.
1.3 Academic Program Review Team

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College of Agriculture and Life Sciences
Texas A&M University
College Station, Texas

April 27-30, 2014

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Section 2

TEXAS A&M SYSTEM (TAMUS)

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2. TEXAS A&M SYSTEM (TAMUS)

2.1 Texas A&M System: Campuses and Agencies

The Texas A&M University System is composed of 11 campuses (http://www.tamus.edu/about/univ-system/) with the largest being the flagship campus located in College Station, TX. Affiliated with the system are 7 Agencies (http://www.tamus.edu/about/agencies-system/). Two agencies of particular importance to the Department of Entomology are Texas A&M AgriLife Research (formerly the Texas A&M Agricultural Experiment Station) and Texas A&M AgriLife Extension. Each agency hires PhD scientists who also hold faculty rank in the Department of Entomology. Nearly all of these agency-based faculty are located at regional Research and Extension Centers outside of Brazos County. Counterparts of these two agencies are typically affiliated with colleges of agriculture at most Land Grant Universities. Recently, the Texas A&M Health Science Center (HSC) was aligned with the College Station campus which add faculty, research capacity, and students to the Texas A&M College Station campus.

The system’s 11 campuses have a total enrollment that exceeds 125,000 students and in FY12 the system awarded 27,408 degrees. The TAMU System (TAMUS) is administered by Chancellor John Sharp. Each of the campuses is led by a President who reports through the Chancellor to the Board of Regents (Fig. 1.). There are 28,000 faculty and staff employed by TAMUS and there is a physical presence of Texas A&M University in 250 of the state’s 254 counties and a programmatic presence in every one. In 2011, externally funded research expenditures exceeded $780 million, making it one of the top public research universities in the country.

Texas A&M University, originally named the Agricultural and Mechanical College of Texas, was the state’s first public institution of higher education in Texas. It was organized by the state legislature in 1871 under the provisions of the Morrill Land-Grant College Act of 1862. The first students were enrolled in 1876. Over time additional campuses were added to the Texas A&M System with the last campuses added in 2009 with the creation of Texas A&M San Antonio and Texas A&M University-Central Texas in Killeen, TX.
Universities (11 campuses)

- Texas A&M University – College Station (flagship university)
  - Texas A&M University at Galveston (branch)
  - Texas A&M University at Qatar (branch in the Middle East)
  - Texas A&M University Health Science Center (HSC)
- Prairie View A&M University
- Texas A&M University at Commerce
- Tarleton State University at Stephenville
- West Texas A&M University at Canyon
- Texas A&M University at Kingsville
- Texas A&M University at Corpus Christi
- Texas A&M International University at Laredo
- Texas A&M University at Texarkana
- Texas A&M University Central Texas at Killeen
- Texas A&M University at San Antonio

Agencies (7 units)

- Texas A&M AgriLife Research, Director, Dr. Craig L. Nessler
- Texas A&M AgriLife Extension, Director, Dr. Douglas Steele
- Texas A&M Engineering Experiment Station (TEEX), CEO, Gary F. Sera
- Texas A&M Engineering Extension Service (TEES), Director, Dean & Vice Chancellor, Dr. M. Katherine Banks
- Texas A&M Forest Service, Director, Thomas G. Boggus
- Texas A&M Veterinary Medical Diagnostic Laboratory (TVMDL), Director, Dr. Tammy R. Beckham
- Texas A&M Transportation Institute, Director, Dr. Dennis L. Christiansen
2.2 Texas A&M University – College Station

The flagship campus in College Station and its branch campuses (Galveston, Qatar, and the TAMU Law School) in Fall 2013 had total enrollment of 56,255 with 52,449 students on the College Station campus. There are 44,569 undergraduates and 10,389 graduate students with 4,697 of the graduate and professional students pursuing a Doctoral degree. There are 11,688 students reported as “Hispanic, Black and American Indians” comprising 20.8% of the total student population. International student enrollment is 5,171 of which 77.9% (4,165) are pursuing a graduate degree.

The College Station campus is organized into 10 distinct academic colleges, each with a Dean and multiple departments. Colleges report through the Provost and Executive Vice President, Dr. Karan Watson, to the interim President of Texas A&M, Dr. Mark Hussey (Fig. 2).
10 Academic Colleges at Texas A&M University:

- College of Agriculture and Life Sciences, Acting Dean & Vice Chancellor - Dr. William Dugas replaced Dr. Mark Hussey when he was named interim President, Jan 2014
- College of Architecture, Dean – Dr. Jorge Vanegas
- Bush School of Government and Public Service, Dean – Dr. Ryan Crocker
- College of Education and Human Development, Dean – Dr. Douglas J. Palmer
- College of Geosciences, Dean – Dr. Kate C. Miller
- College of Liberal Arts, Dean – Dr. Jose Luis Bermudez
- College of Science, Dean – Dr. H. Joseph Newton
- College of Veterinary Medicine and Biomedical Sciences, Dean – Dr. Eleanor M. Green
- Dwight Look College of Engineering, Dean and Vice Chancellor – Dr. M. Katherine Banks
- Mays Business School, Dean – Dr. Jerry R. Strawser
2.3 College of Agriculture and Life Sciences (COALS) and Agencies

The College of Agriculture and Life Sciences (COALS) is led by a Dr. Mark Hussey, Vice Chancellor and Dean for Agriculture and Life Sciences who in January 2014 was appointed interim President for Texas A&M and while Dr. Hussey is on this special assignment, Dr. William “Bill” Dugas is serving as Acting Vice Chancellor and Dean. Four of the Agencies in the Texas A&M System report to Dr. Dugas as Vice Chancellor (Texas A&M AgriLife Research, Texas A&M AgriLife Extension, Texas A&M Veterinary Medical Diagnostic Laboratory, Texas A&M Forest Service).

There are faculty affiliated with COALS departments who hold professorial rank located at the 13 Research and Extension Centers throughout Texas (Fig. 3). All faculty located at the Research and Extension Centers are promoted through their affiliated Departments, although only faculty who have classroom teaching responsibilities hold tenure within the Texas A&M System. Faculty based in College Station typically hold joint appointments in AgriLife Research or AgriLife Extension along with their TAMU (teaching) appointment. Faculty are administratively located (adloc’d) to either Texas A&M College Station, to AgriLife Research or AgriLife Extension. Faculty who are affiliated with sister institutions may apply for graduate faculty status and serve on graduate committees. The strategic plan of the college can be found at:


The College of Agriculture and Life Sciences, established in 1911, is one of 10 collegiate units on the College Station campus and it has 14 academic departments, each led by a department head. There are approximately 400 faculty in COALS. Enrollment in COALS totals 7,583 (Fall 2013) students with undergraduates (85.7%) and 1,266 (14.3%) graduate students. PhD students represent 56.8% of all graduate students in COALS. Most students are enrolled full-time (91.6%) with women constituting 53.8% of the enrollment at the undergraduate level and 48.7% at the graduate level. COALS offers 31 undergraduate degree programs, 37 MS, 24 Doctoral and 6 online graduate programs. (Appendix 3) –
Departments in COALS and Department Heads

- Agricultural Economics, Dr. Parr Rosson
- Agricultural Leadership, Education, and Communications, Dr. Jack Elliot
- Animal Science, Dr. Russell Cross
- Biochemistry & Biophysics, Dr. Greg Reinhart
- Biological and Agricultural Engineering, Dr. Steve Searcy
- Ecosystem Science and Management, Dr. David Baltensperger (interim)
- Entomology, Dr. David Ragsdale
- Horticultural Sciences, Dr. Dan Lineberger
- Nutrition and Food Science, Dr. Greg Reinhart (interim)
- Plant Pathology and Microbiology, Dr. Sandy Pierson
- Poultry Science, Dr. David Caldwell
- Recreation, Park and Tourism Sciences, Dr. Gary Ellis
- Soil and Crop Sciences, Dr. David Baltensperger
- Wildlife and Fisheries Sciences, Dr. Michael Masser
Texas A&M AgriLife Research is the state’s premier research and technology development agency in agriculture, natural resources, and the life sciences. Texas AgriLife Research has 550 doctoral-level scientists most of which are affiliated with academic departments in College Station. Texas A&M Research has 580 active research projects with an annual research budget over $200 million to help improve the productivity, efficiency, and profitability of agriculture. At the same time, Texas A&M AgriLife Research focus is to conserve natural resources and protect the environment. (See: [http://agriliferesearch-tamu-edu.wpengine.netdna-cdn.com/files/2011/03/ResearchStrategicPlan.pdf](http://agriliferesearch-tamu-edu.wpengine.netdna-cdn.com/files/2011/03/ResearchStrategicPlan.pdf) for the Agency’s strategic plan). (Appendix 1)
Texas A&M AgriLife Extension has offices in 250 of Texas’ 254 counties often with multiple county agents that serve youth (4H), agriculture, and community development. AgriLife Extension has divided the state into 12 Districts (Fig. 4) and each District is administered by a District Extension Administrator. Multiple Districts that have similar climate or cropping systems are coalesced into regions and each region has a Regional Extension Administrator. The extension specialists (all have a PhD and hold faculty rank and are often members of the graduate faculty) are administrated through Departments. However, they coordinate their activities with their respective Regional and District Administrators where they are located and the Associate Department Head and Program Leader for Extension Entomology (Dr. Charles Allen). Most Extension Specialists have state-wide responsibilities in their area of expertise. Extension specialists are promoted through the professorial ranks by their peers in the Department. They are reviewed annually by the Associate Head for Extension Entomology. Extension Specialists are typically located at one of the 13 Research and Extension Centers throughout the state.
(see: http://agrilifeextension.tamu.edu/files/2011/01/SSPSummary.pdf for the agency’s strategic plan). (Appendix 2)
Section 3

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3. DEPARTMENT OF ENTOMOLOGY

A critical component of the academic program review is a self-study by the department. The self-study document provides the context of the program within the backdrop of the University, College and the administrative structure that is unique at every institution. While the self-study provides the review team with the basic information about the department and its programs, since the last review, it should also provide the benchmarks that we will use to plan for the future. The assembled information should serve as the principal data source for the external review team to use to assess our strengths, concerns and future plans and direction.

3.1 Mission

The mission of the Department is to “to create and implement knowledge that improves lives”. The primary strength of the Department is our collective expertise to address diverse questions that span across programmatic areas and affect most aspects of human endeavor.

Faculty, students and staff conduct discovery, transitional, and applied entomological research, which is delivered to Texans and the world, through educational outreach, classroom teaching, and distance education.

3.2 Program History

Courses in beekeeping and other entomological subjects were listed in the college catalog as early as 1880, thus it seems fitting that we used the honey bee, *Apis mellifera*, for the cover of this self-study. These courses were taught by faculty in the Departments of Horticulture and Botany but these courses moved to the Department of Entomology when it was established in 1899. The initial reason to begin a Department of Entomology was to “devise means to control the boll weevil” which was plaguing cotton farmers since it first entered the Lower Rio Grande Valley in 1892. Flash forward a mere 115 years later, and we are still working on this same problem; however, through efforts led by Texas A&M scientists the boll weevil has been eradicated from all other cotton growing regions in Texas and from all other cotton growing states in the US except in the subtropical climate of the Lower Rio Grande Valley of Texas where the international border poses serious problems for expanding the eradication program southward. The boll weevil continues to persist in the LRGV and eradication will take new advances in pest control and deployment strategies. Modern management techniques makes this insect far less damaging now than in 1892 when growers could anticipate a 40-50% yield loss.
By 1907 the college catalog listed 11 courses offered in the Entomology Department. The first BS degree in Entomology was granted in 1902. A graduate program was begun in the mid 1920’s with the first MS student in Entomology graduating in 1926. Permission was received by the department in 1935 to offer a PhD program with its first doctoral degree in Entomology conferred in 1943. Following WWII there were many veterans who returned to college or began graduate degrees and this period ushered in the modern era of broad spectrum insecticide use making crop production less risky with respect to insect pests.

This explosive growth of insecticide use in agriculture led faculty at Texas A&M and at other universities throughout the country to voice concerns about adverse environmental effects associated with overuse of insecticides. Dr. Perry Adkisson and others in the Department of Entomology were early advocates of Integrated Pest Management (IPM) and much of the decades of the 60’s and 70’s were spent on studying the basic biology, physiology, toxicology, and ecology of insect populations so that more environmentally sound control options could be made available to the producers of food, fiber and forest products in the State of Texas and beyond. We owe much of our current departmental structure to this vision of Dr. Adkisson. Faculty were hired and stationed at the Research and Extension Centers who became an integral part of our department and our graduate training program. The IPM Agents (professional staff with an MS degree) are crop production specialists who collectively form one of the most powerful agents of change in our crop production system. Discoveries first observed in small field studies by faculty and their graduate students, can be tested in a broad array of environments and, if appropriate, rapidly implemented over tens of thousands of acres. It is one of the most effective means of taking research findings and implementing those findings by engaging this cohort of crop production professionals.

The Department of Entomology currently has 26 faculty located in College Station (1 clinical, 23 tenured or tenure-track, 2 lecturers) who are the classroom teachers for the degree programs (Table 1). In addition to these faculty there are, 9 AgriLife Extension faculty and 7 AgriLife Research faculty who are often part of the entomology graduate faculty but they are employed through one of the “Agencies” that are part of the Texas A&M System. All agency faculty hold a faculty rank (Assistant Professor, Associate Professor or Professor).

### Table 1. Number of faculty in Entomology by tenure, location, and appointment (administrative location).

<table>
<thead>
<tr>
<th>Category</th>
<th>Tenure</th>
<th>Location</th>
<th>Appointment (Ad loc’d)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Tenured/Tenure-track 24</td>
<td>On Campus 26</td>
<td>TAMU or Teaching (02) 23.5</td>
</tr>
<tr>
<td></td>
<td>Non-tenured 18</td>
<td>Off Campus 16</td>
<td>AgriLife Research (06) 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>AgriLife Extension (07) 8</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Clinical 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Administration 3.5</td>
</tr>
</tbody>
</table>

Department of Entomology
but most are located at one of the 13 Research and Extension Centers yielding a total of 42 people in Entomology who have a PhD and who hold faculty rank and this includes the faculty rank of Lecturer and Clinical Assistant Professor.

In addition to the 42 faculty there are 20 IPM Agents and Extension Program Specialists affiliated with Entomology. These professionals (not included in Table 1) have at least an MS degree in Entomology or a related field and are affiliated with the Department of Entomology through AgriLife Extension. These professional extension educators are the “boots on the ground” in our system and they work directly with growers in a 2 to 3 county area to organize a field scouting program for the crops of importance in their region or with an urban clientele.

This cadre of 62 professional entomologists is a powerful force and those who are based off campus pay a key role in graduate education for those students who have a field-based research program. The faculty and professional staff can assist graduate students in locating appropriate field locations and their wealth of experience helps young scientists meld together the theoretical framework with the practical knowledge needed for field experiments to be successful.

3.3 Previous External Review (2006)

Our last Academic Program Review was conducted in 2006. The Self-Study conducted for that review can be found at


3.3.1 Findings and Actions To-Date

The outcomes and progress made on 5 challenge areas since our 2006 academic program review are chronicled in status reports submitted to the Provost’s Office in 2007 (Appendix 4) and 2011 (Appendix 5). The five challenge areas were

- Availability of appropriately equipped space.
- Avoiding potential negative impacts from the launch of the new B.S. degree in Forensic & Investigative Sciences (FIVS).
- Funding model for development of distance education.
- Facilities repairs and resource expansion.
- Graduate student recruiting.
3.3.2 Improvements and Concerns Remaining From the Last Program Review

Availability of appropriately equipped classrooms remains a concern for both lecture and teaching laboratories. Four classrooms under our control have been in service since 1978 without major repair or renovation. These classrooms continue to receive increased usage by growing academic programs in our department and by courses with different demands and technologies than were originally planned. Pending changes in university course fee structure and how these funds are made available to the department will impact proposals for classroom improvements and renovations. Plans to address classroom upgrades will be addressed in the current self-study.

Enrollment in the undergraduate Bachelor of Science degree program in Entomology has stabilized at approximately 70 majors following implementation of the undergraduate Bachelor of Science degree program in Forensic & Investigative Sciences (FIVS). Overall undergraduate enrollment in Entomology courses continues to grow through marketing of value-added educational opportunities for attaining a double-major, minor, or academic certificate in Public Health Entomology. Entomology is a “discovery” major, thus emphasis on introductory/service courses is essential to attracting students. Freshman admission and enrollment in the FIVS program continues to grow. This program received accreditation in 2012 and has met new curriculum standards set by the Forensic Science Education Program Commission (FEPAC) with the curriculum changes beginning in the 2014-15 academic year. Student enrollment data in the current self-study reflect these changes and future trends.

Distance education opportunities continue to change, driven in part by student demand and by funding models for support. Departmental course offerings for distance delivery are increasing with the success of ENTO 320 *Honey Bee Biology*, and include ENTO 322 *Insects and Human Society* launched in 2013 and FIVS 123 *Forensic Investigations* to be launched fall semester 2014. Both ENTO 322 and FIVS 123 have been accepted into the new university core curriculum area of Life & Physical Sciences. While these courses expand the population of students we serve and potentially reduce time to degree, sustaining and growing distance delivery courses will continue to depend on funding stabilization.

A *Graduate Student Recruitment Committee*, was formally appointed in 2012/2013 but had been operating as an ad-hoc committee since 2009. This committee was formed as a response to the previous academic program review that recommended that we begin a formal recruitment effort to increase the number and quality of the applicants to our program. This committee organizes an annual recruitment visit by the top applicants to
our graduate program. In February 2014 we hosted 10 students for a 3-day recruitment event where these students visited labs of potential advisors, socialized with the current cohort of graduate students, and participated in a recognition program for our current students. Since 2009 we have hosted a total of 44 students for recruitment visits typically as a cohort of our best applicants and from this effort 16 (36%) students have matriculated. In addition 18 students have been awarded multi-year fellowships offered through the Office of Graduate and Professional Studies (OGAPS).

Table 2. Graduate Student Recruitment, Matriculation and Fellowships Awarded

<table>
<thead>
<tr>
<th>Year</th>
<th>Recruited</th>
<th>Matriculated</th>
<th>Merit Fellowship</th>
<th>Diversity Fellowship</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2009</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2010</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2012</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>2013</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2014</td>
<td>10</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

1 This includes Merit and Diversity Fellowships from TAMU, Pathways to the Doctorate, and other fellowships including NSF & USDA predoctoral fellowships and Foundation accounts which support graduate fellowships. This does not include any fellowship which provides less than 1 year of complete support.

3.4 Departmental Structure and Organizational Chart and Faculty Committees

The leadership in the Department of Entomology consists of the Department Head and two Associate Department Heads, one for Academic Programs and Graduate Advising (Dr. Pete Teel) and one for Extension Entomology Program Leadership and as the IPM Program Coordinator for the State of Texas (Dr. Charles Allen). One of our undergraduate degree programs, Forensic and Investigative Sciences (FIVS) has received national accreditation through the American Academy of Forensic Scientists, specifically the Forensic Science Education Programs Accreditation Commission (FEPAC). One FEPAC requirement is to have a Director which is Dr. Kevin Heinz and Drs. Teel and Tomberlin serve as Associate Directors. Any of these faculty can represent the program and in concert this team responds to inquiries and orchestrates needed updates or changes to the curriculum.

The Department also houses a regulatory unit, the Texas Apiary Inspection Service (TAIS) which has authority over all aspects of beekeeping in Texas and issues permits for beekeepers who manage and move honeybees within Texas and across counties lines (intrastate permit) and those who move bees to other states (interstate permit) for pollination services.
Key research facilities associated with the Department of Entomology include the Texas A&M Insect Collection (TAMUIC) which has a full-time collections manager (Dr. Ed Riley) supervised by the faculty curator (Dr. John Oswald). We also have a federally licensed quarantine facility (USDA APHIS PPQ) where exotic insects can be maintained and housed with Mr. Pete Krauter designated as our quarantine officer. Both of these facilities are in need of serious upgrades because the current space is inadequate.

The Department of Entomology has a series of elected, appointed and standing committees. Membership, method of appointment and faculty involved in each of these committees (See Appendix 6).
### 3.5 Overview of the Department Budget and Expenditures

The Department of Entomology, like other departments of its kind at land grant institutions, funds its activities through a variety of sources. Table 3 provides a history of funding levels from appropriated funds over the seven year period following our previous Academic Program Review.

#### Table 3. Appropriated Funds and Expenditure

<table>
<thead>
<tr>
<th></th>
<th>Teaching</th>
<th>Research</th>
<th>Extension</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FY13 Income</strong></td>
<td>$1,537,908</td>
<td>$1,471,608</td>
<td>$ 950,851</td>
<td>$3,960,367</td>
</tr>
<tr>
<td>Faculty Salaries</td>
<td>$1,253,217</td>
<td>$1,115,701</td>
<td>$ 776,585</td>
<td>$3,145,503</td>
</tr>
<tr>
<td>Staff Salaries</td>
<td>$ 284,293</td>
<td>$ 354,953</td>
<td>$ 60,126</td>
<td>$ 699,372</td>
</tr>
<tr>
<td>Operating</td>
<td>$    398</td>
<td>$    954</td>
<td>$ 114,140</td>
<td>$ 114,140</td>
</tr>
<tr>
<td><strong>FY12 Income</strong></td>
<td>$1,501,754</td>
<td>$1,440,144</td>
<td>$ 986,849</td>
<td>$3,928,747</td>
</tr>
<tr>
<td>Faculty Salaries</td>
<td>$1,194,331</td>
<td>$1,083,101</td>
<td>$ 926,146</td>
<td>$3,203,578</td>
</tr>
<tr>
<td>Staff Salaries</td>
<td>$ 306,794</td>
<td>$ 350,909</td>
<td>$ 59,992</td>
<td>$ 699,372</td>
</tr>
<tr>
<td>Operating</td>
<td>$    629</td>
<td>$   6,134</td>
<td>$  711</td>
<td>$  711</td>
</tr>
<tr>
<td><strong>FY11 Income</strong></td>
<td>$1,755,822</td>
<td>$1,583,443</td>
<td>$1,125,874</td>
<td>$4,465,139</td>
</tr>
<tr>
<td>Faculty Salaries</td>
<td>$1,427,949</td>
<td>$ 947,536</td>
<td>$ 985,525</td>
<td>$3,361,010</td>
</tr>
<tr>
<td>Staff Salaries</td>
<td>$ 327,873</td>
<td>$ 401,481</td>
<td>$108,876</td>
<td>$ 838,230</td>
</tr>
<tr>
<td>Operating</td>
<td>$    -</td>
<td>$ 234,426</td>
<td>$ 31,473</td>
<td>$  31,473</td>
</tr>
<tr>
<td><strong>FY10 Income</strong></td>
<td>$1,669,193</td>
<td>$1,719,110</td>
<td>$1,200,281</td>
<td>$4,588,584</td>
</tr>
<tr>
<td>Faculty Salaries</td>
<td>$1,383,820</td>
<td>$1,092,379</td>
<td>$ 907,159</td>
<td>$3,383,358</td>
</tr>
<tr>
<td>Staff Salaries</td>
<td>$ 285,369</td>
<td>$ 407,189</td>
<td>$101,979</td>
<td>$ 794,537</td>
</tr>
<tr>
<td>Operating</td>
<td>$    4</td>
<td>$ 219,542</td>
<td>$ 191,143</td>
<td>$  191,143</td>
</tr>
<tr>
<td><strong>FY09 Income</strong></td>
<td>$1,534,060</td>
<td>$1,766,169</td>
<td>$1,174,039</td>
<td>$4,474,268</td>
</tr>
<tr>
<td>Faculty Salaries</td>
<td>$1,195,763</td>
<td>$1,109,863</td>
<td>$ 863,361</td>
<td>$3,168,987</td>
</tr>
<tr>
<td>Staff Salaries</td>
<td>$ 337,977</td>
<td>$ 449,970</td>
<td>$104,589</td>
<td>$ 892,536</td>
</tr>
<tr>
<td>Operating</td>
<td>$    320</td>
<td>$ 206,336</td>
<td>$ 206,089</td>
<td>$  206,089</td>
</tr>
<tr>
<td><strong>FY08 Income</strong></td>
<td>$1,492,852</td>
<td>$1,750,336</td>
<td>$1,156,990</td>
<td>$4,400,178</td>
</tr>
<tr>
<td>Faculty Salaries</td>
<td>$1,259,449</td>
<td>$1,032,509</td>
<td>$ 958,062</td>
<td>$3,250,020</td>
</tr>
<tr>
<td>Staff Salaries</td>
<td>$ 233,036</td>
<td>$ 441,524</td>
<td>$104,584</td>
<td>$ 779,144</td>
</tr>
<tr>
<td>Operating</td>
<td>$    367</td>
<td>$ 276,303</td>
<td>$ 94,344</td>
<td>$  94,344</td>
</tr>
<tr>
<td><strong>FY07 Income</strong></td>
<td>$1,436,775</td>
<td>$1,731,924</td>
<td>$1,131,020</td>
<td>$4,299,719</td>
</tr>
<tr>
<td>Faculty Salaries</td>
<td>$1,165,483</td>
<td>$ 971,452</td>
<td>$ 913,698</td>
<td>$3,050,633</td>
</tr>
<tr>
<td>Staff Salaries</td>
<td>$ 201,136</td>
<td>$ 507,566</td>
<td>$ 90,239</td>
<td>$ 798,941</td>
</tr>
<tr>
<td>Operating</td>
<td>$    70,156</td>
<td>$ 252,906</td>
<td>$ 127,083</td>
<td>$  127,083</td>
</tr>
</tbody>
</table>
Table 4. Faculty Salary Comparison (T/TT only)

<table>
<thead>
<tr>
<th>Full Professors</th>
<th>Associate Professors</th>
<th>Assistant Professors</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANNUAL Salaries</td>
<td>ANNUAL Salaries</td>
<td>ANNUAL Salaries</td>
</tr>
<tr>
<td>No.</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>12</td>
<td>$183,795</td>
<td>$98,654</td>
</tr>
</tbody>
</table>

3.5.1 Teaching Budget

Classroom instructional budgets. Funds that support the teaching mission, i.e., funds not used to support faculty base salary, comes from several major sources: Instructional Enhancement & Equipment Access Fee (IEEF), Distance Education Differential Tuition (DE Tuition), Graduate Program Enhancement Fund, High Impact Learning (HIL) strategic initiative, and other programs or initiatives that are awarded on a competitive basis. Examples of these other programs include, support for summer teaching, development of distance education courses or sections. These funds all become part of the overall classroom instructional budget.

The expenditures using the instructional funds and the source of income by source are outlined in Table 5. The two largest changes in these funds have been the ability to charge DE Differential Tuition which has gone from a minor component of the budget just 2 years ago to a projected $200,000 in revenue in FY14. The other budget that has increased significantly is the IEEF which has upon systematic review of all laboratory fees Entomology charged in all of the courses was reviewed and has led to approximately a 40% increase in these fees ($127,383 in FY11 to $179,093) through spring semester 2014.

The largest expenditure in the classroom instructional budget is salaries used to hire the GATs and lecturers. In addition, we use these funds to purchase laboratory supplies and disposables and we provide a copy budget for each course. In the near future we plan to procure new microscopes that will enhance the teaching function in Entomology. As funding streams become more predictable, larger projects such as remodeling of departmentally controlled teaching laboratories (lecture classrooms are managed centrally) are being planned.

Over the past three years we have increased the classroom instructional budget by making annual adjustments in the IEEF to reflect the true cost of laboratory instruction, particularly in those courses focused on molecular biology and forensic science. We have sought programmatic support for the FIVS program because of the increasing
enrollment we see in this program and the need to continually keep our curriculum up
to date and to respond to needed changes mandated by the national accreditation body,
FEPAC. In summary, we have increased classroom instructional budgets and used
those funds to enhance our teaching facilities and staff. Details of how each of these
various funds operates are outlined below.

**IEEF.** These are is a course fees paid by each student who enrolls in a specific course.
The fee for each course is reviewed annually by the Associate Department Head for
Academic Programs who works with the Department Head and College leadership to
request changes to fees through an annual Course Fee Revision process. Approximately 90% of the IEEF is returned to the department each semester and it is
institutional policy for these fees to be set so that “The rate of an incidental fee must
reflect the actual cost to the university of the materials and services for which the fee is
collected.” Only a small portion of the IEEF can be carried forward each budget cycle.
In the Department of Entomology, the largest portion of IEEF is used to support GATs
for those courses which have laboratories and need TAs support (Fig. 6).

**Figure 6. Graduate Assistants – Teaching (GATs) by semester in the Department of
Entomology, 2007-2014**
**Distance Education Differential Tuition.** This is a fee students pay to access online course sections. If the course has a companion section that is a traditional lecture format and taught on campus (a 500 section in our system) then departments are allowed to charge this DE Differential Tuition to those students who, by choice, register for the online version (a 700 section) of the course. These fees are set by the department and 70% of the funds are returned to the department. The other 30% is retained by the University (20%) and College (10%). The current DE Differential Tuition in Entomology is $150/credit.

**Table 5. Annual Income and Expenses for the Entomology Teaching Program.**

<table>
<thead>
<tr>
<th>Income</th>
<th>FY07</th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14 (projected)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEEF</td>
<td>120,216</td>
<td>126,001</td>
<td>133,202</td>
<td>135,467</td>
<td>127,383</td>
<td>169,215</td>
<td>169,637</td>
<td>179,093</td>
</tr>
<tr>
<td>Dist. Ed. Diff. Tuition</td>
<td></td>
<td>1,496</td>
<td>3,733</td>
<td>3,733</td>
<td>96,277</td>
<td>200,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other grad budgets¹</td>
<td>100,843</td>
<td>141,854</td>
<td>124,436</td>
<td>124,436</td>
<td>123,512</td>
<td>106,945</td>
<td>142,504</td>
<td>122,845</td>
</tr>
<tr>
<td>Summer Teaching</td>
<td>12,500</td>
<td>21,000</td>
<td>21,000</td>
<td>11,500</td>
<td>12,300</td>
<td>14,500</td>
<td>19,600</td>
<td></td>
</tr>
<tr>
<td>Provost support FIVS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>57,000²</td>
</tr>
<tr>
<td>TOTAL</td>
<td>221,059</td>
<td>280,355</td>
<td>278,638</td>
<td>282,399</td>
<td>266,128</td>
<td>292,193</td>
<td>422,918</td>
<td>578,538</td>
</tr>
</tbody>
</table>

| Expenses                |       |       |       |       |       |       |       |                 |
| GATS                    | 195,448 | 229,841 | 187,224 | 204,422 | 212,006 | 210,136 | 244,024 | 300,000         |
| Lecturers               | 12,500 | 12,500 | 33,500 | 21,000 | 5,000 | 17,000 | 23,541 | 66,488          |
| Course supplies         | 12,500 | 12,750 | 14,500 | 14,250 | 12,350 | 13,500 | 14,150 | 15,000          |
| Equip. upgrade          | 0     | 0     | 0     | 0     | 0     | 0     | 22,293 | 50,050          |
| Lab repair              | 19,414 | 2,552 | 21,289 | 67,983 | 70,001 | 0     | 10,071 | 0               |
| Remodel 5 Labs          |       |       |       |       |       |       |       | 90,000          |
| TOTAL                   | 239,862 | 257,643 | 256,513 | 307,655 | 299,357 | 240,636 | 314,079 | 521,538         |

¹ Graduate Program Enhancement Funds, IEEF carry forward, and other special funding
² One-time allocation from Provost for FIVS program

We have two courses that currently offer a DE section, ENTO 320, *Honey Bee Biology* and ENTO 322, *Insects in Human Society*. Each of these courses are now taught both academic semesters and in the summer. Both have enjoyed strong enrollment with several hundred students taking these courses in any given semester (Fig. 7). Enrollment in the summer is typically substantially lower than enrollment in each of the
academic semesters, but routinely we have enrollments in excess of 50 students – an enrollment target set by the college for summer session course offerings. In addition, ENTO 322 was accepted into the new University Core Curriculum (UCC) that goes into effect Fall 2014. ENTO 322 meets the instructional requirements for the Life and Physical Science core. Being part of the University Core Curriculum will help maintain enrollment in this course.

**Figure 7. Annual cumulative enrollment in eight Entomology and Forensic Science service courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>FY07</th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forensic Entomology</td>
<td>94</td>
<td>164</td>
<td>181</td>
<td>212</td>
<td>101</td>
<td>144</td>
<td>149</td>
</tr>
<tr>
<td>Intro FIVS</td>
<td>0</td>
<td>72</td>
<td>146</td>
<td>142</td>
<td>126</td>
<td>175</td>
<td>152</td>
</tr>
<tr>
<td>Medical Entomology</td>
<td>55</td>
<td>41</td>
<td>47</td>
<td>48</td>
<td>42</td>
<td>73</td>
<td>96</td>
</tr>
<tr>
<td>Insects and Human Society</td>
<td>514</td>
<td>483</td>
<td>428</td>
<td>437</td>
<td>447</td>
<td>414</td>
<td>590</td>
</tr>
<tr>
<td>Honey Bee Biology</td>
<td>200</td>
<td>190</td>
<td>327</td>
<td>412</td>
<td>416</td>
<td>585</td>
<td>468</td>
</tr>
<tr>
<td>Global Health Entomology</td>
<td>0</td>
<td>0</td>
<td>35</td>
<td>79</td>
<td>151</td>
<td>217</td>
<td>323</td>
</tr>
<tr>
<td>Veterinary Entomology</td>
<td>446</td>
<td>451</td>
<td>452</td>
<td>422</td>
<td>441</td>
<td>391</td>
<td>314</td>
</tr>
<tr>
<td>General Entomology</td>
<td>254</td>
<td>222</td>
<td>248</td>
<td>293</td>
<td>274</td>
<td>228</td>
<td>212</td>
</tr>
</tbody>
</table>

**Summer Session Courses.** Summer teaching was encouraged through a small grants program that provides funds to cover the cost of instructors that wish to offer courses in the summer. One of the criteria that COALS administration used was to seek courses that enrolled at least 50 students. The goal of the program was to increase the use of campus classrooms during the summer months or to provide courses that would help students graduate on time. ENTO 320 and ENTO 322 were proposed as appropriate summer courses. Although we were able to meet the enrollment goal, the university only realized modest success of this program across the campus. It is anticipated that this program will end after FY14. We may continue to offer these two courses if sufficient demand is present because both courses do qualify for DE Differential
Tuition. In general, ENTO 322 summer offerings have been a net gain while for ENTO 320 the annual total number of students taught has actually declined slightly. We believe ENTO 320 enrollment decline is because we began charging the DE Differential Tuition.

In general, T/TT faculty are not used as instructors in the summer, but rather advanced PhD students, recent graduates, and lecturers are hired so that faculty can concentrate on research endeavors.

**Enrollment trends.** Enrollment trends in the “service courses” (Fig. 7) shows there has been a steady 7% average annual growth in enrollment since FY07 to present, with a cumulative 47% increase in the number of students taking Entomology courses from FY07 to FY13 (1,563 to 2,304). This increase in student enrollment reflects a multitude of management strategies. One strategy the department initiated was to develop the capacity to offer these service courses each semester. This strategy has given flexibility to advisors in scheduling Entomology courses which encourages them to include ENTO courses into a degree program. Our own advising staff have worked diligently with their counterparts across the University to make them aware of such changes. The Associate Department Head for academic instruction works with his peers across the University to let them know about such changes we are considering and he seeks their counsel so that changes to the program translates into putting students in our service courses.

We have committed to develop a new service course, FIVS 123 *Forensic Investigations*, which was accepted for the University Core Curriculum in the Life and Physical Sciences and will be offered for the first time Fall 2014. If successful, a face to face version of this course will be considered in the future which will enable us to assess DE Differential Tuition for those students taking this online course. An online section for FIVS 205, *Introduction to Forensic & Investigative Sciences*, is planned for Fall 2016.

**Student Credit Hours and Weighted Student Credit Hours.** A key metric for every academic program at Texas A&M is the number of student credit hours (SCH) which is the product of the credits in a particular course times the number of enrolled students and Weighted Student Credit Hours (WSCH). WSCH uses a weight measured by the class rank of the students enrolled in the class and whether our courses are viewed as Science (code 02) or Agriculture (code 05). Funding from The Higher Education Coordinating Board (THECB) to Texas A&M University is based on WSCH. Such
funding does not find its way to the department in any sort of formula, but rather these are the funds the University President, through the Provost’s office, has to distribute to Colleges to support academic programs.

The trend in SCH and WSCH in Entomology is for a steady increase in both metrics. Entomology, as 1 of 14 academic units in COALS is consistently 5th or 6th in terms of SCH and WSCH generation. In 2013, academic programs in Entomology generated 10,004 SCH and 39,206 WSCH (Fig. 8). This represents an 18.8 and 20.0% increase over the SCH and WSCH, respectively, reported in 2007.

During that same time period the College showed an 8.2 and 7.6% increase, respectively. There are three departments who generate 2X to 3X more SCH and WSCH than Entomology and include Biochemistry & Biophysics, Animal Science, and Agricultural Economics. Since 2008 we have seen steady growth in WSCH. We believe the FIVS program will continue to help us increase our WSCH generation, but so too will the shift from having a graduate program with equal number of MS students and PhD students, to a graduate program with predominantly PhD students.

**Figure 8. Student Credit Hours (SCH) and Weighted SCH (WSCH) for all courses with ENTO and FIVS designation, FY07-FY13**
4. DEGREE PROGRAMS

4.1 Undergraduate Programs

The Department of Entomology offers two undergraduate degrees, a traditional major in Entomology (ENTO) and a relatively new major in Forensic and Investigative Sciences (FIVS). The Department is one of the top entomology departments in the United States based on its outstanding students, staff and faculty, excellent facilities, and exceptionally diverse programs that improve lives throughout Texas, the region, and the world.

The Bachelor of Science degree in entomology is intended to serve students who have discovered an interest in insects and entomology and have developed correspondingly diverse career interests. To meet the flexibility of diverse entomological career interests, this degree program features a foundation suite of upper-division entomology courses and a broad range of directed and free electives, enabling us to tailor a student’s course work to their career and educational goals. This is the only undergraduate Bachelor of Science degree program in entomology in the State of Texas.

The Bachelor of Science degree in forensic and investigative sciences grew out of a course in forensic entomology that later turned into an academic track program and finally to a separate major. The FIVS degree is intended to serve students with interests in forensic science and law. This degree program was initiated in 2007 and is the only FEPAC accredited undergraduate Bachelor of Science degree in forensic science in the State of Texas.

These two undergraduate degree programs are vastly different in student recruitment, matriculation patterns, admissions requirements, retention, and progression through the degree plan. However, both degree programs share common characteristics such as an expectation that all students incorporate high impact learning, and the curriculum uses a variety of methods to achieve experiential learning. Those methods include writing intensive courses, collaborative assignments, undergraduate research, professional internships, and capstone courses and projects. These graduation requirements in the two undergraduate degree programs meet expectations as articulated in the Academic Master Plan and the Quality Enhancement Plan (QEP) for Texas A&M University.

4.1.1 Entomology (ENTO)

Curriculum in Entomology (2006-2014). The undergraduate degree in Entomology is a balance of course experience in basic and applied science all with focus on insects and their relatives. Insects are the most numerous and diverse multicellular life forms on earth; they are essential constituents of virtually every terrestrial and freshwater aquatic ecosystem. While society benefits from the many diverse roles played by the vast majority of insects, some species may become limiting factors in the production, processing and storage of our food and fiber crops, and to the health and well-being of humans and animals. The knowledge and skills possessed by entomologists are essential components of modern integrated pest management strategies designed to safely and efficiently produce adequate food supplies for a continuously expanding human population, and to impede the transmission of insect-borne pathogens, while at the same time protecting our endangered species and fragile ecosystems.

The Bachelor of Science degree in Entomology leads to a wide array of career paths with strong employment demands among corporate and private agribusiness; urban pest management companies; scientific and technical organizations; public health agencies; local, state and federal governments; and international organizations. In addition, employment opportunities exist in areas such as forensic entomology, conservation biology, environmental quality, food quality, regulatory inspection, public health and many more.

To meet the flexibility of diverse entomological career interests, this degree program features a foundation suite of upper-division entomology courses (insect systematics, insect ecology, insect physiology and molecular genetics) and a broad range of directed and free electives, enabling us to tailor their course work to their career and educational goals. Our curriculum is sufficiently flexible such that a student, in consultation with the academic advisor, may tailor the degree to meet their individual academic goals, including requirements for graduate school, professional schools in the health career areas (medicine, veterinary science, dental school and nursing) as well as providing the analytical skills needed for law school.

Our department also participates in the Texas A&M accelerate online program for teaching certification, which is an innovative approach to training Texas secondary science teachers to gain the background education needed to prepare for certification to teach science grades 8–12.
Students majoring in related areas such as agronomy, animal science, horticulture, biology, genetics and biomedical sciences may wish to consider augmenting their knowledge base and broaden their career opportunities by electing to either double major or to minor in entomology, or to seek the certificate in Public Health Entomology.

The current curriculum worksheet the advising staff use to track student progress is appended below as Catalog 136 (Fall 2013). (Figure 9).

**Curriculum in Entomology (Fall 2014).** (Figure 10) Beginning Fall 2014 the B.S. Entomology curriculum will change to meet state and institutional revisions to the course curriculum. Entomology Curricular Changes for Catalog 137 (Fall 2014) are outlined below and in the appended curriculum sheet (Figure 10) we have highlighted the key changes. Specifically,

1. University Core Curriculum Change: Removed KINE 199 (1 hour)
2. University Core Curriculum Change: Removed KINE 198 (1 hour)
3. University Core Curriculum Change: Removed ENGL 104 as required and indicated “Communications elective (1)” [see Freshman Year, 2nd Semester]
5. University Core Curriculum Change: Renamed Visual and Performing Arts Category to “Creative Arts elective” [See Junior Year, 2nd Semester]
6. Added ENTO 201 General Entomology as a required course [See Freshman Year, 1st Semester]
7. Changed Biological Science elective to “BIOL 111” required [See Freshman Year, 1st Semester]
8. Changed Biological Science elective to “BIOL 112” required [See Freshman Year, 2nd Semester]
9. Changed Mathematics elective to “MATH 142 or PHIL 240” [See Freshman Year, 2nd Semester]
10. Removed International and Cultural Diversity within the curriculum and indicated in a footnote as an ‘additional requirements for baccalaureate degree.

There are 23 hours of technical electives and 12 hours of general electives with the BS- ENTO curriculum plan as proposed. See Appendix 10 for all course titles in ENTO.
# Figure 9. Entomology Curricula Catalog 136 (Fall 2013)

## Department of Entomology

### Curricula in Entomology

#### Freshman Year

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>SCH</th>
<th>Grade</th>
<th>Sub</th>
<th>2nd Semester</th>
<th>SCH</th>
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<tbody>
<tr>
<td>AGLS 101</td>
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<td></td>
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<td>CHEM 102/112</td>
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<td>CHEM 101/111</td>
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<td>ENGL 104</td>
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<td>Math/Phil elective (2)</td>
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<td>MATH 141</td>
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<tr>
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#### Sophomore Year

<table>
<thead>
<tr>
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<tbody>
<tr>
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<td></td>
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<td>POLS 207</td>
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<td>Organic Chemistry elective (4)</td>
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<td>American History elective (2)</td>
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<tr>
<td>Social &amp; behavioral science elective (2)</td>
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<td></td>
<td></td>
<td>Humanities elective (2)</td>
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<tr>
<td>ENTO 482</td>
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<td></td>
<td></td>
<td>Int. Cultural/Diversity elective (2)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>KINE 198</td>
<td>1</td>
<td></td>
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#### Junior Year

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<thead>
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<th>Grade</th>
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<tbody>
<tr>
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<td>Visual &amp; Perf. Arts elective (2)</td>
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<td></td>
<td></td>
<td>KINE 199 (S/U)</td>
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#### Senior Year

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<tr>
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<tr>
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<td>Electives (2)</td>
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<tr>
<td>Technical electives (3)</td>
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<td></td>
<td>Technical electives (3)</td>
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<td>Electives (2)</td>
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<td></td>
<td></td>
<td>14</td>
<td></td>
<td></td>
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<td>16</td>
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</tbody>
</table>

Total Hours 120

### Notes:

1. **BIO 111 and 112 OR** BIO 101 and BIO 107 (BIO 111/112 Sequence Preferred)
2. To be selected from the University Core Curriculum and in consultation with student's academic advisor in the department. Six hours of international and cultural diversity electives are also required; these courses may fulfill other degree requirements as well. See the list of approved courses.
3. Technical electives must be selected in consultation with the student's advisor or from the current list of approved electives published by the department.
4. CHEM 222 or 227.

### Additional Requirements for Baccalaureate Degree

- Foreign Language (2 yrs same language in HS, 1 yr college)
- Writing Intensive Course (2 course designated W in major)

### Technical Electives: (choose from)

## Figure 10. Entomology Curricula Catalog 137 (Fall 2014)

<table>
<thead>
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<th>Catalog 137 (Fall 2014)</th>
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<td><strong>Department of Entomology</strong></td>
<td><strong>Curricula in Entomology</strong></td>
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<td>SCH</td>
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<td>CHEM 101/111 Gen Chem I/Lab</td>
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<td>ENTO 201 General Entomology</td>
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<td>MATH 141</td>
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<td>BIOL 111 Gen Biology I</td>
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<td>ENTO 482 Prof. Develop</td>
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<td>Elective</td>
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<td><strong>Junior Year</strong></td>
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<td>ENTO 305 Morphology</td>
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<td>ENTO 306 Physiology</td>
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<td>Technical elective (2)</td>
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<td>16</td>
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<td><strong>Senior Year</strong></td>
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<tr>
<td>1st Semester</td>
<td>SCH</td>
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<td>ENTO 428 Insect Biotechnology</td>
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<td>Technical electives (2)</td>
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<td>ENTO 481 Seminar</td>
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<td>15</td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td>120</td>
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</table>

### Notes:
1. To be selected from the University Core Curriculum and in consultation with student's academic advisor in the department. Six hours of international and cultural diversity electives are also required; these courses may fulfill other degree requirements as well. See the list of approved courses.

2. Technical electives must be selected in consultation with the student's advisor or from the current list of approved electives published by the department.

3. CHEM 222 or 227.

### Additional Requirements for Baccalaureate Degree
- Foreign Language (2 yrs same language in HS, 1 yr college)
- Writing Intensive Course (2 course designated W in major or 1 W and 1 C course in major)
- International and Cultural Diversity Courses (2 courses for 6 credit hours)

### Technical Electives (choose from)
ENTO Admissions: Freshman Admissions. Texas A&M University utilizes a centralized, online application for admissions for all freshman applicants. Choice of major is not a factor in the admissions decision and the department is not involved in the admission decision for freshman students. Entomology is typically described as a discovery major and we have historically received few students through the freshman admissions process (Table 6) thus, we believe our introductory and service courses that are widely subscribed by the campus community are an important recruiting tool. Faculty instructors and teaching assistants in these introductory courses are important assets to our recruiting program. It is our most engaging instructors who are entrusted to teach these large service courses.

Table 6. Applied, Admitted and Enrolled First-Time Freshman and First-Time Transfer Students, ENTO, 2006 - 2012

<table>
<thead>
<tr>
<th>Year</th>
<th>ENTO Undergraduate</th>
<th>% Yield</th>
<th>Total ENTO Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Applied</td>
<td>Admitted</td>
<td>Enrolled</td>
</tr>
<tr>
<td>2006</td>
<td>22</td>
<td>15</td>
<td>9</td>
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<td>2007</td>
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<td>12</td>
<td>11</td>
</tr>
<tr>
<td>2012</td>
<td>25</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>2013</td>
<td>20</td>
<td>18</td>
<td>4</td>
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</table>

Table 6 summarizes combined first-time freshmen and first-time transfer student admissions data. Comparing the enrolled and percent yield of first-time students to the total ENTO enrollment shows the relative importance placed on change of curriculum students to the major.

Admissions: Transfer Admissions. Texas A&M University utilizes the same centralized, online application for transfer admission and accepts applications for transfer students during the spring and summer/fall semesters. Applicants for entomology are expected to meet the university minimum for transfer students that include 24 graded, transferable credit hours with a minimum 2.50 GPA (=GPR). The admission committee likes to see students with a background in the biological sciences (preferably the freshman biology sequence completed) that would indicate their academic success at Texas A&M University and in the entomology program.
Additionally, applicants are expected to write an essay indicating why they are choosing entomology and their career and educational goals. It is strongly encouraged that prospective students meet with a member of the entomology academic advising team for course work advice prior to submitting their application.

**Admissions: Change of Curriculum.** Students currently enrolled at Texas A&M University in another major who discover entomology and wish to change their major to entomology must follow the change of curriculum process set forth by the university and meet the following departmental standards and guidelines:

To apply for a change of curriculum into Entomology, the following minimum requirements must be met:

1. Completed at least one full semester (12 graded credit hours) at Texas A&M
2. Minimum GPR of 2.0
3. Students in excess of 70 credit hours should have completed course work that closely adheres to the ENTO curriculum (CHEM 101/111, CHEM 102/112, BIOL 111, 112, MATH 141, 142 and university core curriculum requirements)

**Value Added Educational Opportunities in Entomology.** Value added educational opportunities in entomology are available to all students enrolled at Texas A&M University who discover an interest in insects and entomology and wish to enhance their educational experience and career opportunities.

**Entomology Double Major.** Students majoring in related areas many times wish to augment their knowledge base and broaden their career opportunities by electing to double major. Students must be pursuing the same degree in order to pursue a double major (i.e., their primary major must be a Bachelor of Science degree). Students pursuing a double major must complete their double major requirements with a cumulative GPA of 2.0 or better. Completion of a double major is recognized on a student diploma as well as on their transcript.
<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Title</th>
<th>Hrs</th>
<th>Completed</th>
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<tbody>
<tr>
<td>1. ENTO 301</td>
<td>Biodiversity and Biology of Insects</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENTO 313</td>
<td>Biology of Insects</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>2. ENTO 482</td>
<td>Occupational and Professional Development</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3. ENTO</td>
<td>Choose from any 300/400 level ENTO course*</td>
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<td></td>
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<tr>
<td>4. ENTO</td>
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<td>5. ENTO</td>
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<td>6. ENTO</td>
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<td>3</td>
<td></td>
</tr>
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</table>

*4 courses (at least 12 credit hours) of 300/400 level ENTO classes (excluding ENTO 322) to be determined in consultation with advisor.

**Prerequisite Courses:** All prerequisites for each and elective course also must be met. Prerequisite courses will not be applied to double-major requirements and do not count toward the number of hours needed to complete the double-minor. Please refer to the Texas A&M University Undergraduate Catalog for a listing of course prerequisites.

**Entomology Minor.** Students majoring in related areas many times wish to augment their knowledge base and broaden their career opportunities by declaring a minor. Students pursuing a minor must make a grade of “C” or better in each course utilized for the minor. Completion of a minor is recognized on a student transcript but not on the diploma. The minor in Entomology is available to all students enrolled at Texas A&M University. The courses listed below constitute the minimum 17 hours required for a minor in Entomology. For a complete list of courses, course titles and short description see:

[http://entomology.tamu.edu/entomology/entomology-course-descriptions/]
Minor in Entomology

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<thead>
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<th>Course #</th>
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<td>Biodiversity and Biology of Insects</td>
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<td>OR</td>
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<tr>
<td>ENTO 313</td>
<td>Biology of Insects</td>
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<tr>
<td>2. ENTO 482</td>
<td>Occupational and Professional Development</td>
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<td></td>
</tr>
<tr>
<td>3. ENTO _____</td>
<td>Choose from any 300/400 level ENTO course*</td>
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<td>6. ENTO _____</td>
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<td></td>
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</table>

(Note: Substitutions are not allowed for core courses 1 and 2 above)

Directed Elective Courses (12 hours):
Twelve additional hours in 300 or 400 level ENTO courses are required. Students are encouraged to visit the Department of Entomology Academic Advisors in 404 Minnie Belle Heep Building (HPCT), West Campus, to select the appropriate directed elective courses based on their individual educational and career interests.

Prerequisite Courses:
All prerequisites for each core and elective course also must be met. Prerequisite courses will not be applied to the minor requirements and do not count toward the number of hours needed to complete the minor. Please refer to the Texas A&M University Undergraduate Catalog for a listing of course prerequisites.

Availability of Courses and Minor Recognition:
The Department of Entomology cannot guarantee the availability of the courses required to meet the above requirements. Successful completion of the minor will be certified by a degree audit in Howdy during the semester of the student’s graduation. The minor will be recognized after graduation on the student’s transcript, but not on the student’s diploma.

*Academic Certificate in Public Health Entomology.* Growth of the human population will undoubtedly increase the risk of disease outbreaks and emergence of new diseases worldwide. Scientists from many disciplines, physicians, veterinarians, health-care practitioners, public health workers and policy makers need to work in concert to provide resources of public health surveillance, make new discoveries, and to find solutions to address these risks.

This certificate offers a 15 credit-hour concentration in Public Health Entomology focused on insects and other arthropods that serve as vectors of a long list of pathogens that affect humans, domestic animals (livestock and companion animals) and wildlife populations.
Employment opportunities in the public health sector include environmental and health service agencies, mosquito control districts, the Centers for Disease Control and Prevention (CDC), the Department of Defense, the World Health Organization, and the Pan American Health Organization.

Students completing this certificate will be competitive for employment upon graduation, for graduate programs in related disciplines, such as Master’s programs in Public Health, Epidemiology, and Entomology, as well as professional schools.

A curricular sheet used by the advising office to track completion of this certificate is appended below. (Figure 11) Completion of the certificate is noted on the student’s transcript but is not so noted on the diploma.
Figure 11. Certificate in Public Health

CERTIFICATE IN PUBLIC HEALTH ENTOMOLOGY  
Department of Entomology, Texas A&M University  
RETURN COMPLETED APPLICATION TO 354 KEEF HLG.

<table>
<thead>
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<th>UIN: ___________________________</th>
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<tbody>
<tr>
<td>Primary Major/Secondary Major: ___</td>
<td>Classification: U1 U2 U3 U4</td>
</tr>
<tr>
<td>Expected Graduation Date: FALL SPRING</td>
<td>SUMMER YEAR: ____________________</td>
</tr>
<tr>
<td>TAMU E-Mail: _____________________</td>
<td>Cell Phone #: ____________________</td>
</tr>
</tbody>
</table>

What are your career expectations at graduation?  
____ Public Health Field  ____ Non-Public Health Field  
____ Nursing School  ____ Veterinary School  
____ Graduate School  ____ Other

Eligibility Requirements for Entrance:  
Completion of a minimum of one (1) course from Category I and/or II with a grade of "B" or better and a cumulative TAMU GPA of 2.0+

<table>
<thead>
<tr>
<th>Category I – Select one of the 3 credit hour courses</th>
<th>Category III – Select one of the 3 credit hour courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENT0 210 – Global Public Health Entomology (FALL/SPRING)</td>
<td>ENT0 403 – Urban Entomology (SPRING)</td>
</tr>
<tr>
<td>BESC 314 – Pathogens, the Environment &amp; Society</td>
<td>HLTH 354 – Medical Terminology for Health Professions</td>
</tr>
<tr>
<td>VTPB 211 – Great Diseases of the World</td>
<td>VIBS 204 – Food Toxicology &amp; Safety</td>
</tr>
<tr>
<td>VIBS 415 – Introduction to Entomology</td>
<td>VIBS 451 – Public Health Practices</td>
</tr>
<tr>
<td>VIBS 452 – Public Health Practices</td>
<td>VTPB 301 – Wildlife Diseases</td>
</tr>
<tr>
<td>VTPB 409 – Introduction to Immunology</td>
<td></td>
</tr>
</tbody>
</table>

Category II – Must complete both courses  
- ENT0 208 – Veterinary Entomology (FALL/SPRING)  
- ENT0 423 – Medical Entomology (FALL/SPRING)

Category IV – Required Capstone Course  
- ENT0 425 – Disease Ecology – (FALL ONLY)

To Complete the Certification, Students Must:  
- Complete all courses within the certification with a minimum grade of "C"  
- Earn a cumulative 3.0+ GPA within the certificate courses  
- Complete exit survey  
- Meet the minimum qualifications for graduation as defined by Texas A&M University, including a 2.0 cumulative GPA

Statement of Understanding:  
Upon approval of my certificate application, I understand that:  
1. I am responsible for completion of all requirements needed to successfully complete the certificate curriculum.  
2. I must make a "C" or better in all certificate courses.  
3. I am responsible for reporting the completion of all certificate coursework no later than the final date to file for graduation without penalty in the semester in which I plan to graduate. Failure to do so will negate granting of the certificate.

Applicant Signature: ___________________________ Date: ___________________________

Department of Entomology Advisor: ___________________________ Approval Date: ___________________________

For ENTO office use only:  
DATE: ______________ Notification sent to student re: Acceptance or Denial  
DATE: ______________ Copy of Certificate sent to Primary Major Advisor (MS) ________  
DATE: ______________ Student Information Entered in Database  
Updated 10/2013

Department of Entomology
**High Impact Learning Experiences.** The entomology degree program incorporates high impact practices through writing intensive courses, collaborative assignments and projects, undergraduate research and/or internships, study abroad, capstone courses and projects. These meet expectations as articulated in the Academic Master Plan and the Quality Enhancement Plan (QEP) for Texas A&M University ([http://provost.tamu.edu/initiatives/quality-enhancement-plan/QEPquickfacts.pdf](http://provost.tamu.edu/initiatives/quality-enhancement-plan/QEPquickfacts.pdf)). The entomology curriculum requires students to complete two (2) credit hours of either research (ENTO 491) or professional internship (ENTO 484) for graduation purposes, and we encourage and facilitate student participation in study abroad and honors experiences.

**Undergraduate Research.** The undergraduate research (ENTO 491) projects should be faculty supervised research. Projects should be hypothesis driven and provide students with appropriate scientific research experience. Students should demonstrate critical thinking skills by establishing testable hypotheses, presenting logical experimental methods, analyzing data, interpreting results, and discussing findings. Students should also demonstrate technical competency through correct usage of terminology, concepts, principles, and logic in all elements of the research project.

Students complete an online application for research that includes a research proposal and indicates the faculty member with whom they plan to conduct research. These research proposals are processed by the Academic Advising team and sent for review by the intended faculty mentor to ensure that the project and expectations are consistent between all parties involved. Upon confirmation from the faculty mentor to the Academic Advising team, the student is then registered for the requested research credits. At the conclusion of the research experience, the students are expected to upload a final project report, project journal or laboratory notebook.

**Professional Internships.** Students participating in professional internships (ENTO 484) choose an area related to their professional area of interest. Students are expected to recognize the scientific method and apply it to a problem, describe problem-solving principles and organize typical operational protocols, summarize and illustrate results from an experiment, project or experience in a written, scientific manner, and to be able to understand the application of their experiment, project or experience in their chosen area of study.

Students complete an online application for professional internship that includes an internship proposal and indicates the company with whom they plan to conduct their
These professional internship proposals are processed and reviewed by the internship coordinator and sent for review to the intended internship site supervisor to ensure that the internship project and expectations are consistent between all parties involved. Upon confirmation from the internship site supervisor to the internship coordinator, the internship coordinator contacts the Academic Advising Team liaison and the student is then registered for the requested professional internship credits. At the conclusion of the professional internship experience, the students are expected to upload an electronic internship journal, photo-documentation of internship activities, a final internship report. Additionally, the internship site supervisor is sent a final summary evaluation of the intern by the internship supervisor, which is utilized in the final grade. To improve coordination and assessment of professional internship experiences for the students, the department chose to implement a faculty internship coordinator in 2012. This faculty member meets with students in a variety of settings (ENTO/FIVS 482, student organizations, etc) to discuss the internship search process, the application process and specific requirements of the professional internship. The Academic Advising Office maintains an internship database of potential opportunities available for students; however, it is ultimately the students’ responsibility to secure an internship that meets their long-term career goals.

**Study Abroad.** Study Abroad encompasses a variety of international experiences, study, research, internships, volunteer, and service-learning programs ([http://studyabroad.tamu.edu](http://studyabroad.tamu.edu)).

The Department of Entomology annually offers a summer, faculty-led, study abroad opportunity in Dominica in collaboration with the Department of Wildlife and Fisheries Sciences. This experience includes a spring semester, one (1) hour directed studies (ENTO 485 Directed Studies) to prepare students for their research project and experience and a suite of six (6) total credit hours (ENTO 300 Field Studies, 450 Caribbean Conservation, 451 Caribbean Research Seminar) over the summer session.

Students conduct field research and complete class projects at the Archbold Tropical Research and Education Center and adjacent Morne Trois Piton National Park. Individual and group research projects include insect ecology, veterinary studies, plant-animal interactions, aspects of Dominican environmental policy and related cultural questions. Students design projects, collect data, analyze results, and prepare a professional research article. ([http://dominica.tamu.edu](http://dominica.tamu.edu))
Honors. The department has had a rich history with honors students and this service has taken a variety of paths within the avenues provided by the University Honors Program (http://hur.tamu.edu). These paths include participation in individual honors courses, university honors distinctions, and Undergraduate Research Scholars Program leading to a published senior’s thesis.

The department’s active course participation in the honors program has historically included ENTO 208 Veterinary Entomology and more recently included a section in ENTO 201 General Entomology. Honors students have also actively developed honors course contracts with faculty for specific entomology courses that include an additional meaningful and enriching experience (http://hur.tamu.edu/Honors/Earning-Honors-Credit#contract).

The department has adopted a department-level honors program – “Entomology Honors Program” for current undergraduate students. (Figure 12) This program formalizes and recognizes a departmental commitment to high-achieving students and provides them a framework upon which to achieve honors recognition. Upon successful completion, honors recognition will be denoted on the official transcript.
Figure 12. Entomology Honors Program

ENTOMOLOGY HONORS PROGRAM

Departmental Requirements to Graduate with ENTO Honors

To achieve ENTO Honors, a student must complete 18 hours of Honors coursework:

1. ENTO 201 General Entomology or ENTO 208 Veterinary Entomology
2. Twelve (12) hours of honors-level ENTO coursework.
   a. At least six (6) hours of ENTO courses must be at the 300/400 level.
   b. Upper-level may include 6 hours of Directed Studies / Research.
3. Three (3) additional hours of honors-level coursework.

To be certified for Honors Distinction in Entomology no grade of D* or F* in any course on the transcript and no grade on the transcript of “D” or “F” in an honors class can be recorded. (An asterisk[*] on the transcript of a graduating student indicates that the student was given a grade penalty for academic dishonesty and the student did not complete the remediation program that is required in order to have the asterisk removed from such a student’s transcript.)

Honors Recognition and Graduation with Honors

All completed Honors coursework taken at Texas A&M University is designated as such on a student’s official transcript, showing that the student has taken part in this enhanced curriculum. After graduation, the transcript will designate that the student has achieved the distinction of “Entomology Honors”, as well as any other University academic distinctions.

Admission to the Honors Program in Entomology

Current and potential ENTO majors who have an overall GPA of ≥ 3.5 are eligible for admission to the Department Honors Program. Students are encouraged to consult with a member of the Departmental Academic Advising Team as early as possible in their academic career to plan their course sequence. A TAMU cumulative 3.5 GPA and a 3.25 GPA in Honors courses is required to graduate with ENTO Honors.

Grade Point Requirements

Participants in the Entomology Honors Program must maintain a TAMU cumulative 3.5 GPA and a 3.25 GPA in Honors courses and no grade in a honors course below a “C”.

Professional Development

Students are highly encouraged to pursue additional University-level honors distinctions, certificates, and to participate in programs such as the Research Scholars Program through the Office of Honors and Undergraduate Research. Additional professional activities such as organizational memberships and participation in Student Research Week or other student oral presentation or poster competitions are strongly encouraged.

For further information about ENTO Honors, please contact:

Rebecca Hapes, Sr. Academic Advisor II  Ann Pool, Academic Advisor II
rhaps@tamu.edu | 979-845-9733  annpool@tamu.edu | 979-845-0122

Department of Entomology
4.1.2 Forensic and Investigative Sciences (FIVS)

In May 2007, the Texas A&M University System Board of Regents approved the B.S. degree Forensic and Investigative Sciences (FIVS) to be housed within the Department of Entomology. Forensic and Investigative Sciences is a major offered by the Department of Entomology and is a growing area of interest for students seeking to gain entry into careers that deal with the collection, preservation, processing and use of evidentiary information to solve problems. A life sciences-based education, which develops skills in problem solving and critical thinking, is essential for career opportunities in this field. Forensic and investigative scientists rely upon state-of-the-art scientific discoveries and technologies as tools to seek answers to critical questions in a variety of settings. Molecular, organismal, environmental, and ecological sources of information are often analyzed and interpreted in industrial, regulatory, legal, medical and associated professions. Forensic and investigative sciences also operate at the crossroads of science and the legal profession, and provide opportunities for students to consider pre-law preparation. There is a growing demand for attorneys with knowledge and understanding of science, particularly molecular biology as it pertains to criminal evidence and in capital crimes forensic entomology can also play a significant role. The need is to have people who can understand the underlying science and its application in legal cases where the interpretation of science and/or scientific data and analyses are pivotal. Law schools often seek candidates with diverse backgrounds and interests, and they look closely at curricula that stress analytical and problem-solving skills, critical reading abilities, writing skills, oral communication and listening abilities, general research skills, and task organization and management skills. The Forensic and Investigative Sciences program provides students with opportunities to build these essential skills and knowledge areas through a combination of required and elective courses.

Table 7. Applied, Admitted and Enrolled, FIVS, 2006 - 2012

<table>
<thead>
<tr>
<th>Year</th>
<th>FIVS Undergraduate</th>
<th>Total FIVS Enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Applied</td>
<td>Admitted</td>
</tr>
<tr>
<td>2008</td>
<td>57</td>
<td>32</td>
</tr>
<tr>
<td>2009</td>
<td>125</td>
<td>66</td>
</tr>
<tr>
<td>2010</td>
<td>135</td>
<td>75</td>
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<tr>
<td>2011</td>
<td>176</td>
<td>86</td>
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<tr>
<td>2012</td>
<td>207</td>
<td>124</td>
</tr>
<tr>
<td>2013</td>
<td>324</td>
<td>193</td>
</tr>
</tbody>
</table>
The program is designed such that students in their first two years obtain course work in a suite of foundational common body of knowledge (CBK) courses to demonstrate physical and life science competency. Students are required to complete this suite of courses with a cumulative grade point ratio of 3.0 or higher with no individual grade below a “C” in any course prior to completing 70 credit hours. Additionally, students must complete all common body of knowledge courses and submit an Upper Level Intent form requesting entrance to the upper division phase of the Forensic and Investigative Sciences program. At the time of Upper Level Intent submission, the student must specify whether they intend to pursue the Science Emphasis or Pre-Law Emphasis Track.

**Accreditation of FIVS major by FEPAC.** In January 2012 the FIVS program was nationally accredited through the American Academy of Forensic Sciences accreditation arm, the Forensic Science Education Programs Accreditation Commission (FEPAC). It was late in 2012 when FEPAC modified the accreditation standards and requested that we adjust our curriculum to meet the updated standards. At that time FEPAC changed our program status to “conditional accreditation”, pending changes to make to meet the new FEPAC standards. We worked with allied departments in Chemistry, Biochemistry and the interdisciplinary degree program in Genetics, the Department of Soil and Crop Science, and with our partners in TEEX (Texas Engineering Extension Service), to meet the new FEPAC standards. Specific changes can be seen in section 4.1.2b by comparing the course roster of Catalog 136 (Figure 13) with the changes made in Catalog 137 (Figure 14). These changes were approved by FEPAC during the again 2014 American Academy of Forensic Sciences meeting and our program is now recognized as “fully accredited”.

**Curriculum in Forensic and Investigative Sciences (2007-2013)**

**Science Emphasis.** The curriculum sheets for the FIVS-Science Emphasis (SCE) are appended in Figure 13 for the current catalog (136) and the changes that were made to accommodate both FEPAC and the new University Core Curriculum, both of which begin with Catalog 137, Figure 14. To facilitate reading these documents we have highlighted those areas that changed.
Figure. 13 Catalog 136 FIVS-SCE

Catalog (Fall 2013)  
Department of Entomology  
Curricula in Forensic & Investigative Sciences - Science Emphasis Area (FIVS-SCE)

### Freshman Year (Lower Level - Major Indicated as FIVL)

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>SCH</th>
<th>Grade</th>
<th>Sub</th>
<th>2nd Semester</th>
<th>SCH</th>
<th>Grade</th>
<th>Sub</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGLS 201</td>
<td>3</td>
<td></td>
<td></td>
<td>BIOI 112</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOI 111</td>
<td>4</td>
<td></td>
<td></td>
<td>CHEM 102/112</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEN 101/111</td>
<td>4</td>
<td></td>
<td></td>
<td>ENGL 104</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 165 or 141</td>
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<td></td>
<td></td>
<td>MATH 131 or 142</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>FIVS 205</td>
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<td></td>
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<td></td>
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<tr>
<td></td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td>14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Sophomore Year (Lower Level - Major Indicated as FIVL)

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>SCH</th>
<th>Grade</th>
<th>Sub</th>
<th>2nd Semester</th>
<th>SCH</th>
<th>Grade</th>
<th>Sub</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 227/237</td>
<td>4</td>
<td></td>
<td></td>
<td>BIOI 202</td>
<td>4</td>
<td></td>
<td></td>
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<tr>
<td>PHYS 201</td>
<td>4</td>
<td></td>
<td></td>
<td>KINE 106</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication elective (1)</td>
<td>3</td>
<td></td>
<td></td>
<td>Humanities elective (1)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. History elective (1)</td>
<td>3</td>
<td></td>
<td></td>
<td>U.S. History elective (1)</td>
<td>3</td>
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<tr>
<td></td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students should complete the Upper Level Intent form during the semester in which they are completing the courses in bold (common body of knowledge - CKB - courses) and submit this form to the Academic Advising Office, Rm. 404 HPCR. Students will be required to have a minimum 3.0 cumulative GPR as well as a "C" or better in each of these bolded classes before being eligible to move to the FIVS upper level. Entrance to upper level FIVS is required before a student is able to enroll in the upper-division (300 & 400-level) FIVS courses.

### Junior Year

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>SCH</th>
<th>Grade</th>
<th>Sub</th>
<th>2nd Semester</th>
<th>SCH</th>
<th>Grade</th>
<th>Sub</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIVS 402</td>
<td>2</td>
<td></td>
<td></td>
<td>FIVS 411</td>
<td>4</td>
<td></td>
<td></td>
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<tr>
<td>BICH 412</td>
<td>3</td>
<td></td>
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<td>BICH 411</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GENE 301</td>
<td>4</td>
<td></td>
<td></td>
<td>Visual &amp; Performing Arts elective (1)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 315</td>
<td>3</td>
<td></td>
<td></td>
<td>Political Science elective (1)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directed electives (2)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td>14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Senior Year

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>SCH</th>
<th>Grade</th>
<th>Sub</th>
<th>2nd Semester</th>
<th>SCH</th>
<th>Grade</th>
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</thead>
<tbody>
<tr>
<td>FIVS 411 or 491</td>
<td>4</td>
<td></td>
<td></td>
<td>FIVS 415</td>
<td>3</td>
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<td></td>
</tr>
<tr>
<td>FIVS 315</td>
<td>4</td>
<td></td>
<td></td>
<td>FIVS 405</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective (1)</td>
<td>3</td>
<td></td>
<td></td>
<td>STAT 302</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Political Science elective (1)</td>
<td>3</td>
<td></td>
<td></td>
<td>Social &amp; Behavioral Science elective (1)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directed electives (2)</td>
<td>4</td>
<td></td>
<td></td>
<td>Elective (1)</td>
<td>3</td>
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<td></td>
<td></td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Hours Required for the Degree: 120

Notes:
1. To be selected from the University Core Curriculum and in consultation with student's academic advisor in the department. Six hours of international and cultural diversity electives are also required. These courses may fulfill other degree requirements as well.
2. Directed electives must be selected in consultation with the student’s advisor based on career and educational goals and from the current list of approved list published by the department and included on this worksheet.

Additional Requirements for Baccalaureate Degree

- Foreign Language (2 yrs same language in HS, 1 yr college)
- Writing Intensive Course (2 course designated IV in major)

Directed Electives for the Science Emphasis Area: (choose from)

- SCCS 201 (4)
- ANTH 225/325 (4)
- ANTH 425 (3)
- ANTH 432 (3)
- BIOC 213 (2)
- BIOC 301 (4)
- BIOC 302 (4)
- BIOC 308 (3)
- BIOC 413 (3)
- BIOC 415 (3)
- BIOC 420 (4)
- BIOC 422 (3)
- CHEN 318 (1)
- CHEN 320 (2)
- CHEM 322 (3)
- ENTO 422 (3)
- ENTO 426 (1)
- ENTO 428 (1)
- ENTO 429 (1)
- FWS 411-412 (2)
- FSTC 201/301 (4)
- GENE 412 (3)
- GENE 412 (3)
- GENE 450 (3)
- GENE 450 (3)
- PHYS 221 (3)
- PSYC 201 (3)
- PSYC 220 (3)
- PSYC 405 (4)
- VTPP 425 (3)
- VTPP 425 (3)
- VTPP 430 (1)

NOTE: Use of this worksheet does not replace personal advising by a member of the Forensic & Investigative Sciences Academic Advising Team. You are strongly encouraged to meet with an Academic Advisor at least once per semester to discuss any questions that you may have.

Students are required to earn a "C" or better in all courses required within this degree program.
Department of Entomology

Curricula in Forensic & Investigative Sciences - Science Emphasis Area (FIVS-SCE)

### Freshman Year (Lower Level - Major Indicated as FIVL)

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>SCH</th>
<th>Grade</th>
<th>Sub</th>
<th>2nd Semester</th>
<th>SCH</th>
<th>Grade</th>
<th>Sub</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANGL 101</td>
<td>1</td>
<td></td>
<td></td>
<td>BOLAT 111</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL 111 Intro Bio I</td>
<td>4</td>
<td></td>
<td></td>
<td>CHEM 101/121 Gen Chem I</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 111/111 Gen. Chem I</td>
<td>4</td>
<td>Communication elective (1)</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>MATH 112 or 113</td>
<td>3</td>
<td></td>
<td></td>
<td>MATH 112 or 113</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIVS 295 Intro Forensic</td>
<td>3</td>
<td></td>
<td></td>
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<td></td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students should complete the Upper Level Intent form during the semester in which they are completing the courses in bold (common body of knowledge - CBK - courses) and submit this form to the Academic Advising Office, Rm 404 HICT. Students will be required to have a minimum 3.0 cumulative GPA as well as a “C” or better in each of these bolded classes before being eligible to move to the FIVS upper level. Entrance to upper level FIVS is required before a student is able to enroll in the upper-division (300 & 400-level) FIVS courses.

### Sophomore Year (Lower Level - Major Indicated as FIVL)

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>SCH</th>
<th>Grade</th>
<th>Sub</th>
<th>2nd Semester</th>
<th>SCH</th>
<th>Grade</th>
<th>Sub</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 227/227 Organic Chem</td>
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<td>CHEM 228/228 Organic Chem</td>
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<td>PHYS 291</td>
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<td></td>
<td></td>
<td>PHYS 297</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication elective (1)</td>
<td>3</td>
<td></td>
<td></td>
<td>Electing Culture &amp; Language elective (1)</td>
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### Junior Year

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<td>BICH 411 Biochem II</td>
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<td>FIVS 316 Forensic Genetics</td>
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<td>FIVS 422 CSI</td>
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### Senior Year

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<th>2nd Semester</th>
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<td>FIVS 415 Capstone</td>
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<td>FSIV 316 For Biotech</td>
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<td></td>
<td></td>
<td>FIVS 455 Capstone</td>
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<tr>
<td>FSIV 317 For Soil Science</td>
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<td></td>
<td></td>
<td>STAT 502</td>
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<td>Political Science elective (1)</td>
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<td></td>
<td>Social &amp; Behavioral Science elective (1)</td>
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<td>Directed Electives (2)</td>
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<td>Elective</td>
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Total Hours Required for the Degree: 120

**Notes:**
1. To be selected from the University Core Curriculum and in consultation with student's academic advisor in the department. Six hours of international and cultural diversity electives are also required. These courses may fulfill other degree requirements as well.
2. Directed electives must be selected in consultation with the student's academic advisor based on career and educational goals and from the current list of approved electives published by the department and included in this worksheet.

Additional Requirements for Baccalaureate Degree:
- Students must meet University Residency Requirement for Graduation of 38 credit hours at the 300/400 level in the major.
- International and Cultural Diversity Course (2 courses designated Wm major)
- Writing Intensive Course (2 course designated Wm major)

**Directed Electives for the Science Emphasis Area:** (Choose from)

- ANTH 235 (4); ANTH 425 (5); ANTH 427 (3); BIOL 213 (3); BIOL 316 (4); BIOL 351 (4); BIOL 413 (3); BIOL 430 (4); BIOL 454 (3); BIOL 490 (3); CHEM 320 (2); CHEM 327 (3); CHEM 328 (1); CHEM 329 (2); CHEM 350 (1); CHEM 362 (3); CHEM 415 (3); CHEM 424 (2); ENT1 490 (3); ENT1 423 (2); ENTO 426 (3); ENTO 439 (1); FIVS 421 (2); FSIV 315/316; FSIV 351; GEN-1 412 (3); GEN-1 412 (3); GEN-1 429 (3); GEN-1 439 (3); PHYS 221 (2); PSYC 315 (5); PSYC 316 (3); PSYC 317 (3); SCI 304 (1); SCI 304 (3); SCIO 304 (3); VTPS 455 (3); VTPS 455 (3); VTPS 455 (3);

**Note:** Use of this worksheet does not replace personal advising by a member of the Forensic & Investigative Sciences Academic Advising Team. You are strongly encouraged to meet with an Academic Advisor at least once per semester to discuss any questions you may have.

*Students are required to earn a "C" or better in all courses required within this degree program.*
Curriculum in Forensic and Investigative Sciences (2014)

Science Emphasis. Specific changes that were made to the FIVS – Science Emphasis curricula for Catalog 137 (Fall 2014) (Figure 14) include:

1. To meet FEPAC requirements: Removed GENE 301 (4 hours) and replaced with FIVS 308 (4 hours) [See Junior Year, 1st Semester]. We developed our own course in genetics that was more specific to the needs of forensic science. FIVS 308 is taught by Dr. S. Johnston (ENTO) who teaches courses in the interdisciplinary degree program in GENE. FIVS 308, Forensic Implications of Inheritance.

2. To meet FEPAC requirements: Removed CHEM 315 (3 hours) and replaced with CHEM 316 (2 hours) and CHEM 318 (1 hour) [See Junior Year, 1st Semester]. This is Quantitative Chemistry with a separate lab that is focused on forensic chemistry.

3. To meet FEPAC requirements: Added FIVS 422 (2 hours) as a required course [See Junior Year, 2nd Semester]. A course in Crime Scene Investigation taught by adjunct faculty members employed by TEEX (police academy).

4. To meet FEPAC requirements: Removed a General Elective (3 hours) and replaced with SCSC/FIVS 401, Forensic Soil Science (3 hours) [See Senior Year, 1st Semester]

5. University Core Curriculum Change: Removed KINE 199 (1 hour)

6. University Core Curriculum Change: Removed KINE 198 (1 hour)

7. University Core Curriculum Change: Removed ENGL 104 as required and indicated “Communications elective (1)” [see Freshman Year, 2nd Semester]

8. University Core Curriculum Change: Renamed Humanities Core Curriculum Category to “Language, Phil & Culture elective” [See Sophomore Year, 2nd Semester]

9. University Core Curriculum Change: Renamed Visual and Performing Arts Category to “Creative Arts elective” [See Junior Year, 2nd Semester]

There are 7 hours of directed electives and 3 hours of general electives with the BS-FIVS – SCE curriculum plan as proposed.

Pre Law Emphasis.

The curriculum sheets for the FIVS-PreLaw Emphasis (LWE) are appended in Figure 15 for the current catalog (136) and the changes that were made to accommodate both FEPAC and the new University Core Curriculum, both of which begin with Catalog 137, Figure 16. To facilitate reading these documents we have highlighted those areas that changed.
**Figure. 15 Catalog 136 FIVS-LWE**

**Department of Entomology**

**Curricula in Forensic & Investigative Sciences - Pre-Law Emphasis Area (FIVS-LWE)**

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>SCH</th>
<th>Grade</th>
<th>Sub</th>
<th>2nd Semester</th>
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<td>BQL 111</td>
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<td></td>
<td>CHEM 102/112</td>
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<td>FIVS 205</td>
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<td>Social &amp; Behavioral Science elective (1)</td>
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<td>Directed elective (2)</td>
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**Notes:**
1. To be selected from the University Core Curriculum and in consultation with student's academic advisor in the department. Six hours of international and cultural diversity electives are also required; these courses may fulfill other degree requirements as well.
2. Students must choose one course (minimum three hours) from each of the three categories of pre-law directed electives. The remaining pre-law directed electives must be selected in consultation with the student's advisor based on career and educational goals and from the current list of approved electives published by the department and included on this worksheet.

**Additional Requirements for Baccalaureate Degree:**
- Foreign Language (2 yrs same language in HS, 1 yr college)
- Writing Intensive Course (2 course designated W in major)

**Directed Electives for the Pre-Law Emphasis Area:**


B. Category II (Select minimum of 3 hours from): ALED 340 (3), COMM 203 (2), COMM 243 (3), COMM 300 (3), COMM 325 (3), COMM 443 (3), SOC 304 (3)

C. Category III (Select minimum of 3 hours from): ALED 440 (3), GENE 420 (3), HIST 447 (2), PHIL 111 (3)

**NOTE:** Use of this worksheet does not replace personal advising by a member of the Forensic & Investigative Sciences Academic Advising Team. You are strongly encouraged to meet with an Academic Adviser at least once per semester to discuss any questions that you may have.

Students are required to earn a "C" or better in all courses required within this degree program.
Figure. 16 Catalog 137 FIVS-LWE

Department of Entomology

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Pre-Law Emphasis. Specific changes that were made to the FIVS – Law Emphasis curricula for Catalog 137 (Fall 2014) (Figure 16) include:

1. To meet FEPAC requirements: Removed GENE 301 (4 hours) and replaced with FIVS 308 (4 hours) [See Junior Year, 1st Semester]. We developed our own course in genetics that was more specific to the needs of forensic science. FIVS 308 is taught by Dr. S. Johnston (ENTO) who teaches courses in the interdisciplinary degree program in GENE. FIVS 308, Forensic Implications of Inheritance.

2. To meet FEPAC requirements: Added FIVS 422 (2 hours) as a required course [See Junior Year, 2nd Semester]. A course in Crime Scene Investigation taught by adjunct faculty members employed by TEEX (police academy).

3. To meet FEPAC requirements: Removed a General Elective (3 hours) and replaced with SCSC/FIVS 401, Forensic Soil Science (3 hours) [See Senior Year, 1st Semester]

4. University Core Curriculum Change: Removed KINE 199 (1 hour)
5. University Core Curriculum Change: Removed KINE 198 (1 hour)
6. University Core Curriculum Change: Removed ENGL 104 as required and indicated “Communications elective (1)” [see Freshman Year, 2nd Semester]
7. University Core Curriculum Change: Renamed Humanities Core Curriculum Category to “Language, Phil & Culture elective” [See Sophomore Year, 1st Semester]
8. University Core Curriculum Change: Renamed Visual and Performing Arts Category to “Creative Arts elective” [See Sophomore Year, 2nd Semester]
9. Changed Directed Elective hours from 5 hours to 4 hours [See Senior Year, 2nd Semester]

There are 19 hours of directed electives and 3 hours of general electives with the BS-FIVS – LWE curriculum plan as proposed.
**FIVS Admissions: Freshman Admissions.** Texas A&M University utilizes a centralized, online application for admissions for all freshman applicants. Choice of major is not a factor in the admissions decision and the department is not involved in the admission decision for freshman students. The FIVS major is an increasingly popular major among the freshman admission applicant pool and we are receiving a correspondingly high number of applicants through the freshman admissions process. At some point we may need to work with the office of admission to develop an enrollment management program that uses test scores, GPA and/or other predictors of success to limit the applicant pool in this major.

**Admissions: Transfer Admissions.** Texas A&M University utilizes a centralized, online application for admission and accepts applications for transfer students during the spring and summer/fall semesters. Applicants for the forensic and investigative sciences program are expected to meet stringent transfer requirements based on completion of our common body of knowledge course work, cumulative grade point ratio, individual grades in select courses, and overall credit hours. Additionally, applicants are expected to write an essay indicating why they are choosing this program relative to their career and educational goals.

- For a student with 24-45 hours, the student must have:
  - CHEM 101/111 and 102/112
  - A Minimum of 2 other science courses from the Common Body of Knowledge list
  - A Minimum of 2 other Common Body of Knowledge courses
  - 3.0 on Common Body of Knowledge and Core Curriculum*

- For a student with 45-65 hours:
  - ALL CBKs completed (except FIVS 205 for transfer students)
  - 3.0 on Common Body of Knowledge and Core Curriculum*

- No transfer student will be accepted above 65 credit hours

*Excessive Q-drops, withdrawals, repeats, or honor violations will be considered when reviewing applications to the Forensic and Investigative Sciences Program*
Admissions: Change of Curriculum. Students currently enrolled at Texas A&M University who would like to change their major to FIVS must follow the change of curriculum process set forth by the university and meet the following departmental standards and guidelines:

To apply for a change of curriculum into FIVS, the following minimum requirements must be met:

- For a student with 0-45 hours, the student must have:
  - At least one completed semester at TAMU
  - CHEM 101/111 and 102/112
  - A Minimum of 2 other science courses from the Common Body of Knowledge list
  - A Minimum of 2 other Common Body of Knowledge courses
  - 3.0 on Common Body of Knowledge and Core Curriculum*

- For a student with 45-65 hours:
  - ALL CBKs completed
  - 3.0 on Common Body of Knowledge and Core Curriculum*

- No change of curriculum student will be accepted above 65 credit hours

*Excessive Q-drops, withdrawals, repeats, or honor violations will be considered when reviewing applications to the Forensic and Investigative Sciences Program

High Impact Learning Experiences. The forensic & investigative sciences degree program incorporates the same experiences as outlined in the ENTO High Impact Learning Experiences on page 36.

Undergraduate Research. Research (FIVS 491) should be project oriented, faculty supervised research. Projects should be hypothesis driven and provide students with appropriate scientific research experience. Students should demonstrate critical thinking skills by establishing testable hypotheses, presenting logical experimental methods, analyzing data, interpreting results, and discussing findings. Students should also demonstrate technical competency through correct usage of terminology, concepts, principles, and logic in all elements of the research project.

Students complete an online application for research that includes a research proposal and indicates the faculty member with whom they plan to conduct research. These research proposals are processed by the Academic Advising team and initially screened by the internship faculty coordinator to ensure that all projects have forensic relevance and are conducted with forensic practitioners, as mandated by our FEPAC accreditation. The research proposals are then sent for review by the intended faculty
mentor to ensure that the project and expectations are consistent between all parties involved. Upon confirmation from the faculty mentor to the Academic Advising team, the student is then registered for the requested research credits. At the conclusion of the research experience, the students are expected to upload a final project report, project journal or laboratory notebook.

**Professional Internships.** The same faculty member coordinates the FIVS Internships and the ENTO internships. For detail see pg. 36. Students participating in professional internships (FIVS 484) should choose an area related to their professional area of interest. Students are expected to recognize the scientific method and apply it to a problem, describe problem-solving principles and organize typical operational protocols, summarize and illustrate results from an experiment, project or experience in a written, scientific manner, and to be able to understand the application of their experiment, project or experience in their chosen area of study.

**Study Abroad.** Study Abroad encompasses a variety of international experiences, study, research, internships, volunteer, and service-learning programs ([http://studyabroad.tamu.edu](http://studyabroad.tamu.edu)). On-going discussions with forensic science specialists at Greenwich University, United Kingdom, may lead to a new study abroad program in the Forensic & Investigative Sciences program. The proposed concept is a semester long endeavor linking students with Greenwich University forensic science mentors and Department of Entomology forensic science faculty to develop student-centered research projects designed and prepared to be completed during a 9-day visit and research experience in Greenwich University laboratories approximately mid-term. Students would present their findings at the conclusion of the visit to Greenwich University faculty and students, and would spend the remaining period of the semester back at TAMU completing analyses, preparing formal research reports and manuscripts for potential publication in the university journal. Final project summaries and conclusions would be presented in a forum to TAMU FIVS majors and other interested parties at the conclusion of the semester. The program is being discussed with keen interest from both institutions. The limiting factor to initiate this program is balancing TAMU Entomology faculty time to existing course demands with the additional commitment to the planning and execution of a class of 10-20 students in this program.

**Honors.** See Entomology Honors Section on page 38.
Figure 17. Forensic and Investigative Sciences Honors Program

FORENSIC & INVESTIGATIVE SCIENCES HONORS PROGRAM

Departmental Requirements to Graduate with FIVS Honors

To achieve FIVS Honors, a student must complete 18 hours of Honors coursework:

1. FIVS 205 Introductory Forensic & Investigative Sciences
2. Twelve (12) hours of honors-level FIVS coursework.
   a. At least six (6) hours of FIVS courses must be at the 300/400 level.
   b. Upper level may include 6 hours of Directed Studies / Research.
3. Three (3) additional hours of honors-level coursework.

To be certified for Honors Distinction in Forensic & Investigative Sciences no grade of D* or F* in any course on the transcript and no grade on the transcript of "D" or "F" in an honors class can be recorded. (An asterisk [*] on the transcript of a graduating student indicates that the student was given a grade penalty for academic dishonesty and the student did not complete the remediation program that is required in order to have the asterisk removed from such a student’s transcript.)

Honors Recognition and Graduation with Honors

All completed Honors coursework taken at Texas A&M University is designated as such on a student’s official transcript, showing that the student has taken part in this enhanced curriculum. After graduation, the transcript will designate that the student has achieved the distinction of “Forensic & Investigative Sciences Honors”, as well as any other University academic distinctions.

Admission to the Honors Program in Forensic & Investigative Sciences

Current and potential FIVS majors who have an overall GPA of ≥3.5 are eligible for admission to the Department Honors Program. Students are encouraged to consult with a member of the Departmental Academic Advising Team as early as possible in their academic career to plan their course sequence. A TAMU cumulative 3.5 GPA and a 3.25 GPA in Honors courses is required to graduate with FIVS Honors.

Grade Point Requirements

Participants in the Forensic & Investigative Sciences Honors Program must maintain a TAMU cumulative 3.5 GPA and a 3.25 GPA in Honors courses and no grade in a honors course below a “C”.

Professional Development

Students are highly encouraged to pursue additional University-level honors distinctions, certificates, and to participate in programs such as the Research Scholars Program through the Office of Honors and Undergraduate Research. Additional professional activities such as organizational memberships and participation in Student Research Week or other student oral presentation or poster competitions are strongly encouraged.

For further information about FIVS Honors, please contact:

Rebecca Hapes, Sr. Academic Advisor II
rhapses@tamu.edu | 979-845-9733

Ann Pool, Academic Advisor II
annpool@tamu.edu | 979-845-0122
4.2 Graduate Program (ENTO)

The Department of Entomology offers MS and PhD degrees in Entomology. Within these programs, subject matter areas include arthropod ecology, biological control, integrated pest management, molecular biology, physiology, nutritional ecology, genetics, toxicology, plant resistance, systematics, urban and structural, medical/veterinary, and forensic entomology. Students come into the field of entomology with diverse interests, science background and career goals. Students are able to tailor their education and research interests for their respective degree programs with the help of their major advisor and their graduate advisory committees.

Students obtaining a graduate degree from the Department of Entomology must demonstrate competency in four foundation areas: ecology; insect diversity and systematics; physiology; and molecular genetics. This competency can be achieved through prior graduate course work or degree plan course work in entomology, or extensive and relevant professional experience. With the guidance of their advisory committee, additional course work is then included to the degree plan to supplement the foundation areas relevant to the research project and long term career and educational goals of the student. A degree plan check list (Appendix 7) is prepared by the student and advisory committee for departmental degree plan review, assessment and approval.

A study of total course enrollment for Entomology graduate courses and a study of doctoral student enrollment in ENTO graduate courses was conducted to gauge course demand considering that:

1. TAMU has made an institutional commitment toward increasing the number of doctoral students,

2. weighted-student credit-hours (WSCH) will continue to be a metric of performance with WSCH for master’ and doctoral students much great than that of undergraduate students, and

3. to be the instructor of record in higher education in the state of Texas 18 hours of graduate instruction in the discipline is expected.

A history of total enrollment in Entomology graduate courses 2006-2013 inclusive of all majors and degrees is summarized Table 8. These data show there is continuous course demand for subject matter offerings. Three courses, ENTO 606, 610 and 625, are cross-listed with other departments as noted. Enrollments in certain courses over this period have been
influenced by faculty changes or course re-organization, specifically ENTO 608 and ENTO 618, respectively. ENTO 689 Special Topics In is a mechanism to launch new courses and test perceived demand. Once a course has demonstrated sustainable student interest (minimum student enrollment for graduate course is 5 per offering), a permanent course number is assigned. Recently, a new course in Insect Community Ecology (ENTO 614) was added. Approval is pending for a graduate course in Principles of Integrated Pest Management, and there is anticipation for two forthcoming proposals on Advanced Topics in Medical Entomology and Behavioral Ecology. Other course additions will be influenced by new faculty hires.

Table 8. Enrollment in Entomology Graduate Courses (and total enrollment for cross listed of courses) for Academic Years 2006-2013

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<th>602</th>
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<th>608</th>
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606* was cross listed with GENE/WFSC
610b was cross listed with SCSC/PLPA
625c was cross listed with GEOG (College of Geosciences)
*ENTO 618 Medical & Veterinary Entomology offered Spring 2014 with 15 students enrolled.

Our study of doctoral student enrollment in entomology graduate courses included assessments of two student cohorts. The first assessment was of the pattern of all graduate ENTO courses taken by 37 doctoral graduates that completed degrees from 2006 to 2013. This data set was comprised of 27 students on the 64-credit hour program (having had a prior MS degree) and 10 on the 96-credit hour program. Findings from the assessment of completed doctoral programs (Appendix 8a) include:

1. Students in the graduated cohort (Appendix 8a) took on average 3.70 ENTO graduate courses with an average of 12.8 hours credit.
2. Students in 64-credit hour programs took on average 3.41 ENTO graduate courses with an average of 11.7 credit hours, while 96-credit hour programs averaged 4.5 courses and 15.8 credit hours.
3. These students completed 50% of ENTO graduate courses in the first 2 regular semesters, and 88% in 4 regular semesters, and 98% by the 5th regular semester.

The second assessment (Appendix 8b) was of ENTO graduate courses from approved degree plans of 32 currently matriculating doctoral students comprised of 21 students on the 64-credit hour program and 11 students on the 96-credit hour program. Findings from this assessment include:

1. The average number of ENTO graduate courses for this cohort (n=32) is 4.19 with an average of 13.6 credit hours.
2. Students in 64-credit hour program (n=21) have planned on average 3.86 ENTO graduate courses with an average of 12.4 credit hours, while 96-credit hour programs average 4.73 courses and 15.6 credit hours.
3. There is a small increase in number of ENTO graduate courses and credit hours in matriculating student cohorts compared to the graduated student cohort (base line).
4. The pattern of courses on degree plans is scattered across all ENTO graduate courses with the highest frequencies in courses supporting systematics, ecology, and genomes. The frequency of ENTO 689 “Special Topics in…..” is influenced by the development of new courses.
5. If students in the matriculating cohort were all required to take a minimum of 15 credit hours of ENTO graduate courses, there would be an 18% increase in student contact hours (524 hours versus 427 actual credit hours) for doctoral students. This would produce a corresponding increase in weighted student credit hours for the department.

4.2.1 Master of Science (MS) and Master of Agriculture (MAgr)

The Master of Science degree in Entomology requires 32 credit hours on the formal degree plan. Students are required to submit their official degree plan prior to the conclusion of their second semester. The degree plan must include competency in the four foundation areas as described above. The complete guidelines for degree plan and progress toward degree requirements may be found in our Departmental Policies and Procedures at

https://insects.tamu.edu/students/grad/pdf/policiesandproceduresforgrad.pdf
In response to a THECB review of low-producing degree programs, the Master of Agriculture (MAg) degree in Economic Entomology has been discontinued and the Plant Protection major is currently being phased out. The Plant Protection major is jointly administered between three departments – Entomology, Soil and Crop Science, and Plant Pathology and Microbiology. The list of students as of Fall 2013 (attach to this document here) indicates two MAgr students still on the books, but neither are currently enrolled.

4.22 Doctoral Degree (PhD)

The Doctoral degree in Entomology requires 64 or 96 credit hours on the formal degree plan. If a student has a TAMU-recognized master’s degree, their entomology PhD degree plan will include a minimum of 64-credit hours; however, if a student enters the department directly from a bachelor’s degree or with a TAMU-non-recognized master’s degree, their degree plan must include 96-credit hours. Students are required to submit their official degree plan prior to the conclusion of the third long semester. The degree plan must include competency in the four foundation areas as described above. The complete guidelines for degree plan and progress toward degree requirements may be found in our Departmental Policies and Procedures at https://insects.tamu.edu/students/grad/pdf/policiesandproceduresforgrad.pdf.

4.23 Graduate Admissions

Graduate applicants are reviewed in a holistic manner based on a number of factors that include: GPA on last 60 credit hours; courses taken; GRE scores; TOEFL score (if international applicant); recommendation letters & forms; statement of purpose; resume/CV. The admission committee pays particular interest to prior research experience, relevant course work, and other indicators of future student success. Recently, the department has modified the admissions policy to now include a letter of commitment from a faculty member (financial and mentorship) before a student is admitted. This change in policy was needed because an increased number of admitted students, particularly international students, were matriculating and arrived seeking research support and a major advisor. Failing to find such a commitment, students were left without an advisor, short on funds, and occasionally left the program seeking opportunities in other departments. Effective Fall 2013 for an applicant to move from admissible to the official “admit” status, a faculty member is required to submit a letter of commitment for the applicant’s file. This letter includes a statement indicating a willingness to advise the student and a commitment to fund the student on a research
assistantship if other funding is not available (government scholarships, Fulbright fellowships, or equivalent funding the student may bring with them).

4.24 Graduate Certificate Programs

A graduate certification program represents an academic emphasis area within a particular field or it could be interdisciplinary and involve several fields. The department has course work that is incorporated in two current graduate certificate programs. Certificates do not show on the diploma but they are recognized as completed on the transcript.

4.25 Geographic Information Systems (GIS) Certificate

The Geographic Information Systems (GIS) Certificate Program is jointly administered by the departments of Ecosystem Science and Management, College of Agriculture & Life Science and Geography. GIS technologies are applied to wide-ranging fields with interests in spatially distributed information such as transportation, environmental/resource management, marketing, facility management, healthcare delivery, homeland security, agriculture and urban planning, among others. This certificate program has been designed to meet the growing demand for qualified individuals in this field.

http://essm.tamu.edu/academics/graduate/degrees-and-certificates/certificates/graduate-certificate-in-geographic-information-systems-(gis)/

ENTO courses involved in this certificate: ENTO 625, Landscape Ecology

International Agriculture and Natural Resource Management Certificate

This transcripted graduate certificate program offered through the College of Agriculture & Life Sciences is intended to build the experience and knowledge of graduate students seeking careers in international agriculture and resource development. The 16-credit hour program consists of 12 credit hours in one of five focus areas, a 3-credit hour capstone course (AGEC 689 International Agricultural Development Policy), 1-credit hour for a Global Seminar (ALEC 681), or 8 Borlaug Institute seminars. ENTO 618 Medical & Veterinary Entomology and ENTO/GEOG 625 Landscape Ecology are currently included in the focus area entitled Human Capacity Development for International Agriculture, and ENTO/GEOG 625 Landscape Ecology is included in remaining four focus areas of Agricultural & Natural Resource Trade & Policy,
Food Systems, Natural Resources, and Agricultural & Natural Resource Development.

**Interdisciplinary Degree Programs.** Entomology faculty and the courses they teach can be part of an Interdisciplinary Degree Program (IDP). These are graduate degree programs which faculty groups organize and for which there is no one department as the “home department”


The Office of Graduate and Professional Studies (OGAPS) is where these programs report. A list of all the available IDPs can be found on the above link. Details of these IDP can be found at the OGAPS website. Faculty in Entomology elect to become affiliated with the IDP and their students may elect this degree option as well. In the current roster of students, we have 2 graduate students who are seeking an IDP degree, one in genetics (GENE) and one in molecular and environmental plant science (MEPS). The IDP led to either an MS or PhD degree. The IDPs that faculty in Entomology are involved with include: Genetics (GENE), Molecular & Environmental Plant Sciences (MEPS), Toxicology, Biotechnology, and Neuroscience.

The newest PhD program that just received Board of Regents approval is Ecology and Evolutionary Biology (EEB). This program still needs final approval from the Higher Education Coordinating Board (THEQB) which is expected in April 2014. EEB has a number of faculty in Entomology listed as part of the EEB faculty (12 core faculty and 3 affiliated faculty from Entomology). Core faculty are those who will serve as major professors of students seeking graduate degrees in EEB opposed to affiliated members who can only co-chair graduate students with another core faculty member.

4.2.6 Graduate Exchange Program – Erasmus Mundus. In 2013 the Department of Entomology was invited to be one of only two US programs to participate in the Erasmus Mundus Program, an internationally recognized program for higher education which has received comparison to the Fulbright Program. The invitation is specifically to participate in the Erasmus Mundus Masters in Forensic Science two year program currently operated by universities in Portugal, United Kingdom, and Spain. Students are highly diverse as those admitted into this program are from around the globe.
This program provides the opportunity for a truly international educational experience as students with this program will work in each nation as well as have the opportunity to conduct research abroad. This program now has an agreement in place with the Department of Entomology at Texas A&M University. Students will have the opportunity to work with researchers at Texas A&M University as part of their MS degree. This will result in international collaborations between Texas A&M University faculty and students/faculty from around the world.
Section 5

ENTOMOLOGY STUDENTS

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Department of Entomology
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5. ENTOMOLOGY STUDENTS

5.1 Undergraduate Programs – Enrollment Trends

Overall student enrollment in the undergraduate programs (majors, minors, and certificates) is summarized in Figure 18. This figure illustrates the steady increase from 132 students in 2007 to 327 students in 2013, a 2.4-fold increase. The detailed composition of student sub-populations reflects the following trends:

1. Implementation of the Forensic & Investigative Sciences major beginning Fall 2007.

2. Termination of the Forensic Entomology track within the Entomology major in 2007, followed by a stable average of 73 Entomology majors from 2010-2013.

3. Sustained student enrollment in the Entomology Double-Major. The primary major of these students is elsewhere in COALS (e.g., animal science, horticulture, wildlife & fisheries sciences, bioenvironmental science, agricultural leadership, soil & crop sciences, etc.) or other colleges (e.g., majors in biomedical sciences, English, sociology, anthropology, etc.)


The sub-populations in items 3-5 above attract additional students to our courses, diversify our student interests, enhance opportunities to engage undergraduate students in high impact experiences, undergraduate research opportunities, and study abroad experiences. They also increase our student credit hours and demand for seating capacities in lectures and laboratory sections.
The undergraduate students that are commonly tracked by TAMU are just students in the majors, ENTO and FIVS, (not minors, certificates or double majors). But these other student cohorts impact our program. In terms of curriculum design, course revision, laboratory seat capacity, etc., these double majors, minors and certificate program students must be considered since any changes will likely impact all students served. For example, in Fall 2013 we had 44 students seeking an ENTO degree as a double major. These students are “counted” by the department where their primary major is located. The official head count for Entomology does not include these students to avoid double counting students by TAMU, Data and Research Services (DARS) which is the source of all such counting efforts, system wide. Figure 18 provides a complete picture of all the student cohorts we serve in our curriculum, but only the number of students in ENTO and FIVS are used centrally. Altogether, we have 327 students in our graduate, undergraduate, minor and certificate programs (Fig. 18). Our undergraduate programs continue to expand with a total enrollment (Fall 2013) of 248 in the two undergraduate degree programs (77 in ENTO; 171 in FIVS).

An Academic Certificate Program in Public Health Entomology launched Fall 2012 that currently has 24 students enrolled. A certificate differs from a minor by having students take courses across the campus to fulfill a specialized area of concentration. Minors and certificates...
do not show on a student’s diploma but they do appear on the transcript. In Spring 2009, *Global Public Health Entomology* (ENTO 210) was launched with an initial enrollment of 32 students. Enrollment has since increased to 325 students in the 2012-2013 academic year. In 2013/2014 enrollment has declined suggesting we have reached a plateau for this course. The success of this course stimulated the department to explore developing an Undergraduate Certificate Program in Public Health Entomology. The School of Rural Public Health recognizes this certificate and sees this as a positive when students are applying for entry into graduate programs in Public Health.

### 5.1.1 Student Demographics

**Entomology.** Hispanic or Latino, 8% (6) Asian and 55% (42) White Only, the new categories used by the University since Fall 2010 (Fig. 19). This is slightly higher level of Hispanic or Latino across the TAMU campus community (20%). Women outnumber men in the ENTO degree (54% female, 46% male) which has remained relatively constant since Fall 2007 (Table 9) and is close to the university trend with 46.8% female and 53.2% male undergraduates at TAMU.

Figure 19. Ethnic origin of students in the ENTO major

![Ethnic Origin of Students in the ENTO Major](image.png)
Table 9. Ethnic and gender diversity of students in the ENTO major

Agriculture and Life Sciences

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</table>
**Forensic & Investigative Sciences.** A similar trend is seen in the FIVS major with 53% of the students categorized as non-white. The FIVS program also has 68% of the students as female. We see this as a very positive sign that the FIVS program at the undergraduate level is turning out graduates in a STEM (Science, Technology, Engineering and Math) discipline.

**Figure 20. Ethnic origin of students in the FIVS major**
Table 10. Ethnic and gender diversity of students in the FIVS major

### Agriculture and Life Sciences

<table>
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<th>Student Headcount</th>
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<th>Fall 2010</th>
<th>Fall 2011</th>
<th>Fall 2012</th>
<th>Fall 2013</th>
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</tr>
</tbody>
</table>

First Generation Student

First Generation  | 15 | 43 | 33 | 49 | 59 | 73 |
Not First Generation | 22 | 43 | 47 | 59 | 74 | 86 |
Unknown             | 2  | 4  | 4  | 4  | 11 | 11 |
5.1.2 Enrollment and Retention

Entomology. The Entomology major had a Forensic Science Track prior to the implementation of the new FIVS major in fall of 2007. The Forensic Science Track in the ENTO major was discontinued when the FIVS major was implemented, consequently there was a decline in enrollment of ENTO majors from 92 in 2007 to 60 in 2009 as Forensic Science Track students graduated. The ENTO major has since continued a steady increase and we anticipate sustaining a population of 70-80 ENTO majors per year.

The ENTO major is primarily a discovery major within the university. We have very few freshmen enter the major (2-11/year, mean 5.75/year, Table 6) due to limited prior exposure. Often these freshmen have entomological experience in 4-H, FFA, or scouting programs. Freshman ENTO students tend to have a focused entomological interest and are retained within the program. Data indicate that since Fall 2008 (Table 11), the fall to spring freshman year retention rate is 91.6%, and the freshman to sophomore year retention rate is 61.5%, with the three students who decided to leave the program and the university after their freshman year for a variety of reasons. Most of our majors discover Entomology through exposure in introductory or service courses and make decisions to change their major (“change of curriculum”), or to declare an ENTO double-major, minor, or certificate. The advising office offers a course to ENTO majors to help struggling student focus and become successful in the ENTO major.
Retention Strategies. The department places entomology students on academic probation when either their semester or cumulative grade point ratio (=GPA) drops below a 2.0. Prior to the creation of the *Directed Studies: Academic Skills and Success* course in Fall 2009, students on academic probation met with the Senior Academic Advisor on an individual basis throughout the semester to discuss and address their academic deficiencies. In this *Directed Studies Academic Skills and Success* course, the students learn about their learning style, effective study skills, time management, prioritizing and goal setting, combating procrastination, motivation, professional networking, and stress management. This course is optional for all students and is required of entomology students on academic probation.

The Academic Advising Office staff also utilizes mid-term grade reports and contacts students who have term grades below the necessary thresholds required for the program. Their correspondence reminds them of the program requirements and mandates they meet with a member of the Academic Advising staff prior to registration for the upcoming semester. This correspondence and mandated meeting enables the staff to meet with the student to assess the situation and determine if academic and/or other referrals to university resources may be necessary. Additionally, the Academic Advising Office staff utilizes the undergraduate listserv to correspond with students regarding upcoming academic programs, workshops, resources, and university deadlines for Q-dropping courses and withdrawing from the university.

Forensic & Investigative Sciences. The FIVS program has become a popular undergraduate major since it was first authorized in 2007 by the Board of Regents of Texas A&M University (Figure 18) (Table 12). Freshmen admits to the FIVS major often underestimate the rigor of the FIVS degree program which is essentially a pre-med degree program for the first 2 years. Beginning as a freshmen they must successfully complete at least one science class per semester, take *Introduction to Forensic Science*, FIVS 205, along with other University Core Courses (see curricula sheets on pages 46-51) and students must maintain a cumulative grade point ratio (GPR at TAMU = GPA used elsewhere) of 2.75 or greater by the end of their freshman year to continue. For example, in Fall 2012, there were 115 freshmen admitted to TAMU who declared a FIVS major. Only 78 of the 124 admitted freshmen matriculated (62% yield). The 78 freshmen that
matriculated, 29 (37%) continued as FIVS majors in Spring 2013. We require students in the lower division of the FIVS major (FIVL) to complete a science course with a B or better each semester and their overall GPA is 2.75 or above. Before students can enter the upper division courses, they must have completed all required courses, each with a grade of a B or better and have an overall GPA of 3.0 by the end of their sophomore year. There are currently five Entomology faculty teaching in the FIVS curriculum (Coates, Johnston, Tarone, Teel, & Tomberlin) and a sixth faculty member (Heinz) has developed a separate course, FIVS 123, Forensic Investigations, that is not part of the required curriculum for the FIVS major, but it might introduce more students to the field since it serves as a University Core Curriculum course in the Life and Physical Sciences area. The accreditation agency (FEPAC) requires most faculty who teach in the FIVS major to be active in forensic science by doing forensic case work, providing courtroom testimony, or be actively engaged in forensically relevant research evidenced by grants and peer reviewed publications, or providing relevant professional service to forensic organizations and commissions. Five of six faculty are so engaged.

Table 11. Semester Retention Report for FIVL, 2008C – 2012C

<table>
<thead>
<tr>
<th>Cohort Term</th>
<th>Initial Cohort Count</th>
<th>Percent Retained in Major</th>
<th>Percent Retained in College</th>
<th>Percent Retained in University</th>
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</thead>
<tbody>
<tr>
<td>2008 Fall 1-Term (Fall to Spring)</td>
<td>25</td>
<td>92</td>
<td>92</td>
<td>96</td>
</tr>
<tr>
<td>2008 Fall 2-Term (Fall to Fall of Soph Yr)</td>
<td>25</td>
<td>72</td>
<td>72</td>
<td>80</td>
</tr>
<tr>
<td>2009 Fall 1-Term (Fall to Spring)</td>
<td>47</td>
<td>74.47</td>
<td>74.47</td>
<td>93.62</td>
</tr>
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<td>2009 Fall 2-Term (Fall to Fall of Soph Yr)</td>
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<td>29.79</td>
<td>29.79</td>
<td>85.11</td>
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<tr>
<td>2010 Fall 1-Term (Fall to Spring)</td>
<td>42</td>
<td>42.86</td>
<td>45.24</td>
<td>95.24</td>
</tr>
<tr>
<td>2010 Fall 2-Term (Fall to Fall of Soph Yr)</td>
<td>42</td>
<td>28.57</td>
<td>30.95</td>
<td>80.95</td>
</tr>
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<td>2011 Fall 1-Term (Fall to Spring)</td>
<td>57</td>
<td>45.61</td>
<td>50.88</td>
<td>98.25</td>
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<tr>
<td>2011 Fall 2-Term (Fall to Fall of Soph Yr)</td>
<td>57</td>
<td>22.81</td>
<td>29.82</td>
<td>84.21</td>
</tr>
<tr>
<td>2012 Fall 1-Term (Fall to Spring)</td>
<td>78</td>
<td>37.18</td>
<td>39.74</td>
<td>91.03</td>
</tr>
<tr>
<td>2012 Fall 2-Term (Fall to Fall of Soph Yr)</td>
<td>78</td>
<td>21.79</td>
<td>26.92</td>
<td>74.36</td>
</tr>
</tbody>
</table>

AG – Agriculture & Life Sciences; ED – Education; LA- Liberal Arts; AR – Architecture; BA – Business; GS – General Studies; GE – Geosciences; VM – Vet Med

Department of Entomology
**FIVS Retention Strategies.** As a higher percentage of our students are entering into college seeming to lack the necessary skills sets to transition effectively, the department provides an opportunity to engage these students in an intimate class setting to teach these academic skills as early as possible in an attempt to establish proper habits in these students and set a proper foundation for academic success. In addition, the University places a high emphasis and priority on retention, specifically on freshman retention, and our retention efforts as they relate to this group should reflect that University priority. In *Directed Studies: FIVS 285* academic skills and success course, taught by the Senior Academic Advisor, students explore their learning style, are taught effective study skills, time management, prioritizing, goal setting, combating procrastination, motivation, professional networking, and stress management. This course has been taught since the Fall 2009 and is offered as an option for incoming students during their New Student Conferences. In addition, if students struggle academically, this course, along with multiple university resources, is provided as a tool to be utilized.

Progress in the FIVS degree program is highly structured with many required prerequisites and courses offered only once per academic year and progress is actively monitored by the advising staff. Once a student successfully achieves upper division status (U3 with 60 credit hours, 3.0 GPR minimum) the FIVS program enjoys a near 100% graduation rate, with just 1 student not finishing the degree program since 2007. We are concerned about the approximately 80% of the freshmen who enter the program (U1) do not continue to the sophomore year (U2) (Table 11). If this degree program is not meeting their expectations or the rigorous science curriculum is too difficult, then early intervention is preferable so that an orderly transfer to an acceptable major can occur early in a student’s academic career. Table 11 shows the dispersal of students who are not successful in achieving upper division FIVS status to 8 of our 10 colleges, and indicates the percentage of students leaving the university. While we do not have data for these sub-cohorts by ethnicity, some under-represented populations may be disproportionately impacted since we have a substantially diverse population of incoming freshmen. We have been working with high school teachers and counselors to better understand college preparation and needs of under-represented populations to be successful in college. We have submitted internal proposals for programs to improve retention, and this includes the concept of integrating the FIVS 123 course in the freshman year and a majors only offering for FIVS 205.
Table 12. Number and type of degrees awarded annually in the Department of Entomology.

<table>
<thead>
<tr>
<th>Degree Offered</th>
<th>Degrees Awarded Annually</th>
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<td>07-08</td>
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<tr>
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<td>N/A</td>
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<td>M.S.</td>
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<td>M.Agr.(^2)</td>
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<td>Ph.D. ENTO</td>
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<td>M.S./Ph.D.-IDP</td>
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<tr>
<td>Totals</td>
<td>47</td>
<td>38</td>
</tr>
</tbody>
</table>

\(^1\) Double majors are not counted in the total. Students are only counted in their primary major so that the system reports the number of unique students enrolled at TAMU.

\(^2\) Master of Agriculture degree program was discontinued in 2011/2012 due to low enrollment.

5.1.3 Graduation and Time to Degree.

**Entomology.** For the Entomology major the average time to degree for the undergraduate major is 4.67 years (Table 13). The average time to degree for all 183 Entomology majors 2006-2013 was 4.67 years. The annual mean for time to degree ranged from 4.38 to 5.09 years. In comparison, the mean annual time to degree (2008-2013) for the Baccalaureate degree in the College of Agriculture & Life Sciences ranged from 4.26 to 4.35 years, and for Texas A&M University (College Station) was 4.36 to 4.60 years, (https://accountability.tamu.edu/content/university-metrics-time-degree). Note that these university and college calculations exclude transfer students.

**Forensic & Investigative Sciences.** The FIVS major has had 44 students graduate to date (Fall 2009 to August 2013) (Table 12). Of those students who do graduate in the FIVS program, the average time to degree for the FIVS degree since the first degree was awarded in fall commencement 2009 (2009/2010 to 2011-2012) is 4.2 years (range 4.04 – 4.38). This time to degree is less than the means for both the College of...
Agriculture & Life Sciences, and Texas A&M University (College Station campus). Since 2007 there have been 12 students graduate with the pre-law emphasis and 32 in the science emphasis for a total of 44 graduates.

**Table 13. Average Year to Degree for Undergraduate Programs in Entomology**

<table>
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<td>2010-11</td>
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<td>2012-13</td>
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<td>4.07</td>
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<td>AVE</td>
<td>4.67</td>
<td>4.17</td>
</tr>
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</table>

**5.2 Graduate Program**

**5.2.1 Student Demographics**

**Figure 21. Graduate Enrollment in Entomology, 2007-2013.**
In the past 7 years we have graduated a total of 75 students with advanced degrees, 37 with a PhD and 38 with either MS or a MAgr (4 PPRO, 1 ECEN). Graduate degrees prepare students for careers in research, education, extension, business, or industry.

Our graduate currently has approximately 1/3 of our students listed as international and 12% as Hispanic or Latino.

Figure 22. Ethnic Origins of ENTO Graduate Students
Table 14. Ethnic and Gender Diversity of ENTO Graduate Students

<table>
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<th></th>
<th>Student Headcount</th>
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<th>Fall 2008</th>
<th>Fall 2009</th>
<th>Fall 2010</th>
<th>Fall 2011</th>
<th>Fall 2012</th>
<th>Fall 2013</th>
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</thead>
<tbody>
<tr>
<td>Agriculture and Life Sciences Total</td>
<td>53</td>
<td>48</td>
<td>49</td>
<td>52</td>
<td>51</td>
<td>55</td>
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<tr>
<td>White Only (NEW)</td>
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<td>29</td>
<td>30</td>
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<tr>
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5.2.2  Time to Degree

For the graduate degree programs MS students on average (2007-2012) complete their degree in 2.38 years and for the PhD the average is 5.33 (Table 15). For the latter this statistic co-mingles two distinct student populations. Those students who enter the PhD program with an MS are required to complete 64 hr of instruction, while those students entering directly from the BS are required to complete a 96 hr program. Figure 23 compares 2006-2012 time to degree to 200-2005 date and indicates slight improvement for each population.

The time to degree for the 64 credit PhD program is 4.92 years (4.61 if you remove 1 significant outlier, C. Cate) and the time to degree for the 96 credit PhD program is 6.59 years. If we were to enter more 96 credit PhD students (BS to PhD) in the future, because incentives are in place to discourage an MS degree at TAMU we expect more students will be BS to PhD thus our time to completion of the PhD will increase, perhaps by as much as 2.0 years. This average time to degree has not changed significantly since 2000 (Figure 23).

For comparison, the mean annual time to degree (2008-2013) for all Masters degrees (thesis and non-thesis) in the College of Agriculture & Life Sciences ranged from 2.49 to 2.63 years, and for Texas A&M University (College Station) was 2.06 to 2.19 years. The mean annual time to degree (2008-2013) for all Doctoral degrees in the College of Agriculture & Life Sciences ranged from 5.42 to 5.68 years, and for Texas A&M University (College Station) was 5.47 to 6.05 years. The source of these data is https://accountability.tamu.edu/content/university-metrics-time-degree.
Table 15. Means for Time to Degree

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Average of all PhD students: 5.33
Average of all 96 hr PhD: 6.59
Average of all 64 hr PhD w/o C A Cate: 4.61

NOTES:
- Each semester is counted as .33 years.
- Time to degree count begins when student enters PhD program in ENTO (either as G7 or G8 status).
- *Out 5 semesters for deployment, not included in time to degree.
- XX Student who request their academic information remain confidential.

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<tr>
<th>Name</th>
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5.2.3 Graduation and Placement Information

Undergraduate Graduation and Placement Information. Graduation data for the ENTO and FIVS majors are summarized in Table 12. Placement information for undergraduates has always been problematic owing to the nature of their respective placement after graduation. In 2014 we will be implementing a new Qualtrics survey for graduating students that will be tied to graduation clearance to improve our capture of both placement information and student assessment of their undergraduate experience. Anecdotal information from Entomology graduates indicates that students are employed in extension positions, agrochemical/pharmaceutical companies, PCO companies, animal health companies, independent and private schools, public health agencies, USDA, Department of Homeland Security, private enterprises and museums. Approximately half of the graduates pursue graduate school programs across the country in areas including Entomology, Epidemiology, Education, and International Development, or professional schools including Veterinary Medicine,
Graduates from the FIVS program are being employed in municipal, county, and state/regional crime laboratories, forensic technology companies, and criminal justice programs, while more than half pursue master’s programs in forensic chemistry, forensic genetics, forensic nursing, etc., or pursue professional schools in medicine and law.

**Graduate Graduation and Placement Information.** During the past 7 years (2007-2013) Table 12 summarizes the various graduates of our program and Appendix 9 Table A provided current employer information. Specifically we have graduated 184 BS-ENTO, 44 BS-FIVS, 37 PhD, 33 MS, 5 MAg, and 4 Interdisciplinary Degree Program graduates with an Entomology faculty member serving as the chair of the student’s graduate advisory committee (2 MS and 2 PhD in MEPS and GENE) for a total of 307 degrees awarded. Appendix 9 Table B summarizes the employment status of 37 PhD and 38 MS students in ENTO. These data were either found using publically available internet searches or we contacted our graduates to seek their permission to put this information in this review document. In summary, all PhD students are employed either in permanent positions (25) or as grant supported research scientist or in post-doctoral positions (12). For the 33 MS and 5 MAg students, just over 1/3 (13 of 37) are seeking a PhD with 4 of those continuing at Texas A&M in the Entomology PhD program. Seventeen of the 37 MS students are employed by various government agencies, university research labs or private companies in technical positions directly related to entomology, 2 are educators (community college or high school science instructors), 1 is a police officer, and 2 recent graduates still seeking employment (August 2013 graduation) and we have lost contact with 2 former students.

**5.2.4 Student Publications, Presentations, and Awards (Graduate and Undergraduate).**

We do not systematically collect data on graduate student publications, presentation or awards. (See Appendix 10 for examples of some of the awards our students have earned. We have begun to capture these data, but there is no historical record we can use as a comparison. Moving forward we have put in place an Qualtrix Survey for all BS, MS and PhD students which will ask for these data.
5.2.5  Graduate Student Fellowships and Grantsmanship.

Table 2 documents the high quality of our recruits for graduate school with nearly half of those students successfully competing for a variety of fellowships (See Appendix 11) that will support one to three years of their graduate program. In addition to these fellowships, graduate students often seek outside funding for travel grants, short term research support, or other such awards that add significant resources into the graduate program that are not easily accounted for except through the annual faculty evaluation where such data are captured. For example, in 2012/2013 graduate students brought in a total of $392,199 which are not captured in the data on grants as summarized in Table 20. This is a remarkable level of grantsmanship of our cohort of 62 graduate students.
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Texas A&M University
Department of Entomology
412 Minnie Belle Heep Center, 2475 TAMU
College Station, TX 77845-2475
dragsdale@tamu.edu
6. ENTOMOLOGY FACULTY

6.1 Teaching Faculty by Program and Teaching Load

Courses we teach in Entomology can be found in Appendix 11. This is a list of undergraduate courses (100-400 level classes) in ENTO and FIVS and the graduate level courses in Entomology (600 level courses). Syllabi for each course are available on the entomology.tamu.edu website using the Academic Programs dropdown box <http://entomology.tamu.edu/entomology/entomology-course-descriptions/>. Faculty at Texas A&M are expected to be in the classroom and the annual performance review has 30% of the total points available based on education using data on classroom instruction and training and mentoring students. The classes each faculty member teaches is captured at the top of their CV. We also do a 3 year projection of teaching for planning purposes. See Appendix 13.

The number of “fixed credit” courses, which are defined as traditional lecture and/or laboratory courses, but does not include variable credit research classes taught, by faculty from 2009 through 2013 was from 0 to 7 courses per faculty member during the fall and spring semesters with an average of 2.4 courses per faculty. In addition, faculty taught multiple sections of variable credit courses for undergraduate or graduate research credit and directed studies. Those faculty who did not teach a fixed credit course in any given semester either met their teaching expectations in a single semester, were on Faculty Developmental Leave, or who were teaching a specialized course that failed to have sufficient enrollment for the course to be taught which in our system is a minimum of 5 students needed for a graduate course and 10 students for an undergraduate course.

Faculty Profiles. Faculty members in the Department of Entomology are highly recognized and respected in their field. A list of faculty members can be found in Table 16 and detailed biographies can be found in Appendix 14, Faculty Profiles and CV’s gives a flavor of the current research, the background of each faculty member, and their specific teaching assignments. Faculty are listed in two groups. The TAMU based faculty who hold tenure or tenure-track appointments, followed by the teaching faculty who hold non-tenure track appointments followed by faculty affiliated with AgriLife Research and AgriLife Extension who are typically based off campus and only a subset of the “agency” faculty serve as core faculty.

Faculty term appointments. All tenured/tenure track (T/TT) faculty that are located in College Station hold a split teaching and research appointment. To be eligible for tenure in the State of Texas, a 12-month faculty member must have at least a 25% teaching appointment (33% for a 9-month appointment). Tenure at Texas A&M is the base salary that supports the 9-month
appointment. The majority of the T/TT faculty (17 of 24 or 71%) have a term appointment that is less than 12 months (see Table 16). For the T/TT faculty the average teaching appointment in Entomology is 36% (range is 25 to 52%). The most common term of employment is a 10-month appointment with two months summer salary self-funded from a variety of sources (grants, contracts, designated accounts, or startup funds). All new hires in Entomology are offered a competitive salary with our peer institutions but the term is a 10-month appointment which allows faculty to supplement their base salary from contracts and grants. Faculty term appointment, job expectations (percent teaching, research, extension, and service) for each faculty member is also included on the faculty member’s 2 page CV (Appendix 14a-d). A lecturer is considered a faculty rank, but that appointment does not accrue tenure and their sole function is classroom and laboratory instruction. All AgriLife Research and AgriLife Extension faculty typically have a 100% appointment with their respective agencies and at times job duties cross between Extension and Research, but no Agency faculty member currently has a teaching expectation. Because agency faculty are not teaching in the classroom, their appointments do not accrue tenure.
Table 16. Current Faculty in Entomology 2006-2013

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<th>TAMU Faculty (Tenured/Tenure Track)</th>
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<td>3</td>
<td>12</td>
</tr>
<tr>
<td><strong>Sword, Gregory</strong></td>
<td>Insect Ecology &amp; Evolution, Genetics &amp; Behavior</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td><strong>Teel, Pete</strong></td>
<td>Ticks</td>
<td>35</td>
<td>12</td>
</tr>
<tr>
<td><strong>Vincent, S. Brad</strong></td>
<td>Parasitic Insects</td>
<td>44</td>
<td>10</td>
</tr>
<tr>
<td><strong>Woolley, James</strong></td>
<td>Systematics</td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td><strong>Zhu-Salzman, Keyan</strong></td>
<td>Insect Plant Interaction</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Associate Professor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Behmer, Spencer</strong></td>
<td>Physiology Behavior &amp; Ecology</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td><strong>Bernal, Julio</strong></td>
<td>Biological Control</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td><strong>Coates, Craig</strong></td>
<td>Genetics, Biotechnology</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td><strong>Medina, Raul</strong></td>
<td>Evolutionary Ecology Principles in Agro-Ecosystem</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td><strong>Mulenga, Albert</strong></td>
<td>Vector Biology &amp; Genomics</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td><strong>Tomberlin, Jeffery</strong></td>
<td>Forensic &amp; Investigative Sciences</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rangel, Juliana</strong></td>
<td>Honey Bee Biology</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td><strong>Slotman, Michel</strong></td>
<td>Vector Biology</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td><strong>Tamborindeguy, Cecilia</strong></td>
<td>Plant Vector Pathogen</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td><strong>Tarone, Aaron</strong></td>
<td>Molecular Forensic Sciences</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>TAMU Faculty (Non-Tenure Track)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical Assistant Professor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Hamer, Gabriel</em>*</td>
<td>Medical Entomology</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Lecturer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brundage, Adrienne</td>
<td>FIVS, Veterinary Entomology &amp; Medical Entomology</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Metz, Bradley</td>
<td>Honey Bee Biology</td>
<td>3</td>
<td>part-time</td>
</tr>
</tbody>
</table>
### Off-Campus AgriLife Research Faculty (Non-Tenure Track)

<table>
<thead>
<tr>
<th>Professor</th>
<th>Field of Study / Location</th>
<th>Age</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Michels, Jerry</td>
<td>Biological Control - Bushland/Amarillo, TX</td>
<td>32</td>
<td>12</td>
</tr>
<tr>
<td>*Mitchell, Forrest</td>
<td>Biological Control - Stephenville, TX</td>
<td>29</td>
<td>12</td>
</tr>
<tr>
<td>**Parajulee, Megha</td>
<td>Cotton Entomology Quantitative Ecology - Lubbock, TX</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>**Way, Michael O (MO)</td>
<td>Rice, Soybeans &amp; Sugarcane Beaumont, TX</td>
<td>31</td>
<td>12</td>
</tr>
<tr>
<td>**Wilson, Lloyd (Ted) (Tenured)</td>
<td>Endowed Chair, Director - IPM Beaumont, TX</td>
<td>24</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assistant Professor</th>
<th>Field of Study / Location</th>
<th>Age</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Brewer, Michael</td>
<td>Field Crop Entomology - Corpus Christi, TX</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>*Henne, Don</td>
<td>Vegetable, IPM – Weslaco, TX</td>
<td>3</td>
<td>12</td>
</tr>
</tbody>
</table>

### Off-Campus AgriLife Extension Specialists (Non-Tenure Track)

<table>
<thead>
<tr>
<th>Professor</th>
<th>Field of Study / Location</th>
<th>Age</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allen, Charles</td>
<td>Associate Department Head for Extension - Statewide IPM Coordinator – San Angelo, TX</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td><strong>Knutson, Allen</strong></td>
<td>Extension Specialist – Dallas, TX</td>
<td>33</td>
<td>12</td>
</tr>
<tr>
<td><strong>Merchant, Michael</strong></td>
<td>Extension Specialist – Urban – Dallas, TX</td>
<td>29</td>
<td>12</td>
</tr>
<tr>
<td>Porter, Patrick</td>
<td>Extension Specialist – IPM – Lubbock, TX</td>
<td>15</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Associate Professor</th>
<th>Field of Study / Location</th>
<th>Age</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bynum, Ed</td>
<td>Extension Specialist – IPM, Host Plant Resistance – Amarillo, TX</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Muegge, Mark</td>
<td>Extension Specialist – IPM – Ft. Stockton, TX</td>
<td>16</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assistant Professor</th>
<th>Field of Study / Location</th>
<th>Age</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barman, Apurba</td>
<td>Extension Specialist – Cotton – Lubbock, TX</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Swiger, Sonja</td>
<td>Extension Specialist – Veterinary – Stephenville, TX</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Villanueva, Raul</td>
<td>Extension Specialist – Vegetable, Citrus, Urban, IPM – Weslaco, TX</td>
<td>4</td>
<td>12</td>
</tr>
</tbody>
</table>

*Members of Entomology Core Faculty defined by TAMU as having advised or co-advised a Ph.D. Student.
*Graduate Faculty Members
**Faculty Promotion.** Twenty faculty have undergone review for promotion or promotion with tenure during the past seven years. All faculty seeking promotion and tenure during the past six years have been successful. Four of five faculty who sought promotion to the rank of professor were also successful. All seven agency faculty who sought promotion were successful. The overall success can be attributed to multiple factors. Faculty search committees over the past seven years have focused on hiring faculty with proven track records of publication and grantsmanship. New faculty are mentored by experienced faculty and the annual performance review process focuses on providing input that will assist junior faculty to achieve success. A formal mid-term review is conducted after the third year of appointment. The mid-term review provides an opportunity for the faculty member to receive valuable comments regarding their progress toward promotion from the elected Promotion and Tenure committee. The Department of Entomology promotion and tenure guidelines are available on the Dean of Faculties website.


**Table 17. Number of faculty dossiers reviewed for promotion with and without tenure (FY 07-14).** (See Appendix 18 for University Wide Statistics)

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Promotion (non-tenure track)</th>
<th>Promotion &amp; Tenure (TAMU)</th>
<th>Promotion (TAMU)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number Reviewed</strong></td>
<td></td>
<td><strong>Number Successful</strong></td>
<td></td>
</tr>
<tr>
<td>2007/2008</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2008/2009</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2009/2010</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2010/2011</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2011/2012</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>2012/2013</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>2013/2014</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>7</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>
**Faculty Job Expectations.** In the past, T/TT faculty job expectations closely aligned with the funding source. That is, a 40% teaching appointment typically had 40% of the salary coming from the teaching budget (Fund Code: 02) with a concomitant job expectation equal to the funding source. The funding source is no longer used to define job expectations. In the future, for T/TT faculty positions, an increasing proportion of the base salary of all College Station based faculty will come from the ‘02’ budget. The ‘02’ budget supports both scholarly activity and classroom instruction. This change began in the 2013/2014 budget cycle (FY14) and the plan is to continue this shift in funding until the base salary of all T/TT faculty in COALS aligns with how faculty are funded in the other colleges at Texas A&M. Salary support for additional months of the appointment will come from AgriLife Research (Fund Code: 06) as it currently does and supplemental summer salary funding can come from grants and contracts awarded to faculty.

6.2 Faculty and Core Faculty.

A complete list of faculty is provided in Table 16. The core faculty, as defined by The Higher Education Coordinating Board (THECB), are faculty who have advised or co-advised a PhD student. Not all faculty, especially those faculty located outstate or new Assistant Professors at TAMU are likely to have mentored a PhD student to completion, so the number of ‘Core Faculty’ will be smaller than the total number of faculty who are members of the Graduate Faculty in Entomology.

6.2.1 Faculty Publications summary.

The current 24 tenured/tenure-track faculty and clinical Assistant Professors based in College Station on average publish a total of 204 scholarly works each year (Table 18) and since 2006 have produced a total of 1,628 scholarly works with 769 of these being refereed journal articles. Peer reviewed journal publications are the most important method of disseminating scholarly information in science and in the discipline of Entomology. The number of refereed journal publications have increased from an average of 3.5 peer reviewed publications per faculty member in 2007 to 4.1 publications per faculty member, an increase of 20% over the 2007 publication rate. The average journal impact factor of all peer-reviewed journal articles published in 2012 was 2.949. This is a significant increase since 2007 when the impact factor of all publications that year was a modest 1.20. Citations of the journal articles in aggregate exceeds 31,000 a 17% increase since 2006 (26,431). On average each faculty member has 1233 journal citations an increase of 12% over the previous reporting period (1101) The range of citations is very large with junior faculty (Assist Professors) having less that 100 total citation to senior faculty approaching 10,000 citations.
We have asked faculty to limit their CVs to just 2 pages, thus we are not submitting a total CV for any faculty member, some of which exceed 200 pages. In summary, we submit that Entomology faculty are actively publishing their research and we have an annual performance review that encourages timely publication. It is an expectation that graduate students, particularly PhD students, are senior authors on research they conducted as part of their dissertation. We don’t separately count publications by students and it would take an inordinate amount of work to summarize that effort. Having reviewed faculty CVs for several years, it is the Department Head’s opinion, that at least 50% of the publications are authored or co-authored by students. In general, students who have completed their PhD program have multiple publications and they are often the senior author on those peer reviewed journal articles. MS students are also commonly the senior author, but not in all cases. It is an expectation of our faculty to have their students publish their research, present their data at appropriate scientific meetings, and many of our students are winning awards at these scientific meetings. The latter is another statistic that we have no historical data to use as comparison, but we are now capturing these data on a systematic basis that will be available for future use.

Table 18. Faculty publications in refereed journals, books, book chapters and other editor reviewed, but not peer-reviewed publication of technical reports, conference proceedings, abstracts and contract reports.

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUBLICATIONS (Calendar year) TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refereed Journal Publications (unique)</td>
<td>82</td>
<td>101</td>
<td>103</td>
<td>101</td>
<td>89</td>
<td>107</td>
<td>95</td>
<td>91</td>
<td>96</td>
</tr>
<tr>
<td>Book Chapters</td>
<td>4</td>
<td>5</td>
<td>7</td>
<td>4</td>
<td>9</td>
<td>14</td>
<td>13</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Books Edited or Written</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Published Abstracts</td>
<td>11</td>
<td>30</td>
<td>34</td>
<td>31</td>
<td>25</td>
<td>15</td>
<td>13</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Published Conference Proceedings</td>
<td>40</td>
<td>25</td>
<td>28</td>
<td>29</td>
<td>18</td>
<td>28</td>
<td>21</td>
<td>17</td>
<td>26</td>
</tr>
<tr>
<td>Published Technical Reports</td>
<td>46</td>
<td>25</td>
<td>38</td>
<td>33</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Grant &amp; Contract Reports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Non-Refereed Technical Publications</td>
<td>36</td>
<td>40</td>
<td>44</td>
<td>43</td>
<td>43</td>
<td>43</td>
<td>12</td>
<td>10</td>
<td>33</td>
</tr>
</tbody>
</table>

However, these statistics only tell a portion of the accomplishments of the Department since we have another 18 PhD scientists located at the Research and Extension Centers who also hold faculty rank. These faculty are not typically included in the Academic Program Review process and because they are not involved in classroom teaching and they are employed by AgriLife Research and AgriLife Extension they do not accrue tenure. Some are involved in graduate education by giving guest lectures, serving as PI and co-PIs on grants, co-advisors of MS and PhD students and are designated on Table 16 as members of the graduate faculty and
core faculty members. All of these faculty are involved in adult education through programs they participate in at the Research and Extension Centers and events they organize or in programs organized by county, district, or regional offices of AgriLife Extension. An example of how these affiliated faculty impact our departmental statistics is included in Table 19 below.


<table>
<thead>
<tr>
<th></th>
<th>TAMU</th>
<th>AgriLife Extension</th>
<th>AgriLife Research</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Faculty (IPM Agents &amp; Prog. Specialist)</td>
<td>25</td>
<td>11</td>
<td>7</td>
<td>41</td>
</tr>
<tr>
<td>Peer Reviewed Journal Articles</td>
<td>96</td>
<td>21</td>
<td>22</td>
<td>130</td>
</tr>
<tr>
<td>Non-refereed publications (conference proceedings, editor reviewed contributions, trade journals)</td>
<td>77</td>
<td>78</td>
<td>39</td>
<td>194</td>
</tr>
<tr>
<td>Extension publications (newsletters, fact sheets, bulletins, software, blogs, websites)</td>
<td>0</td>
<td>373</td>
<td>9</td>
<td>382</td>
</tr>
<tr>
<td>Books (edited or single author)</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Book Chapters</td>
<td>13</td>
<td>1</td>
<td>1</td>
<td>15</td>
</tr>
</tbody>
</table>

6.2.2 Faculty External Grants.

The campus-based T/TT faculty are very active in seeking grants. On average, 107 grants are submitted each year. Just over 3% of the proposals are funded. The funding rate varies from a high rate of success in commodity organizations to a much lower success rate for federal grants.

Table 20. Federal Grant and Total Grant Expenditures by TAMU Faculty FY07-FY13.

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Federal Grant Expenditures</th>
<th>Total Grant Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY07</td>
<td>$2,513,194</td>
<td>$3,115,116</td>
</tr>
<tr>
<td>FY08</td>
<td>$1,924,632</td>
<td>$2,395,764</td>
</tr>
<tr>
<td>FY09</td>
<td>$1,933,242</td>
<td>$2,698,166</td>
</tr>
<tr>
<td>FY10</td>
<td>$2,022,439</td>
<td>$3,065,490</td>
</tr>
<tr>
<td>FY11</td>
<td>$1,943,035</td>
<td>$2,808,592</td>
</tr>
<tr>
<td>FY12</td>
<td>$2,231,465</td>
<td>$2,821,528</td>
</tr>
<tr>
<td>FY13</td>
<td>$2,116,019</td>
<td>$2,591,844</td>
</tr>
</tbody>
</table>

Source: Maestro. Search String: Executive tab, Organization, Activity, ENTO-TAMU-Entomology, FY, Organization with Associates, Expenditures, Direct & Indirect, All

Department of Entomology
Table 21. Grants awarded to TAMU (23 campus-based) faculty, FY07-FY13. Total value of award, direct + indirect, with total award counted the year of the award.

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Number of Awards</th>
<th>Federal</th>
<th>State</th>
<th>Commodity, Private</th>
<th>Other</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY07</td>
<td>47</td>
<td>$4,746,753</td>
<td>$185,980</td>
<td>$211,838</td>
<td>$0</td>
<td>$5,144,571</td>
</tr>
<tr>
<td>FY08</td>
<td>52</td>
<td>$3,954,938</td>
<td>$220,579</td>
<td>$151,000</td>
<td>$18,462</td>
<td>$4,344,980</td>
</tr>
<tr>
<td>FY09</td>
<td>55</td>
<td>$3,519,682</td>
<td>$77,704</td>
<td>$378,861</td>
<td>$149,451</td>
<td>$4,125,697</td>
</tr>
<tr>
<td>FY10</td>
<td>48</td>
<td>$2,603,163</td>
<td>$125,469</td>
<td>$385,087</td>
<td>$0</td>
<td>$3,113,719</td>
</tr>
<tr>
<td>FY11</td>
<td>65</td>
<td>$3,854,739</td>
<td>$130,488</td>
<td>$516,564</td>
<td>$13,200</td>
<td>$4,514,991</td>
</tr>
<tr>
<td>FY12</td>
<td>49</td>
<td>$6,291,877</td>
<td>$7,500</td>
<td>$86,000</td>
<td>$0</td>
<td>$6,385,377</td>
</tr>
<tr>
<td>FY13</td>
<td>46</td>
<td>$4,398,015</td>
<td>$213,516</td>
<td>$163,744</td>
<td>$101,916</td>
<td>$4,877,191</td>
</tr>
<tr>
<td>Average</td>
<td>51.7</td>
<td>$4,195,595</td>
<td>$137,319</td>
<td>$270,442</td>
<td>$40,433</td>
<td>$4,643,789</td>
</tr>
</tbody>
</table>

Source: Maestro. Search string: Executive Tab, Organization, Activity, ENTO-TAMU-Entomology, FY, Organization w/Associates, Awards, All, All

For comparison purposes, metrics of faculty not typically included in an Academic Program Review, but they are typically included in metrics when we compare ourselves to our peer institutions, are the grant support provided to AgriLife Extension faculty. These faculty and affiliated professionals (IPM agents do not have faculty rank, but are active in applied research) actively seek funds to support their education and applied research programs. For the faculty located at the Research and Extension Centers, there is often a graduate student project involved. Table 22 summarizes the grant activity of this subset of faculty affiliated with Entomology. On average the AgriLife Extension faculty (Currently 9 total + 20 IPM Agents and Program Specialists) were awarded 36 competitive grants each year with a total value of $1.024M. Often these grants are from commodity organizations, from private business to conduct contract research and other funding that is quite different from funding that TAMU faculty seek. These data here are included for the review team since at our peer institutions Extension Faculty generally are included in dept. metrics.
Table 22. Grant activity for AgriLife Extension Faculty in Entomology

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Number of Awards</th>
<th>Federal</th>
<th>State</th>
<th>Commodity, Private</th>
<th>Other</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY07</td>
<td>42</td>
<td>$273,985</td>
<td>$79,228</td>
<td>$258,702</td>
<td>$18,280</td>
<td>$630,196</td>
</tr>
<tr>
<td>FY08</td>
<td>38</td>
<td>$114,360</td>
<td>$131,206</td>
<td>$275,417</td>
<td>$20,000</td>
<td>$540,983</td>
</tr>
<tr>
<td>FY09</td>
<td>38</td>
<td>$350,269</td>
<td>$71,425</td>
<td>$234,994</td>
<td>$244,932</td>
<td>$901,619</td>
</tr>
<tr>
<td>FY10</td>
<td>40</td>
<td>$465,593</td>
<td>$167,127</td>
<td>$209,834</td>
<td>$57,021</td>
<td>$899,575</td>
</tr>
<tr>
<td>FY11</td>
<td>33</td>
<td>$1,616,541</td>
<td>$18,000</td>
<td>$225,191</td>
<td>$27,778</td>
<td>$1,887,511</td>
</tr>
<tr>
<td>FY12</td>
<td>37</td>
<td>$1,329,307</td>
<td>$47,297</td>
<td>$347,664</td>
<td>$83,197</td>
<td>$1,760,169</td>
</tr>
<tr>
<td>FY13</td>
<td>25</td>
<td>$3,72,446</td>
<td>$11,250</td>
<td>$147,219</td>
<td>$8,483</td>
<td>$548,398</td>
</tr>
<tr>
<td>Average</td>
<td>36.1</td>
<td>$691,676</td>
<td>$68,319</td>
<td>$242,717</td>
<td>$65,670</td>
<td>$1,024,064</td>
</tr>
</tbody>
</table>

6.3 Faculty Diversity

The cultural background of the faculty now represents every continent on the globe which has led to an expansion of teaching, research, and extension programs that include a global dimension. We have particular strength with faculty who are native Spanish speakers who make Texas A&M a key Tier 1 University that attracts students from throughout Latin America and the world.

A total of 19% of our TAMU faculty are female (includes 1 Lecturer) and 27% are non-white with 71% of the non-white faculty listed as Hispanic or Latino. We have been successful in recruiting women faculty in the past few years (2 of 4 hires being female since 2008) but we have a ways to go to have the faculty in Entomology resemble the make-up of our undergraduates and graduate students which are 54 and 52% women in Entomology undergraduate and graduate programs, respectively and 68% women in FIVS. Faculty located off-campus have 19% categorized as non-white but only 1 of the 16 faculty (6%) located at the Research and Extension Centers is a female.
### Table 23a. TAMU faculty in Entomology Ethnicity and Gender, FY13

<table>
<thead>
<tr>
<th>Rank</th>
<th>Gender</th>
<th>White</th>
<th>Hispanic</th>
<th>Black</th>
<th>Asian</th>
<th>AmerInd</th>
<th>Intl</th>
<th>Unknown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor</td>
<td>Female</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Professor</td>
<td>Male</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Assoc. Prof.</td>
<td>Female</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Assoc. Prof.</td>
<td>Male</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Assist. Prof.</td>
<td>Female</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Assist. Prof.</td>
<td>Male</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Lect./Clinical</td>
<td>Female</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Lect./Clinical</td>
<td>Male</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td><strong>19</strong></td>
<td><strong>5</strong></td>
<td><strong>1</strong></td>
<td><strong>1</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>26</strong></td>
</tr>
</tbody>
</table>

### Table 23b. AgriLife Extension and AgriLife Research faculty in Entomology Ethnicity and Gender, FY13

<table>
<thead>
<tr>
<th>Rank</th>
<th>Gender</th>
<th>White</th>
<th>Hispanic</th>
<th>Black</th>
<th>Asian</th>
<th>AmerInd</th>
<th>Intl</th>
<th>Unknown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor</td>
<td>Female</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Professor</td>
<td>Male</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Assoc. Prof.</td>
<td>Female</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Assoc. Prof.</td>
<td>Male</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Assist. Prof.</td>
<td>Female</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Assist. Prof.</td>
<td>Male</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td><strong>13</strong></td>
<td><strong>1</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>2</strong></td>
<td><strong>0</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>
Section 7

VISION, GOALS, AND ASSESSMENT

David W. Ragsdale, Professor & Head
Texas A&M University
Department of Entomology
412 Minnie Belle Heep Center, 2475 TAMU
College Station, TX 77845-2475
dragsdale@tamu.edu
7. VISION, GOALS, AND ASSESSMENT

The mission of the Department is to “to create and implement knowledge that improves lives”. The primary strength of the Department is our collective expertise to address diverse questions that span across programmatic areas and affect most aspects of human endeavor.

Faculty, students and staff conduct discovery, transitional, and applied entomological research, which is delivered to Texans and the world, through educational outreach, classroom teaching, and distance education.

The Vision of the Department of Entomology is that it “strives to be a network of faculty, staff, and students that creates a culture of excellence resulting in the Department being one of the pre-eminent entomological teaching, research, and extension organizations in the world.” We embrace discovery, transitional, and applied entomological research from levels of ecological landscapes to biological molecules. The Department provides exciting yet scientifically, agriculturally, and environmentally relevant research experience and training as part of undergraduate and graduate instruction from a faculty of nationally and internationally recognized scholars who contemplate our science from a global perspective. The Department envisions its teaching, research, extension and regulatory missions to be functionally integrated and of equal importance.

7.1 Texas A&M University Vision 2020

The Academic Master Plan at Texas A&M University was adopted in 1999 as Vision 2020. The Twelve Imperatives that are the core of Vision 2020 are intertwined in the Department’s academic programs. The complete Academic Master Plan and Vision 2020 can be viewed at: http://vision2020.tamu.edu/the-twelve-imperatives

Five of the imperatives are highly relevant to Entomology and we embrace these as we plan and fine tune our academic programs.

1. Elevate Our Faculty and Their Teaching, Research, and Scholarship. As we recruit new faculty from lecturers to endowed chairs, we seek individuals who are at the cutting edge of their science, who will become the leaders in their area of scholarship and we will work to retain these top scholars and teachers.

2. Strengthen Our Graduate Programs. The foundation of a great graduate program is the recruitment of the best students. We have created a new standing committee on Graduate Student Recruitment where we celebrate graduate student success and achievement. It is through the graduate students we produce where our future success will be measured.
3. **Enhance the Undergraduate Academic Experience.** We emphasize throughout our undergraduate curriculum the importance of experiential learning whether that is an undergraduate research project, an internship, accepting the challenge of taking honors programs, or a study abroad experience. It is these high impact learning experiences that will make our graduates highly successful in the workplace.

4. **Diversify and Globalize the A&M Community.** We seek a diversified faculty and students who will bring different views, perspectives and ways of doing that will enhance our ability and allow our programs to have a global impact.

5. **Meet Our Commitment to Texas.** At the heart of a land grant, sea grant and space grant institution is the need for our scholarship to make a difference in the lives of Texans and beyond. Whether it is through the people we serve or the sons and daughters of the citizens of Texas that we are entrusted to educate, the concept of meeting our commitment to the citizens of Texas is paramount in our scholarship and in our teaching and certainly in our extension and applied research programs.

7.1.1 **Action 2015.** The entomology degree program incorporates high impact practices through writing intensive courses, collaborative assignments and projects, undergraduate research and/or internships, and capstone courses and projects. These meet expectations as articulated in the Academic Master Plan and the Quality Enhancement Plan (QEP) for Texas A&M University, see: (http://provost.tamu.edu/initiatives/quality-enhancement-plan/QEPquickfacts.pdf).

Additionally, we completed a planning document in 2011 for implementation of the **Action 2015 Plan** which is to help us achieve the goals set forth in the Academic Master Plan, **Vision 2020**. This planning document Action 2015-Entomology is available as Appendix 15. The Entomology faculty listed four key elements that would lead to improvement in areas listed in the Action 2015 Plan as High Impact Learning Experiences. Those specific items are:

1. Development of an undergraduate research opportunity in Entomology
2. Increasing opportunities for students to participate in internships
3. Expanding opportunities in study abroad
4. Adding honors sections to select courses

The Department of Entomology provides financial support for these experiences through the Undergraduate Research Opportunity in Entomology (UROE) to assist students and faculty offsetting costs of materials, supplies, travel, and housing.
Since the initiation of UROE in 2012, the Department has invested $6,000 in the research experience of 13 students working in 10 laboratories. We have also supported a Linnaean Team (undergraduate) at each of the last four Entomological Society of America (ESA) – Southwest Branch meetings, and in one year our undergraduate team, as runner up at the branch meeting, competed at the ESA national meeting and twice our graduate student team was sponsored to attend the national meeting as one of two winning teams from the SW Branch. Sponsorship is typically $2,000 to 5,000 per meeting from departmental resources per team. Since 2006 we have sent x teams to y meetings costing a total of $x,xxx.

Research. Each of these high impact learning opportunities are discussed in detail in section 4.x? on pages 36 and 52 for the undergraduate degree programs in ENTO and FIVS respectively.

7.1.2 Grand Challenges

COALS has just completed its new strategic plan call the “Grand Plan for Grand Challenges” which is available at: https://aglifesciences.tamu.edu/wp-content/uploads/2014/02/AGLS-Grand-Challenge-Document-2.27.pdf. In summary there are five Grand Challenges identified and all of these are to be considered as departments, faculty and students work in concert to develop relevant curricula, new courses, plan research projects and other endeavors so that we weave these Grand Challenges throughout the academic programs. The Grand Challenges are:

1. Feeding our World
2. Protecting our Environment
3. Improving our Health
4. Enriching our Youth
5. Growing our Economy

7.2 Strategic Plan/Program Assessment

In the context of the Academic Master Plan, Vision 2020 we have implemented mission statements and new processes that help measure our achievement.

For the Bachelor of Science degree in Entomology our stated goal is:

To prepare students for a wide array of career paths, including graduate and professional schools, by providing them an inquiry-rich and research-based learning experience to increase skills in problem solving, written and oral communication, and professional development.
For the Bachelor of Science degree in Forensic & Investigative Sciences the goal is:

To prepare students for a wide array of career paths, including graduate and professional schools, by providing them an inquiry and research-based learning experience to increase skills in problem solving, written and oral communication, and professional development.

For our Graduate Degree Programs in Entomology, MS/PhD the goal is:

To prepare students for their desired career field by providing them an inquiry-rich academic experience including in-depth research opportunities, written and oral communication, professional development and service activities to meet their goals.

7.3 Academic Program-Level Assessment

Based on recommendations from the prior Academic Program Review in 2006, the Department created program level outcomes for each of the degrees (described below). Specific faculty involved in course level outcomes utilized for the program level assessment include Drs. Jim Woolley, Cecilia Tamborindeuy, Keyan Zhu-Salzman, Aaron Tarone, Jeffery Tomberlin and are led by the department assessment coordination team of Dr. Pete Teel and Ms. Rebecca Hapes.

The assessment team is assembling data for the 7th cycle of our departmental student learning outcome submission. Our first submission for student learning outcome assessment was in AY07. The department utilizes a university-wide, centralized system for input of data, assessment, and action plans called WeaveONLINE, maintained and managed by The Office of Institutional Assessment.

Our program-level outcome assessment is linked as appropriate to the university-level student learning outcomes for each academic student level (undergraduate and graduate) that have been adopted by the University as part of the Academic Master Plan, Teaching and Learning Roadmap (2008-2009), approved by the President, January 2010 and used in the university reaccreditation by the Southern Association of Colleges and Schools (SACS) in 2012. For our Forensic and Investigative Sciences program, we are utilizing our program-level outcome assessment to be consistent with FEPAC accreditation requirements.

7.3.1 ENTO Undergraduate Degree

Goal 1: Critical Thinking and Communication. Students will develop critical thinking strategies and enhance written and oral communication skills.
**Goal 2: Entomological Knowledge.** Students will develop their entomological knowledge.

**Student Learning Outcomes:**
1. **Demonstrate entomological competency:** Students should be able to:
   a. Identify orders, major families, and know the respective natural histories of insects and related arthropods and be able to use taxonomic keys and know proper collecting and preservation techniques.
   b. Identify the insect external anatomy and compare/contrast its evolution through the insect orders.
   c. Define and integrate the structure and function of the insect internal organ systems.
   d. Analyze the interaction of environmental processes on insect populations and communities.
   e. Evaluate the role of genetic engineering and biotechnology in various applications such as; insect population suppression; crop protection, and medical and veterinary related disease management.

These learning outcomes are measured by:
1. Insect Collection Project (embedded assignment in ENTO 301)
2. Research/Professional Internship (ENTO 491/484 - required within curriculum)
3. Debate/Case Study (embedded assignment in ENTO 435 capstone course)
4. Molecular Competency (embedded assignment in ENTO 429 – required within curriculum)

2. **Develop Problem Solving Strategies:** Critically analyze different problem solving strategies; develop logical arguments from different perspectives; design and communicate decision-making processes.

The learning outcome is measured by:
1. Research/Professional Internship (ENTO 491/484 - required within curriculum)
2. Debate/Case Study (embedded assignment in ENTO 435 capstone course)

3. **Develop Written & Oral Competency:** Demonstrate competency of both written and oral communication to a wide variety of audiences.

Outcome is measured by:
1. Research/Professional Internship (ENTO 491/484 - required within curriculum)
2. Debate/Case Study (embedded assignment in ENTO 435 capstone course)
3. Molecular Competency (embedded assignment in ENTO 429 – required within curriculum)

7.3.2 FIVS Undergraduate Degree

Goal 1: Critical Thinking and Communication. Students will develop critical thinking strategies and enhance written and oral communication skills.

Goal 2: Academic & Experiential Development. Students will integrate academic foundations with experiential development.

Student Learning Outcomes:
1. Synthesize academic foundation of forensic science: Demonstrate physical and life science competency; Demonstrate knowledge of the fields of forensics and the variety of opportunities available within them; Demonstrate ability to collect, preserve, process, interpret and present evidentiary information to address problems of a forensic nature. Outcome is measured by:
   a. Academic Preparation
   b. Forensic Project (embedded assignment in FIVS 431/432 course)
   c. Research/Professional Internship (FIVS 491/484 - required within curriculum)
   d. Debate/Case Study (embedded assignment in FIVS 435 capstone course)

2. Development of Problem Solving Strategies: Critically analyze different problem solving strategies; develop logical arguments from different perspectives; design and communicate decision-making processes.
   Outcome is measured by:
   a. Forensic Project (embedded assignment in FIVS 431/432 course)
   b. Research/Professional Internship (FIVS 491/484 - required within curriculum)
   c. Debate/Case Study (embedded assignment in FIVS 435 capstone course)

3. Demonstrate Written and Oral Competency: Demonstrate competency of both written and oral communication to a variety of audiences.
   Outcome is measured by:
   a. Forensic Project (embedded assignment in FIVS 431/432 course)
   b. Research/Professional Internship (FIVS 491/484 - required within curriculum)
   c. Debate/Case Study (embedded assignment in FIVS 435 capstone course)
7.3.3 ENTO Graduate Degree

**Goal 1: Critical Thinking and Communication.** Students will develop critical thinking strategies and enhance written and oral communication skills.

**Goal 2: Entomological Knowledge.** Students will expand their entomological knowledge.

**Student Learning Outcomes:**

1. **Advanced and specialized entomological knowledge:** Demonstrate competency in a specialized area of entomological expertise specific to the students desired career field.
   - Outcome is measured by:
     a. Degree Plan
     b. Proposal
     c. Thesis/Dissertation Defense and Final Exam

2. **Development of Critical Thinking Strategies:** Demonstrate knowledge of the scientific method; analyze research strategies; synthesize logical arguments from different perspectives; design and communicate decision-making processes.
   - Outcome is measured by:
     a. Proposal
     b. Thesis/Dissertation Defense and Final Exam

3. **Demonstrate Written and Oral Competency:** Demonstrate competency of both written and oral communication to a variety of audiences.
   - Outcome is measured by:
     a. Proposal
     b. Thesis/Dissertation Defense and Final Exam

7.4 Entomology Departmental Assessment

It is always a challenge to evaluate the achievements of any given Department. The Provost’s office uses an independent data source, Academic Analytics, which compares us to our peer institution. The departments in COALS were asked to develop a productivity (=meets expectations) and an excellence (=exceeds expectations) matrix by which we measure departmental achievement. Below is a copy of this matrix (Table 24).
### Table 24. Entomology Department Assessment

<table>
<thead>
<tr>
<th>DRAFT ENTOMOLOGY MATRIX</th>
<th>PRODUCTIVITY</th>
<th>GOAL</th>
<th>ACTUAL (FY12)</th>
<th>EXCELLENCE</th>
<th>GOAL</th>
<th>ACTUAL (FY12)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TEACHING</strong></td>
<td>Ave. fixed SCH/faculty member</td>
<td>200/yr</td>
<td>219/yr</td>
<td>Ave Time to Degree BS</td>
<td>&lt; 5 years</td>
<td>Enth 4.67, FIVS 4.17</td>
</tr>
<tr>
<td># total undergraduates</td>
<td>60 ENTO</td>
<td>70 ENTO</td>
<td>Ave undergraduates presenting research at professional meeting per year</td>
<td>10</td>
<td>Data not yet tabulated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>120 FIVS</td>
<td>136 FIVS</td>
<td># undergraduates as an author of a peer reviewed article</td>
<td>5</td>
<td>Data not yet tabulated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40 Double majors</td>
<td>39 double major</td>
<td># graduate students presenting research at a conference</td>
<td>50%</td>
<td>Data not yet tabulated</td>
<td>% presentations</td>
</tr>
<tr>
<td># BS degrees awarded</td>
<td>30 total</td>
<td>22 ENTO</td>
<td>% graduate students as an author of a peer reviewed article</td>
<td>20%</td>
<td>Data not yet tabulated</td>
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</tr>
<tr>
<td></td>
<td>20/5 yr</td>
<td>25 ENTO</td>
<td>% graduating BS students with HIP experience</td>
<td>100%</td>
<td>Data not yet tabulated</td>
<td></td>
</tr>
<tr>
<td># new courses or major course revision per year</td>
<td>3/yr</td>
<td>5</td>
<td>% BS graduates with international experience</td>
<td>25%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>% faculty with score &gt;4 out of 5 in student evaluation</td>
<td>80%</td>
<td>90%</td>
<td># External graduate committee service</td>
<td>60</td>
<td>112</td>
<td></td>
</tr>
<tr>
<td><strong>RESEARCH</strong></td>
<td>% faculty with peer reviewed pub in last year</td>
<td>90%</td>
<td>100%</td>
<td>% of publications in high impact journals (IF&gt;3)</td>
<td>25%</td>
<td>15.3%</td>
</tr>
<tr>
<td>Ave. no. refereed pubs per year per faculty (3 yr ave.)</td>
<td>3.0</td>
<td>4.2</td>
<td>% of publications in highest impact journals (IF&gt;6)</td>
<td>10%</td>
<td>8.2%</td>
<td></td>
</tr>
<tr>
<td>% faculty with grant in last 3 yrs</td>
<td>80%</td>
<td>100%</td>
<td>% faculty with national competitive grant award in past 3 years</td>
<td>25%</td>
<td>21%</td>
<td></td>
</tr>
<tr>
<td>Ave. grant expenditures per faculty</td>
<td>1/yr</td>
<td>0</td>
<td># licensures/commercialization of IP</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td># IP disclosures/patents</td>
<td>$100K/yr</td>
<td>$149,762/yr</td>
<td>% faculty with h-index ≥20</td>
<td>33%</td>
<td>22%</td>
<td></td>
</tr>
<tr>
<td>% grad students advised with a pub</td>
<td>80%</td>
<td>Data not avail.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ave. number of grad students/faculty</td>
<td>3.0</td>
<td>3.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SERVICE</strong></td>
<td>% faculty doing ad-hoc review of grants</td>
<td>33%</td>
<td>30%</td>
<td>% faculty serving on a grant panel or program review</td>
<td>15%</td>
<td>13%</td>
</tr>
<tr>
<td>% faculty reviewing for journals</td>
<td>80%</td>
<td>100%</td>
<td>% faculty in leadership of prof org</td>
<td>15%</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td># faculty serving as subject editor or editorial board of any journal</td>
<td>5</td>
<td>10</td>
<td>% faculty serving as editor/assoc. editor of key journal (IF&gt;3) (2/yr)</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>% faculty serving on departmental committees</td>
<td>80%</td>
<td>91%</td>
<td>% faculty serving on College or Univ committees</td>
<td>10%</td>
<td>26%</td>
<td></td>
</tr>
</tbody>
</table>

*Draft 26March 2013*
7.5 Entomology Strategic Plan.

Entomology

Mission:
To create and implement knowledge that improves lives.

Vision:
The Department of Entomology strives to be a network of faculty, staff, and students that creates a culture of excellence resulting in the Department being one of the pre-eminent entomological teaching, research, and extension organizations in the world.
Goal 1: Teaching - Offer academic programs that are relevant and effective in developing student's lifelong learning skills.

Program Objective: Enhancing the Educational Experience

Benchmark: Broadening educational experiences and student recruiting.

Keywords: Entomology, core curriculum, external linkages, Forensic & Investigative Sciences, undergraduate

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Timeline/Measure</th>
<th>Oversight</th>
</tr>
</thead>
</table>
| 1. Create an Undergraduate Certificate in Public Health Entomology as a value-added credential for career focused students with collaborations of partners in Biomedical Sciences and the School of Rural Public Health. | • Develop and implement an Academic Concentration of approximately 15 credit hours focused in Public Health Entomology building from existing courses but including a new capstone course in Disease Ecology.  
• Prepare proposal for submission to COALS academic committee (UPC) by summer 2011.  
• Implementation of Certificate target is fall 2012.  
• Background & Progress: Initial concept presentation has support from Deans of COALS, Veterinary Medicine & Integrative Biomedical Sciences, and the School of Rural Public Health.  
Syllabus for capstone course is under development. | Dr. Pete Teel and the Academic Team. |
| 2. Complete Core Curriculum modifications as designated by THECB and TAMU. | • Participate in Core Curriculum meetings on campus, modify curricula in accordance with guidelines, and submit timely requests for approvals.  
• Timeline: Draft changes ready for review 2011 for submission in 2012. | Dr. Pete Teel and the Academic Team. |
| 3. Identify and review institutions statewide that offer introductory entomology courses and assess opportunities for recruiting transfer students. | • Work through the Office of Admissions and Records to research and review.  
• Timeline: 2010-2012.  
• Background & Progress: Blinn College shares a common interest in introductory entomology courses; and Blinn has encouraged opportunities for student recruiting. | Dr. Pete Teel and the Academic Team. |
<p>| 4. Expand and support High Impact learning opportunities through       | • Develop a program of student proposal submission for financial support; improve student-faculty-supervisor linkages and project | Drs. Ragsdale, Teel, Tomberlin, and |</p>
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| **4.** Departmental support of research and internship activities. | **development and assessment.**  
  - **Timeline:** 2010-2013 | Advising Team. |
| **5.** Seek renewal “W” and “C” designations in the Entomology and Forensic & Investigative Sciences curricula. |   | Drs. Cecilia Tambourindeguy, Aaron Tarone, Jeff Tomberline, and Pete Teel. |
|   | **Submit renewal proposals with requested background data for “C” (communications intensive) designations for ENTO 435 and FIVS 435 Case Studies in Problem Solving and for “W” (writing intensive) designation for FIVS 481 Seminar**  
  - **Timeline:** summer-fall 2010 |   |
| **6.** Secure Entomology course offerings for acceptance in the new University Core Curriculum | **Potential submissions include ENTO 201, 320, 322, and a new course FIVS 123 Forensic Investigations.**  
  - **Timeline:** Prepare proposals for submission when final CC guidelines are approved – anticipated in 2010. | Department Head. Faculty as Instructors of Record; academic team. |
**Goal 2: Teaching** - Offer academic programs that are relevant and effective in developing student's lifelong learning skills.

**Program Objective:** Assessing Student and Programmatic Outcomes

**Benchmark:** Planned methods for first cycle outcome assessment and performance trend analyses.

**Keywords:** Outcome assessment, student retention, recruiting, curriculum development, undergraduate, graduate.

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<th>Strategy</th>
<th>Timeline/Measure</th>
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<tr>
<td>1. Assess and improve techniques for student retention and success.</td>
<td>• <em>Academic advising team to track trends in performance outcomes of our new student orientation and retention program – Continuous annual cycle.</em>&lt;br&gt;• <em>Recommend, implement and track refinements – for both undergraduate majors and graduate student cohorts – Continuous annual cycle.</em></td>
<td>Drs. Ragsdale, Teel, Tomberlin and Academic Team.</td>
</tr>
<tr>
<td>2. Develop recommendations to improve the Entomology Graduate curriculum.</td>
<td>• <em>Assess degree plan ENTO courses and course patterns for 64-hour and 96-hour doctoral students with assistance of An-Hoc Committee of Faculty Advisory Committee.</em>&lt;br&gt;• <em>Analysis and assessment – 2012-13</em>&lt;br&gt;• <em>Recommendations considered by faculty and Academic Program Review – 2013-14</em></td>
<td>Drs Ragsdale, Teel, and the FAC.</td>
</tr>
<tr>
<td>3. Integrate online survey tools to improve data capture procedures for student academic and professional activities, including presentations, awards, grant proposals, employment, graduate and professional school goals.</td>
<td>• <em>Develop and test Qualtrics survey tools, and evaluate optimal integration of surveys into compliance activities to increase data capture.</em>&lt;br&gt;• <em>Staged development of tools 2010-2013</em>&lt;br&gt;• <em>Staged implementation 2012-2014.</em></td>
<td>Academic Team and Drs. Tomberlin and Teel.</td>
</tr>
</tbody>
</table>
Goal 3: Research - Enhance competitiveness and prosperity of urban and rural agricultural industries.

Program Objective: Discover, develop, and implement effective, economical, and environmentally benign methods for the control of arthropod pests

Benchmark: Research and implementation of many pest management programs keep urban and rural agricultural industries competitive and prosperous. New pest threats continually challenge these industries, thus mandating continuous research on arthropod identification and life histories, discovery of new control strategies and technologies, and development and evaluation of the most effective implementation programs.

Keywords: IPM, Pest management, Arthropods, Insects

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<th>Strategy</th>
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<tr>
<td>1. Advance discovery of novel technologies benefiting management of arthropods.</td>
<td>Provide intellectual infrastructure to address pressing arthropod management issues in Texas and elsewhere</td>
<td>Department Head and Associate Department Heads</td>
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<tr>
<td><strong>Progress:</strong></td>
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<td>OUTCOME: An outside panel of reviewers was engaged, proposals were ranked and funded following the review panel recommendations.</td>
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<td>• Synergize host-insect research enterprise through key faculty interactions with off-campus faculty. Working group formed to focus on mechanisms to control sucking insects – a key functional group not currently being addressed by transgenic technologies.</td>
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<td>OUTCOMES TO DATE: Grants submitted, research initiated even though USDA AFRI grant was not funded and group remains engaged with grower groups in cotton and sorghum</td>
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<td><strong>Planned:</strong></td>
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<tr>
<td>• Explore opportunities in classical biological control of sorghum aphid if pest pressure continues in 2014 and beyond.</td>
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<td>• Have faculty work on collegiate strategic planning process: Grand Challenges.</td>
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<tr>
<td>2. Build multi-disciplinary, -agency, and -geographical teams to achieve sustainability across Texas and beyond.</td>
<td>Increase number of productive collaborations each year.</td>
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<tr>
<td>• Work with AgriLife Research Administration to explore opportunities as they arise to collaborate with constituent groups to meet critical needs in entomological expertise.</td>
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**OUTCOMES TO DATE**

1. **Creation of West Nile Virus Task Force** with creation of training manual for mosquito abatement training. Five workshops planned for early 2014.
2. **Regional response to invasive aphids found in sorghum,** tentatively identified as *Melanaphis sacchari.* USDA grants have been submitted, 2 small grants have been awarded to faculty teams, Extension training guide developed winter 2014.


**OUTCOMES TO DATE**

1. **Worked with industry, state and federal partners to develop a management program** focused on early detection, psyllid population management and biological control. Brought funding opportunities to key faculty. Proposals have been written, outcomes yet to be determined.

**Planned:**

- Continue to work with AgriLife administration in developing an SCRI.
| 3. Facilitate building of translational bridges between research and implementation | Provide formalized opportunities for faculty networking between research and extension. **Continuing:**  
  
  - **Re-evaluate the need for an Annual Entomology Science Conference**  
  - **Expand the departmental support of a graduate student recruiting weekend**  
  - **Re-evaluate the Extension entomology retreat. Seek Extension faculty and staff guidance on rethinking the venue and need.** |  
  |  | Department Head, Associate Department Head for Extension |
**Goal 4: Research** - Improve public health and well-being

**Program Objective:** Use model insect systems to elucidate biological systems that enable prevention and remediation of diseases that influence human health and that of their companion animals.

**Benchmark:** Impacts on vector-borne diseases, including malaria, dengue fever, infections by other arboviruses, schistosomiasis, trypanosomiasis, onchocerciasis, and leishmaniasis are expected to pose unknown future risks to humans and natural ecosystems due to global and local climate changes (that lead to geographical spread of the arthropod vectors and the diseases they vector) in addition to the ongoing loss of drugs and pesticides due to the selection of resistant strains of pathogens and vectors. Similar problems will exist for vector-borne diseases of plants (ex. Citrus Greening Disease, Pierce’s Disease, Tomato Spotted-Wilt Virus, etc.). Within the United States, Texas will continue to be a primary invasion point for these vector-borne diseases due to its geographical location, its climatic conditions, and high population centers.

**Keywords:** Vector-borne diseases, Prevention, Remediation, Arthropods, Insects, Vector-Host-Pathogen Interactions

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<td>1. Connect on campus faculty with research and extension counterparts statewide.</td>
<td>• <em>West Nile Virus Task Force.</em> Led by AgriLife Extension faculty but fully engaged with relevant campus based faculty with appropriate research focus. <strong>OUTCOME:</strong> Exceptional Item selected by AgriLife Research for inclusion into the FY13/FY14 Legislative Request. Exceptional Item was not funded by the 83rd Texas Legislature, but plans are to resubmit for the 84th Texas Legislative session in January 2015.</td>
<td>Department Head, Faculty, AgriLife Administration</td>
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<tr>
<td>2. Sustain momentum in the Forensic and Investigative Sciences major</td>
<td>Seek novel means to fund the nationally accredited program.</td>
<td>Department Head, Faculty, AgriLife Administration; Development Foundation</td>
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<td>• <em>DIFFERENTIAL TUITION.</em> Developed a proposal that was presented to the Provost.* <strong>OUTCOME:</strong> One-time funding of $57,000 for FY14 was obtained to support FIVS program. One full-time lecturer was hired to help relieve the teaching load.</td>
<td>FIVS Director, Kevin Heinz and</td>
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<td>• REDESIGN FIVS curriculum to meet the new FEPAC standards</td>
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Department of Entomology
OUTCOME:  Report submitted to FEPAC, report was accepted without comment by FEPAC and at the American Academy of Forensic Sciences annual meeting with the Directors of accredited programs, all modifications were accepted as meeting the new standards.

- Developed working partnership with Tom Shehan regarding teaching support Forensic and Investigative Sciences Program through required course taught by TEEX instructors in Crime Scene Investigation (FIVS 422).

OUTCOME: completed.

- Initiate development of a fund raising campaign to support the program. **Initiation of the Forensics and Investigative Sciences Endowment. Current book value of $8,200**
  Goal not met. Focus has been for fund raising for the $4.2M Urban and Structural Entomology building which broke ground Fall 2013 for completion by November 2014

Proposed:

- **Mentor new hire in Apiculture.**
- **Support development of FIVS 123 Forensic Investigations, an online only course to be developed by TEEX.**

Associate Director Pete Teel.
Goal 5: Research – Successfully recruit, retain, and promote faculty; increase overall budgets, and improve infrastructure to sustain international reputation and fulfill Department mission and vision

Program Objective: Strengthen existing and build new programs of discovery, transitional, and applied entomological research from levels of ecological landscapes to biological molecules to provide educational, scientific and technological advances through teaching, research, and extension and regulatory.

Benchmark: Entomological opportunities continue to expand and TAMU Entomology is geographically and scientifically well-positioned for sustained international prominence. There are currently 22 tenured and tenure-track faculty and one clinical faculty member (non-tenure track) based in College Station who are the scholarly engines to achieving this goal. I have reported here for comparison purposes the grantsmanship of the extension entomology unit because in nearly all of our peer institutions, these faculty would also hold tenure and their scholarship would be counted in their departmental total.

Keywords: Discovery Research, Translational Research, Invasion Biology, Vector Biology, Biodiversity, Public Health, Interaction, Insect-Host, Insect-Pathogen, Insect-Insect, Insect-Environment

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<tr>
<td>1. Build upon existing research strengths in using insects as model systems.</td>
<td>Fill faculty vacancies in key areas including the Endowed Chair in Agricultural Biotechnology and a second Endowed Chair in Urban and Structural Entomology.</td>
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<td>Attempts to recruit Mike Roe and Subba Reddy Palli failed for the Agricultural and Biotechnology Endowed Chair position</td>
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<td>Negotiations are currently underway for Dr. Gold’s replacement in Urban and Structural Entomology.</td>
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<td>Initiated recruitment of assistant professor in arthropod systematics and biodiversity. Search committee appointed, applicants being screened, interviews planned for early 2014.</td>
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<td><strong>URGENT NEED</strong>: Conversion of Clinical Assistant Professor (G. Hamer) to a TT faculty position needed by January 2015 when his current partner placement program hire terminates.</td>
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<td>Work with AgriLife Extension to create a new Urban and Structural</td>
<td>Department Head, Resident Director, AgriLife Administration</td>
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**Entomology Extension Specialist position based in College Station.** Approval gained, search committee appointed for a search in 2014.

- Complete search for an Extension Specialist and Assistant Professor in Agricultural Entomology for Corpus Christi
- Completed: Extension Specialist and Assistant Professor in Cotton Entomology located in Lubbock, TX. Offer made to Kelly Tilmon, but partner placement was not available. Re-opened search and in second round made offer to Dr. Apurba Barman who accepted the position. 100% AgriLife Extension

### 2. Diversify faculty to open international corridors

Increase diversity of culture, gender, and perspective among the faculty whereby it best reflects the composition of the Texas population.

- **New Assistant Professor in Apiculture, Dr. Juliana Rangel** is female and Hispanic bringing our total women faculty to 5 of 22 T/TT faculty (22.7%) at College Station.
- **New Assistant Professor in Extension Entomology (Cotton, Lubbock, TX)** is Dr. Apurba Barman.
- The department continues to implement gender diversity recruiting strategies for each faculty search. Three faculty searches underway and 2 Endowed Chairs.

### 3. Work to better balance workloads and reward structure.

Rebalance faculty average appoints to 33% Teaching and 67% Research – and better align research interests to teaching responsibilities.

- **Hired lecturers to provide relief for key faculty who are teaching well above their job expectations.**
- **Retained two faculty and DH is working on a third preventative retention offer.**
- **Sought equity salary increases for faculty identified by COALS administration as needing an adjustment.**

### 4. Increase faculty contribution to the scientific enterprise.

Increase scientific outputs in terms of peer-review publications (5% for the year, pending faculty replacements), the quality of these publications, and the impacts of the scientific activity.
- Total peer reviewed publications per faculty member was 4.1.
- Impact factor of all papers averaged 2.95 up from 1.2 in 2007.
- Faculty have submitted 3 disclosures of intellectual property.

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<th>5. Improve fiscal support for research programs.</th>
<th>Increase grants and contracts by 5% per year (compare FY12 to FY13)</th>
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<td>• In FY13, a total of 109 proposals were submitted an 18% increase over FY12.</td>
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<td>• Of the 109 proposals, TAMU faculty submitted 67 ($10.02) and the Extension Entomology unit submitted 42 ($2.03).</td>
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<td>• In FY13, 19 of the 67 TAMU proposals were funded (28%) and 15 different PIs received an award for a total of $2.14 million compared to 14 PIs in FY12 totaling $3.15 million.</td>
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<td>• The Extension Entomology unit in FY13 received 20 awards compared to 35 awards in FY12.</td>
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<td>• Entomology ranked 3rd in 2012 and 6th in 2013 in grants received out of 14 COALs Departments.</td>
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<td>• Texas A&amp;M Endowment contributions and commitments of $3.3M has allowed us to begin construction of the Rollins Urban and Structural Entomology facility</td>
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<td>• Distance delivery differential tuition has increased from $3.7K in FY12 to $96.3K in FY13 and an estimated $200K in FY14.</td>
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<td>Additional Proposals:</td>
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<td>• Request funding support from AgriLife Research to purchase a multi-user Leica M205FA stereo microscope with $20K coming from each of 3 sources (faculty, department and AgriLife Research). Expected outcome is to increase capacity for graduate student training in systematics, neurobiology, and physiology.</td>
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<th>6. Improve Department Infrastructure</th>
<th>Create space sufficient for faculty to conduct internationally prominent research.</th>
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<td>Progress:</td>
<td>Department Head, AgriLife Administration</td>
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- Initiate renovation of laboratory space on 3rd floor for Agricultural Biotechnology Endowed Chair. Begin to demolish and leave as shell space.
- Continued fundraising for Urban and Structural Entomology building so that equipment and shelled spaces can be completed.
- Initiated reassignment of greenhouse space to Dr. Greg Sword with renovation underway.
- Partnered with Parking and Transportation Services to remove the WWII Quonset building.
- Fundraising for Rollins’ Urban and Structural Entomology facility was secured at a level so that a construction contract was awarded and the contractor broke ground in January 2014. We expect to occupy the facility in November 2014.
- Completed installation of 20, 48-drawer insect cabinets on the 2nd floor hallway to expand the TAMUIC. This is only a temporary solution as the floor load cannot handle additional cabinets in the TAMUIC assigned space.

**Additional Proposals for future consideration:**
- Seek funding for improvements of the federally licensed quarantine space in the Biological Control building assigned to Entomology. Need to add modular greenhouses, BSL3-Ag, to support research on exotic vectors of plant pathogens.
**Goal 6: Regulatory**

**Program Objective:** Increase relevance and capacity of Texas Apiary Inspection Service (TAIS) to execute its regulatory functions.

**Benchmark:** TAIS has statewide responsibility to maintain a healthy and viable population of honey bees to benefit pollination needs, honey production and Texas Agriculture as a whole.

**Keywords:** honey bees, bee keeping, apiary, regulatory

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| 1. Redesign the TAIS staffing plan            | Constituted a review of all activities of the TAIS when current Director was on extended leave  
• *Formed advisory committee and held first meeting.*  
• *Advisory Committee reviewed TAIS staffing plan upon retirement of Director and one off-campus inspector.*  
• *AgriLife Research approved a search for a new director which was completed and Mr. Mark Dykes has been hired and will start March, 2014.*  
• *Advisory Committee will be used by Mr. Dykes as the new Director will seek their opinion as he restructures TAIS to meet the industry needs.* | Department Head, Faculty involved in Apiculture Research                                                                                           |
| 2. Enhance external communication avenues to clientele. | • *Key role of new Chief Apiary Inspector.*                                                                                                                                                                   | Department Head, Chief Apiary Inspector. Apiculture faculty                                                                                      |
| 3. Seek stability in funding for TAIS,        | **Proposed:**  
• *Work in tandem with the Advisory Committee to resolve fee structure and use of fees by TAIS.*                                                                                                         | Department Head. /AgriLife Administration. State Apiary Inspector                                                                               |
Goal 7: Integration

Program Objective: Increase and stabilize revenue sources for Texas IPM Program.

Benchmark: The move to competitive Federal funding destabilized a highly successful applied research and extension outreach program.

Keywords: IPM, fiscal

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<tr>
<td>1. Initiate capital campaign for “IPM Enhancement Fund in Entomology”</td>
<td>Initiate gift agreement and funding strategy.</td>
<td>Associate Department Head for Extension &amp; IPM Coordinator with assistance from the Department Head and the Texas A&amp;M Foundation</td>
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<td>Proposed, not yet begun activity:</td>
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<tr>
<td>• Goal is initially to fund several IPM internship positions with industry or private gifts. Need is $5K/student per summer</td>
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<td>• Begin to meet with prospects in coming year</td>
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Department of Entomology
PROGRAMMATIC GOALS AND OBJECTIVES

AGRICULTURE – FOOD, FIBER, AND GREEN INDUSTRIES

**Imperative 1:** Texas agricultural producers effectively evaluate and adopt research-based technology applications and best management practices for crop and forage systems to enhance their economic competitiveness in the global marketplace.

**Goal 1:** Producers improve their knowledge of agricultural production systems to improve profitability and conserve resources.

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| Provide science-based, multidisciplinary programs to producers and associated agribusiness professionals relative to technology transfer in crop and forage systems. | 2014-2018: Producers increase knowledge and/or utilize best management practices for crop and forage systems. This includes soil testing, weed identification, Integrated Pest Management practices and tools, plant disease identification and management, management of conventional and reduced tillage systems, improved crop and forage genetics. (OUTCOME) | T Miller  
C Allen  
C Sansone  
D Appel | | YES |

**Results/Narrative**

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| Provide science-based, multidisciplinary programs to producers and associated agribusiness professionals relative to technology transfer in crop and forage systems. | 2014-2018: Producer adoption of IPM compatible tools to manage weeds, insects, and diseases will increase. (OUTCOME) | C Allen  
C Sansone  
D Appel | | YES |

**Results/Narrative**
**Goal 3:** Encourage adoption of pesticide safety for pest- and pesticide-sensitive institutions, including schools, child care facilities, hospitals, nursing care facilities, and others.

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<tr>
<td>Conduct annual mandatory and advanced IPM regional trainings for school IPM coordinators and other school IPM stakeholders.</td>
<td>2014-2018: Knowledge and implementation of IPM concepts measured by exam and follow-up surveys, with knowledge gain of 5%. (OUTCOME)</td>
<td>C Allen M Merchant D Renchie</td>
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<td>YES</td>
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**Results/Narrative**

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<tr>
<td>Maintain regular communication with school IPM facility managers, school IPM stakeholders, and interested agencies via newsletters, email, and letters.</td>
<td>2014-2018: At least 50% of all school districts annually reached via periodic electronic or print materials. (OUTPUT)</td>
<td>C Allen M Merchant D Renchie</td>
<td></td>
<td>YES</td>
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<tr>
<td>Develop IPM techniques and innovative training materials for institutions wanting to improve pest control while minimizing risks for employees and clientele for onsite visits.</td>
<td>2014-2018: 5% percent increase in understanding or adoption of key IPM concepts/measures achieved among institutional decision-makers. (OUTCOME)</td>
<td>C Allen M Merchant D Renchie</td>
<td>YES NO</td>
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**Results/Narrative**
**Goal 4:** Increase urban pest control and safety education among urban pesticide applicators, including those who provide pest control for structures, turfgrass, and landscapes.

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<tr>
<td>Conduct regular, Extension-sponsored pest management training programs for structural and landscape pesticide applicators.</td>
<td>2014-2018: Existing pest management workshops for urban pesticide applicators conducted and quality maintained, as measured by meeting attendance and post-program evaluations. Knowledge and skills increase by 15%. (OUTCOME)</td>
<td>D Renchie</td>
<td>C Sansone</td>
<td>D Appel</td>
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<td></td>
<td></td>
<td>C Sansone</td>
<td>D Renchie</td>
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**Results/Narrative**

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<tr>
<td>Minimize the economic and environmental costs of urban pest control for Texans.</td>
<td>2014-2018: Measurable reductions achieved in costs or environmental risks associated with urban pest management practices. Case study to be conducted will reveal reduced costs of 10%. (OUTCOME)</td>
<td>C Sansone</td>
<td>C Allen</td>
<td>D Renchie</td>
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<td></td>
<td></td>
<td>C Sansone</td>
<td>D Renchie</td>
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**Results/Narrative**
Section 8

STRENGTHS AND CONCERNS

David W. Ragsdale, Professor & Head
Texas A&M University
Department of Entomology
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College Station, TX 77845-2475
dragsdale@tamu.edu
8. STRENGTHS AND CONCERNS

8.1. Program Strengths

8.1.1 Teaching and Degree Programs

**Accomplishments and Future Plans.** Below we provide the details for the critical needs in multiple areas of the departmental mission. We first address the infrastructure needs for the teaching enterprise and the plans we have for improving that part of the departmental physical facility. Interwoven into this overall classroom instructional budget is the need for a large number of GATs. Having teaching assistantships available as a departmental resource helps relieve the increased burden faculty are asked to bear in funding graduate student stipends, tuition and fees. Finally, we set the stage for future hires outlined more thoroughly in Section 9. Here we present the opportunities, strengths and concerns for the following areas.

- **Classroom Instructional Budget.**
  - Availability of more 50% GATs to support laboratory instruction
  - Hiring of the first full-time lecturer in Entomology
  - Contract courses and special instructional support
  - IEEF replaced with college and university differential tuition
- **Student Credit Hour and Weighted Student Credit Hours**
  - Enrollment Trends in Entomology
  - Unintended consequences of policy that favors PhD over MS
- **Interdepartmental Degree Program**
  - Ecology and Evolutionary Biology

**Classroom Instructional Budgets.** Over the past 3 years we have made a conscious effort to increase the various components of this budget to allow for increased programmatic opportunities. This increase in budget has been reinvested into strategic hires of two lecturers (1 full time, 1 part time) and increased GAT support. It has also allowed us to garner sufficient resources to begin an aggressive plan to remodel facilities and to reinvest in our teaching equipment.

**GATs.** The strategic goal is to provide more 50% GATs in the future if enrollment in key service courses can be maintained or even expanded. This current semester (Spring 2014) we have increased the total number of GATs from an average of 13 per semester to 19 and all GATs in spring 2014 were hired as 50% GATs (Fig. 6).
**Concern:** A stable funding mechanism for the classroom instructional budget that provided stipends for most of our GATs was eliminated in January (IEEF) by Board of Regent action. Central administration is working on a new mechanism of university-wide and collegiate differential tuition, but details of this new funding model have not been fully revealed making planning for Fall 2014 difficult. It has been stated by upper administration that differential tuition should be revenue neutral to departments but the fiscal year used as the base year and whether enrollment gains in the future will translate into increased resources is unknown.

**Lecturers.** We hired one full-time lecturer (Dr. Adrienne Brundage) and a lecturer (Dr. Bard Metz) on a part-time basis for the online course in ENTO 320, *Honey Bee Biology*. Dr. Brundage taught FIVS 205, *Introduction to Forensic and Investigative Sciences* and coordinated the stand alone laboratory course ENTO/FIVS 432, *Applied Forensic Entomology* affiliated with the lecture course ENTO/FIVS 431, *The Science of Forensic Entomology*. She has also helped the forensic faculty with the grading in FIVS 415, *Practice & Principles of Science & Law*. Dr. Brundage also taught three different ENTO courses during the current academic year. The demand for some of our courses, especially in the rapidly growing FIVS major necessitated this hire. Specifically, we anticipate the FIVS program will have an even larger cohort of students matriculating into the upper division courses beginning spring 2015. Because the required upper division capstone courses (FIVS 415 and FVIS 435) requires extensive reading, discussion of case studies, debate, and other forms of active learning, lecture sections cannot exceed 24 students. If upper division exceeds this enrollment, as anticipated, additional lecture sections of the capstone courses will be needed.

**Concern:** We see an increase in the use of lecturers in COALS, a relatively new practice for our college. The challenge will be to provide the opportunity for lecturers to maintain their disciplinary expertise without having a research program that T/TT faculty use to remain current and up-to-date.

**Teaching laboratory remodeling project.** We have proposed to remodel all five departmentally controlled teaching laboratories in the Minnie Belle Heep Center, which if approved will begin Summer 2014 for completion by Fall 2014 (see Appendix 16, bid for remodeling teaching laboratories in HEEP). All of the departmental teaching laboratories (5 teaching laboratories in Minnie Belle Heep) will be remodeled with new casework, table tops, white boards, blinds, floor tile and ceilings. The estimated cost of this total project is ca. $190,000. We are working with COALS administration to help devise a strategy to accomplish this remodeling project. Since we don’t have the total
$190,000 available, we could phase the project and remodel half the laboratories now and half in the future as funds are available. The latter means, of course, multiple years of construction and likely an increase in the total cost of the project. Ideally, we would like to remodel all the laboratories at once and use our funding sources identified in Table 5 as a way to pay for the remodeling project over a short time span of two or three years.

**Concern:** Minor logistic issues are all we perceive to be a concern as we have developed a path forward to handle the remodeling project. However, because of the replacement of IEEF is not known, we have not committed to the remodeling project in the event funds are needed to sustain our GAT support.

**Teaching Equipment Upgrades.** We have completed the purchase and installation of a bank of 30 laptop computers used in courses such as ENTO 625, *Landscape Ecology*, ENTO 424, *Insect Ecology*, and other courses. Another planned upgrade includes the purchase of approximately $50,000 in dissecting microscopes in FY14. Sufficient funding is available to purchase enough microscopes for 1 of the 3 larger teaching laboratories with a goal of having all scopes replaced within the next 5 years. The Education Committee will be tasked with identifying additional teaching equipment needs as funding becomes available in the future.

**Concern:** The upgrade of teaching equipment in laboratories has become a departmental responsibility. Course and lab fees are expected to be spent each academic year with only a small balance allowed to be carried forward. This restriction prevents the accumulation of funds over the anticipated life of equipment which in some cases may be 20 years or more before replacement is needed. There needs to be a way to plan for future replacements of key laboratory equipment, e.g., microscopes. Buying just a few microscopes at a time yields a lab with multiple models each of which may require different maintenance. Keeping all scopes the same in a laboratory is a distinct advantage. There does not seem to be a mechanism that allows for long-term acquisition plans.

**Contract Instruction and Special Instructional Needs.** The classroom instructional budget has also supported contract for the FIVS major (FIVS 422, *Crime Scene Investigations* and FIVS 421, *Latent Fingerprint Processing*) which are courses offered through TEEX to law enforcement personnel, but also open to FIVS students. FIVS 422 is now part of the required curriculum as we made adjustments to meet the new FEPAC standards. The classroom instructional budget has also been used to hire
temporary instructors to fill in for sabbatical and medical leaves, and to invest in developing additional online courses or course sections. The one-time allocation from the Provost of $57,000 (Table 5) was used to support this effort. We need a permanent solution that funds the expanding enrollment in the FIVS program.

**Concern:** The national accreditation through FEPAC of the FIVS program means we must have the ability to pay for specialists who will help us fulfill the instructional needs of the program. We must pay for the reaccreditation process (every 5 years) and the annual fee to maintain our accreditation along with supporting a Director of the FIVS program. We have not found a way to programatically fund the FIVS degree through either a program fee or differential tuition. One time funds were provided in FY14 from the Provost office and we are seeking a way forward which will tie resources to enrollment growth.

**Student Credit Hour and Weighted Student Credit Hours.**

**Enrollment Trends in Entomology.** The Department of Entomology teaches multiple classes that enjoy relatively high enrollment (Fig. 7). Demand for some of our courses continues to grow while others have reached a plateau. Resources that flow to the department as a result of these large enrollment courses have given us the resources needed to reinvest in the teaching program and to provide graduate students with teaching opportunities. Most GATs are given to PhD students and while MS students are eligible to TA laboratories, current TAMU policy only allows tuition waivers for PhD students and not MS students. This university policy will likely continue and we expect our MS student population will continue to decline because the tuition costs for an MS student either falls on the student or on the faculty member to cover their tuition, while Ph.D. students when serving as GATs have their tuition waived. We expect the MS student enrollment is unlikely to disappear entirely because we have employers who still want to hire an MS student and not PhD students.

**Concern.** As a consequence of the policy not to waive tuition for MS students, makes an MS student actually cost PIs more than a PhD student (if the PI covers the tuition from grants). We anticipate this will lead to more BS to PhD students (96 credit PhD program) and substantially reduce MS to PhD students (64 credit PhD program) because we will not have a pool of MS students internally to draw from. In the past 6 years, the majority of our PhD students were enrolled in the 64 credit PhD program. University metrics such as time to degree do not distinguish between the 96 and 64 credit PhD programs. We anticipate that the time to completion for the PhD in
Entomology which is currently at 4.6 years will increase and that increase could approach 2 additional years to the average time to completion (see Figure 22).

**Interdisciplinary Degree Programs.** The Entomology graduate program to date has not been impacted by the IDPs. The student numbers seeking these degrees have been fairly modest across all the IDPs. We have graduated 75 MS and PhD students in ENTO, and an additional four students were advised or co-advised and graduated in MEPS (2) or GENE (2). This may change if the Ecology & Evolutionary Biology (EEB) degree program is approved by THECB.

**Concern.** We don’t anticipate a major problem, and faculty affiliated with EEB know that if the EEB PhD programs adversely impacts enrollment in the ENTO PhD program that this would not be a desired outcome. We suspect EEB could have a larger impact on the ENTO degree program than other IDPs because more faculty in Entomology have expressed a desire to affiliate with this IDP (12 core members and 4 affiliated members). This is an area of potential conflict. Our student numbers in Entomology could decrease if current students or new recruited students seek the EEB option instead of an ENTO degree. Student enrollment in ENTO courses at the 600 level could decline because we have fewer ENTO students or they could increase because so many of the ENTO courses are listed as meeting the core requirements of an EEB degree. We simply do not have data to guide us at the current time. As a management plan, if we see a decline in ENTO PhD students with a concomitant increase in EEB PhD students to the point where we no longer will have appropriately trained graduate students to serve as GATs in the lower division laboratory courses in ENTO, we may institute a coursework minimum before students can TA in ENTO classes. We seek the review teams’ opinion on this potential area of conflict although like the TAMU faculty in Entomology, we can only speculate since we have no data points to react to at the present time. EEB anticipates they will enter students Fall 2014, not by recruiting new students, but by allowing students in other degree programs to file for a change in degree option. Under current policy, GATs are only open to ENTO students and not open to any IDP student. We will consider an IDP student for a GAT if all requests from ENTO are filled and the student has sufficient background in the subject matter to serve as an effective GAT, with the decision to accept an IOP student at the discretion of the ADH for academics.
Section 9

PLANS FOR THE NEXT 1-3 YEARS

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9. PLANS FOR THE NEXT 1-3 YEARS

9.1 Remodeling
We have need to undertake major remodeling and repurposing of a large suite of research laboratories in the Heep Center, two major labs in the Entomology Research Laboratory, and when Dr. Gold vacates the buildings he now occupies, there is a need to repurpose and remodel some of those buildings. We have not fully identified funds available for such remodeling projects especially the non-teaching space. We cannot use the funds generated through course fees to remodel non-teaching spaces. There is a proposal to redirect even more of the indirect costs from grants away from the department to free up funds for central administration to invest in core facilities (sequencing center, bioinformatics, imaging center, etc.). This too may limit our ability to pay for much needed remodeling and faculty startups.

9.2 Fund Raising and Building Projects
We have successfully raised sufficient funds to construct the O. Wayne Rollins’ Urban and Structural Entomology facility (Appendix 17) – a 10,000 square foot facility that will house the Endowed Chair in Urban and Structural Entomology and the Extension Entomologist for Urban and Structural Entomology. We have raised the $4.2M needed for construction. We have a need to continue the fund raising effort to provide needed equipment for the building and we are diligently working with staff at the Texas A&M Foundation to complete this project. We need an additional commitment of $600,000 to fully equip this new laboratory.

9.3 Faculty Positions
Entomology is one of the few taxonomic based departments that are still common among land grant universities. Other such departments (botany, zoology, etc.) have gone away in favor of broader collections of faculty in Ecology, Conservation Biology, Ecosystem Policy and Management, as examples. Entomology departments remain because all biological disciplines from basic molecular, genetic and cell biology to the more applied population management functions are easily accommodated within the discipline of Entomology. The overwhelming desire of the faculty in Entomology is to remain a full service Entomology department with expertise from molecules to systematics. What brings us together is the common theme of insect (and their relatives) science.
9.4 Faculty Replacement

As we plan for the inevitable departure of faculty in Entomology (some planned and some unforeseen) the elected Faculty Advisory Committee is the core faculty used to help guide the next hires and new programmatic thrusts. The recommendations by the FAC are reported at monthly faculty meetings. At the present time, we have five searches underway, three assistant professor faculty positions are currently underway. All of these searches and position descriptions began with the FAC and were presented to the faculty as a draft position description that was modified to include the consensus opinion of the faculty. These positions include one T/TT position in College Station (Arthropod Systematics and Biodiversity) and two Extension Specialists. The AgriLife Extension positions are for an Extension Specialist located at the Corpus Christi Research and Extension Center with a focus on field crop entomology. The second Extension Specialist position is a newly redefined position who will be assigned to the area of Urban and Structural Entomology with a focus on southern Texas (Houston, Austin, and San Antonio) and state-wide responsibility for organizing the annual Pest Control Operators training event, held each January in College Station. This latter position was a responsibility of the Urban and Structural Entomology Chair, but upon this planned retirement in January 2015, the decision was made to split this into a Research/Teaching endowed position and to co-located a new Extension Specialist with the Endowed Chair in Urban and Structural Entomology in the new O. Wayne Rollins’ Urban and Structural Entomology facility. This search for the Extension Specialist began with the appointment of a search committee in March 2014. We have sought and received approval from AgriLife Extension to open this redefined position. In addition to these three Assistant Professor level, we are searching for two Endowed Chairs.

9.4.1 Endowed Chairs.

There are four endowed chairs affiliated with the Department of Entomology with 2 located in College Station (Charles R. Parencia Chair in Cotton Entomology and the Urban and Structural Entomology Endowed Chair). A third chair in College Station is currently vacant (Agricultural Biotechnology) formerly held by Dr. Max Summers. The fourth Endowed Chair is held by Dr. Ted Wilson who is located at Beaumont, TX and serves as the Resident Director of that Research and Extension Center, and as the Jack. B. Wendt Endowed Chair in Rice Research. Active searches are in progress to recruit senior faculty (tenured full professors) for the Agricultural Biotechnology Endowed Chair and for the next Endowed Chair for Urban and Structural Entomology.
10. APPENDICES

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Agency Overview

Texas A&M AgriLife Research is the state’s premier research and technology development agency in agriculture, natural resources, and the life sciences. Headquartered in College Station, AgriLife Research has a statewide presence, with scientists and research staff on other Texas A&M University System campuses and at the 13 regional Texas A&M AgriLife Research and Extension Centers.

We conduct approximately 580 projects each year, with more than $190 million in research funding. AgriLife Research helps to improve the productivity, efficiency, and profitability of agriculture. At the same time, we focus on conserving natural resources and protecting the environment.

AgriLife Research has 550 doctoral-level scientists spanning many disciplines, from genetics and genomics to air and water quality.

The annual economic gains from investments in Texas’s public agricultural research are estimated at more than $1 billion. By collaborating with other institutions and agencies, commodity groups, and private industry, AgriLife Research is helping to strengthen the state’s position in the global marketplace by meeting modern challenges through innovative solutions.

AgriLifeResearch.tamu.edu
In addition to collaborations with departments within the College of Agriculture and Life Sciences, Texas A&M AgriLife Extension and TVMDL, AgriLife Research also includes six institutes:

- National Center for Foreign Animal and Zoonotic Disease Defense (FAZD)
- Institute for Obesity Research & Program Evaluation
- Institute of Plant Genomics & Biotechnology
- Institute of Renewable Natural Resources
- Norman E. Borlaug Institute for International Agriculture
- Texas Water Resources Institute

Dr. Craig L. Nessler was named director of Texas A&M AgriLife Research in December 2009.

Dr. Nessler’s began his 30-year career as an assistant professor of biology. During his 21 years on campus, he rose in rank to professor and associate head in the Department of Biology. He left in 2000 to head the Department of Plant Pathology, Physiology and Weed Science at Virginia Tech in Blacksburg.

In 2004, Dr. Nessler was promoted to director of the Virginia Agricultural Experiment Station and associate dean for research in Virginia Tech’s College of Agriculture and Life Sciences. During his tenure leading the Virginia Agricultural Experiment Station, the college rank rose from 14th to 5th nationally in National Science Foundation research expenditures among agricultural and natural resource programs.

In 2008, Dr. Nessler earned his bachelor’s and master’s degrees in biology at the College of William and Mary. He earned his doctoral degree in plant science, with a pharmacology minor, from Indiana University in 1976.
Agency Overview

The Texas A&M AgriLife Extension Service is a unique outreach education agency with a statewide network of professional educators, trained volunteers, and county offices. It reaches into every Texas county to address local priority needs.

Some of our major efforts are in mitigating drought impacts; conserving water use in homes, landscapes, and production agriculture; improving emergency management; enhancing food security; and protecting human health through education about diet, exercise, and disease prevention and management.

AgriLife Extension demonstrates the latest technology and best practices to improve the state’s food and fiber system, which serves all Texas consumers and contributes nine percent of the gross domestic product. Texas 4-H, our primary youth program, engages some 600,000 youth every year in learning projects, leadership development, and community service.

Collaborative programs enable extension educators and their partners to extend resources and prevent duplication of services. In 2012, planned extension programs involved 208 collaborators—diverse private sector and nonprofit entities—and hundreds of school districts.
Texas A&M AgriLife Extension Service

STATEWIDE PRESENCE

AgriLife Extension is always local with 250 offices serving all 254 counties. In addition, 13 collaborative AgriLife Research and Extension centers are located throughout the state.

Texas A&M AgriLife Extension Service Headquarters
Texas A&M AgriLife Extension Service County Office
Texas A&M AgriLife Research and Extension Center

AGRILIFE EXTENSION DIRECTOR

Dr. Douglas L. Steele was approved as director of the Texas A&M AgriLife Extension Service on November 2, 2012.

Prior to his current appointment he was vice president for external relations and director of Extension for Montana State University. Steele previously held Extension positions at Colorado State University, where he had been assistant director and state 4-H program leader, and at Purdue University, where he served as an Extension specialist and assistant professor in the Department of Curriculum and Instruction. From 1981 to 1992 he held various Extension positions within The Texas A&M University System, including Extension agent, county director, and Extension specialist.

He is a past chair of the national Extension Committee on Organization and Policy, which works on vital issues of federal funding and national system initiatives. Dr. Steele holds a doctoral degree in educational human resource development from Texas A&M University.

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Fact Sheet: Texas A&M College of Agriculture and Life Sciences

When the first students enrolled at Texas A&M University to study agriculture, it was a brand new academic field. Today, after more than a century of discovery and innovation, agriculture and the life sciences are still part of the bedrock of Texas A&M — but they are also very much a part of its future.

From long-established majors such as agronomy and animal science, the College of Agriculture and Life Sciences has expanded to 14 academic departments and nearly 100 degree programs. Our students will find a clear focus on science, technology, engineering, and math (STEM) courses to prepare them for a career in a job market that is searching for qualified graduates. Our diverse and supportive faculty members and advisors bring each student into the Aggie family, with respect for all. As one of the nation’s largest colleges of agriculture and life sciences, with more than 7,200 students, we offer outstanding academics. At the same time, Texas A&M is proud of its recognition as one of the nation’s best values in a college education.

The College of Agriculture and Life Sciences offers high-impact learning, taking students far beyond the classroom to abundant research and outreach opportunities, distance learning, internships in state and federal government, and study abroad opportunities worldwide. And through the Norman Borlaug Institute for International Agriculture, our students can help respond to world economic and humanitarian challenges while broadening their college experience.
The College is made up of 14 academic departments:

- Agricultural Economics
- Agricultural Leadership, Education, & Communications
- Animal Science
- Biochemistry & Biophysics
- Biological & Agricultural Engineering
- Ecosystem Science and Management
- Entomology
- Horticultural Sciences
- Nutrition & Food Science
- Plant Pathology & Microbiology
- Poultry Science
- Recreation, Park & Tourism Sciences
- Soil and Crop Sciences
- Wildlife & Fisheries Sciences

aglifesciences.tamu.edu
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DEPARTMENTS

Dr. Mark Hussey was appointed Vice Chancellor and Dean for Agriculture and Life Sciences in December 2008. As vice chancellor, Dr. Hussey provides leadership and oversight for The Texas A&M University System’s agricultural agencies as well as serves as dean of the College of Agriculture and Life Sciences at Texas A&M University.

Dr. Hussey is a native of southern Illinois, where he received a bachelor of science degree in biology from the University of Illinois. He continued his education at Texas A&M University, where he received a master of science degree and a doctorate in plant breeding.

Before his appointment as vice chancellor and dean, Dr. Hussey served as the director of Texas A&M AgriLife Research. From 1983 to 1985, Dr. Hussey was an assistant professor at the Texas A&M AgriLife Research and Extension Center at Weslaco, where he conducted forage breeding and management research. He joined the faculty of the Department of Soil and Crop Sciences at Texas A&M University as an assistant professor in 1985 and was promoted to professor in 1997. In 2001, Dr. Hussey became professor and head of the Department of Soil and Crop Sciences, a position he held until 2005. Dr. Hussey was named associate director of programs for the Texas Agricultural Experiment Station (now Texas A&M AgriLife Research) in April 2005.

VICE CHANCELLOR AND DEAN

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ONE COLLEGE. FIVE GRAND CHALLENGES.

Protecting Our Environment
The College is committed to environmental sustainability and restoring the health of our ecosystems.

Improving Our Health
From recreation and weight control to designing fruits and vegetables with more phytonutrients for cancer prevention to using the latest biotechnology advancements to search for new drugs, the College is dedicated to improving health.

Enriching Our Youth
We prepare students to be leaders in solving the world’s problems.

Feeding Our World
Growing populations, decreasing natural resources, and increasing environmental challenges present us with opportunities to find the most efficient and healthful ways to provide food for all, both domestically and globally.

Growing Our Economy
Producing more, selling more, adding value, and increasing the safety and security of what we trade are all ways the College is growing our economy.

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MEMORANDUM

To: Dr. Robert Webb, Interim Dean, Office of Graduate Studies

From: Kevin Heinz, Professor and Head

Subject: Response to Academic Program Review Final Report

31 August 2007

Please find attached the summary of our response to the findings of the External Peer Review of Academic Programs in the Department of Entomology conducted October 15-18, 2006. We look forward to discussing these findings, actions we have taken in the interim, and plans for the coming year.

Attachment.

Cc: Dr. Pete Teel, Associate Head for Academic Programs
   Entomology Faculty
Academic Program Review
Department of Entomology Response
Texas A&M University
31 August 2007

The Department of Entomology developed and conducted an academic program self-study that included Entomology degree programs at the Bachelor of Science, Master of Science, Master of Agriculture, and Doctor of Philosophy levels, as well as the forthcoming addition of a new B.S. degree program in Forensic & Investigative Sciences. Our focus was not only on a retrospective analysis of performance at local, regional and national level, but also on our future directions and aspirations in the context of our goals and strategic plan, as well as those of the College of Agriculture & Life Sciences and Texas A&M University. Our Academic Program Review Committee consisted of Dr. Darrell Bay (Assistant Department Head for Undergraduate Studies), Dr. Tanya Pankiw (assistant professor), Dr. Craig Coates (associate professor), Dr. Jim Woolley (professor), Dr. Spencer Behmer (assistant professor), Ms. Rebecca Hapes (senior academic advisor), Mr. Brad Hopkins (PhD student), and was chaired by Dr. Pete Teel (Graduate Advisory and Associate Department Head for Academic Affairs). We wish to extend our thanks and appreciation to our departmental staff and to all in the Office of Graduate Studies who not only provided invaluable assistance during the self-study, but who also provided an “Aggie” welcome to the visiting review team.

The external Academic Review Team (ART) visited our campus from 15-18 October 2006. The ART was composed of Dr. Jonathan Edelson, Oklahoma State University, Dr. Pedro Barbosa, University of Maryland, Dr. Joe Culin, Clemson University, and Dr. Sammy Ramaswamy, Purdue University. The ART summarized their review findings in a written document to the Department of Entomology and to administration. The ART highlighted the following recognitions:

- The academic programs of the Department of Entomology meet or surpass standards set by the best entomology departments in the nation. Courses offered in our programs are unmatched elsewhere in the region and on par with other elite entomology programs in North America.
- The Department has the largest undergraduate enrollment of any department in North America.
- The Department demonstrates excellence in student recruiting and advising.
- The Department is successful in developing ethnic and gender diversity within student populations.

The ART developed a set of strengths, challenges, and recommendations for each academic program. The following highlights the Department’s responses to each recommendation by ART, and each response will subsequently be discussed in more detail by category.
Undergraduate Programs – Infrastructure, Courses, and Faculty Recommendations.

- Plans are in place for replacement of advising staff and/or faculty involved in advising, and for training additional faculty in student advising responsibilities.
- The size and quality of the undergraduate programs will be expanded. We expect the number of entomology majors to temporarily decline as the new Forensic & Investigative Science degree begins and grows. However, recruiting efforts in Entomology will continue and we expect this program to remain viable, relevant, remain as the largest in North America.
- Need for classroom space, equipment, and advising.
  - We are working toward better utilization of classroom space and time, including extending some usage into evening hours.
  - The investment of our REEF revenue in the teaching program continues to improve classroom equipment and technology.
  - We have had some success with industry partners making in-kind donations for specialized equipment (e.g., molecular technology laboratory) and will continue to seek extramural funding to assist in sustaining these more expensive enterprises.
  - A redirection of internal resources and requested support from COALS will assist us in adding an additional Academic Advisor to be assigned to the new FISC degree program.
- Foster unrivalled enrollment of underrepresented student groups and first generation attendees.
  - We are very pleased that the ARP was so highly complimentary of our efforts in this regard.
  - The department will continue to actively recruit and mentor underrepresented groups.
  - Targeted articulation agreements may assist us in this activity, especially with regard to the new Forensic & Investigative Science degree.
  - We will continue to be engaged in programs that support opportunities to recruit undergraduate and graduate students from underrepresented groups.
- Consider providing startup packages for new faculty to include teaching resources.
  - Texas A&M Agriculture has recently more fully empowered Departments in budgetary matters, including start-up packages. General guidelines are for TAM Agriculture to supply 25% and the Department to supply 75% of the start-up costs associated with new faculty hires. Departmental sources of funding for start-ups will include IDC returns and interest from a discretionary endowment. It is uncertain at this time if this formula will benefit or hinder the ability to recruit quality teaching/research faculty. The Department will continue to work with all University, College, and Agency administrations, and will seek novel external sources, to obtain the resources necessary to insure quality teaching programs for TAMU students.
Undergraduate Programs – Recruiting Recommendations.

- Develop a staffing plan for replacement of senior faculty and potential staff losses.
  o Staffing plans and contingencies for anticipated retirements of faculty and loss of staff are part of our annual internal review and strategic planning process.

- Provide appropriate startup funding for new faculty commensurate with expectations.
  o We strive to assemble startup packages that are nationally competitive to hire the best candidates. As we are moving into implementation of new processes for developing startup packages, we will work closely with administration to be sure that our efforts continue to bring the best and brightest scientists, educators and practitioners to our programs.

- Develop and implement mentoring programs for new faculty members to ensure success.
  o A new mentoring program is planned that consists of three components:
    1. Guidance from the Department Head and Associate Heads provided through informal discussions (e.g., luncheons) and facilitation of meeting other faculty statewide,
    2. Guidance from fellow senior faculty members chosen through mutual interests, and

Undergraduate Programs – Forensic Science Major.

- Additional resources should be provided in support of this new major.
  o We are working with COALS administration to develop additional resources for the new major. As of this date, we have reallocated some resources to start the new courses and have set IEEF course fees for revenue generation to support the courses over time.

- Growth and use of resources will have to be closely monitored by the administration to assure that sufficient resources are available to allow for success of the new faculty and the program.
  o A semester and annual report to administration on the growth and development of this major is a departmental priority.

Online Courses and Distance Education.

- The department should seek the help of the university administration to facilitate changes in state law necessary to allow a reduction in the cost of distance and online courses to potential off-campus students.
  o Our experience to date in distance education, e.g., Master of Agriculture Degree at a Distance, shows that we are over priced and not competitive with alternative programs on the national scene (Univ. Nebraska and Virginia Polytechnic Institute, for example). The changes needed to address this issue are at the institutional and state levels. We will continue to re-evaluate...
opportunities for distance education in the future, but we must be practical in this highly competitive environment.

- University administration should develop policies that would allow return of some portion of the distance/online course tuition/fees to the department and faculty members to support their efforts and to act as a reward or inducement to develop additional courses.
  - The ART included this recommendation even though they were provided information on the distance education fee return to the instructor of record. Their reference however was to make more generous returns from distance education programs other institutions where distance education has become quite successful.

**Graduate Programs** - the Department and individual faculty have successfully completed the NRC survey in a timely manner.

**Graduate Programs – Research and Teaching Infrastructure.**

- The college and university administration should consolidate the departmental teaching and research facilities within one building. However, there remains a need for outlying research facilities that support ‘dirty’ work conditions associated with some of the research programs in urban, medical, and veterinary entomology.
  - Dr. Murano has toured our facilities, including those of faculty housed in metal buildings along Agronomy Road, and the Department of Entomology stands ready to support any initiative that would modernize and improve research and teaching space for our faculty.

- The administration must repair the leaking roof of the Heep building, and plumbing and HVAC system leaks as priority items. These leaks pose significant safety hazards to the occupants, and have the potential to cause damage to expensive research and teaching equipment.
  - The leaks in the Heep Atrium were repaired in prior to the start of the Fall 2007 semester.
  - The roof in the Biological Control Building was replaced in CY 2007.
  - Problems in the Entomology Research Laboratory continue to be address and solutions evaluated. For example, problems with mold in Dr. Vinson’s laboratory are scheduled to be corrected before the end of 2007.

- Improvements must be initiated to the outlying laboratories that are aged but offer the type and amount of space needed for support of field-oriented graduate research programs. The state of disrepair of these buildings poses safety hazards to the occupants, students, and visitors.
  - A strategy needs to be developed will provide quality teaching and research space to support elite programs in Entomology and Forensic and Investigative Sciences. The Department is available to work with all entities to develop and execute a realistic plan that accomplishes this goal. The unavailability of financial resources almost always becomes the rate limiting step to the execution of strategic planning.
Graduate Programs – Insect Collection.

- The university and department should locate additional space or revamp space in the main building for future development of the collections.
  - Several intermediate and long range plans, including renovation of existing space and construction of new space, have been evaluated to accommodate expansion for the insect collection. Scale, design, and cost are the limiting factors. Means to solve this serious space issue, which is a national resource that is essential for programmatic excellence, will require dedication from partnerships yet to be developed.

Graduate Programs – Recruitment.

- Develop recruiting programs to attract additional, domestic students from outside of Texas and Southwestern USA.
  - In addition to our traditional recruiting activities that are based upon faculty contacts with colleagues nation wide, recruiting at regional and national scientific meetings, and program promotion through the web and national meeting mixers, the department is developing and participating in the following new programs:
    1) A national recruiting effort for Ph.D. candidates has been developed. This effort utilizes an early season recruiting weekend supported by a pre-application screening process and travel grants to attend an on-campus and community visit. Recruiting announcements are being circulated nationally for a November 2007 recruiting weekend program. This objective is to identify and recruit promising candidates early in the competitive season.
    2) Participation in the Sloan Scholars Program to recruit, mentor, Petain, and develop US Ph.D. students from under-represented populations. We have our first Sloan Scholar onboard and are anticipating identifying another scholar this year.

- Promote efforts to recruit domestic, ethnic minority students into the graduate program; one approach may be to track ethnic minorities and first generation college enrollees within the undergraduate major for potential to succeed in graduate programs, mentor them, offer scholarships and experiential research opportunities to work with departmental faculty for admission into the graduate program or other options such as a three-plus-two approach.
  - This is evolving as a natural consequence of the corresponding growth and expanded diversity of our undergraduate program. The new 2007 class of students entering the Entomology Master of Science program consists of 14 students with 8 coming from our undergraduate program and these include students from both under-represented populations and first generation students. We expect an increasing trend to continue in future years. In addition, we are continuing a new undergraduate student orientation with a focus on early mentoring and guidance with the expectation that top students...
can be retained for graduate degrees. Our 8 incoming undergraduate students (freshmen/transfers) is comprised of 6 minority representatives.

- In addition the Department has developed a Research Experience Undergraduate proposal to the National Science Foundation in Entomology to focus on recruiting top undergraduate students to our graduate programs. This proposal received very favorable consideration in 2006, and is being resubmitted with NSF encouragement for 2007.

- Enhance efforts to recruit students from Latin America and the Caribbean region.
  - These efforts are driven primarily by faculty research activities and interactions with students, faculty and university administrations in the region.
  - The Department of Entomology has greatly increased the diversity of faculty with recent hires with national origins in Mexico, Honduras, Peru, and Argentina. These faculty are coalescing to develop recruitment to attract students from Central and South America.
  - Faculty members are encouraged to consider these opportunities to recruit students and where possible take advantage of international programs to recruit and support these students. We have a long tradition of successful students from the region and they have become ambassadors for our department.

- Develop standard criteria for student admissions process and have all faculty become aware of the same so that acceptance of students is based on faculty input. This will ensure fairness when placing students with faculty mentors, as well to recruit the best students into the program.
  - Graduate student admissions criteria and process will be reviewed in 2008.
  - Program level outcome assessment will be designed to provide annual data on student performance related to admissions criteria.
  - Graduate student admission, selection and expectations are being made priority subjects of mentoring discussions with new faculty.

Outcome Assessment – Undergraduate and Graduate Programs.

- Conduct workshops for faculty in support of development of outcomes based teaching methods and assessment tools for the undergraduate and graduate programs and courses.
  - A teaching retreat and workshop devoted to course-level and program-level outcome assessment has been conducted with the guidance and direction of the Center for Teaching Excellence with Dr. Deborah Fowler and COALS with Associate Dean, Dr. Ann Kenimer, on August 13th, 2007. The retreat focused on faculty members rethinking and rewriting syllabi using learning outcomes and corresponding measures of assessment. Breakout group sessions focused on interconnectivity of course subject matter through the curricula and on the expectations and nature of the students in our programs. The retreat also focused on expected changes and demands on faculty and programs with the anticipated introduction of the new Forensic & Investigative Sciences degree.
• Actively involve faculty in development of student learning outcomes and assessment plans.
  ○ This recommendation was first included in the retreat described above.

• Facilitate faculty discussions to develop a uniform and clearly stated desired outcome for each entomology degree, including expectations of core knowledge that can then become the standard against which assessment can be made.
  ○ The program level outcomes for each program prepared for the ART were reviewed and discussed in the August 13th, 2007, retreat. The Department Education Committee will follow-up in focusing the activities and measures to be made in the program-level assessment with respect to readily available data sets and available human resources. This revised program level outcome assessment will become the departmental program to be submitted to COALS by December 14th, 2007.

• Increase faculty buy-in on a shared department vision and improve esprit de corps among faculty
  ○ Improve Communication Among Administration and Faculty:
  ○ Enhance Department intranet to make information more departmental information readily available to faculty. This includes providing minutes of all important Department committee activities and meetings.
  ○ Increase interpersonal communication through faculty, staff, and student roundtables.
  ○ Initiated open lunch discussions prior to each faculty meeting.
  ○ The program level outcomes for each program prepared for the ART were reviewed and discussed in the August 13th, 2007, retreat. The Department Education Committee will follow-up in focusing the activities and measures to be made in the program-level assessment with respect to readily available data sets and available human resources. This revised program level outcome assessment will become the departmental program to be submitted to COALS by December 14th, 2007.
MEMORANDUM

To: Dr. Karan Watson, Interim Provost & Executive Vice President for Academics

Through: Dr. Martyn Gunn, Vice Provost

Through: Dr. Karen Butler-Purry, Associate Vice President for Graduate Studies

Through: Dr. Pamela Matthews, Associate Provost for Undergraduate Studies

Through: Dr. Mark Hussey, Vice Chancellor & Dean,

From: Dr. David Ragsdale, Head


This status report is provided as our current assessment of the 5 challenge areas identified by the Academic Program review team and summarized by Dr. Robert C. Webb in his post-review summary dated 1 October 2007.

1. Availability of appropriately equipped space.

(R. Webb/Oct 2007). The availability of appropriately equipped space was a concern. A number of facilities need to be updated and maintenance has been deferred too long. This issue was being addressed by a combination of efforts including soliciting gifts from industry, competing for equipment grants and considering other sources of support as one of a number of university infrastructure priorities. This is a work in progress.

Repetitive water leaks into classroom and teaching support spaces was remedied by the University paying for a new roof that was installed on the Heep Center in 2009.

The Department has received industry support in the form of specialized laboratory equipment and supplies for teaching laboratories that provided hands-on learning of molecular techniques in 3 courses. This model is being used to support additional teaching needs where industry and academic partnerships can be linked. We also link our classroom enhancement student fee (IEEF) re-investment in courses to
appropriately upgrade and support teaching equipment, supplies and teaching assistants. The department has successfully competed for computing science fee resources to improve our classroom IT needs.

Several of the Department endowments (including the student enhancement fund targeted specifically at benefiting student programs) have been completed. Disbursements from these endowments are to begin in 2011.

Funds for significant remodeling of classroom and laboratory teaching space remain problematic. The department continues to apply for available grants and to seek donors interested in supporting this concern.

2. Avoiding potential negative impacts from the launch of the new B.S. degree in Forensic & Investigative Sciences (FIVS).

(R. Webb/Oct 2007). The new undergraduate degree in Forensic and Investigative Sciences is expected to be a very popular program once it is launched. The department has prepared a plan that will allow them to roll out this new program while maintaining the current level of excellence in their current undergraduate program offerings. It is of utmost importance to avoid any negative impact to the existing programs while this new program is implemented.

We are pleased to report:
   a) That the overall impact to the undergraduate programs has been net growth and positive balance between our two degree offerings in ENTO and FIVS.
   b) That the launch of the FIVS degree has been successful, with 82 majors enrolled for the spring semester 2010, the first students have graduated from the program and were highly sought by employers, and accreditation by the American Academy of Forensic Sciences has been requested for 2011.
   c) That the anticipated adjustment of Entomology majors has stabilized and will be sustained at approximately 70 majors (67 majors, Spring 2010). In addition, we have experienced an increase in Entomology double-majors, (currently 50 double majors, Spring 2010). We are still the largest Entomology majors program in the US, producing approximately 1/3 of all undergraduates in this discipline.

3. Funding model for development of distance education.

(R. Webb/Oct 2007). The review team and the presenters all noted that the current funding structure of Distance Education at Texas A&M make it difficult for our programs to compete with others available around the country. The questions was asked, “How can we develop a funding model that would support the development of new distance education courses in Entomology that would allow them to more effectively meet the needs of the market for these courses?” This matter is one with broader impact across the university and will need to be addressed university-wide before this situation will change.
The broader issue of distance education funding and development at the state level has not changed. However, we have two successfully delivered web-based courses that provide development, delivery, and funding models that are now being assessed for additional courses. These successes are ENTO 320 Honey Bee Biology which serves over 200 on-campus students per semester and ENTO 402 Field Crop Entomology serving 22 students this semester. Students at Texas A&M University are increasingly seeking the flexibility offered by on-line courses as part of their course load. The distance education fee base provides a partial means of course sustainability and updating over time. This approach is being examined for potential development in 3 additional courses serving large populations.

4. **Facilities repairs and resource expansion.**

(R. Webb/Oct 2007) Somewhat related to (1) above, a number of areas occupied by the department are in need of major repair. Among them is the "world class" insect collection in the Heep Building. Some temporary fixes have been made to deal with the water leaks in the area of the (insect) collection and they were hopeful that this would protect the collection from water damage, but the issue of the ever increasing size of this collection, made it imperative that a plan for expansion of the collection space be developed as soon as possible. A proposal to add enough space to the Heep building to house the collection for the next 30 years has an estimated cost of $15 million. The Entomology Department has initiated a project to locate the necessary funds to build this expanded facility, but additional help will be needed from the University. A multi-function natural history museum is one possibility.

As outlined in #1 above, the problem with water leaks in the Heep Center were resolved. Similarly, water issues associated with the satellite collection housed in the Biological Control Center were solved by that building being re-roofed in 2008/9.

Two courses of action continue to be reviewed as a means of generating more space for the Texas A&M University Insect Collection. First, and dependent upon laboratory course enrollment patterns or changes in utilization of space by research faculty, the Department may be able to re-assign and renovate space adjacent to the collection to support expansion of the collection. Several new endowments targeted at support of the collection have been established that generate some of the financial resources necessary to execute this plan (approximately $10,000 per year in interest disbursements). Second, the department continues to partner with the Brazos County Museum of Natural History and other collections at TAMU to seek resources necessary from a new public-private partnership to build a multi-function natural history museum. While non-fiscal support from a number of groups has been identified, no funds have been collected in support of this alternative. It should be noted that when the University conducted its white-paper exercise, there was good support for investing in world-class
collection facilities. However, limitations in funding did not permit the project to go advance.

5. **Graduate student recruiting**.

(R. Webb/Oct 2007). In response to the new hires for the faculty reinvestment program on campus, the department needs to be more successful in recruiting graduate students to the program. A number of options are open to the department to recruit domestic and international students more effectively, and they are working on a departmental plan to address this issue.

The department implemented the Doctoral Recruiting Program described in our Academic Program Review Self Study in 2007. This program is nationally advertised in the fall semester and includes recruiting efforts connected to the Entomological Society of America annual meetings held in December. The department offers travel grants to 6-8 applicants selected based upon their applications for graduate school admission (submitted by mid-December) for a 3-day Departmental recruiting program held in mid-February. The timing of this program allows us to recruit for excellence, diversity, and competition with rival graduate programs across the U.S. This also allows us to review and direct applications from this pool to our own university scholarship and fellowship programs. In 2009, all 6 applicants to this program qualified for diversity and/or president’s fellowships. This program has largely been responsible for a 3-year increase in our doctoral student numbers by 26%. We have just completed our 2011 recruiting focus for 8 applicants and have high expectations that the majority and potentially all of these applicants will join our doctoral program fall semester 2011.
# Department of Entomology Committee Memberships, Teams, and Officers

## Elected/Appointed/Standing

### Promotion and Tenure Committee (Elected in December)

- Roger Gold (15), Chair
- Jim Woolley (14)
- Keyan Zhu-Salzman (14)
- Pat Porter (14)
- Jerry Michels (14)
- Mike Merchant (14)
- Greg Sword (15)
- Forrest Mitchell (15)
- Patricia Pietrantonio (15)
- Johnston, Spencer (15)
- Allen Knutson (16)
- Megha Parajulee (16)
- MO Way (16)
- Bob Coulson (16)
- Micky Eubanks (16)

### Faculty Advisory Committee (Elected in September)

- Jeff Tomberlin, Chair (16)
- Aaron Tarone (14)
- Mike Brewer (14)
- Gregory Sword (15)
- Micky Eubanks (15)
- Raul Medina (16)
- Ed Bynum (16)

### Capital Campaign Committee (September)

- John Oswald (14)
- Kevin Heinz (15)
- Roger Gold (16)
- Juliana Rangel (16)
- Charles Allen
- Carla Smith
- David Ragsdale

## Student Committee/Ad-hoc

### Entomology Graduate Student Organization (EGSO)

- Lauren Lewis, Pres.
- Lue Cuttfield, Vice Pres.
- Elly Espinoza, Sec./web master
- Milo Lewis, Treasurer
- Carrie Deans, Social Chair
- Kyle Harrison, Seminar Chair
- Gassie Schoenthal, Outreach Chair

**Advisor:**
- Dr. Gregory Sword

### Aggie Forensic Investigative Sciences Organization (AFIS)

- Sunday Saenz, Pres.
- Olivia Nirider, Vice Pres.
- Emily Grimshaw, Treas.
- Angela Ruffino, Sec.
- Stephanie Stratta, Historian
- Devin Beach, Activities Coor.

**Advisor:**
- Dr. Kevin Heinz

### Capital Campaign Committee (September)

- Roger Gold (15), Chair
- Jim Woolley (14)
- Keyan Zhu-Salzman (14)
- Pat Porter (14)
- Jerry Michels (14)
- Mike Merchant (14)
- Greg Sword (15)
- Forrest Mitchell (15)
- Patricia Pietrantonio (15)
- Johnston, Spencer (15)
- Allen Knutson (16)
- Megha Parajulee (16)
- MO Way (16)
- Bob Coulson (16)
- Micky Eubanks (16)

### Graduate Admissions Committee (September)

- Committee on Utilization and Assignment of Physical Space (September)

### Administrative Advisory Team

- David Ragsdale
- Pete Teel
- Charles Allen
- Teresa Gold
- Carla Smith
- Ann Pool
- Kevin Heinz

### Undergraduate Entomology Student Organization (UESO)

- Kristen Rainosek, Pres.
- Andrew Ly, Vice Pres.
- Devin Beach, Treas.
- Jason Gould, Sec.
- Chelsea Gould, Historian
- Emily Dinh, Student Advisor
- Danielle Restuccia & Bryant
- McDowell, webmasters

**Advisors:**
- Dr. Albert Mulenga
- Dr. Jim Woolley

### Quarantine Committee

- Julio Bernal
- Gabe Hamer
- Jim Woolley
- Pete Krauter (non-voting)
- David Ragsdale

## Education Committee*

### (September)

- Awards and Scholarships Committee (September)

### Graduate Student Recruitment Committee (September)

### HEEP Center Committee on Safety

### Student Enhancement Fund Committee*

**Year indicates FALL Semester when terms expire. (Except P&T Committee)**

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*student rep.*
# Graduate Studies Degree Plan Checklist

**NAME**

- **UIN**

1. **DEGREE SOUGHT**
   - [ ] MS
   - [ ] PhD
   - [ ] MAg
   - [ ] ECEN
   - [ ] PPRO

2. **BACKGROUND COURSES AND/OR EXPERIENCE IN THE FOLLOWING AREAS:** (List prior and planned courses and experience. If none exist for that area, address those deficiencies in your cover letter. Elaborate as needed in your cover letter.)

<table>
<thead>
<tr>
<th>Area</th>
<th>Previous Courses</th>
<th>Degree Plan Courses</th>
<th>Experience</th>
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<tr>
<td>Molecular Genetics</td>
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3. **COMMITTEE MEMBERS** (MS/MAg = 3; PhD = 4; At least 1 outside member - not from ENTO. All committee members MUST be members of the Graduate Faculty. Special appointments MUST be approved by the Education Committee and do not count toward the required number of committee members. See the OGS website for information on Graduate Faculty.)

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
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4. **UNIVERSITY REQUIREMENTS & LIMITATIONS**
   - [ ] No more than 9 hours of 300/400 level courses [ALL DEGREE PLANS]
   - [ ] No more than 12 hours combined of 691 (8 hrs max) plus 485/685 (8 hrs max) plus 690 (3 hrs max) [MS/MAg]
   - [ ] No more than either 12 hours or 1/3 of hours listed on degree plan can be transferred into degree plan. Transfer courses must be B or better. [MS/MAg]

5. **DEPARTMENTAL REQUIREMENTS & LIMITATIONS**
   - [ ] ENTO 690 Theory of Research included (Required: PhD = 4; MS/MAg = 2; Limit of 3 for MS/MAg)
   - [ ] ENTO 681 Seminar included (Required: PhD = 2; MS/MAg = 1; Limit of 2 for MS/MAg)
   - [ ] No less than 33% of PhD degree plan should be fixed credit courses (not including 681 & 690).

6. **MINIMUM CREDIT HOURS**
   - MS = 32; MAg = 36; PhD (with MS) = 64; PhD (straight through) = 96

## Education Committee Materials Needed

1. **COPY OF DEGREE PLAN** (Can be printed from the OGS Online Submission System) & DEGREE PLAN CHECKLIST
2. **COVER MEMO** (In memo format, routed through your major advisor. This memo should describe your scientific background, current research objectives, future goals, your degree plan, including why you chose your courses and committee members, as well elaborate as necessary on the above background courses and experience.)
3. **COPY OF UNDERGRADUATE AND GRADUATE (IF NEEDED) TRANSCRIPT** (Can be unofficial copies.)

**Room 412, Minnie Belle Heep**
2475 TAMU
College Station, Texas 77845
Tel. 979.845.2516
Fax. 979.845.6305
http://insects.tamu.edu
email: entomain@ag.tamu.edu

**Updated 01/2009**
## Appendix 8a

### Degree Plan analysis of doctoral students graduating Fall of 2006 to Fall of 2013

<table>
<thead>
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<th>Program</th>
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| ENTO 621 Entomophagous Insects (R. Wharton - Retired) |
| ENTO 623 AgroEcosystems (T. Wilson, Center Director) |
| ENTO 624 Animal Populations (Cross-Listed and Taught by WSFC Faculty) |</p>
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### Appendix 8b

Degree Plan analysis of doctoral students matriculating Fall of 2010 to Fall of 2013

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<td>Cate, Carrie Ann</td>
<td>Fall 1993</td>
<td>Spring 2007</td>
<td>Vinson</td>
<td>Monitoring, assessing and evaluating the pollinator species (Hymenoptera: Apoidea) found on a native brush site, a revegetated site and an urban garden</td>
<td>Biology Faculty, Dine' College, Tsaile, AZ</td>
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<td>Johnsen, Mark Miller</td>
<td>Summer 2005</td>
<td>Spring 2007</td>
<td>Olson</td>
<td>The status of resistance in <em>Culex quinquefasciatus</em> Say (Diptera: Culicidae) populations in Brazos and Harris Counties, Texas</td>
<td>Environmental Health Specialist, Brazos County Health Department, Bryan, TX</td>
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<td>Joyce, Andrea Lee</td>
<td>Fall 2002</td>
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<td>Bernal, Vinson</td>
<td>Courtship acoustics and mating in <em>Cotesia</em>, a genus of parasitoid wasps</td>
<td>Assistant Research Scientist, Sierra Nevada Research Institute, University of California Merced, Merced, CA</td>
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<td>Kjos, Sonia Alane</td>
<td>Spring 2003</td>
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<td>Olson, Coates</td>
<td>Biogeography and genetic variation of triatomine Chagas disease vectors and <em>Trypanosoma cruzi</em> isolates from Texas</td>
<td>Adjunct Assistant Professor, Dept. of Biology, Univesity of Minnesota-Duluth</td>
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<td>Sagili, Ramesh Reddy</td>
<td>Fall 2004</td>
<td>Spring 2007</td>
<td>Pankiw</td>
<td>Evaluation of physiological and phenomonal factors regulating honey bee, <em>Apis mellifera</em> L. (Hymenoptera: Apidae) foraging and colony growth</td>
<td>Assistant Professor, Department of Horticulture, OSU Honey Bee Lab, Corvallis, OR</td>
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<td>Vargus, Luis Espino</td>
<td>Fall 2002</td>
<td>Summer 2007</td>
<td>Way, Olson</td>
<td>Damage assessment and sampling of the rice stink bug, <em>Oebalus pugnax</em> (Fabricius) (Hemiptera: Pentatomidae), in rice, <em>Oryza sativa</em> L., in Texas</td>
<td>Rice Farm Advisor, University of California Cooperative Extension, Colusa, CA <a href="mailto:laespino@ucanr.edu">laespino@ucanr.edu</a></td>
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<td>Yoder, Matthew Jon</td>
<td>Summer 2002</td>
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<td>Wharton</td>
<td>Advances in diapriid (Hymenoptera: Diapriidae) systematics, with contributions to cybertaxonomy and the analysis of rRNA sequence data</td>
<td>Biological Informatician, Biodiversity Informatics, Illinois Natural History Survey, Champaign, IL</td>
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<td>Ahn, Ji-eun</td>
<td>Fall 2004</td>
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<td>Zhu-Salzman, Guari</td>
<td>Molecular Mechanisms Governing the Differential Regulation of Cysteine Proteases in Insect Adaptation to a Soybean Protease Inhibitor</td>
<td>Post-doctoral scientist, Department of Molecular and Cellular Medicine Texas A&amp;M Health Science Center, College Station, Texas</td>
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<td>Aquino Perez, Gildardo</td>
<td>Spring 2004</td>
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<td>Johnston</td>
<td>Generation of an integrated karyotype of the honey bee (<em>Apis mellifera</em> L.) by banding pattern and fluorescent in situ hybridization</td>
<td>Instituto de Recursos Genéticos y Productividad, Montecillo, Mexico</td>
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<td>Baumgardner, David Eugene</td>
<td>Fall 1998</td>
<td>Summer 2008</td>
<td>Oswald</td>
<td>Phylogeny and biogeography of the mayfly family Leptophlebidae (Insecta: Ephemeroptera) with a taxonomic revision of selected genera</td>
<td>Biology lecturer, Blinn College, Bryan Tx; Biology lecturer, Texas A&amp;M, College Station, TX</td>
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<td>Calixto Sanchez, Alejandro Antonio</td>
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<td>Implications of Relative Ant Abundance and Diversity for the Management of <em>Solenopsis invicta</em> Buren with Broadcast Baits</td>
<td>Field Scientist, Dow AgroSciences, Tampa, FL</td>
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<td>The effects of temperature and humidity on the eggs of <em>Aedes aegypti</em> (L.) and <em>Aedes albopictus</em> (Skuse) in Texas</td>
<td>USDA ARS, Center for Medical, Agricultural and Veterinary Entomology, Gainesville, FL</td>
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<td>Natural enemies and mortality factors of the coffee leafminer <em>Leucoptera coffeella</em> (Guerin Meneville) (Lepidoptera: Lyonetiidae) in Chiapas, Mexico</td>
<td>Programa en Entomología y Acarología, Colegio de Postgraduados, Campus Montecillo, Montecillo, Texcoco, Edo. de México, CP. 56230</td>
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<td>Identification, Distribution and Control of an Invasive Pest Ant, <em>Paratrechina</em> sp. (Hymenoptera: Formicidae), in Texas</td>
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<td>Wilson</td>
<td>Tri-trophic Analyses of Rice, the Sugarcane Borer, and Putative Biological Control Agents</td>
<td>Post-doctoral, Beaumont, TX</td>
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<td>Biological and Ecological Aspects of Field Released Fire Ant Decapitating Flies <em>Pseudacteon</em> spp. (Diptera: Phoridae), Parasitoids of Red Imported Fire Ants <em>Solenopsis invicta</em> Buren (Hymenoptera: Formicidae)</td>
<td>Associate Research Scientist, Center for Urban and Structural Entomology, Texas A&amp;M; co-chair of the ESA Ethics and Rules Committee, President of Entomology Graduate Student Org at A&amp;M '06-'07</td>
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<td>The Molecular Characterization of a Diuretic Hormone Receptor (GPRdih1) From Females of the Yellow Fever Mosquito, <em>Aedes aegypti</em> (L.)</td>
<td>Research Associate and Laboratory Manager, Department of Molecular and Cellular Medicine, TAMU, TX</td>
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<td>Variation in and Responses to Brood Pheromone of the Honey Bee (<em>Apis mellifera</em>)</td>
<td>Assistant Lecturer, A&amp;M;</td>
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<td>Associative Learning Capabilities of Adult <em>Culex quinquefasciatus</em> Say and Other Mosquitoes</td>
<td>Forensic Entomologist, Harris County Medical Examiner's Office</td>
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<td>Host-Associated Differentiation in an Insect Community</td>
<td>USDA Agricultural Research Service, Post-doctoral research, Fort Pierce, Florida</td>
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<td>Menard, Katrina Louise</td>
<td>Fall 2006</td>
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<td>Woolley</td>
<td>Journeys within the Leucophoropterini: Revision of the Tribe, Genera and Species, and Description of New Genera and Species from Australia and the Indo-Pacific</td>
<td>Curator, University of Oklahoma; Colleitions Manager, Entomologist, Norman OK; Teaching Assistant A&amp;M</td>
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<td>Ticks and Tick-Borne Pathogens Associated with Feral Swine in Edwards Plateau and Gulf Prairies and Marshes Ecoregions of Texas</td>
<td>Cpt Sanders, Air Force Research Laboratory, Wright-Patterson, OH,</td>
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<td>Interactive Effects of Geography and Host Plant Species on Genetic and Phenotypic Variation of Cotton Fleahopper Populations</td>
<td>Assistant Professor and Extension Specialist-Cotton, Texas A&amp;M AgriLife Research and Extension Center, Lubbock TX</td>
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<td>Fitness Effects of Colonization Time of <em>Chrysomya rufifacies</em> and <em>Cochliomyia macellaria</em>, and their Response to Intra- and Inter-specific Eggs and Egg Associated Microbes</td>
<td>Lecturer in Forensic Entomology, Baylor University; Forensic Entomologist Lecturer, Texas A&amp;M, Remote Lecturer of Wildlife Forensic Entomology, University of Florida</td>
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<td>Female Blow Fly (Diptera: Calliphoridae) Arrival Patterns and Consequences for Larval Development on Ephemeral Resources</td>
<td>Lecturer, Forensic Sciences Program, West Virginia University</td>
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<td>The Importance of Microbial and Primary Colonizer Interactions on an Ephemeral Resource</td>
<td>Post-doctoral, University of Dayton</td>
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<td>Spatial and Temporal Survey of Feral Pig Ectoparasites in Three Texas Wildlife Districts</td>
<td>US Army Medical Component, Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand</td>
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<td>Behmer</td>
<td>Effects of Sterol Structure on Insect Herbivore Physiology, Biochemistry and Molecular Biology</td>
<td>Post Doc. Cornell University, Department of Entomology</td>
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<td>Harris, Nansen</td>
<td>Effects of Drought-Stress on Cotton (<em>Gossypium hirsutum</em> L.) and Host-Plant Resistance to Western Flower Thrips (<em>Frankliniella occidentalis</em> Pergande)</td>
<td>Researcher at Arkansas State University, Jonesboro, AR</td>
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<td>Life-history traits of <em>Chrysomya rufifacies</em> (Macquart) (Diptera: Calliphoridae) and its associated non-consumptive effects on <em>Cochliomyia macellaria</em> (Fabricius) (Diptera: Calliphoridae) behavior and development</td>
<td>Research Entomologist, Walter Reed National Military Center</td>
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<td>Name</td>
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<td>Henderson, Ruth</td>
<td>Fall 2005</td>
<td>Fall 2012</td>
<td>Vinson</td>
<td>The Late Immature Development of <em>Toxoneuron nigriceps</em>, a Koinobiont Endoparasitoid, and Steps Toward an In Vitro Rearing System</td>
<td>Post-doctoral Research Associate, Irrigated Agriculture Research &amp; Extension Center in Prosser, WA</td>
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<tr>
<td>Kwon, Hyeog Sun</td>
<td>Spring 2007</td>
<td>Fall 2013</td>
<td>Pietrantonio</td>
<td>Characterization and functional analysis of calcitonin receptor-like receptor 1 (AaegGPRCAL1: Diuretic Hormone 31 (DH31) receptor) in females of mosquito <em>Aedes aegypti</em> (Diptera: Culicidae)</td>
<td>Post-doctoral Research Associate, Texas A&amp;M University, College Station, TX</td>
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<tr>
<td>McDonald, Danny</td>
<td>Fall 2007</td>
<td>Fall 2012</td>
<td>Gold</td>
<td>Investigation of an Invasive Ant Species: <em>Nylanderia fulva</em> Colony Extraction, Management, Diet Preference, Fecundity, and Mechanical Vector Potential</td>
<td>Research Scientist, Sam Houston State University, Huntsville, Texas</td>
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*Employer information obtained through internet search engines all of which are publically available.
*There is one additional student who has requested their academic information remain confidential.

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<th>Name</th>
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<td>Reed, Janis</td>
<td>Fall 2010</td>
<td>Fall 2013</td>
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2013/2014
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<th>Name</th>
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<tr>
<td>Bahr II, Stephen M. (MAgr)</td>
<td>Fall 2004</td>
<td>Fall 2007</td>
<td>Pankiw</td>
<td>Dynamics of tritrophic interactions between <em>Solenopsis invicta</em>, <em>Antonina graminis</em>, and <em>Neodismeta sangwani</em>: do fire ants negatively impact the success of a biological control system?</td>
<td>Agriculture Specialist, US Customs and Border Protection</td>
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<tr>
<td>Chantos, Jillian Marie</td>
<td>Fall 2004</td>
<td>Fall 2007</td>
<td>Vinson</td>
<td>The establishment, biological success and host impact of <em>Diorhabda elongata</em>, imported biological control agents of invasive <em>Tamarix</em> in the United States</td>
<td>Analyst Summer Intern at US GAO; Operations Specialist and Presidential Management Fellow at US Dept. of Housing and Urban Development, Seattle; Management Analyst, Federal Housing Administration, Atlanta</td>
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<tr>
<td>Hudgeons, Jeremy Lee</td>
<td>Fall 2003</td>
<td>Fall 2007</td>
<td>Heinz, Knutson</td>
<td>The establishment, biological success and host impact of <em>Diorhabda elongata</em>, imported biological control agents of invasive <em>Tamarix</em> in the United States</td>
<td>Analyst Summer Intern at US GAO; Operations Specialist and Presidential Management Fellow at US Dept. of Housing and Urban Development, Seattle; Management Analyst, Federal Housing Administration, Atlanta</td>
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<tr>
<td>Junek, Terry Ann (MAgr)</td>
<td>Fall 2002</td>
<td>Summer 2007</td>
<td>Pietrantonio</td>
<td>Monitoring for Pyrethroid Resistance in <em>Helicoverpa zea</em> (Boddie) (Lepidoptera: Noctuidae) in Texas</td>
<td>Research Assistant, Texas A&amp;M, College Station, TX; Technician II, Dept. Chemistry, Texas A&amp;M, College Station, TX 845-1996</td>
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<tr>
<td>Honaker, Jessica Marie</td>
<td>Fall 2004</td>
<td>Spring 2008</td>
<td>Harris</td>
<td>The quantification of blackmargined aphid (<em>Monellia caryella</em> (Fitch)) honeydew production in pecan (<em>Carya illinoinensis</em> (Koch)) in Texas</td>
<td>Instructor, Blinn College; Managing Director, Solpugid Productions</td>
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<tr>
<td>Irungu, Rose Wambui</td>
<td>Summer 2006</td>
<td>Spring 2008</td>
<td>Harris, Tong-Xian</td>
<td>Effects of spinosad and lambda-cyhalothrin on their targets, cabbage looper, <em>Trichoplusia ni</em>, and diamondback moth, <em>Plutella xylostella</em>, and on their non-targets, spiders, on cabbage in south Texas</td>
<td>Assistant Officer in Charge/Entomologist, US Navy, Kandhar, Afghanistan; Naval Officer/Dept Head/Medical Entomologist, US Navy, Jacksonville, FL; Chemical Safety Intern, University of Texas Health Science Center, Houston, TX</td>
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<tr>
<td>Lostak, Tracy</td>
<td>Fall 2006</td>
<td>Fall 2008</td>
<td>Teel</td>
<td>Genetic variation in the 16s mitochondrial rDNA gene from Texas and Oklahoma populations of <em>Amblyomma maculatum</em></td>
<td>Post-doctoral, University of Dayton</td>
</tr>
<tr>
<td>Pechal, Jennifer</td>
<td>Fall 2006</td>
<td>Spring 2009</td>
<td>Gold, Tomberlin</td>
<td>Intraspecific Gene Flow and Vector Competence among <em>Periplaneta americana</em> Cockroaches (Blattodea: Blattidae) in Central Texas</td>
<td>Post-doctoral, University of Dayton</td>
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<tr>
<td>Reddick, Kristie Lynn</td>
<td>Fall 2005</td>
<td>Summer 2008</td>
<td>Wharton</td>
<td>The diversity, distribution and feeding behavior of solifuges (Arachnida; Solifugae) in Kenya.</td>
<td>Kristie Reddick  Creative Director, The Bug Chicks; Founder, Solpugid Productions, College Station, TX; Creative Director and Partner, Solpugid Productions; Consultant, Normal Borlaug Institute for International Agriculture 503-847-9247</td>
</tr>
<tr>
<td>Wynalda, Rachel Anne</td>
<td>Fall 2005</td>
<td>Summer 2008</td>
<td>Gold/Behmer</td>
<td>Nutrient regulation of an exotic, unidentified <em>Paratrechina</em> sp. (Hymenoptera: Formicidae) found in Texas</td>
<td>Vet Technician, Roy C Gully Animal Hospital; Graduate Research Assistant, Texas A&amp;M; Scientist, BAE Systems</td>
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<td>Boatright, Stacy Ann</td>
<td>Fall 2007</td>
<td>Fall 2009</td>
<td>Tomberlin</td>
<td>Development of <em>Cochliomyia macellaria</em> on Equine and Porcine Striated Muscle Tissue and Adult Attraction to Larval Resource</td>
<td>Intern CSI, Bryan Police Dept, Bryan, TX</td>
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<tr>
<td>Name</td>
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<td>Dissertation Title</td>
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<td>Cameron, Mika Danielle</td>
<td>Fall 2006</td>
<td>Summer 2009</td>
<td>Wharton</td>
<td>A Morphological Evaluation of the Sub-apical Dorsal Notch in the Family Ichneumonidae (Hymenoptera) and Its Application to a Revision of the Genus Hodostates Foerster</td>
<td>Professor, San Jacinto College, Pasadena, TX</td>
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<td>Catanach, Therese</td>
<td>Spring 2007</td>
<td>Summer 2010</td>
<td>Woolley</td>
<td>A Revision of the Leafhopper Genus Xyphon (Hemiptera: Cicadellidae)</td>
<td>PhD student, University of Illinois, Entomology working with Chris Dietrich</td>
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<tr>
<td>Catena, Amanda Marie</td>
<td>Fall 2007</td>
<td>Fall 2009</td>
<td>Teel, Mulenga</td>
<td>Physiological Ageing as it is Related to Gene Function in the Lone Star Tick, Amblyomma americanum</td>
<td>United States Army</td>
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<td>Moreno, Ricardo Hernandez</td>
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<td>Tong-Xian, Harris</td>
<td>Liriomyza leafminers, associated parasitoids and insecticide evaluations in south Texas</td>
<td>Precision Ag Consultant, Agrinetix LLC, NY; PhD Student, University of Arizona, Tucson, AZ</td>
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<tr>
<td>(Peters) Dahlgren, Lizette Alice</td>
<td>Spring 2006</td>
<td>Spring 2009</td>
<td>Pankiw</td>
<td>Effect of pollen diet and honey bee (Apis mellifera L.) primer pheromones on worker bee food producing glands</td>
<td>Post-doctoral, University of Nebraska</td>
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<tr>
<td>Thompson, Aaron Neal</td>
<td>Summer 2007</td>
<td>Spring 2009</td>
<td>Gold</td>
<td>Field evaluation of aerial applications of hydramethylnon and metaflumizone to control the red imported fire ant, Solenopsis invicta (Buren) and related ant species (Hymenoptera: Formicidae)</td>
<td>USDA, College Station</td>
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**2009/2010**

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<tr>
<td>Boswell, Andrew</td>
<td>Spring 2008</td>
<td>Fall 2010</td>
<td>Behmer</td>
<td>Insect Herbivore Stoichiometry: The Effect of Macronutrient Quantity, Ratio, and Quality (Orthoptera: Acridae, Schistocerca americana)</td>
<td>Technical, Ducks Unlimited, TX; Project Manager, Berg-Oliver Associates, Inc.</td>
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<tr>
<td>Chalaire, Katelyn</td>
<td>Spring 2011</td>
<td>Fall 2007</td>
<td>Mulenga</td>
<td>The Biological and Molecular Analysis of a Tick-Encoded Serine Protease Inhibitor (S6) and its Role in the Feeding Cycle of the Lone Star Tick, Amblyomma americanum (L) (Acari: Ixodidae)</td>
<td>Entomologist Research, Gainesville, Florida</td>
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<tr>
<td>Hartfield (Newmons), Emilie</td>
<td>Fall 2007</td>
<td>Fall 2010</td>
<td>Medina</td>
<td>Molecular and Pheromone Studies of Pecan Nut Casebearer, Acrobasis nuxvorella Neunzig (Lepidoptera: Pyralidae)</td>
<td>Secondary Science Educator, Houston Independent School District</td>
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<tr>
<td>Keefer, Tony Chris</td>
<td>Spring 2007</td>
<td>Summer 2010</td>
<td>Gold</td>
<td>Laborator and Field Evaluations of Imidacloprid against Reticulitermes flavipes (Kollar) and Coptotermes formosanus Shiraki (Isoptera: Rhinotermitidae) Subterranean Termites in Texas</td>
<td>Assistant Research Scientist, Texas A&amp;M</td>
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<tr>
<td>Osborne, Angela (MAgr)</td>
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<td>Harris</td>
<td>No thesis required</td>
<td>USDA-Natural Resources Conservation Service (NRCS). Soil Conservation Technician, Crocket, TX Field Office</td>
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<td>Name</td>
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<td>Roeder, Karl</td>
<td>Fall 2007</td>
<td>Fall 2011</td>
<td>Behmer</td>
<td>Dietary Effect on the Performance and Body Composition of the Generalist Insect</td>
<td>The University of Oklahoma (PhD)</td>
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<tr>
<td>(Skrivanek) Comeaux, Sarah (MA)</td>
<td>Fall 2008</td>
<td>Summer 2010</td>
<td>Harris</td>
<td>No thesis required</td>
<td>Agricultural Commodity Grader at USDA Federal Grain Inspection Service</td>
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<td>Swain, Chris</td>
<td>Fall 2008</td>
<td>Summer 2010</td>
<td>Gold</td>
<td>Laboratory Evaluation and Ranked Preference Assessment of Subterranean Termites</td>
<td>Research Assistant, Texas A&amp;M; Owner of Premier Pest Control; Technical Service Manager, MGK</td>
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<td><em>Coptotermes formosanus</em> Shiraki (<em>Isoptera: Rhinotermitidae</em>) on Pecan Cultivars of <em>Carya illinoinsensis</em> (Wangenh.) K. Koch in Texas</td>
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<td>Denemark, Eric (non-thesis)</td>
<td>Summer 2011</td>
<td>Fall 2011</td>
<td>Tomberlin</td>
<td>No thesis required</td>
<td>Oregon State, pest control company employee</td>
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<tr>
<td>McLoud, Laura Ann</td>
<td>Fall 2009</td>
<td>Fall 2011</td>
<td>Vinson</td>
<td><em>Microplitis croceipes</em> (Hymenoptera: Braconidae): A Life History Study and in vitro</td>
<td>Graduate Assistant, Research, Texas A&amp;M</td>
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<td>Rearing</td>
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<td>Smith, Julia Elizabeth (MAgr)</td>
<td>Spring 2008</td>
<td>Summer 2011</td>
<td>Harris</td>
<td>No thesis required</td>
<td>Research Assistant</td>
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<td>Deitz, Kevin</td>
<td>Fall 2009</td>
<td>Spring 2012</td>
<td>Slotman</td>
<td>The Population Genetic Structure of the Malaria Mosquito Anopheles melas</td>
<td>Genetics and Ecology Research Intern, Old Domain University; Biological Research Technical, University of South Carolina; Graduate Research Assistant, Texas A&amp;M University</td>
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<td>Throughout Its West-African Range</td>
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<td>Kersch, Cymon</td>
<td>Spring 2011</td>
<td>Spring 2012</td>
<td>Pietrantonio</td>
<td>Immunolocalization and in vivo Functional Analysis by RNAi of the Aedes Kinin</td>
<td>Oregon Health &amp; Science University (MD/PhD program)</td>
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<td>Receptor in Female Mosquitoes of <em>Aedes aegypti</em> (L.) (Diptera, Culicidae)</td>
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<td>Bellota Villafuerte, Edwin</td>
<td>Fall 2009</td>
<td>Spring 2013</td>
<td>Bernal</td>
<td>On Anti-herbivore defenses of maize (Zea mays) along its domestication, and selection</td>
<td>Ph.D. student, Ohio State University, Department of Entomology</td>
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<td></td>
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<td>gradient against an specialist herbivore: the <em>Dalbulus maidis</em> leafhopper</td>
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<td>Davila Flores, Amanda</td>
<td>Fall 2010</td>
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<td>Bernal</td>
<td>Host Plant Influences on Performance and Haplotype Diversity of <em>Dalbulus maidis</em>, a</td>
<td>Ph.D. Student, University of Florida, Forensic Science</td>
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<td>Specialist Herbivore of <em>Zea</em></td>
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<td>Owings, Charity</td>
<td>Spring 2011</td>
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<td>Tomberlin</td>
<td>Developmental Plasticity of <em>Cochliomyia macellaria</em> Fabricius (Diptera: Calliphoridae)</td>
<td>Ph.D. Student, University of Florida, Forensic Science</td>
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<td>from Three Distinct Ecoregions in Texas</td>
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<td>Hancock, Joseph Ryon</td>
<td>Fall 2010</td>
<td>Summer 2013</td>
<td>Tamborindeugy</td>
<td>Aquaporin identification and localization in the asian citrus psyllid (<em>Diaphorina citri</em>) and the potato psyllid (<em>Bactericera cockerelli</em>)</td>
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1 Employer information obtained through internet search engines all of which are publically available.

** There are two additional students who requested their academic information remain confidential.
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<th>Current or last known employer</th>
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Graduate Student Awards

2014

- Third Place-Junior Graduate Student Category in the 2013-2014 Poster Session for Texas A&M Chapter of the Society for Neuroscience and Texas A&M Institute for Neuroscience
- First place in the Ph.D. Oral Presentation category at the Southwestern Branch of the ESA meeting in San Antonio.
- Charles H. & Frances Fleming Academic Excellence Award

2013

- Texas A&M Gamma Sigma Delta’s Outstanding Graduate Student award in the Ph.D. category
- 2013 Phil Gramm Doctoral Fellowship Award
- College of Agriculture and Life Sciences Dean’s Outstanding Achievement Award for Graduate Research
- Outstanding PhD student presentation at the North American Forensic Entomology Association Conference

2012

- Phil Gramm Doctoral Fellowship Award. One of six students in the university that received the highest honor given to graduate students
- 2nd Place, President’s Prize for Oral Presentation at the National Entomological Society of America Conference
- Medical, Urban, Veterinary Entomology Section of Entomology Society of America Travel Grant to International Congress of Entomology in Korea
- 2012 Comstock Award from the Entomological Society of America. The Comstock Award is given to one graduate student from each of the Entomological Society of America's five branches to promote interest in the science of entomology at the graduate level and to stimulate interest in attending the annual meetings.

2011

- 2011 Comstock Award from the Entomological Society of America. The Comstock Award is given to one graduate student from each of the Entomological Society of America's five branches to promote interest in the science of entomology at the graduate level and to stimulate interest in attending the annual meetings.
- First place in oral presentation category at the 2011 Southwestern Branch of the Entomological Society of America for her research
- Outstanding PhD student oral presentation at the North American Forensic Entomology Conference
- 2nd Place, Outstanding PhD student oral presentation at the North American Forensic Entomology Conference

2010

- Vice Chancellor’s Award in Excellence in the Teaching category from the Texas A&M AgriLife Vice Chancellor’s office
- Association of Former Students Outstanding Graduate Student Award from Texas A&M University

2009

- Susan M. Arseven ’75 Make-A-Difference Memorial Award
- Entomological Society of America’s President’s Prize for the Integrated Physiological Molecular Insect Systems Student Competition at the national ESA meeting in 2009
- Cotton Insect Research and Control Conference Gary A. Herzog PhD Student Award
- Runner up in the ESA Student Competition in the Plant-Insect Ecology section for the Ecology II Paper category of the President’s Prize at the national ESA meeting.
- 2009 Comstock Award from the Entomological Society of America. The Comstock Award is given to one graduate student from each of the Entomological Society of America's five branches to promote interest in the science of entomology at the graduate level and to stimulate interest in attending the annual meetings.

2008

- 2008 Comstock Award from the Entomological Society of America. The Comstock Award is given to one graduate student from each of the Entomological Society of America's five branches to promote interest in the science of entomology at the graduate level and to stimulate interest in attending the annual meetings.
- 2nd place prize in the oral presentation category for Ph.D. students at the Southwestern Branch of the Entomological Society of America
- 2008 Academic Excellence Award from the Association of Former Students
- Outstanding Presentation Award, Royal Garden Jubilee Seminar, Chiang Mai University, Thailand

2007

- First Place (President’s Prize), student poster competition, Section A1 (Systematics, Morphology and Evolution), Entomological Society of America Annual Meeting and the L. T. Jordan Fellowship, L. T. Jordan Institute, Texas A&M University
Undergraduate Student Awards

2013
- Senior Merit Award for 2013 from COALS
- Best Presentation for a Non-Doctoral student award during a special awards presentation at the North American Forensic Entomology Association’s annual meeting in Las Vegas on July 17-19.

2012
- Senior Merit Award for 2012 from COALS
- Mindy Bryant Memorial Award – Alpha Phi Omega
- Alpha Phi Omega Region VII Distinguished Service Certificate

2011
- Senior Merit Award for 2011 from COALS
- 2011 Gamma Sigma Delta Outstanding Graduating Senior
- One student was inducted into the TAMU Chapter of the Phi Beta Kappa, an academic honor society with the mission of fostering and recognizing excellence in undergraduate liberal arts and sciences
- One student inducted into the TAMU chapter of Phi Beta Kappa

2010
- Senior Merit Award for 2010 from COALS
- Gamma Sigma Delta Outstanding Graduating Senior Award
- 2010 Margaret Rudder Community Service Award

2009
- Senior Merit Award for 2009 from COALS
- Outstanding Junior, College of Agriculture & Life Sciences

2008
- University Scholar (Offered to only 14 Presidential Scholars with 4-year academic scholarships)
- Ideas Challenge Winner
- Medic of the Year, Texas A&M University Emergency Care Team
Graduate Student Fellowships

2014

- Graduate Diversity Fellowship
- Graduate Merit Fellowship
- C. Everett Sayler Fellowship
- Graduate Advancement Fellowship

2013

- Pathways to the Doctorate Fellowship
- C. Everett Sayler Fellowship

2012

- Graduate Diversity Fellowship
- C. Everett Sayler Fellowship

2011

- Graduate Diversity Fellowship
- C. Everett Sayler Fellowship

2010

- Graduate Merit Fellowship
- Graduate Diversity Fellowship
- C. Everett Sayler Fellowship
- Regents Fellowship

2009

- Graduate Diversity Fellowship
- C. Everett Sayler Fellowship
- Regents Fellowship

2008

- C. Everett Sayler Fellowship
Graduate Student Fellowships

2014

- Graduate Diversity Fellowship
- Graduate Merit Fellowship
- C. Everett Sayler Fellowship
- Graduate Advancement Fellowship

2013

- Pathways to the Doctorate Fellowship
- C. Everett Sayler Fellowship

2012

- Graduate Diversity Fellowship
- C. Everett Sayler Fellowship

2011

- Graduate Diversity Fellowship
- C. Everett Sayler Fellowship

2010

- Graduate Merit Fellowship
- Graduate Diversity Fellowship
- C. Everett Sayler Fellowship
- Regents Fellowship

2009

- Graduate Diversity Fellowship
- C. Everett Sayler Fellowship
- Regents Fellowship

2008

- C. Everett Sayler Fellowship
### 12a. Undergraduate Entomology Courses

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<td>Field Studies</td>
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<td>301</td>
<td>Biodiversity and Biology of Insects</td>
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<td>305</td>
<td>Evolution of Insect Structure</td>
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<td>306</td>
<td>Insect Physiology</td>
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<td>Biotechnology and Society</td>
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<td>Honey Bee Biology</td>
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<td>322</td>
<td>Insects and Human Society</td>
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<td>401</td>
<td>Principles of Insect Pest Management</td>
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<td>Field Crop Insects</td>
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<td>403</td>
<td>Urban Entomology</td>
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<tr>
<td>423</td>
<td>Medical Entomology</td>
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<tr>
<td>424</td>
<td>Insect Ecology</td>
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<td>425</td>
<td>Disease Ecology</td>
</tr>
<tr>
<td>428</td>
<td>Insect Biotechnology</td>
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<tr>
<td>429</td>
<td>Insect Biotechnology Lab</td>
</tr>
<tr>
<td>431</td>
<td>Forensic Entomology</td>
</tr>
<tr>
<td>432</td>
<td>Applied Forensic Entomology</td>
</tr>
<tr>
<td>435</td>
<td>Problem Solving in Entomology</td>
</tr>
<tr>
<td>450</td>
<td>Caribbean Conservation</td>
</tr>
<tr>
<td>481</td>
<td>Seminar</td>
</tr>
<tr>
<td>482</td>
<td>Occupational and Professional Development</td>
</tr>
<tr>
<td>484</td>
<td>Professional Internship</td>
</tr>
<tr>
<td>485</td>
<td>Directed Studies</td>
</tr>
<tr>
<td>489</td>
<td>Special Topics in …Field Entomology</td>
</tr>
<tr>
<td>491</td>
<td>Research</td>
</tr>
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</table>

### 12b. Graduate Entomology Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>601</td>
<td>Principles of Systematic Entomology</td>
</tr>
<tr>
<td>602</td>
<td>Insect Biodiversity and Biology</td>
</tr>
<tr>
<td>606</td>
<td>Quantitative Phylogenetics</td>
</tr>
<tr>
<td>608</td>
<td>Principles of Biological Control</td>
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<td>610</td>
<td>Host Plant Resistance</td>
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<td>612</td>
<td>Insect Evolution</td>
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<tr>
<td>614</td>
<td>Insect Community Ecology</td>
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<td>615</td>
<td>Insect Physiology</td>
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<td>617</td>
<td>Acarology</td>
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<tr>
<td>618</td>
<td>Medical and Veterinary Entomology</td>
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<tr>
<td>619</td>
<td>Insect Toxicology</td>
</tr>
<tr>
<td>625</td>
<td>Landscape Ecology</td>
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<tr>
<td>628</td>
<td>Arthropod Genomes</td>
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<tr>
<td>684</td>
<td>Professional Internship</td>
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<td>685</td>
<td>Directed Studies</td>
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<tr>
<td>689</td>
<td>Special Topics in…</td>
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<tr>
<td>690</td>
<td>Theory of Research</td>
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<td>691</td>
<td>Research</td>
</tr>
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### 12c. FIVS Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>FIVS 205</td>
<td>Introduction to Forensic &amp; Investigative Sciences</td>
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<tr>
<td>FIVS 308</td>
<td>Forensic Implications of Inheritance</td>
</tr>
<tr>
<td>FIVS 316</td>
<td>Biotechnology &amp; Forensics</td>
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<tr>
<td>FIVS 401</td>
<td>Forensic Soil Science</td>
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<tr>
<td>FIVS 415</td>
<td>Practice &amp; Principles of Science &amp; Law</td>
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<tr>
<td>FIVS 431</td>
<td>The Science of Forensic Entomology</td>
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<tr>
<td>FIVS 432</td>
<td>Applied Forensic Entomology</td>
</tr>
<tr>
<td>FIVS 435</td>
<td>Case Studies in Problem Solving</td>
</tr>
<tr>
<td>FIVS 481</td>
<td>Seminar</td>
</tr>
<tr>
<td>FIVS 482</td>
<td>Occupational &amp; Professional Development</td>
</tr>
<tr>
<td>FIVS 484</td>
<td>Internship</td>
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<tr>
<td>FIVS 491</td>
<td>Research</td>
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<tr>
<td>Faculty</td>
<td>Fall 2013</td>
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<tr>
<td>Behmer</td>
<td>306</td>
</tr>
<tr>
<td>Bernal</td>
<td>313 (2 sections)</td>
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<tr>
<td>Coates</td>
<td>FIVS 316</td>
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<td>Coulson</td>
<td>625</td>
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<td>Eubanks</td>
<td>425</td>
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<td>Gold</td>
<td>322</td>
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<td>Hamer</td>
<td>208 (13 sections)</td>
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<td>Heintz</td>
<td>FIVS 489 Gene</td>
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<td>Johnston</td>
<td>GENE 481</td>
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<td>Medina</td>
<td>201/201H</td>
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<tr>
<td>Mulenga</td>
<td>423 (2 sections)</td>
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<tr>
<td>Oswald</td>
<td>602</td>
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<tr>
<td>Pietrantonio</td>
<td>615</td>
</tr>
<tr>
<td>Ramirez</td>
<td>489 (Field)</td>
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<td>Tamborindeguy</td>
<td>690</td>
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<tr>
<td>Tarone</td>
<td>ENTO/FIVS 431 &amp; 432 (3 sect)</td>
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<td>Teel</td>
<td>482</td>
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<tr>
<td>Tomberlin</td>
<td>FIVS 415</td>
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<tr>
<td>Vinson</td>
<td>489W</td>
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<tr>
<td>Wharton</td>
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<td>Woolley</td>
<td>601</td>
</tr>
<tr>
<td>Zhu-Salzman</td>
<td>428</td>
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<td>Dominica</td>
<td>Woolley</td>
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<td>Metz</td>
<td>320E</td>
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<tr>
<td>Ramirez</td>
<td>489W</td>
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<tr>
<td>Sconiers</td>
<td>201/201H</td>
</tr>
</tbody>
</table>

**E** = Electronic Delivery  
**H** = Honors Section  
**W**= Writing Intensive Course  
**C**=Communication Course (Meets "W" requirement)
Appendix 14 Entomology Faculty
TAMU Tenured/Tenure Track Faculty

Spencer T. Behmer
Associate Professor
Texas A&M University, TX

Current Appointment: 33% Teaching 62% Research 5% Service

Current Teaching Assignments:
ENTO 306 Insect Physiology - Fall 13, 14, 15
ENTO 201 with honors section General Entomology - Fall 14

Education
1989  B.S.  University of Nebraska (Lincoln, NE) Biology
1993  M.S.  University of Nebraska (Lincoln, NE) Biology/Ecology
1998  Ph.D.  The University of Arizona (Tucson, AZ) Entomology

Professional Experience (at Texas A&M University)
2011-Present  Associate Professor, Department of Entomology, Texas A&M University
2005-2011  Assistant Professor, Department of Entomology, Texas A&M University
2005-Present  Member, Faculty of Ecology & Evolutionary Biology, Texas A&M University (currently associate chair of this program)
2008-Present  Member, Faculty of Neuroscience

Awards
2011  Faculty Developmental Leave (FDL), Office of the Dean of Faculties and Associate Provost (Funded by Association of Former Students). FDL was taken in Jena, Germany, at the Max Planck Institute for Chemical Ecology.
2008  $1000 – Big 12 Faculty Fellowship, College of Agriculture and Life Sciences plus The Dean of Faculties (Texas A&M)
2007  Sole nominee, by the College of Agriculture and Life Sciences (TAMU), for the USDA Award for Excellence in Teaching - New Teacher Award.
2006  Outstanding Professor, Department of Entomology (as voted by students).

Areas of Research Specialization
My lab studies insect physiology and behavior, including their ecological and evolutionary bases. Our approach is “bottom-up”, with an emphasis on using individual behavior as a tool to understand physiological and higher-level processes. We are particularly interested in how key nutrients drive these processes. We use different insects in our research, including grasshoppers, caterpillars, ants, Drosophila, and true bugs.

Selected Publications (Since 2005); *graduate student, **postdoc, ***undergraduate student


**Contracts and Grants (2005)** Total awarded – $2,406,808 (72% is from federal agencies (USDA, NSF))

**Professional Service**

Co-editor – *Journal of Insect Physiology* (since January 2013); 2012 IF = 2.38

Associate editor – *Journal of Animal Ecology* (since December 2013); 2012 IF = 4.84

Associate editor – *BMC Physiology* (since January 2010); 2012 IF (unofficial) = 2.13

Referee for 39 different journals, and grant reviewer for NSF, USDA, plus international agencies
Julio S Bernal  
Associate Professor  
Texas A&M University, TX

Current Appointment: 40% Teaching 55% Research 5% Service

Current Teaching Assignments:  
ENTO 313 (2 sections) Biology of Insects - Spring 14, Fall 14, Spring 15, 16  
ENTO 489 Special Topics in Field Entomology - Spring 14

Education  
1988 B.S. Universidad Autonoma Chapingo, Plant Protection  
1991 M.S. University of California, Riverside, Entomology  
1995 Ph.D. University of California, Riverside, Entomology

Professional Experience  
2005-Present Associate Professor, Texas A&M University  
1999-2005 Assistant Professor, Texas A&M University  
1997-1998 USDA Postdoctoral Fellow, University of California, Riverside  
1995-1997 Postdoctoral Research Scientist, University of California, Riverside

Area of Research Specialization  
Biological control of insect pests, ecology and behavior of parasitoids, insect ecology and behavior, plant defense against insects, including secondary defenses

Publications  
Sixty-seven peer-reviewed articles (25 in the last five years), 10 book chapters, >50 technical, proceedings, and newspaper articles.

Selected Publications (selected last 5 years)  


**Contracts and Grants**

During the period 2008-2013, I have been PI or Co-PI on federal and state grants in support of research on biological control of various pests and maize defense against insects for a total of $350,000.

**Professional Service (selected, last 5 years)**

Panel Manager, USDA, Crops at Risk (CAR), Risk Avoidance & Mitigation (RAMP) programs 2009, 2010

Panel Chair, Ecology and Environmental Sciences, Ford Foundation Predoctoral, Dissertation, and Postdoctoral Fellowships Program, 2009

Panelist, Biological Sciences, Ford Foundation Predoctoral, Dissertation, and Postdoctoral Fellowships Program, 2008

Subject Editor, Journal of Economic Entomology, Biological and Microbial Control, December 2012

Subject Editor, Neotropical Entomology, Biological Control, January 2011
Craig Coates  
Associate Professor  
Texas A&M University, TX

Current Appointment: 40% Teaching 55% Research 5% Service

Current Teaching Assignments:  
FIVS 316 Biotechnology & Forensics - Fall 13, 14, 15  
ENTO 315 Biotechnology and Society - Spring 14, 15, 16  
ENTO 628 Arthropod Genomes and Gene Expression - Fall 14

Education  
1991  B.Sc. (Hons)  Australian National University, Canberra ACT, Australia  
1996  Ph.D.  Australian National University, Canberra ACT, Australia

Professional Experience  
2005-Present  Associate Professor, Texas A&M University, Department of Entomology  
1999-2004  Assistant Professor, Texas A&M University, Department of Entomology  
1999-Present  Faculty Member, TAMU, CS., Interdisciplinary Program in Genetics  
2008-Present  Chair, TAMU, CS., Interdisciplinary Program in Genetics  
2000-Present  Faculty Member, TAMU, College Station, Interdisciplinary Program in Biotechnology

Awards and Honors  
2013  Professor of the Year, Aggie Forensic and Investigative Science Organization  
2010  Outstanding Professor, Department of Entomology

Area of Research Specialization  
Insect Molecular Genetics with a focus on transgenesis and paratransgenesis. Also research into the role of insulator protein function in mosquito genomes.

Publications:  Authored or Co-authored 41 refereed papers, 4 non-refereed papers, and 3 book chapters

Selected Publications  


Contracts and Grants
During the period 2006-2013, principle investigator or co-investigator on grants and contracts totaling more than $620,000 for research on mosquito transgenesis and targeted gene integration.

Professional Service
2007 Ad Hoc Member, NIH – Vector Biology Panel
2008 Entomology Panel Member, USDA – CREES,
2009-Present Associate Editor, Journal of Insect Science,
2011-Present Panel Member, AAAS/KACST Program
Robert N. Coulson
Professor
Texas A&M University, TX

Current Appointment: 33% Teaching 62% Research 5% Service

Current Teaching Assignments:
ENTO 625 Landscape Ecology - Fall 13, 14, 15
ENTO 424 Insect Ecology - Spring 14, 15, 16
ESSM 307 Forest Protection - Spring 14, 15, 16

Education
1969: Ph.D., Entomology, University of Georgia
1967: M.S., Entomology (with distinction), University of Georgia
1965: B.S., Biology, Furman University

Professional Experience
1980-present: Professor, Entomology, Texas A&M University
1976-1980: Associate Professor, Entomology, Texas A&M University
1970-1976: Assistant Professor, Entomology, Texas A&M University
1970-1973: Principal Entomologist, Texas Forest Service
1969-1970: Post doctorate Research Associate, Institute of Ecology, University of Georgia

Awards and Honors
Fellow, Entomological Society of America, 2008.

Henry C. Cowles Award, AAG, Outstanding Published Paper: Simulating the reciprocal interaction of forest landscape structure and southern pine beetle herbivory using LANDIS. Landscape Ecology, 2008.


Faculty Achievement Award for Research, Texas A&M University Former Student Association, 1986.

J. E. Bussart Award, Entomological Society of America, 1985.

Award of Merit in Recognition of Outstanding Achievements in Forest Research, Texas Forestry Association, 1980.

Area of Research Specialization
Entomology Specialties: insect ecology, landscape ecology, forest entomology, integrated pest management

Technical Specialties: knowledge engineering, computer-based problem-solving and decision making, environmental science and management

Publications
Selected Publications


Contracts and Grants (selected)

Development of the Texas Sensitive Crops Website: Sponsor - Texas Department of Agriculture, Specialty Crop Block Grant Program; Amount - $136,477; Duration - 2011-13.


Evaluating Impacts of Hemlock Decline in the Southern Appalachian Mountains: Sponsor - USDA Forest Service, Forest Insect Research; Amount - $349,277; Duration - 2011-2013

Implementation of the Southern Pine Beetle Map/Text Reporter. Sponsor: Sponsor - USDA Forest Service, Forest Health Protection; Amount - $72,801; Duration - 2008-2010

Applied Silvicultural Assessment of Southern Pine Beetle in Southern Pine Stands West of the Mississippi River: Sponsor - USDA Forest Service, Southern Research Station; Amount - $600,000; Duration - 2005-2008.

Professional Service

Entomological Society of America (ESA), International Society for Landscape Ecology (IALE), International Union of Forestry Research Organizations (IUFRO)
Micky D. Eubanks
Professor and Texas AgriLife Research Fellow
Texas A&M University, TX

Current Appointment: 33% teaching, 62% research, 5% service

Current Teaching Assignments:
ENTO 425 Disease Ecology - Fall 13, 14, 15
ENTO 201 General Entomology – Spring 15
ENTO 201 honors General Entomology – Spring 15
ENTO 614 Insect Community Ecology – Spring 15

Education
1989   B.S.   University of Mississippi, Biology
1991   M.S.   University of Mississippi, Biology
1997   Ph.D. University of Maryland, Entomology

Professional Experience
2010-Present  Professor, Department of Entomology, Texas A&M University
2007-2010  Associate Professor, Department of Entomology, Texas A&M University
2011-Present  AgriLife Research Fellow, Texas A&M University
2008–2010  Assistant Department Head for Graduate Programs, Department of Entomology, TAMU
1999-2007  Auburn University, Department of Entomology and Plant Pathology
Associate Professor (03-07), Assistant Professor (99-03)

Awards and Honors
2011–Present  Texas AgriLife Research Fellow
2010-2011  Department of Entomology, Undergraduate Selection for Professor of the Year

Area of Research Specialization
Insect Ecology, Community Ecology, Evolutionary Ecology, Plant-Insect Interactions, Predator-Prey Interactions, Agroecology

Publications: 65 refereed publications, 3 book chapters, co-authored one insect ecology textbook

Selected Publications


**Contracts and Grants**

PI or Co-PI on grants totaling $6,865,933. Most have been federal grants (NSF, USDA, NIH).

**Professional Service:** Department (Texas A&M University)

Assistant Department Head for Graduate Programs, December 2008 – September 2010

Department Head Search Committee, 2010

Apiculture Assistant Professor Search Committee, (chair) October 2010 – September 2010


Medical Entomologist Search Committee, (member) July 2007 – December 2007

Departmental Faculty Advisory Committee (2009 – present)

Departmental Education Committee (2009 – present)

Departmental Promotion and Tenure Committee (member 2011, subcommittee chair 2012, chair 2013)

Numerous ad hoc committees

**Professional**

Subject Matter Editor and Editorial Board Member, Ecology and Ecological Monographs, 2004-2008, 2011 – present

Editor (equivalent to associate or subject editor), Ecology Letters, 2011 - present

United States Department of Agriculture, Panel Member, Pest Management Alternatives Panel, 2012 and 2013

Co-Chair of Program Committee, 2006 Annual Imported Fire Ant Conference, Mobile, AL

Southeastern Branch of the Entomological Society of America, Student Awards Committee

S-267/S-303 Southern Regional Program: Biological Control of Selected Arthropods and Weeds 1999 - 2007
Roger E. Gold
Professor & Endowed Chair, Urban Entomology
Texas A&M University, TX

Current appointment:
42% Teaching 43% Research 10% Extension 5% Service

Current Teaching Assignments:
ENTO 322 Insects and Human Society – Fall 13, 14, 15; Spring 14, 15, 16
ENTO 322E (E-online course) Insects and Human Society – Sum 14, 15, 16; Fall 13, 14, 15
ENTO 403 Urban Entomology – Spring 14, 16

Education
1968 B.S. University of Utah
1970 M.S. University of Utah
1974 Ph.D. University of California-Berkeley

Professional Experience
1989-Present Professor and Endowed Chair in Urban and Structural Entomology, Texas A&M University, College Station, TX
1988-1989 Director of the Water Center and Environmental Programs, Assistant Dean – Agricultural Research Division, Assistant Dean - Nebraska Cooperative Extension Service and Professor of Entomology, University of Nebraska-Lincoln, Lincoln, NE
1985-1988 Head, Department of Entomology/Coordinator for Environmental Programs, Professor of Entomology, University of Nebraska-Lincoln, Lincoln, NE
1977-1985 Coordinator for Environmental Programs and Associate Professor then Professor of Entomology, University of Nebraska-Lincoln, Lincoln, NE
1976-1977 Program Director-Agriculture, Arizona Cooperative Extension Service, University of Arizona
1974-1976 Extension Pesticide Specialist, Arizona Cooperative Extension Service, and Assistant Professor of Entomology and Plant Pathology, University of Arizona

Awards and Honors
2007 Texas A&M Vice Chancellor’s Award in Excellence for Undergraduate Teaching
2009 Excellence in Teaching Undergraduate & Graduate Students, Continuing Education
2011 Pest Management Professional Hall of Fame Award (NPMA)
2012 Texas A&M AgriLife Outstanding Professors section website

Areas of Research Specialization
Publications
Authored or coauthored 138 refereed journal articles; 60 trade magazine articles; 134 abstracts or proceedings; 12 books or chapters; 57 Extension publications.

Selected Publications


Endowments, Contracts and Grants
2008  $ 706,187
2009  $1,056,498
2010  $ 855,916
2011  $ 991,830
2012  $ 595,847
2013  $ 809,207   (Contributions to Urban Building Fund $3,014,500)

Professional Service
ESA: Handbook committee, student competitions, moderators, manuscript reviewer
NCUE: Executive committee 20 years (current secretary/treasurer)
TAMU committees: Promotion & tenure, capital campaign, admissions, educations
Technical committees: National Pest Management Association, Rollins
Kevin M. Heinz
Assistant Provost of Graduate and Professional Studies,
Director of the TAMU Forensic and Investigative Sciences Program,
Professor of Entomology
Texas A&M University, TX

Entomology Appointment (50% FTE): 25% Teaching, 15% Admin., 60% Research

Current Teaching Assignments:
FIVS 123 Forensic Investigations – Fall 14, 15; Spring 15, 16

Education
1979 B.S. Loyola Marymount University, Los Angeles, CA, Biology
1980 M.S. Northern Arizona University, Flagstaff, Arizona, Biology
1989 Ph.D. University of California, Riverside, CA, Entomology

Professional Experience
September 2012 – Present
Assistant Provost; Office of Graduate and Professional Studies; TAMU

January 2011 – Present
Director; Forensic and Investigative Sciences Program; Department of Entomology; TAMU

December 1, 2003 – October 31, 2010
Department Head; Department of Entomology; TAMU

July 15, 2005 – May 1, 2007
Executive Team Leader; TX Ag. Exp. Station Pierce’s Disease Research and Education Program

August 1, 2002 – August 1, 2009
Director; Texas Imported Fire Ant Research and Management Project

Awards and Honors
Entomological Society of America. 2012. Distinguished Achievement Award in Horticultural Entomology.

Texas A&M University College of Agriculture and Life Sciences Dean’s Outstanding Achievement Award for Educational Enrichment Innovation. 2012. The Research Experience for Undergraduates - Expanding Scientific Investigation through Entomology. (Team Award.)

Texas Agrilife and College of Agriculture and Life Sciences Vice Chancellor’s Award in Excellence. 2008. Diversity Recruiting (Entomology Recruitment Team).

Texas Agrilife and College of Agriculture and Life Sciences Vice Chancellor’s Award in Excellence. 2008. Administration.

Southwestern Branch of the Entomological Society of America. 2007. Distinguished Achievement Award in Horticultural Entomology.
Area of Research Specialization
Biological Control, Insect Ecology

Publications
76 Peer-Review, Refereed Journal Articles (16, 2006-13); 43 Non-Peer, Editor-Reviewed, Refereed Journal Articles (9, 2006-13); 9 Editor-Reviewed Book Chapters, 3 Books and Special Editions Edited (1, 2006-13); 37 Symposium Abstracts/Proceedings; 38 Popular Articles (5, 2006-13); 8 Other Publications

Selected Publications


Contracts and Grants
Extramural Grants: (Total of: 73 Funded Proposals Valued at $4,715,433). Only Active Listed
American Floral Endowment. 2013. Beneficial fungal endophytes for effective insect management in floriculture crops. $99,000. (3 years). With Greg Sword (TAMU)
Syngenta. 2012. Insect Management in Ornamentals. $8,000. (1 year).
USDA IR-4. 2012. “The efficacy of several products and rotations for managing thrips.” $10,000. (1 year)
Syngenta. 2011. Insect Management in Ornamentals. $29,000. (1 year)

Intramural Grants: (16 Funded Proposals Valued at $243,220) Only Active Listed
Honors and Undergraduate Research Office, Texas A&M University. 2013. Undergraduate Research Excitement as a Pathway to Talent Expansion and Retention of Underrepresented Students. $7500.

Professional Service
American Academy of Forensic Sciences; Entomological Society of America; International Organization for Biological Control; Sigma Xi; Society of American Florists
J. Spencer Johnston
Professor
Texas A&M University, TX

**Current Appointment:** 52% Teaching 43% Research 5% Service

**Current Teaching Assignments:**
- FIVS 308 Forensic Implications of Inheritance – Fall 13, 15
- GENE 412 Population & Ecological Genetics – Spring 14, 15, 16
- GENE 481 Genetics Seminar – Fall 13, 14, 15; Spring 14, 15, 16
- GENE 482 Genetics II Seminar – Fall 13, 14, 15; Spring 14, 15, 16

**Education**
1967  B.S.  University of Washington, Seattle, WA  Zoology (with honors)
1972  Ph.D.  University of Arizona, Tucson, AZ  Genetics
1975  University of Texas, Austin, TX  Genetics NIH Post-Doctoral Fellow

**Professional Experience**
1997-Present  Professor of Entomology, Dept. Entomology, Texas A&M University
1986-1997  Associate Professor of Entomology, Entomology, Texas A&M University
1980-1986  Associate Professor of Genetics, Plant Sciences, Texas A&M University
1975-1979  Assistant Professor of Biology, Biology, Baylor University

**Awards and Honors**
1968-72  NDEA Fellow, University Of Arizona
1972-75  NIH Fellow
1992  Outstanding Undergraduate Genetics Professor
1996  Outstanding Undergraduate Genetics Professor
1999  Elected Visiting Senior Fellow, Department of Zoology, Oxford University
2003  Elected Visiting Senior Fellow, St. Hugh's College, Oxford University
2004  Paper in Journal of Insect Molecular Biology (JIMB) cover for the year 2005
2005  Paper in Ann. Botany listed in Science Citation Index as most cited in its field.
2005  Two papers in Ann. Botany listed among 50 most cited in the journal history.
2006  Author of the year: Jn. Insect Molecular Biology - (865 citations).
2006  Four papers in Ann. Botany listed among 10 most cited in the journal history.

**Area of Research Specialization**
My laboratory determines genome size for a wide variety of plants and animals, with emphasis on genome size of Arthropods. This work is done both to inform complete genome sequencing projects, the evolution of genome architecture.

**Publications:**  Authored or coauthored more than 95 refereed papers and 6 book chapters
Selected Publications


Contracts and Grants: During the period 2006 to 2013 PI or Co-PI on grants totaling $380,000

Professional Service

Provided reviews of more than 100 publications including reviews for Science, Ann. Entomology, Nature, Insect Molecular, PLOS, and Journal of Molecular Biology.

Reviews for NSF, NIH, USDA, NYAS, CAS, 2010-present. I5K selection committee

2008-Present Coordinating board. Whole Systems Genomics Institute. TAMU
Raul F. Medina
Associate Professor
Texas A&M University, TX

Current Appointment: 25% Teaching 70% Research 5% Service

Current Teaching Assignments:
ENTO 201 & ENTO 201 Honors General Entomology – Fall 12, 15
ENTO 401 Principles of Insects Pest Management – Fall 13, 14, 15
ENTO 610 Host Plant Resistance (TEAM) – Spring 14, 15, 16
ENT 689 Special Topics – IPM – Fall 13, 14, 15

Education
1995 B.S. Universidad Nacional Agraria La Molina, Lima-Peru
1999 M.S. University of Maryland
2005 Ph.D. University of Maryland

Professional Experience
2012-Present Associate Professor Texas A&M University, Department of Entomology
2006-2012 Assistant Professor Texas A&M University, Department of Entomology

Awards and Honors
2013 National Evolutionary Synthesis Center (NESC), Scholarship to Attend the Evolution of Indoor Biome Workshop and Discussions. Durham, NC
2011 Integrated Pest Management Team Award for the study of the population structure of the potato tuberworm Phthorimaea operculella in the US. Oregon State University-University of Florida-Texas A&M University-Washington Potato Commission. Pacific Branch Entomological Society of America

Area of Research Specialization
I study the influence of evolutionary ecology principles in agro-ecosystem communities. My research questions explore the role that ecological factors and micro evolutionary forces play in pest and natural enemy population genetics. I am currently studying how host-plant and bacterial associations, morphological differentiation, and mating behavior influence the way insect populations are genetically structured.

Publications: Authored or coauthored 24 refereed papers, 7 non-refereed papers and 1 book chapter

Selected Publications:
*Undergraduate students, **Graduate students, *** Post-doc, †Graduate students, post-docs or visiting scientists.


Contracts and Grants
During the period 2006-2013, principal or co-investigator on grants totaling more than $432,392 for research associated with evolutionary ecology in agro-ecosystems.

Professional Service
Molecular Ecology Top Reviewer
Subject Editor (Molecular Entomology Section) of the Journal of Economic Entomology
Ad Hoc Reviewer for NSF, USDA, FONDECYT (Chile) and CONACYT (Mexico)
Panel member for Ford Foundation Fellowships Panel-Science since 2012
USDA Exchange International Faculty mentor 2009-2010.
Mentor for the Graduate Teaching Academy Mentor Program. Texas A&M University 2007-2013
SEEDS Meeting Mentor for the Ecological Society of America
Albert Mulenga
Associate Professor with tenure
Texas A&M University, TX

**Current Appointment:** 33% Teaching 62% Research 5% Service

**Current Teaching Assignments:**
ENTO 618 Medical and Veterinary Entomology – Spring 14, 16
ENTO 423 Medical Entomology (2 sections) – Fall 13
ENTO 423 Medical Entomology (4 sections) – Fall 14, 15; Spring 15, 16

**Education:**
- 1990 BVM University of Zambia, Lusaka, Zambia, Veterinary Medicine
- 1991 Certificate ICIPE, Nairobi, Kenya, Tick IPM
- 1993 MVS University of Liverpool, Liverpool, England, Veterinary Parasitology
- 1999 Ph.D. Hokkaido University, Sapporo, Japan, Veterinary Medicine

**Professional Experience (in reverse chronological order)**
- 2012-Present  Associate Professor, Texas A & M University, Entomology
- 2005-2012  Assistant professor, Texas A & M University, Entomology
- 2001-2005  Post-doctoral fellow, University of Maryland, School of Medicine, Immunology & Microbiology, Baltimore Maryland
- 1999-2001  Post-Doctoral fellowship, Japanese Society for Advancement of Science (JSPS) Hokkaido University, Graduate School of Veterinary Medicine, Disease control, Sapporo, Japan
- 1993-1994  Lecturer (Veterinary parasitology), University of Zambia, Samora Machel School of Veterinary Medicine, Para-clinical, Lusaka, Zambia
- 1991-1992  Staff development fellowship (vectors and vector borne pathogens), University of Zambia, Samora Machel School of Veterinary Medicine, Para-clinical, Lusaka, Zambia

**Awards and Honors**
- 1999-2001  Japanese Society for promotion of Science, post-doctoral fellowship, Hokkaido University, Sapporo, Japan
- 1999  International graduate student class of 1999 graduation speech (selected), Hokkaido University, Sapporo, Japan

**Area of Research Specialization**
My research focuses on understanding the molecular basis of how ticks interact with the host and/or tick borne disease agents as a means of discovering targets for anti-tick vaccine development. We are also investigating medicinal applications of tick saliva

**PUBLICATIONS** = 43 (Including two returned for corrections), and one book chapter
SELECTED PUBLICATIONS


Grants and Contracts (TOTAL = $1,831,644, TO PROGRAM = 1,704,119)

NIH/NIAID (RO1, R21, R03, Supplements) = $1 (total to program)

Texas AgriLife Research = $193000 (Program = $67000)

Departmental = $3050 (Program = $1525)

Invited speaker/grant review = $3017.00

Professional Service

Entomological Society of America

2012 Symposium co-organizer symposium “Functional Genomics of Tick Pathogen Interface” Little Rock, Arkansas

2011 Co-organizer with Patricia Pietrantonio of the symposium “Acarology in the Post Genomic Era” at the Southeastern Branch Entomological Society, San Juan, Puerto Rico

2008 Co-organizer of the symposium “Tick Genomics and Beyond – New advances in Tick-borne Disease Systems” at the 56th Entomological Society of America Conference, Reno, Nevada, Texas A & M University

2009 Co-author of the white paper to create the TAMU Center for the Group of Experimental Researchers on Microbiology and their Arthropod (GERM).
John D. Oswald  
Professor and Curator  
Texas A&M University, TX

**Current Appointment:** 40% Teaching 55% Research 5% Service

**Current Teaching Assignments:**
- ENTO 305 Evolution of Insects Structure – Fall 13, 14, 15
- ENTO 489 Special Topics in Field Entomology – Fall 13, 14, 15
- ENTO 602 Insect Biodiversity and Biology – Spring 14, 15, 16
- ENTO 612 Insect Evolution – Spring 14, 16

**Education**
- 1982 B.S. Oregon State University, Forest Management
- 1985 M.S. Oregon State University, Entomology
- 1991 Ph.D. Cornell University, Systematic Entomology

**Professional Experience**
- 2010-Present  Professor, Texas A&M University, College Station, Department of Entomology
- 1996-Present  Curator, Texas A&M University Insect Collection
- 2001-2010  Associate Professor

**Areas of Research Specialization**
Global systematics of the superorder Neuropterida (Insecta: Neuroptera, Megaloptera and Raphidioptera); insect phylogeny and evolution; biodiversity informatics; insect/arthropod research collection direction and development.

**Selected Publications**


Selected Contracts and Grants

NSF: BIO: EF: Advancing Digitization of Biological Collections (ADBC), PI (TAMU Collaborator), Digitization Thematic Collection Network (TCN): Collaborative Research: Southwest Collections of Arthropods Network (SCAN): a model for collections digitization to promote taxonomic and ecological research, July 2012-July 2015 (36 months), $362,414


NSF: DEB: PEET, PI, Antlion Systematics: building global expertise in the Myrmeleontidae (Insecta: Neuroptera), 2010-2014 (60 months), $749,496

Texas Parks & Wildlife Department: State Wildlife Grant, Invertebrates of Special Concern: Beetles (Insecta: Coleoptera) of the South Texas Ecoregions, PI (with Co-PI Ed Riley), 2008-2011 (36 months), $162,690

NSF: BRC, Entomological Bioinformatics at the Texas A&M University Insect Collection, PI, 2006-2009 (36 months), $388,573

Selected Professional Service

Entomological Society of America

International Association for Neuropterology
Patricia V. Pietrantonio
Professor and AgriLife Research Fellow
Texas A&M University, TX

Current Appointment: 33% Teaching 62% Research 5% Service

Current Teaching Assignments:
ENTO 615 Insect Physiology – Fall 13, 14, 15
ENTO 619 Insect Toxicology – Spring 14, 15, 16
ENTO 690 Theory of Research – Spring 14, 15, 16

Education
1976-1982 Ingeniera Agron University of Buenos Aires, School of Agronomy (Arg.), Agriculture
1987-1990 M.S. University of California, Riverside, California, Entomology
1990-1995 Ph.D. University of California, Riverside, California, Entomology

Professional Experience
2009-Present* Professor and AgriLife Research Fellow, TAMU, CS., Department of Entomology
2002-2009 Associate Professor with tenure
*Associate member of the Faculty of Toxicology and member of the Faculty of Neuroscience
1996-2002 Assistant Professor, TAMU, CS., Department of Entomology

Awards and Honors
2013 College of Agriculture Dean’s Outstanding Achievement Award for Faculty Mentoring, TAMU
2007 Outstanding Service Award by the Entomological Society of America (ESA) for being Subject Editor 2006-2007 for the journal Environmental Entomology. Sloan Faculty Mentor approved by the Alfred P. Sloan Foundation in the Sloan Minority Ph.D. Program. Plaque from Sloan Foundation.
2006 Texas A&M Experiment Station (TAES) Fellow, for significant scholarly accomplishments and meaningful contributions to science through exceptional research leadership and grantsmanship.

Area of Research Specialization
Insect physiology and toxicology with emphasis in hormonal signaling and target validation of G protein-coupled receptors for neuropeptides and biogenic amines involved in water balance (diuresis/excretion). The strength of the program is in the integration of molecular biology, cellular biology, biochemistry, functional characterization of recombinant receptors and tissue and organismal physiology. For phenotype characterization we perform RNAi followed by qRT-PCR validation and functional assays in vitro and in vivo. The P.I. is also part of the tick genome project having annotated and cloned neuropeptide GPCRs from Ixodes scapularis. Many species are investigated: mosquito Aedes aegypti and ticks Rhipicephalus microplus and Ixodes scapularis, fire ants Solenopsis invicta and lepidopterans Helicoverpa zea and Manduca sexta. The P.I. also collaborates with off-Campus faculty to deliver insecticide resistance monitoring information for cotton pests.
Publications

Authored or co-authored 46 refereed publications (as Oct. 2013 one is under review), 17 papers in Proceedings and 7 book chapters. The PI Graduate students are indicated by ¶ and post-docs by ♦

Selected Publications


Contracts and Grants

2008-2013: Principal investigator of two federal grants (USDA-AFRI and NSF-IOS) totaling $1.092 million; grants from Cotton Incorporated ($116K, 2006-2013); competitive funds from the Fire Ant/Invasive Ants Initiative ($695, 2006-2014) and vector biology intramural funds ($ 55K). Total= $1,958,000.

Professional Service

David Ragsdale
Professor and Head
Texas A&M University, TX

Current Appointment:  Administration - Department Head of Entomology

Education
1974  B.A.  Pasadena/Point Loma College, San Diego, CA, Biology/ Chemistry
1977  M.S.  Louisiana State University, Baton Rouge, LA, Entomology/Microbiology
1980  Ph.D.  Louisiana State University, Baton, Rouge, LA, Entomology/Microbiology

Professional Experience
2010-Present  Professor and Head, Department of Entomology, Texas A&M University
2009-2010  Interim Head, Department of Entomology, University of Minnesota
2008-2009  Director of Graduate Studies, Entomology Program, University of Minnesota

Awards and Honors
2008  Carol Mortensen Invasive Species Management Award, Minnesota Invasive Species Council
2008-2009  Nominee of the Southern Association of Agricultural Experiment Station Directors for the USDA regional project National Award of Excellence in Research
2009  National Award of Excellence in Research, USDA
2009  FAME Award, Faculty Award for Mentorship in Entomology, Entomology Graduate Student Organization, Frenatae
2009  Entomological Foundation, IPM Team Award sponsored by Dow AgroSciences for work by the Soybean Aphid IPM Team

Area of Research Specialization
My research focus is vector ecology with an emphasis on aphid-transmitted plant viruses. The focus of my most recent work centered on the management of the soybean aphid, an newly discovered invasive aphid from Asia. My lab worked on developing an economic threshold for soybean aphid, classical biological control, fungal pathogens associated with soybean aphid, and on host plant resistance. I also collaborated broadly with scientists across the country who were involved in using insects to control invasive perennial weeds.

Publications:  239 Totals
98 peer or editor reviewed publications, 81 journal, 17 contributed book chapters
141 Other communications:  11 electronic publications, 24 popular, extension, or trade publications, 48 published abstracts or proceedings, and 60 misc. non-refereed publications
Selected Publications


Costamagna, A. C., McCornack, B. P. and Ragsdale, David W. 2013. Within-plant bottom-up effects mediate non-consumptive impacts of top-down control of soybean aphids. PLoS ONE 8(2) Article Number: e56394 DOI: 10.1371/journal.pone.0056394


Contracts and Grants Total number of grants awarded: 142
47 national competitive grants from federal agencies
49 grants from commodity boards, state and regional funding sources
19 grants from state agencies
14 grants from competitive University and Collegiate sources
13 grants from Industry partners
Total funds awarded since 1980: $16,506,983 (includes total award for multi-authored grants, both direct and indirect costs). Funds from these grants used by DWR to support graduate students and post-docs in the Ragsdale lab or for students I’ve co-advised: $4,448,388

Professional Service
2007-2009 CFANS Faculty Consultative Committee, Chair 2007-2008
2007-2011 NCB ESA Secretary Treasurer
2012-2014 Governing Board ESA, Southwestern Branch Representative
Juliana Rangel-Posada
Assistant Professor in Apiculture
Texas A&M University, TX

**Current Appointment:** 30% Teaching 65% Research 5% Service

**Current Teaching Assignments:**
ENTO 320 Honey Bee Biology – Spring 14, 15, 16; Fall 14
ENTO 489 Honey Bee Biology (Lab) – Spring 15

**Education**
2004  B.S.  University of California, San Diego, Ecology, Behavior and Evolution
2010  Ph.D.  Cornell University, Neurobiology and Behavior

**Professional Experience**
2013-Present  Assistant Professor of Apiculture, Department of Entomology, TAMU, CS., TX
2010-2012  NSF Postdoctoral Research Fellows in Biology, NC State University, Raleigh, NC

**Awards and Honors**
2013-2014  ADVANCE Scholar, Texas A&M University
2010-2013  National Science Foundation (NSF) Postdoctoral Research Fellow
2005-2009  National Science Foundation (NSF) Graduate Research Fellow
2004-2009  State University of New York (SUNY) Graduate Research Fellows
2008  Eastern Apicultural Society Foundation for Honey Bee Research Scholar
2008  Lewis and Clark Fund for Exploration and Field Research Fellow

**Area of Research Specialization**
I am generally interested in the reproductive biology of the honey bee *Apis mellifera*. My laboratory focuses on understanding the biological and environmental factors that affect reproductive quality and decisions of honey bee queens and drones, and how those factors also influence colony-wide fitness. Using field and laboratory techniques, we conduct basic biology that encompass the areas of behavioral ecology, toxicology, physiology, and genomics, to understand how reproductive competitiveness is modulated. Our studies also have an applied component, and results from our experiments are used to better serve the apiculture community in Texas and the United States.

**Publications:** Authored or coauthored 12 refereed papers and authored 5 non-refereed papers

**Selected Publications**


**Contracts and Grants**

As a new faculty member in the Department of Entomology, Dr. Rangel-Posada is currently being funded by startup funds provided by Texas AgriLife Research and Texas A&M University’s Department of Entomology.

**Professional Service**

Vice-President Elect, American Association of Professional Apiculturists. January 2013-Present
Graduate Student Recruitment Committee, Department of Entomology, TAMU. August 2013-Present
Capital Campaign Committee, Department of Entomology, TAMU. August 2013-Present
Graduate Research Forum Committee, Department of Entomology, TAMU. August 2013-Present
Search Committee Member, Texas Chief Apiary Inspector, TAMU. August 2013-Present
Faculty Advisor, Café y Miel Program for Beekeepers in Latin America. September 2012-Present
Monthly column writer, Texas Beekeepers Association Newsletter. January 2013-Present
Michel A Slotman
Assistant Professor
Department of Entomology
Texas A&M University, TX

Current Appointment: 33% Teaching 62% Research 5% Service

Current Teaching Assignments:
ENTO 210 Global Public Health Entomology – Fall 13, 14, 15; Spring 14, 15, 16

Education
1997  B.S.  Biology, Wageningen University, The Netherlands
1997  M.S.  Biology, Wageningen University, The Netherlands
1999  M.S.  Biology, Yale University, New Haven, CT
2000  M.Ph.  Biology, Yale University, New Haven, CT
2003  Ph.D.  Ecology and Evolutionary Biology, Yale University, New Haven, CT

Professional Experience
2007-2008  Associate Research Scientist, Department of Ecology and Evolutionary Biology, Yale University, New Haven
2005-2007  Post-Doctoral Associate, Department of Ecology and Evolutionary Biology, Yale University, New Haven
2003-2005  Post-Doctoral Fellow, Department of Entomology, University of California at Davis

Awards and Honors: None

Area of Research Specialization
My research focuses on the evolutionary genetics of disease transmitting mosquitoes, primarily the members of the Anopheles gambiae complex. My lab uses genetic mapping, RNAseq and population genetic approaches to study the speciation process in this recently diverged species complex. In addition, my lab studies the genetic basis of human host preference in An. gambiae and the role of microRNA’s in regulating host seeking behavior of Aedes aegypti. Finally, my lab also is involved with the Bioko Island Malaria Control Project for which we conduct entomological monitoring analyses and have just completed a set of operational studies questions related to vector behavior, population size impacts and insecticide resistance.

Publication: Authored or co-authored 28 refereed papers

Selected Publications
Hodges TK, G Athrey, KC Deitz, HJ Overgaard, A Matias, A Caccone, MA Slotman (2013). Large fluctuations in the effective population size of the malaria mosquito Anopheles gambiae s.s. during vector control cycle. Evolutionary Applications (early online view).


Reddy MR, A Godoy, K Dion, A Matias, K Callender, AE Kiszewksi, I Kleinschmidt, F Ridl, JR


**Contracts and Grants**
During the period 2008-2013, I was the principal investigator on grants totaling $2,238,489 for research (and equipment). Of this $1,793,680 was attributable to my lab.

**Professional Service**
Member of the Executive Committee for the Ecology and Evolutionary Degree program at TAMU (in charge of membership and travel grants)
Organizer of Evolution symposium at TAMU (Oct 28<sup>th</sup> + 29<sup>th</sup>)
Outside reviewer NIH vector biology study section
Member of the technical advisory group of the Bioko Island Malaria Control Project II and III
Gregory A. Sword
Professor and Charles R. Parencia Chair in Entomology
Texas A&M University, TX

Current Appointment: 25% Teaching 70% Research 5% Service

Current Teaching Assignments:
ENTO 681 Seminar – Fall 13, 15
ENTO 402 Field Crop Insects – Spring 14, 15, 16

Education
1992  B.S.  University of Arizona, Department of Ecology and Evolutionary Biology
1998  Ph.D.  University of Texas at Austin, Department of Zoology

Professional Experience
2011-Present  TAMU, Department of Entomology, Professor and Charles R. Parencia Chair in Entomology, University of Sydney, School of Biological Sciences
2009-2010  Associate Professor and Head of First Year Biology
2006-2009  Senior Lecturer, USDA-ARS, Northern Plains Research Laboratory

Awards and Honors
2013  Geoffrey G.E. Scudder Lecture in Entomology, University of British Columbia
2011  Distinguished Service Award for career achievements in research conducted at the University of Texas, Brackenridge Field Laboratory
2011  Top 10 University of Sydney Lecturer of the Year (#1 in the School of Biological Sciences, #6 University-wide)
2009  Perry Adkisson Distinguished Speaker Award

Area of Research Specialization
Research in the lab spans topics in ecology, evolution, genetics and behavior including microbial ecology, endosymbionts, migration and movement, population genetics, functional genomics, phenotypic plasticity, nutritional ecology, collective behavior, plant-herbivore-predator interactions, and insect and nematode IPM.

Publications: 64 journal articles, 5 book chapters

Selected Publications


Contracts and Grants
From 2008-2013, PI or co-PI on grants totaling $2,004,374 for research in insect/nematode ecology, behavior or IPM. Career total = $2,526,792.

Professional Service

Editorial Boards:
2009-2011 Australian Research Council, Biological Sciences and Biotechnology Panel
2010-2011 Special Guest Editor, Psyche, Special Issue "Locusts and Grasshoppers: Behavior, Ecology, and Biogeography"
2003-2006 Executive Director of the Orthopterists’ Society
Cecilia Tamborindeguy
Assistant Professor
Texas A&M University, TX

Current Appointment: 33% Teaching 62% Research 5% Service

Current Teaching Assignments:
ENTO 690 Theory of Research – Fall 13, 14, 15
ENTO 435C (C-communication) Problem Solving in Entomology – Spring 14, 15, 16
ENTO 489 Special Topics - Study Abroad - Summer 14, 15, 16

Education
1999 Agronomy diploma, INP-ENSAT, Toulouse, France
1999 M.S. INP-ENSAT, Toulouse, France, Plant Biosciences
2004 Ph.D. INP-ENSAT, Toulouse, France, Plant Biosciences

Professional Experience
2008-Present Assistant Professor, Texas A&M University, CS., TX,
2006-2008 Post-doctoral Research Associate, Cornell University, Ithaca, NY, Plant Pathology

Awards and Honors
1995 Bourse d’Excellence du Gouvernement Francais, French Government, 2 years award given to the best student of international French schools to study in France in the very competitive and restigious Classes Preparatoires
1997 Bourse d’Excellence du Gouvernement Francais, French Government, 3 years award to Study in a Grande Ecole, awarded for being the highest ranking of the Classe Preparatoire
2000 Graduate Research Fellowship, French Government,: 3 years fellowship

Area of Research Specialization
I study insect vectors of plant pathogens, the transmission of plant pathogens by insect vectors, and the interaction between insects and microorganisms. My laboratory uses a combination of genomic, transcriptomic, bioinformatics, molecular biology and behavioral approaches. Presently, my work focuses primarily in psyllid-Liberibacter associations.

Publications: Authored or co-authored 20 refereed papers and 14 non-refereed papers

Selected Publications
Cecilia Tamborindeguy, Michael S. Bereman, Stacy Deblasio, David Igwe, Dawn M. Smith, Frank White, Michael J. MacCoss, Stewart M. Gray and Michelle Cilia. 2013 Genomic and proteomic analysis of Schizaphis graminum reveals cyclophilin proteins are involved in the transmission of Cereal yellow dwarf virus. PlosOne, 8: e71620.

Levy J., Hancock J., Ravindran A., Gross D., Tamborindeguy C., Pierson E. 2013 Methods for rapid and effective PCR-based detection of ‘Candidatus Liberibacter solanacearum’ from the insect vector Bactericera cockerelli: streamlining the DNA extraction/purification process. Journal of Economic Entomology, 106:1440-1445
Huot O., Nachappa P., Tamborindeuy C. 2013 the evolutionary strategies of plant defenses have a dynamic impact on the adaptations and interactions of vectors and pathogens. Insect Science, 20: 297-306


Cilia M., Howe K., Fish T., Smith D., Mahoney J., Tamborindeuy C., Burd J., Thannhauser T.W. and Gray S. 2011 Biomarker discovery from the top down: Protein biomarkers for efficient virus transmission by insects (Homoptera: Aphididae) discovered by coupling genetics and 2-D DIGE. Proteomics, 11: 1285-1291


The International Aphid Genomics Consortium, 2010, Genome sequence of the pea aphid Acyrthosiphon pisum. PLOS Biology 8: e1000313.


Contracts and Grants
During the period 2008-2013 principal or co-investigator on grants, contracts and gifts totaling more than $1,800,000 for research and education.

Professional Service
Entomological Society of America (ESA) Books and Media Reviews Editorial Board (2012-Present)
Panel member, USDA- Plants and Environment: Genetics and Disease Resistance 2013
Panel member, USDA-NIFA 2013
Aaron M. Tarone
Assistant Professor
Texas A&M University, TX

Current Appointment: 40% Teaching 55% Research 5% Service

Current Teaching Assignments:
ENTO/FIVS 431 & 432 Forensic Entomology & Applied Forensic Entomology (3 sections) – Spring 14, 16; 15 (no sections)
FIVS 435C (C-communication) Case Studies in Problem Solving – Spring 14, 15, 16

Education
2001 B.S. University of California at Davis, Genetics
2007 Ph.D. Michigan State University, Zoology

Professional Experience
2009-Present Assistant Professor-Molecular Forensic Sciences, Texas A&M University, Department of Entomology
2007-2009 Postdoctoral Research Associate, University of Southern California, Section of Molecular and Computational Biology
2001-2003 Postgraduate Researcher, University of California at Davis, Section of Evolution and Ecology

Awards and Honors
Department of Zoology Travel Awards (2004, 2005, 2007), Michigan State University
Graduate Enhancement Award (2006), Michigan State University
Dissertation Completion Fellowship (2006), Michigan State University
NIH/NIEHS NRSA postdoctoral fellowship was approved for funding in 2009, but declined as I also had been offered my current position at TAMU
Department of Entomology, Texas A&M University, Outstanding Professor of the Year for Academic Year 2010-2011

Area of Research Specialization
I study the evolution of life history traits and their plasticity in flies. I use the Drosophila model system to learn first principles about fly evolutionary ecology and apply those concepts to carrion fly (currently blow flies and black soldier flies) biology as a means of developing more effective applications of forensic entomology, maggot therapy, waste management, and pest management.

Publications
Authored or coauthored 28 refereed papers (4 invited), one invited educational article, an invited author for one book chapter, an invited author/co-editor of another book.
Selected Publications


Contracts and Grants

During the period of 2009-Present I have been a principle or co-investigator of 4 internal, 1 state, and two federal grants, totaling more than $1,130,000.

Professional Service

Member of the Genetics Society of America, Entomological Society of America, and the North American Forensic Entomology Association.

Co-organized the 2011 NAFEA meeting in College Station, TX.

Moderated sessions at the 2013 ESA meeting in Austin, TX.

Served as a reviewer for 13 refereed journals spanning forensic science, biology, and statistical topics.
Pete D. Teel
Professor
Associate Department Head for Academic Programs
Associate Director, Forensic & Investigative Sciences Program
Department of Entomology
Texas A&M University, TX

Current Appointment: 34% Teaching; 33% Research; 33% Administration

Current Teaching Assignments:
ENTO 482 Occupational and Professional Development – Fall 13, 14, 15
FIVS 482 Occupational & Professional Development – Fall 13, 14, 15
ENTO 617 Acarology – Fall 14

Education
1969  B.S.  Oklahoma State University, Entomology
1970  M.S.  Texas A&M University, Entomology
1978  Ph.D.  Oklahoma State University, Entomology

Professional Experience
2013-Present  Associate Director, Forensic & Investigative Sciences Program
1994-Present  Associate Department Head for Academic Programs, Entomology
1991-Present  Professor, Department of Entomology, TAMU
1985-1991  Associate Professor, Department of Entomology, TAMU
1979-1985  Assistant Professor, Department of Entomology, TAMU

Awards and Honors
2008  Vice Chancellor’s Award in Excellence in Diversity Efforts, Entomology Team Award
2002  Association of Former Students, Distinguished Achievement Award–Teaching-College Level

Area of Research Specialization
Biology, ecology, management and epidemiology of ticks and tick-borne diseases.

Selected Publications


**Contracts and Grants**


**Professional Service**

Member, College of Agriculture & Life Sciences, Tenure & Promotion Committee, 2011-2013.

*Tick Identification and Foreign Animal Disease Awareness*, Training Workshops for Texas Animal Health Commission and USDA, APHIS, Veterinary Services, 1996-2013


*Forensic Acarology Workshop*, North American Forensic Entomology Association (NAFEA) 20 July 2011, College Station, TX. Participants included 7 foreign countries.

Invited testimony, Texas House of Representatives, Committee on Agriculture and Livestock, ticks and tick-borne diseases, 26 May 2010, Alice, TX.

Member, Agricultural & Food Policy Center, Congressional Response Team, Research Report 10-2 (May 2010) entitled *Economic Impact of Expanded Fever Tick Range*.

Chair, NP-104 Peer Review Panel, USDA, ARS, Office of Scientific Quality and Assurance, Program Proposal Review. May-June 2009.
Jeffery K. Tomberlin
Associate Professor
Department of Entomology
Texas A&M University, TX

Current Appointment: 47.50% Teaching 47.50% Research 5% Service

Current Teaching Assignments:
FIVS 415 Practice & Principles of Science & Law – Spring 14, 15, 16
FIVS 481W (W-writing) Seminar – Spring 14, 15, 16
ENTO 681 Seminar – Spring 14, 16

Education
B.S. 1993 University of Georgia, Athens, Georgia, Biology
M.S. 1996 Clemson University, Clemson, South Carolina, Entomology
Ph.D. 2001 University of Georgia, Athens, Georgia, Entomology

Professional Experience
2012-Present  Associate professor
2007- 2012  Assistant professor
2002- 2007  Assistant professor and extension specialist

Awards and Honors
Forensic & Investigative Sciences Faculty of the Year. 2012. Department of Entomology, Texas A&M University.
Texas Environmental Excellence Award in the Agriculture, 2nd Place. 2009. Texas Commission on Environmental Quality.
Outstanding Faculty Award. 2008. Undergraduate Entomology Organization, Department of Entomology, Texas A&M University.
Area of Research Specialization

His research is primarily focused on tritrophic interactions as it relates to elucidating the pre-colonization interval of decomposing human remains by blow flies. His laboratory examines the mechanisms regulating blow fly arrival, colonization and development patterns on vertebrate carrion. His central hypothesis is that quorum sensing by microbes serves as a key mode through which information related to resource quality is communicated to invertebrates locating, assessing, and utilizing these resources.

Publications

(Approximately 54 refereed publications, 20 proceedings, 20 extension articles, 6 book chapters 3 books, and 1 DVD to date)


Contracts and Grants

Approximately, $1.3M received through competitive grants since arriving at Texas A&M in December 2002. He has also received $200K through internal grants, $172K through industry, and students in his lab have received $500K through fellowships, awards and grants.

Professional Service

Founder of the North American Forensic Entomology Association. President of the association.


Chair, Sec., Program Chair for Pathology/Biology Section, American Academy of Forensic Sciences.
S. Bradleigh Vinson
Professor
Texas A&M University, TX

Current Appointment: 25% Teaching 70% Research 5% Service

Current Teaching Assignments:
ENTO 481W (W-writing) Seminar – Fall 13

Education
1961 B.S. The Ohio State U., Columbus, Ohio
1963 M.S. Mississippi State University, State College, Miss.
1965 Ph.D. Mississippi State University, State College, Miss.
1965 Institute Nuclear Studies, Oak Ridge, TN; Radioisotope Safety, NC. State U. Adv. Studies

Professional Experience
1975-Present Texas A&M Univ., Department Entomology, Professor
1965-1969 Mississippi State Univ., Associate Professor

Awards and Honors
2002 Designated most “Highly Cited Researchers” by ISI
2005 Designated senior fellow of the Texas Ag. Exptl. St.
Senior Faculty Fellow 2006
Keynote Speaker International Parasitoid Conference, Italy 2007
Distinguished Research Medal International Society of Hymenoptera 2012

Area of Research Specialization
My emphasis in Entomology has been in 4 areas. 1. Imported Fire ant involves physiology, behavior, chemical ecology, classic ecology +some management. 2. Chemical ecology, behavior and physiology of several parasitic hymenoptera that attack tobacco budworm’s that included discovery of Polydna viruses. 3. Biology, behavior and ecology of solitary Centris bees in Costa Rica. 4. In addition I have first publications on vertebrate pesticide resistance and 4. Manipulating insects through electronic systems in recent years. (Co-operation in EE).

Publications
I have 364 papers in major reviewed journals including Science, Nature, J, Virology, J. Ultra-structural Res. In addition I have 87 book chapters, 12 Annual Rev. Articles, 7 Books Edited (also 1 in progress). I also have or do serve on the editorial board of a number of journals and I am editor of a “Special Issue of the “Journal of Biological Control” dealing with China. Plus an issue of “Insect Science” with a picture cover by me along with a review article on the IFA (Drees has an article in it also).
Selected Publications
I have 12 published book reviews (junior on 3) and 1 major book in progress, 12 review articles (I am senior on 9 and single author on 6 of the 9), Edited 7 books (senior 4 and 1 as single). It is hard to select some publications over others as I have a number that have open up new areas of research or thought. (polyDNA viruses; Parasites of herbivores first attracted to damaged plant; Fire Ant biology, Mechanical Control of insects. In addition I have 9 that are not typical such as “testifying before congress on the fire ant” or the conservation of the name *Solenopsis invicta* in the Bulletin of Zoological Nomenclature.

Contracts and Grants
(some of these were shared but I was instrumental in writing (with help) for all of them).
From 1976 to 78 I had 17 grants totaling $1,373,000; 1979 to 1988 I had 38 grants totaling $6,366,306; 1989 to 1998 I had 45 grants totaling $3,006,990; 1999 to 2006 I had 48 grants totaling $2,934,693; 2007 to 2013 I had funds I Entomology and in Electrical engineering {15 grants totaling $540,462.[overall total $14,221,451.00]}.

Professional Service
Graduate Student Awards Committee, Student Enhancement Committee, Physiology Search Committee 2004-2006; P&T Committee 2008-2011; Chair P&T Research Committee 2010-2011; Member Honey Bee Search Committee 2010-2011; Member AgriLife P&T Committee 2009-2011; President-Entomology Found 2008; Burroughs Bibliophiles board, 2006-Present. Chair 2013 Pest Ant and IFA Conf., San Antonio, TX; 2011 IFA Conf., Galveston, TX., Symposia Organizer of 10 national or international symposia. Committee Chair or member of some 42 organizations ranging from international to regional and still active in 5 as of 2013.
James B. Woolley
Professor
Texas A&M University, TX

Current Appointment: 43% Teaching 52% Research 5% Service

Current Teaching Assignments:
ENTO 301 Biodiversity and Biology of Insects – Spring 14, 15, 16
ENTO 601 Principles of Systematic Entomology – Fall 13, 15
ENTO 606 Quantitative Phylogenetics (Team-mateos) – Spring 14, 15, 16
ENTO 485 Directed Studies – Dominica – Spring 14, 15, 16
Dominica – Summer 14, 15, 16

Education
1983  Ph.D.  University of California, Riverside, Entomology
1977  B.S.  Oregon State University, Corvallis, Oregon,  Entomology

Professional Experience
Professor, Department of Entomology, Texas A&M University, September 1995 to present
Expert, Scientific Consultant, Systematics and Biodiversity Sciences cluster, Division of Environmental Biology, National Science Foundation, Arlington, VA, January through June 2012.
Program Director, Biodiversity Survey and Inventory Program, Division of Environmental Biology, National Science Foundation, Arlington, VA, August 2003 to December 2004.
Assistant Department Head for Graduate Studies, Dept. Entomology, Texas A&M University, 1998-2003
Associate Professor, Department of Entomology, Texas A&M University, April 1989 to August 1995.
Assistant Professor, Department of Entomology, Texas A&M University, September 1983 to April 1989.

Awards and Honors (selected)
Selected by Graduate Student Council, Texas A&M University, as their nominee for the Presidential Teaching Award, Spring 2010
Distinguished Research Fellow, Natural History Museum, London, 2005
Research Associate, Smithsonian Institution, 2003 to present
Outstanding Professor of the Year, 1998 and 2003, Undergraduate Entomology Student Organization, Department of Entomology, Texas A&M University

Area of Research Specialization
Selected Recent Publications


Contracts and Grants (selected, recent awards only)


NSF, Doctoral Dissertation Improvement Grant, DEB 1110631, Integrating morphology, molecules and information technology for the taxonomic revision of Signiphoridae (Hymenoptera), Co-PI with Anamaria Dal Molin (Ph.D. student, TAMU), $11,733, 2011-2012.

EcoLabs, Texas, Host associations of parasitoid wasps in grasslands, Co-PI with Anamaria Dal Molin (TAMU), $4137, 2011-2012.


Professional Service (recent service only)


Electron Microscopy Users Committee, Texas A&M University, 1989 to present, Chair since 2005.

Keyan Zhu-Salzman
Professor
Texas A&M University, TX

Current Appointment: 33% Teaching 62% Research 5% Service

Current Teaching Assignments:
ENTO 428 Insect Biotechnology – Fall 13, 14, 15
ENTO 429 Insect Biotechnology (Lab) – Fall 13, 14, 15

Education
1985 B.S. Fudan University, Shanghai, China, Biology
1988 M.S. Fudan University, Shanghai, China, Biology
1994 Ph.D. Purdue University, West Lafayette, Indiana, Entomology

Professional Experience
2011-Present Professor, Department of Entomology, Texas A&M University
2005-2010 Associate Professor, Department of Entomology, Texas A&M University
1999-2004 Assistant Professor, Department of Entomology, Texas A&M University
1997-1999 Research Associate, Department of Entomology, Purdue University
1995-1996 Postdoctoral Researcher, Department of Entomology, Purdue University

Awards and Honors
2004 The DuPont Young Professor Award. The Corporate Center for Collaborative Research and Education and the DuPont Fellows Forum.

Area of Research Specialization
The long term goal of my research is to illustrate molecular mechanisms of insect-plant interaction. I am particularly interested in the molecular and genetic bases of insect adaption to plant defense and to environmental stresses. Objectives of my research are 1) Understanding the mode of action of plant defense proteins and dissecting defense signal transduction pathways; 2) Profiling gene expression in the insect alimentary tract when insects are challenged by anti-nutritional factors; 3) Studying function and regulation of insect digestive proteases during adaptation to plant protease inhibitors; 4) Uncovering the mechanism of insect tolerance to hypoxia (low oxygen).

Publications:
Authored or coauthored 57 refereed papers, 3 book chapters

Selected Publications


**Contracts and Grants**
Since 2005, principal or co-investigator on grants, contracts and gifts totaling more than $2M for research associated with insect-plant interactions.

**Professional Service**
- 2010- Present: Editorial board member for the journal *Insect Science*.
- 2012-2013: Associate Editor for a special ‘Insect-Plant Interactions’ section of *Insect Science*.
- 2012: Organizing committee member for The Second International Symposium on Insect Midgut Biology. South China Normal University, Guangzhou, China.
- 2008-2012: Panelist, Entomological Foundation Awards Judging Panels, ESA
- 2010-2013: Faculty Senate at Texas A&M University
- 2012-2014: Promotion and Tenure Committee for the Department of Entomology, TAMU
TAMU Non-Tenure Track Faculty

Gabriel L. Hamer
Clinical Assistant Professor
Texas A&M University, TX

Current Appointment: 48% Teaching 47% Research 5% Search

Current Teaching Assignments:
ENTO 208 Veterinary Entomology (13 sections) – Fall 13, 14, 15
ENTO 208 Honors Veterinary Entomology (6 sections) – Fall 13, 14, 15

Education
2002 B.S. University of Illinois, Urbana, IL, Natural Resources Environmental Science
2004 M.S. University of Illinois, Urbana, IL, Natural Resources Environmental Science
2008 Ph.D. Michigan State University, East Lansing, Michigan, Fisheries and Wildlife

Professional Experience
2010-2011 Post-doc Researcher, Dept. of Microbiology, Michigan State University,
2009-2010 Post-doc Researcher, Dept. of Pathobiological Sciences, University of Wisconsin Madison,

Awards and Honors
2008 Illinois Mosquito and Vector Control Association, Student Paper Competition, 1st place
2008 Rocky Mountain Goats Foundation’s Bill Burtness Fellowship recipient
2007 Midwest Fish and Wildlife Conference, Student Paper Competition, 3rd place
2007 George J. Wallace and Martha C. Wallace Endowed Scholarship Award

Area of Research Specialization
My research broadly investigates the ecology of infectious diseases of humans, wild animals, and domestic animals, with particular attention to those transmitted by arthropod vectors (e.g. mosquitoes, ticks, midges). I have focused primarily on vector-host interactions that lead to parasite amplification and increased disease risk. I utilize a multidisciplinary approach to studying these complex disease systems, including molecular biology, landscape epidemiology, eco-immunology and ecological modeling. A goal of my research is to elucidate mechanisms of transmission across space and time that facilitate ecological management of diseases with effective intervention and preventative strategies.

Publications: Authored 25 refereed papers, 3 non-refereed papers, and 1 book chapter
Selected Publications


Contracts and Grants

Texas A&M and CONACYT: Collaborative Research Grant Program; Ecology and epidemiology of Chagas disease across a transnational gradient, 9/2013–8/2014; G.L. Hamer (Co-Investigator) $24,000

Texas Invasive Ant Research and Management Seed Grant Program; Impact of red imported fire ants on small mammals, ticks and tick-borne pathogens, 9/2013–8/2015; G.L. Hamer (Co-PI) $110,000

**Mosquito** Research Foundation; Mosquito movement in the urban environment: a stable isotope mark-capture study, 2013; G.L. Hamer (PI) $50,958

Texas Eco Lab; Eco-epidemiology of Chagas disease in central Texas, 2013; G.L. Hamer (PI) $17,317.74

NSF EEID Program; West Nile virus: Eco-epidemiology of disease emergence in urban areas II; G.L. Hamer (PI) subcontract 2013. $54,546

U.S. Fish and Wildlife Service; Avian Health and Disease Program; Disease risks to whooping cranes determined by non-invasive sampling and analysis of sandhill cranes as surrogates, 2012-2013; S. A. Hamer (Co-PI) G.L. Hamer (Co-PI) $120,099

USDA Formula Animal Health, TAMU CVM; Elucidating tick-borne disease transmission systems using stable isotopes to identify tick-host interactions 2012-2013; S. A. Hamer (PI), G. L. Hamer (Co-PI) $40,000

Professional Service

2013   Moderator of a symposium for  ESA Meeting

2012-2013 Quarantine Committee, Department of Entomology, Texas A&M University

2013   Education Committee, Department of Entomology, Texas A&M University

2013   Graduate Student Recruitment Committee, Department of Entomology, TAMU
Adrienne Brundage
Assistant Lecturer
Texas A&M University, College Station, Texas

Current Appointment: 100% Teaching

Education
1999  B.S.  Cal Poly San Luis Obispo, San Luis Obispo, California, Plant Protection Sciences
2007  M.S.  San Jose State University, San Jose, California, Organismal Biology
2012  Ph.D.  Texas A&M University, College Station, Texas, Entomology

Professional Experience
2013-Present  Assistant Lecturer, Department of Entomology, Texas A&M University, CS
2011-2013  Lecturer, Department of Natural Sciences, Blinn College, Brenham, TX
2012-2013  Adjunct Professor Remote Campus, Department of Pathology, University of Florida, Gainesville, FL
2010  Lecturer, Department of Anthropology, Baylor University, Waco, TX
2008-2009  Assistant Lecturer, Department of Entomology, Texas A&M University, CS, TX
2005-2008  Lecturer, Department of Biology, San Jose State University, San Jose, CA

Awards and Honors
2013  Instructor of the Year, Undergraduate Entomology Student Organization
2009  Vice Chancellor’s Award in Excellence, Graduate Student Teaching

Area of Research Specialization
My current position is 100% teaching, but my research specialty is forensic entomology, specifically the dipteran species that act as early colonizers on decomposing tissue. My Ph.D. work focused on the mechanisms controlling oviposition on decomposing resources. I continue to have a keen interest in forensic entomology, and use this to help my students focus their studies.

Selected Publications

Bradley N. Metz

Lecturer
Texas A&M University

Current Appointment: 100% Teaching

Education

2003  B.S.  University of Illinois, Urbana, IL, Biology
2009  Ph.D.  Texas A&M University, College Station, TX, Entomology

Professional Experience

2012- Present  Part-time lecturer, Blinn College, Bryan, TX
2010-2012  Postdoctoral Research Associate, Dr. Brad Vinson, TAMU, College Station, TX
2009-Present  Instructor, Texas A&M University, College Station, TX
2003-2009  Graduate Assistant, Dr. Tanya Pankiw, Texas A&M University, College Station TX

Awards and Honors

2011  Texas Fire Ant Initiative, Texas State Legislature.
2009  Texas Fire Ant Initiative, Texas State Legislature.
2007  Research and Presentation Grant, Office of Graduate Studies, Texas A&M University.
2006  Foundation for the Preservation of Honey Bees Young Researcher Award.

Selected Publications


Professional Service

2009-Present  Member, Animal Behavior Society
2009-Present  Member, International Society for Chemical Ecologists
2005  Fellow, Graduate Teaching Association (GTA) Texas A&M University.
2004-Present  Member, Brazos Educational Radio, KEOS 89.1FM College Station.
2007-2009  Chair, Management Team
2003-Present  Member, Entomological Society of America (ESA).
2003-Present  Member, International Union for the Study of Social Insects (IUSSI).
2003-2009  Member, Entomology Graduate Student Organization (EGSO) Texas A&M University
AgriLife Research Faculty (Non-Tenure Track)

Michael J. Brewer
Assistant Professor, Entomology, Field Crops Research Entomologist
Texas A&M AgriLife Research & Extension Center, Corpus Christi

Current Appointment: 100% Texas AgriLife Research

Education
1981  B.S.  Entomology, University of California, Davis, CA
1985  M.S.  Entomology, Louisiana State University, Baton Rouge, LA
1986  M.S  Applied Statistics, Louisiana State University, Baton Rouge, LA
1990  Ph.D.  Entomology, University of California, Riverside, CA

Professional Experience
2009-current  Texas A&M University, AgriLife Research, Department of Entomology
  Assistant Professor, Entomology, Field Crops Research Entomologist
2002-2009  Michigan State University, Center for Integrated Pest Systems, Department of
  Entomology Integrated Pest Management Coordinator, Michigan State University
1991-2002  University of Wyoming, Department of Plant, Soil, and Insect Sciences
  Associate Professor/ Extension Specialist, Entomology (97-02)
  Assistant Professor/ Extension Specialist, Entomology (91-97)

Awards and Honors
Grower Incentives for IPM Team Project, IPM Symposium Award in IPM, 2009.
EPA Region VIII Outstanding Achievement Award, 1995.
National FFA Organization, Distinguished Service Award, 1995.

Area of Research Specialization
Development of IPM strategies and their incorporation into field crop management systems. I
have been involved in evaluating the compatibility of insect management strategies, including
host plant resistance, biological control, and insecticide control in field crop systems. My current
emphasis is on addressing the shifting insect pest complex of south Texas field crops through: 1)
Development of decision support for insect management, and 2) Understanding environmental
and cropping system context of plant/insect/disease interactions that affects plant health risk.

Publications
I have authored or coauthored 55 refereed journal articles, 7 book chapters. 39 abstracts and
proceedings, and 38 outreach (extension) publications.
Selected Publications


Contracts and Grants

During the period 2008 through 2013, principal or co-investigator on grants, contracts and gifts totally approximately $851,447 which was attributable to my involvement and support for research and outreach/extension associated with IPM strategies and their incorporation into field crop management systems. The total team award amount was approximately $1,309,901.

Professional Service

Entomological Society of America, 10 year service as Subject Editor, *Journal of Economic Entomology*. Moderator, judge, symposia organizer, and committee service for meetings. International IPM Symposium, 2009. Organizing committees, Symposia organizer. Review: Panel member, USDA NIFA, Crops at Risk & Risk Management Avoidance Programs, Reviews for 9 grant programs and 16 promotion packages

Teaching Experience

I have taught 10 structured courses including Ecology of Plant Protection (cross-disciplinary) and several distance-learning mini-courses. I have advised or co-advised 8 M.S. students (thesis option) and 9 undergraduate students (internship option).
Don Henne  
Assistant Professor  
Texas A&M AgriLife Research & Extension Center, Weslaco

**Current Appointment:** 100% Research

**Education**

1995 B.S. Entomology, University of Manitoba, Winnipeg, Manitoba, Canada  
2000 M.S. Entomology, University of Manitoba, Winnipeg, Manitoba, Canada  
2007 Ph.D. Entomology, Louisiana State University, Baton Rouge, Louisiana

**Professional Experience**

2010-Present  *Asst. Professor*, Dept. of Entomology, TAMU AgriLife Research, Weslaco  
2008-2010  *Asst. Research Scientist*, Dept. of Plant Pathology, TAMU AgriLife Research, Amarillo  
1999-2008  *Research Assoc. Specialist*, Dept. of Entomology, LSU, Baton Rouge, LA

**Awards and Honors**

2012 Entomological Society of America Integrated Pest Management Team Award  
2008 Louisiana State University, College of Agriculture University-Wide Distinguished Dissertation Award Nomination  
2008 Louisiana State University Department of Entomology Outstanding Dissertation Award  
2007 John Henry Comstock Outstanding Ph.D. Award, Entomological Society of America, Southeastern Branch Nomination

**Area of Research Specialization**

My professional research career has included forays into applied ecology, host-parasitoid interactions, behavioral and population ecology, spatial modelling and analysis, plant pathology and epidemiology, population sampling, and insect biodiversity. Currently, I am directing the Subtropical Pest Management Laboratory and overseeing research focusing on plant disease-vector interactions and vegetable IPM in south Texas. One plant disease, ‘zebra chip’ is caused by a plant pathogen *Candidatus Liberibacter solanacearum* (Lso) that is vectored by the potato psyllid, *Bactericera cockerelli*. In my research program, and in collaboration with other researchers, we are studying the chemical ecology of host plant selection by the potato psyllid, simulating effects of enhanced CO₂ levels on potato plants, potato psyllids and Lso, studying life history and functional response characteristics of a potato psyllid parasitoid, coordinating multi-state surveys and monitoring of the potato psyllid, quantifying Lso titers in the potato psyllid over time and at different temperatures, testing novel chemistries for managing the potato psyllid, and elucidating the population structure and genetics of the potato psyllid. Previously, I worked on potato psyllid movement, cold tolerance, overwintering ecology, and zebra chip epidemiology.

**Publications**

Authored or co-authored 23 refereed papers, 44 non-refereed papers, technical reports and abstracts, and 1 book chapter.
Selected Publications


Contracts and Grants

2010-Present as PI or Co-PI on grants, contracts, and gifts totaling more than $1 million.

Professional Service

*President-elect, Subtropical Agriculture and Environments*

*Symposium Moderator, “Population Monitoring and Modelling”, 60th Annual Meeting of the ESA, Knoxville, TN*

*Committee Member, Audit Committee, Southwestern Branch, ESA*

*Panel Judge Member, ESA Distinguished Achievement Award in Horticultural Entomology*

*Symposium Organizer and Moderator, “Plant Disease Vector Movement and Spatial Dynamics in Greenhouse and Cropping Systems”, 57th Annual Meeting of the ESA, Indianapolis, IN*

Teaching Experience

I have taught courses in Introductory Entomology, Plant Pathogenic Bacteria, Biological Control, Population Ecology, Fundamentals of Horticultural Entomology and Insect Pests of Crops.
Jerry Michels
Professor of Entomology
Texas A&M AgriLife Research & Extension Center, Amarillo

**Current Appointment:** 100% research

**Education**
1977  M.S.  University of Wyoming, Entomology
1980  Ph.D.  University of Wyoming, Entomology

**Professional Experience**
1991-Present  Professor of Entomology
1986-1991  Associate Professor
1981-1986  Assistant Professor
Graduate faculty, Texas A&M University
Adjunct Professor and graduate faculty, West Texas A&M University

**Awards and Honors**
2007  Fort Carson Sixth Annual Sustainability Conference and Expo. Certificate of Appreciation

**Area of Research Specialization**
The goals of the program are to conduct basic and applied research dealing with insect and mite pests of field crops in the Texas Panhandle, biological control of weeds, and the role of insects in sensitive ecosystems. 1981-1996. Development of integrated pest management strategies for insect and mite pests in wheat, corn, sorghum, and other crops found in the Texas Panhandle. Integrating chemical control with biological control and host plant resistance. 1996-2013. The program developed a long-term project to implement biological control of weeds on Federal installations in Colorado and Wyoming. This project started at Ft. Carson, and expanded to six other installations by 2006. The project is supported by the U. S. Army, U. S Air Force, U. S Forest Service, and U. S. Dept. of Energy through the U. S. Fish and Wildlife Service. Biological control of weeds was also initiated in Texas in 1996 for bindweed, musk thistle, wavyleaf thistle, and saltcedar. We continue to work in field crop entomology, and are developing predictive models for major corn and small grain insect pests to compliment, modify, or support previously-developed crop pest management strategies.

**Selected Publications** (Peer-reviewed, chronological 2008-2013)


Contracts and Grants: Career (1981-2013): $6,698,444  Last five years: $1,870,604

Professional Service
2002-2011 ESA Southwestern Branch Linnaean Games Committee
2002-2011 ESA Southwestern Branch Student Competition Committee
2006 ESA Local Arrangements Chairman, National Meetings, Indianapolis, IN.
2008-2012 Society of Southwestern Entomologists Editorial Board (Southwestern Entomologist)
2009 ESA Southwestern Branch Program Committee Chair
2009-2012 ESA Southwestern Branch Audit Committee
2011 ESA Southwestern Branch Local Arrangements Committee
2013 ESA Southwestern Branch Secretary-Treasurer
2012-2013 Rocky Mountain Conference of Entomologists Secretary-Treasurer
2012-2013 Tamarisk Coalition Advisory Committee

Teaching Experience
Co-chair or committee member on six PhD and 24 MS committees. Mentored 107 undergraduate and graduate students as research aides. No formal classroom teaching, but have often been a guest lecturer at West Texas A&M University
Forrest L. Mitchell

Professor
Texas A&M AgriLife Research & Extension Center, Stephenville

Current Appointment: 75% research, 25% extension

Education
1977  B.S.  Texas A&M University, Wildlife and Fisheries Science
1980  M.S.  Texas A&M University, Entomology
1985  Ph.D.  Louisiana State University, Entomology

Professional Experience
2008-Present  Professor, Texas AgriLife Research, Stephenville, TAMU
1997-2008  Associate Professor, Texas Agricultural Experiment Station, Stephenville, TAMU
1991-1997  Assistant Professor, Texas Agricultural Experiment Station, Stephenville, TAMU
1986-1991  Assistant Research Scientist, Texas Agricultural Experiment Station, Stephenville, TAMU
1984-1986  Research Associate, Texas Agricultural Experiment Station, Stephenville, TAMU
1980-1984  Research Assistant, Department of Entomology, LSU, Baton Rouge, LA
1978-1980  Research Assistant, Department of Entomology, TAMU

Area of Research Specialization
Insect transmitted plant diseases, invertebrate pathology. Past projects on thrips vectored tomato spotted wilt virus, squash bug vectored cucurbit yellow vine disease, Pierce’s disease of grape, microsporidian epidemiology in red imported fire ants. Biology of Odonata as a sidelight.

Publications: 74, 46 refereed, 1 book, 4 book chapters, 19 proceedings/symposia, 4 agency
Selected Publications (asterisk denotes students)


Contracts and Grants
Since 1987 the program has accrued some $6 million in state and federal contracts and grants. I have served as lead investigator or co-PI on most of them. The Stephenville Center served as the fiscal home for the Pierce’ disease program facility in Fredericksburg in 2010 and 2011 because of my involvement with the program and thus increased the total.

Professional Service
Member, review panel for the USDA National Research Initiative Grants, 3-7 April 2006
Secretary for section Cc, Insect-Plant Vector Biology, Entomology Society of America 2006
Vice-chair, Common Names Committee, Entomological Society of America 2005-2006
Chair, Common Names Committee, Entomological Society of America 2006-2007
Member, review panel for the USDA National Research Initiative Grants, 24-28 March 2007
Member, Nan-Yao Su award committee, Entomological Society of America 2009-current
Member, departmental promotion and tenure committee

Teaching Experience
I have no formal undergraduate teaching appointment, but serve as an advisor and sponsor for both graduate and undergraduate students. These are mainly enrolled at Tarleton State University, which is in the same city as the Texas A&M AgriLife Research and Extension Center where I am based.

<table>
<thead>
<tr>
<th>Students</th>
<th>Co-Chair</th>
<th>Member</th>
<th>Non-Thesis</th>
<th>Interns</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MS</td>
<td>PhD</td>
<td>MS</td>
<td>PhD</td>
</tr>
<tr>
<td>Texas A&amp;M University</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Tarleton State University</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Oklahoma State University</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (Texas Tech, Univ. Nebraska)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Students</strong></td>
<td><strong>29</strong></td>
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</tbody>
</table>

The program has employed over 100 undergraduates since 1984.
Megha N. Parajulee
Professor, Faculty fellow, and Texas A&M Regents Fellow
Texas A&M AgriLife Research & Extension Center-Lubbock

**Current Appointment:** 100% Research

**Education**

<table>
<thead>
<tr>
<th>Year</th>
<th>Degree</th>
<th>Institution</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>Associate Degree in Agriculture</td>
<td>Tribhuvan University, Institute of Agriculture, Kathmandu, Nepal</td>
<td>Top-ranked graduate of the university.</td>
</tr>
<tr>
<td>1987</td>
<td>B.S.</td>
<td>Himachal Pradesh Agriculture University, Solan, India</td>
<td>(Distinguished) Agriculture (Agricultural Economics Track) Top-ranked/Gold medalist.</td>
</tr>
<tr>
<td>1991</td>
<td>M.S.</td>
<td>Entomology, University of Wisconsin-Madison</td>
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</tr>
<tr>
<td>1994</td>
<td>Ph.D.</td>
<td>Entomology, University of Wisconsin-Madison</td>
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</table>

**Professional Experience**

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
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<tbody>
<tr>
<td>2012-Present</td>
<td>Professor, Faculty Fellow, and Regents Fellow/Cotton Entomology Program Leader, TAMU Research &amp; Extension Center, Lubbock</td>
</tr>
<tr>
<td>2010-2012</td>
<td>Professor and Faculty Fellow/Cotton Entomology Project Leader, Lubbock</td>
</tr>
<tr>
<td>2006-2010</td>
<td>Associate Professor/Cotton Entomology Project Leader, Lubbock</td>
</tr>
<tr>
<td>2001-2006</td>
<td>Assistant Professor/Cotton Entomology Project Leader, Lubbock</td>
</tr>
</tbody>
</table>

**Awards and Honors**

<table>
<thead>
<tr>
<th>Year</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Plenary Speaker at the Fourth Biopesticide International Conference, Palayamkottai, Tamil Nadu, India</td>
</tr>
<tr>
<td>2012</td>
<td>Keynote/Lead Speaker at the International Conference on Food Security vis-à-vis Pest Management, Kalyani, West Bengal, India</td>
</tr>
<tr>
<td>2011</td>
<td>Texas A&amp;M University System Regents Fellow, Texas A&amp;M University System Board of Regents, College Station, TX</td>
</tr>
<tr>
<td>2011</td>
<td>Jewel of Nation Award, Everest Foundation, Kathmandu, Nepal</td>
</tr>
<tr>
<td>2010</td>
<td>Recognition of Service as ESA National Program Co-Chair, Entomological Society of America, Lanham, MD</td>
</tr>
<tr>
<td>2010</td>
<td>Recognition of Service as President, Society of Southwestern Entomologists, Dallas, TX</td>
</tr>
</tbody>
</table>

**Area of Research Specialization**

My research typically incorporates a vigorous field program with quantitative, ecological, experimental, and behavioral research to ensure that the most ecologically sound and economically optimal pest management approaches are devised to meet or exceed Texas High Plains cotton producers’ expectations. Current research projects include, 1) Development of economic threshold and management recommendations for Lygus in Texas High Plains cotton, 2) Quantifying the effect of soil applied nitrogen on cotton arthropod population dynamics in a drip irrigation system, 3) Developing a treatment threshold for western flower thrips in cotton and characterize the compensatory potential of cotton after thrips injury, and 4) Investigation of genetically modified cotton conferring *Lygus*-tolerance.

**Publications and Presentations**

- 82 refereed journal articles and 210 non-refereed publications.
- 106 invited and 199 contributed papers in meetings and conferences.
Publications


Contracts and Grants

I have secured $7.6 million in total contracts and grants and managed $3.0 million. Grant sources included USDA AFRI, USDA ARS, USDA NIFA, USEPA, Cotton Incorporated, Plains Cotton Improvement Program, Monsanto, Bayer CropScience, StollerUSA, and TDA.

Professional Service


*Committee Member:* Faculty Advisory Committee (Elected), 2003-2008; Search Committee for the Professor & Charles Parencia Chair in Cotton Entomology position, 2005-2006; Strategic Planning Committee, TTU PSS Department, 2007-2008; Graduate Admission Committee, TAMU Entomology (2008-2013); TAMU Promotion and Tenure Committee, 2010-2016.

ESA Program Committee (2009-2011, Co-Chair 2010), Chair of the ESA Committee on International Affairs (2008), President of the Society of Southwestern Entomologists (2009), International IPM Symposium Program Co-Chair (2009-2012), Awards Committee Co-Chair (2012-2015).

Teaching Experience

I taught two courses, Insect Ecology and Integrated Pest Management, from 2002-2012 each in alternating years. I graduated 18 M.S. /Ph.D. students as an advisor/co-advisor and currently supervise two PhD students at Texas Tech University. I also served on 19 (17 PhD and 2 MS) student committees who have graduated and am currently serving on three (2 PhD and 1 MS) committees.
Michael (Mo) Orrin Way
Professor
Department of Entomology
Texas A&M AgriLife Research & Extension Center, Beaumont

**Current Appointment:** 100% Research

**Education**
- 1967 B.S. University of California, Davis Entomology
- 1976 M.S. University of California, Davis Entomology
- 1982 Ph.D. University of California, Davis Entomology

**Professional Experience**
- 2006-Present Professor, Entomology Department, Texas A&M AgriLife Research
- 2000-2006 Associate Professor, Entomology Department, Texas Agricultural Experiment Station & Texas Cooperative Extension
- 1998-2000 Associate Professor, Entomology Department, Texas Agricultural Experiment Station
- 1982-1998 Assistant Professor, Entomology Department, Texas Agricultural Experiment Station

**Awards and Honors**
- 2009 National Excellence in Multistate Research Award; S-1039 Biology, Impact and Management of Soybean Insect Pests in Soybean Production Systems
- 2008 Texas Plant Protection Association Academic/Agency Award
- 2006 The Conservation Tillage Systems Rice Researcher of 2006

**Areas of Research Specialization**
I conduct insect integrated pest management (IPM) research on rice, soybeans and Sugarcane/energycane. The goals of my project are to elucidate the biology of major/minor insect pests (including newly introduced species); develop and/or revise treatment thresholds and sampling plans; and incorporate cultural, genetic, physical and chemical control tactics into effective IPM strategies for managing insects attacking the above commodities. Although I do not have an Extension appointment, a significant portion of my efforts is directed towards extending research results to stakeholders including farmers, crop consultants, state and federal regulatory agencies and private industry partners.

**Publications**
I have authored or co-authored 52 peer-reviewed papers and 7 book chapters. I have authored many non-refereed papers and numerous Extension publications. I have served as editor or co-editor of the *Texas Rice Production Guidelines* since 1999. This is an annual bulletin covering all aspects of rice production in Texas.
Selected Publications


Contracts and Grants

I have obtained over $3 million in funding during my career with Texas A&M University. Grant sponsors are commodity groups, private industry, federal and state agencies, and Texas A&M University.

Professional Service

2012 Chair Youth Science Committee Southwestern Branch of the Entomological Society of America
2006 Chair Committee on Education and Youth Entomological Society of America

Teaching Experience

I have been the co-major advisor for 2 M.S. and 4 Ph.D. students. I have served as undergraduate intern mentor for numerous students enrolled at Texas A&M University and Lamar University. I do not have a formal teaching appointment.
Lloyd “Ted” Wilson
Professor (tenured) and Endowed Chair
Adjunct Professor of Soil and Crop Sciences
Jack B. Wendt Endowed Chair in Rice Research, Center Director
Texas A&M AgriLife Research & Extension Center, Beaumont

Current Appointment:  Administration, split research, extension, and teaching

Education
1973  B.S.  University California Davis, Entomology
1971  A.A.  Bakersfield Junior College, Bakersfield, California, Biology
1977  Ph.D.  University California Davis, Entomology

Professional Experience
2000-Present  Adjunct Professor of Soil and Crop Sciences, Texas A&M University
1999-Present  Center Director, Agricultural Research and Extension Center, Beaumont, TX
            A&M University System
1989-Present  Professor of Entomology, Texas A&M University
1981-89  Assistant, Associate, and Professor of Entomology, U.C. Davis, California
1980-81  Biological Systems Analyst, U.C. Systemwide
1978-80  Research Scientist, CSIRO Division of Plant Industry, Narrabri, NSW, Australia
1977-78  Fulbright Post-Doctoral Fellow, Queensland University, Brisbane, Australia

Awards and Honors
2001-Present  Jack B. Wendt Endowed Chair, Texas A&M University,
2007  Honorary Professorship, Universidad Nacional de san Martin, Tarapoto, Peru

Area of Research Specialization
Dr. Wilson’s research program is broad-based and focuses on the theory and application of quantitative principles as they pertain to agroecosystem management. His current research largely focuses on rice, energycane, high biomass sorghum, and algae cropping systems management. He has expertise in field experimental design and analysis, in the development of physiologically based food, feed, fiber, and bioenergy crop models, in biological control, and the mathematics of sampling theory and its application.

For the past 5 years, an increasing amount of his research has focused on lignocellulosic cropping production analysis. He is the site coordinator for the Texas Upper Gulf Coast component of the Sun Grant energycane DOE feedstock project. He is currently working with a team of scientists evaluating several energycane cultivars and miscane cultivars, a subset of which are undergoing detailed phenotyping to characterize the effects of phenotypic traits on yield performance. He is part of a multi-state project that is evaluating the impact of expanding lignocellulosic crop production and management. Part of this research will identify the best approach for preventing economically damaging stem borer pests from causing economic loss to energycane, sugarcane, and rice.

Dr. Wilson’s research outreach activities largely focus on interfacing with the Texas agricultural rice industry in delivering improved management programs. Nineteen M.S./Ph.D. students have completed their degrees under his supervision. He has served on an additional 21 committees for which students have completed M.S. or Ph.D. degrees.
Publications

During Dr. Wilson(180,42),(330,57)’s professional career, he has published almost 700 scientific papers, nearly 200 refereed journal articles and book chapters, and over 500 research outreach papers.

(Selected Publications)


Contracts and Grants 147 grants as a PI or Co-PI, totaling over $15.1 million

Professional Service


Teaching Experience

Dr. Wilson has served as instructor of record for 21 courses since receiving his Ph.D. in 1977. He developed and taught for a number of years a graduate level course titled “Advanced Principles of Agroecosystem Management”.

AgriLife Extension Faculty

Charles Allen

Professor
IPM Coordinator, Extension Entomologist
Associate Department Head - Extension
Texas A&M AgriLife Research & Extension Center, San Angelo

Current Appointment: 100% Extension

Education
B.S. 1975 Texas Tech University, Lubbock, TX  Biology
M.S. 1977 Texas Tech University, Lubbock, TX  Entomology
Ph.D. 1980 Louisiana State University, Baton Rouge, LA  Entomology

Professional Experience
1981-1996  Texas Agricultural Extension Service, Extension Entomologist, Weslaco and Fort Stockton, TX
2000-2009  Texas Boll Weevil Eradication Foundation, Program Director, Professor and Extension Entomologist
2009-2012  Texas A&M AgriLife Extension Service, Statewide IPM Coordinator
2012-Present  Associate Department Head, Professor, Ext. Specialist and IPM Coord.

Awards and Honors
Clean Texas 2000 Governor’s Award (Team) 1995
Texas Agricultural Extension Service Superior Service Award (Team) 1995
TAMUS Vice Chancellor’s Award in Excellence (Interdisciplinary Team) 1995

Area of Research Specialization
Currently my position is primarily administrative. My background and expertise is primarily in IPM in field crops and eradication of primary pests (boll weevil and pink bollworm). As an Extension Entomologist for many years in Texas and Arkansas, I have experience in a wide area of Entomology and IPM including: household and structural, landscape/turf, livestock, insect vectored disease, urban/school, orchard crop and others.

Publications
Authored or coauthored 16 refereed papers, 118 proceedings articles, 41 extension publications, 3 white papers and 3 book chapters.
Selected Publications


Contracts and Grants

From 1981-2000 I managed 182 grants totaling $555,004 as principal administrator and was provided $320,000 in in-kind gifts (seed, chemicals and equipment). From 2000-2009 I served as Program Director of the boll weevil eradication program in Texas. I was co-author of funding proposals and year-end reports (state and federal). The total budget for the program I supervised 2000-2009 was $803,309,849.

Professional Service

Texas, National and International Boll Weevil and Pink Bollworm Technical Advisory Committees (5)
Texas Corn Advisory and Implementation Committee 2009-present
Southern Region IPM Center - Regional IPM Proposal Review Panel 2013
SERA 003 Secretary 2013, Chair 2014

Teaching Experience

Apurba K. Barman
Assistant Professor and Cotton Extension Entomologist
Texas A&M AgriLife Research & Extension Center, Lubbock

Current Appointment: 100% Extension

Education
2001 M.Sc. Assam Agricultural University, Assam, India
2006 M.S. Texas Tech University, Lubbock, TX
Ph.D. 2011 Texas A&M University, College Station, TX

Professional Experience
2013-Present Extension Specialist-Cotton Entomology, Texas A&M AgriLife Extension Service
2012-2013 Postdoctoral Research Associate, The University of Georgia
2007-2011 Graduate Research Assistant, Department of Entomology, Texas A&M University
2004-2006 Graduate Research Assistant, Department of Soil and Crop Science, Texas Tech University
2001-2003 Senior Research Fellow, Entomology Department, Indian Agricultural Research Institute, New Delhi, India

Awards and Honors
2012 Entomological Society of America “John Henry Comstock Graduate Student Award” (Southwestern Branch) presented at Entomological Society of America 60th Annual Meeting, Knoxville, TN.
2011 Gary A. Herzog Ph.D. Student Award for oral presentation in Cotton Insect Research and Control Conferences, Beltwide Cotton Conferences, Atlanta, GA.
2009 Regional Champion - Linnaean Games, Southwestern Branch of the Entomological Society of America Annual Meeting, Stillwater, OK.
2006 T. S. Hall Memorial MS Student Award for oral presentation in Cotton Insect Research and Control Conferences, Beltwide Cotton Conferences, San Antonio, TX.
2005 West Texas Agricultural Chemicals Institute Academic Scholarship (Graduate level competition).

Area of Research Specialization
As an Extension specialist, I dedicate a significant portion of my time in training and education targeting our southern Texas High Plains cotton production system clientele. However, to generate the information needed for such educational efforts, I conduct applied research both independently and in collaboration with other research faculty, county IPM Extension agents, consultants, industry partners and producers. The objectives of my applied research are to address current and foreseeable insect related problems in cotton. Broadly, my research specialization includes insect ecology, insect-plant interactions, insect population genetics and integrated pest management (IPM). Some of the specific research areas I am currently working on include:
1. Effectiveness of neonicotinoid seed treatments and foliar insecticide applications on thrips management in cotton.
2. Development of economic threshold levels for thrips in cotton grown under different growing conditions (dryland vs. irrigated, cold vs. warm weather conditions, and regional differences in vegetation and pest pressure).
3. Understanding the species composition of thrips in cotton across the Texas High Plains.
4. Cultural and chemical control options for plant bugs (*Lygus* and cotton fleahopper) management in cotton.
5. Monitoring and management of Lepidopteran pests on conventional (non-*Bt*) and *Bt*-transgenic cotton varieties.

**Publications:** Authored 10 referred papers, 15 non-referred papers.

**Selected Publications**


**Contracts and Grants**

My research program is supported by various funding agencies including Texas State Support Committee (Cotton Incorporated), Plains Cotton Growers, Inc., USDA-NIFA, and industry partners.

**Professional Service**

Symposium organizer at Entomological Society of America Annual Meetings:


Panel member for Plant-Insect Ecosystems Awards- Entomological Society of America (2013-2015)

**Teaching Experience**

I have taught sections of ENTO 401 (Integrated Pest Management) during 2009 and 2010 at Department of Entomology, Texas A&M University.
**Ed Bynum**
Assistant Professor and AgriLife Extension Entomologist
Texas A&M AgriLife Research & Extension Center, Amarillo

**Current Appointment:** 100% Extension

**Education**
1973  B.S.  Texas Tech University, Lubbock, Texas Animal Production
1976  M.S.  Texas Tech University, Lubbock, Texas Entomology
2003  Ph.D.  Texas Tech University, Lubbock, Texas Agronomy

**Professional Experience**
2009-present  Assistant Professor and AgriLife Extension Entomologist, Texas A&M AgriLife Extension Service, Amarillo, TX
2005-2008  Extension Agent-IPM, Texas Cooperative Extension Service, Sweetwater, TX
2004  Senior Research Associate, Texas Agricultural Experiment Station, Dallas, TX
       Texas Agricultural Experiment Station, Lubbock, TX
1999-2003  Assistant Research Scientist
1987-1999  Senior Research Associate
1977-1987  Research Associate
1976-1977  Technician I

**Awards and Honors**
2013  Team Excellence Award – District 1 Moth Trapping Team
2011  Service Ethic Award – District 1 Specialist
2008  Friends of Southern IPM Outstanding State IPM Program Award to the Texas IPM Program, Texas A&M AgriLife Extension team member.
2006  Texas Pest Management Association 2006 Excellence in IPM Programming Award.

**Area of Research Specialization**
Although my current position is 100% Extension, I still conduct applied research in IPM for spider mites and lepidopteran pest of corn, wheat aphids, and grain sorghum pests. My background is in the areas of insect behavior, host plant resistance, cultural practices, biological control, insecticide efficacy and resistance management, and damage potential for arthropod pests of corn, cotton, grain sorghum, wheat, and sunflower.

**Publications**
Authored or co-authored 56 refereed publications, 16 editor-reviewed papers and 7 Extension publications

**Selected Publications-Extension Publications**


**Refereed Publications**


**Contracts and Grants**

During the period from 2009 to the present, principal or co-investigator on grants, contracts and gifts totaling more than $950,000 for research and extension associated with pest management for corn, potatoes, and wheat.

**Professional Service**


Allen E. Knutson
Professor and Extension Entomologist
Texas A&M AgriLife Research & Extension Center, Dallas

Current Appointment: 75% Extension, 25% Research

Education
1974  B.S.  University of Minnesota, Biology
1976  M.S.  University of Florida, Entomology
1987  Ph.D.  Texas A&M University, Entomology

Professional Experience
1994-Present  Professor and Extension Entomologist, Texas A&M University
1992-1993  Associate Professor and Extension Entomologist, Texas A&M University
1980-1989  Extension Agent-Pest Management, Texas Ag. Extension Service, Dimmitt, TX

Awards and Honors
1998  Distinguished Achievement in Extension Entomology. Entomological Society of America
1998  Vice Chancellor’s Award in Excellence in Extension Education. Texas A&M University
1995  Vice Chancellor’s Award in Excellence for Interdisciplinary Team. Texas A&M University
1995  Superior Service Award for Interdisciplinary Team. Texas Agricultural Extension Service
1992  Deputy Chancellor's Award for Excellence. Interdisciplinary Team. Texas A&M University
2011  Superior Service Award, Team Award. Texas AgriLife Extension Service.

Area of Research Specialization
My research program has addressed integrated pest management of insect pests of cotton, pecan, wheat, corn and sorghum with a focus on sampling methods, economic thresholds, biological control, pheromone discovery and application, host plant resistance and biological control. My Extension program involves working with County Extension agents to provide educational programs on insect pest management for small grains, forages, pecans and row crops in north Texas.

Publications
Authored or coauthored 49 refereed journal articles, 5 book chapters, and 14 Extension publications.

Selected Publications


**Contracts and Grants**
Principal or co-investigator on grants contracts and gifts totaling $1.6 million for research, extension and educational programs during 1990-2013.

**Professional Service**
2012 Entomological Society of America. President, Southwestern Branch
2010 Entomological Society of America. Secretary-Treasurer, Southwestern Branch
1991-Present Society of Southwestern Entomologists, Secretary-Treasurer

**Teaching Experience**
I co-advised or served on committees of 3 Ph.D. students and 9 M.S. students.
Michael Merchant
Professor and Extension Urban Entomologist
Texas A&M AgriLife Research & Extension Center, Dallas

**Current Appointment:** 100% Extension

**Education**

1979  B.S.  Huxley College of Environmental Studies, Western Washington University, Environmental Science
1984  M.S.  Purdue University, Entomology
1989  Ph.D.  Texas A&M University, Entomology

**Professional Experience**

1989-Present  Extension Urban Entomologist, TAMU AgriLife Research and Extension Center, Dallas
2004-Present  Professor
1996-2004  Associate Professor
1991-1996  Assistant Professor

**Awards and Honors**

**Area of Research Specialization**
Statewide responsibilities for extension education on structural pests. District-wide leadership for Extension educational programs on structural, household, lawn and ornamental, nursery, and human health pest problems. Assist county Extension agents in conducting result demonstrations and educational programs. Conduct applied research on insect pests of structures, turf and ornamentals, pets and humans; and develop IPM programs for homes and institutions, including public schools.

**Publications**
6 Peer reviewed publications, 52 Extension publications, Insects in the City website (and factsheets), Insects in the City Blog for Professionals, 75 trade journal/popular magazine articles

**Selected Publications**
[https://agrilifebookstore.org/publications_details.cfm?whichpublication=54](https://agrilifebookstore.org/publications_details.cfm?whichpublication=54)
[https://agrilifebookstore.org/tmppdfs/viewpdf_1547.pdf](https://agrilifebookstore.org/tmppdfs/viewpdf_1547.pdf)
Contracts and Grants
Over past five years principal or co-principal investigator on contracts and gifts totaling over $380,000 for IPM implementation and research on urban insect pests.

Professional Service
2013-present  Member, U.S. Environmental Protection Agency Region 6 IPM in Schools Collaboration Group
2008-2011  Officer, Entomological Society of America (ESA) Section for Structural, Veterinary and Public Health Systems
2006-2007  ESA Section F Secretary. Entomological Society of America
2006  Chair, President’s Committee on Linnaean Games. Entomological Society of America
1982-Present  Member, Entomological Society of America
Robert Patrick Porter
Extension Entomologist and Professor
Texas A&M AgriLife Research & Extension Center, Lubbock

Current Appointment: 100% Extension

Education
1982 B.S. Colorado State University, Ft. Collins, CO, Agronomy
1985 M.S. Mississippi State University, Starkville, MS, Entomology
1988 – 1989 University of Illinois, Urbana, IL,
1993 Ph.D. Mississippi State University, Starkville, MS, Entomology

Professional Experience
1998-Present Extension Entomologist, Texas AgriLife Extension, TAMU, Department of Entomology
1996-1998 Integrated Pest Management Specialist and IPM Coordinator, West Virginia University, Morgantown, WV
1995-1996 Postdoctoral Fellow and Entomology Specialist, New Mexico State University

Awards and Honors

Area of Research Specialization
Much of my research involves transgenic crops for control of insect pests and preventing the evolution of resistance to those crops. Additional research involves development of economic thresholds for Lepidoptera pests of corn and exploration of candidate insecticides for control of insects and spider mites in corn, sorghum and vegetable crops.


Selected Publications


Contracts and Grants
During the period 2006 – 2012, principal or co-investigator on grants, contracts and gifts totaling more than $604,000 for research, extension and education.

Professional Service
2001-2011 Texas representatives to NC 205 and NCCC 46 (formerly NCR 46)
2007 Local Arrangements Chair, NC 205 and NCCC46, Dallas, TX
2011 Chair, North Central Coordinating Committee 46 (NCCC46)
2011-2012 Member EPA Resistance Detection Working Group
2012 Member NC205/NCCC 46 Resistance Research and Outreach Coordination Operations Committee

Teaching Experience
I have no teaching appointment but have served on three graduate committees and taught 5 lecture sessions at Texas A&M University, Texas Tech University and West Texas A&M University.
Sonja L. Swiger
Assistant Professor / Extension Specialist
Texas A&M AgriLife Research & Extension Center, Stephenville

Current Appointment: 75% Extension / 25% Research

Education
2001  B.S.  Bethany College, Bethany, West Virginia Biology
2003  M.S.  University of Florida, Gainesville, Florida Entomology
2007  Ph.D.  University of Florida, Gainesville, Florida Entomology

Professional Experience
2008-Present  Assistant Professor/Texas A&M AgriLife Extension Specialist, TAMU, Department of Entomology

Awards and Honors

Area of Research Specialization
My area of specialty and research is livestock and veterinary entomology with a background in forensic entomology. Current and future research is aimed at assisting producers with biting fly management and reduction. Previous projects have looked at the efficacy of insecticide impregnated ear tags on horn flies during the fly season in Texas; the effectiveness of fly baits in controlling house flies and the presence of stable flies on dairies in both the Panhandle and central Texas.

Publications: Authored 1 refereed paper, 6 non-refereed papers

Selected Publications


Contracts and Grants
During the period of 2008 – 2012, principal or co-investigator on grants, contracts and gifts totaling more than $53,000 for research, extension and education associated with livestock entomology pests.

Professional Service
Livestock Insect Workers Conference, LIWC Committee Extension Representative, 2010-2012
Entomological Society of America
    Southwestern Branch Entomological Society of America
    Program Co-Chair, 2011-2012, 2012-2013
    Awards Committee Member, 2009-present
Society of Southwestern Entomologists
Texas Mosquito Control Association

Teaching Experience
I taught ENY 4660 Medical and Veterinary Entomology Lab in the Fall of 2005 & 2006, at the University of Florida while a graduate student. September 2008 I was a guest lecturer for FIVS 205 Introduction to Forensic and Investigative Sciences. I have co-advised 4 M.S. students (3 at Tarleton State University).
Raul T. Villanueva
Assistant Professor and Extension Entomologist
Texas A&M AgriLife Research & Extension Center, Weslaco

Current Appointment: 100% Extension

Education
B. Sc. 1987 Universidad Nacional Agraria La Molina, Lima, Peru
M. Sc. 1997 Queen’s University, Kingston, ON, Canada. Biology
Ph. D. 2002 University of Florida, Gainesville, FL, Entomology

Professional Experience
Texas A&M University and Texas AgriLife Extension, Weslaco, Department of Entomology
   Assistant Professor and Extension Specialist 2009 to present
North Carolina State University
   Research Associate, Department of Plant Pathology, Raleigh, NC. 2006-2009
   Research Associate, Department of Entomology, Fletcher, NC. 2002-2006

Awards and Honors
University of Florida graduate forum competition award in Ecology
Davidson graduate scholarship: University of Florida
Queen’s University: Graduate student award.

Area of Research Specialization
My expertise is on the behavior, dynamics and management of eriophyid, tetranychid, tarsonemid, phytoseiids, and stigmaeid mites. However, my interest deals with the development of ecologically feasible pest management programs and their implementation for field and vegetable crops (i.e. tomato, pepper, onions, cabbage) on conventional and organic systems. The goal of my program is to educate and transfer technology to growers in the Rio Grande Valley. My program includes collaborative research with scientists from AgriLife and USDA; and through applied research data resulted from studies conducted with the support from the industry, growers, and competitive grants.

Publications
Authored or coauthored 20 refereed papers, more than 20 non-refereed papers (proceedings or extension publications); and co-authored three per-reviewed manuscripts

Selected Publications


**Contracts and Grants**

More than $1.3 million from the industry and competitive grants from 2009 to 2013.

- Organic transition grant 2010 to 2013: 639,000
- Outreach assistance for socially disadvantaged farmers and ranchers 2012-2013: $299,999
- Survey for Invasive weevils of palms $40,000
- Survey for invasive moths on corn, cotton and sorghum 2013-2014: $43,000
- Potato psyllid studies in Mexico 2013-2014: $25,000
- Industry >$200,000

**Professional Service**

President of the Acarological Society of America 2013

Member of the:

- Entomological Society of America
- Acarological Society of America
- Entomological Society of Texas
- Latin American Society of Acarology
- Subtropical Plant Science Society

Expert support for Honey Bee Day at the Brownsville Zoo

Science fair judge at schools in Hidalgo Co.

**Teaching Experience**

- As an adjunct faculty in the Department of Agronomy & Resource Sciences, TAMU-Kingsville, I delivered lectures at the TAMUK-Citrus Center in Weslaco and had participated in MSc thesis committees.
- I supervised students from Mexico and Egypt in the past.
- I collaborated with faculty from the South Texas College to supervise undergraduate students on small projects. I guided 10 students from South Texas College in their research projects since 2010.
Department of Entomology – Action 2015 Plan

**Overall Plan.** Entomology houses two distinct majors: an Entomology (ENTO) and Forensic and Investigative Sciences (FIVS). There are currently 79 in ENTO (up from 67, Fall 2010) and 112 students in FIVS (up from 82, Fall 2010) for a total of 191 undergraduates. In addition we have 50 double majors. The FIVS program is seeking national accreditation and we anticipate that third party accreditation will increase visibility and demand for the FIVS major. Both majors provide students with high quality science-based education with a focus on scientific knowledge, principles, and practices and we provide students with an opportunity to put into practice those principles learned in the classroom. We will focus our high impact learning in four areas by: 1. Expanding opportunities in study abroad, 2. Development of an undergraduate research opportunity program, 3. Increasing opportunities for students to participate in internships, and 4. Adding honors sections to select courses.

**Current Graduation Standards.** Entomology already requires 100% of our undergraduates to complete a research experience (ENTO/FIVS 491) or an internship (FIVS/ENTO 484). Students currently have no problem meeting this requirement, but anticipated growth in the FIVS major and a predicted steady enrollment to modest increase in the ENTO major, dictate that we expand internship and research opportunities to continue to achieve 100% participation.

**Strategy for implementing Action 2015 plan with budget implications.** A majority of students meet the graduation standard by conducting undergraduate research. To encourage faculty to accept more ENTO and FIVS undergraduates into their laboratories, and to develop a means of tracking all undergraduate research activity, we propose to develop an **Undergraduate Research Opportunity – Entomology (UROE).** The UROE will provide a small supply budget for the laboratory as an enticement to faculty to accept UROE students and an opportunity to offset travel costs of the student to present research results at a professional meeting. Our plan is to implement the UROE grant proposal process Fall 2011 with funds available to expend Spring and Summer 2012. Metrics will include the number of undergraduates that present research results at professional meetings. We currently support this activity in the Department (10 travel scholarship awarded at $3,500) supplemented by the PI who sponsored students from grant funds and additional scholarships sought by individual students.

Fewer students enroll in Professional Internships ENTO/FIVS 484 compared to students conducting research in faculty laboratories. Our long-term strategy is to increase the number of internships available and to work with companies and agencies to accept more interns and to survey those who provide internships to determine how to improve the program. Departmental resources were directed at this activity in January 2011 when a Director of the FIVS program was appointed with an expectation to increase internship opportunities, endowments, and to oversee the accreditation process of the FIVS major. In addition, we have applied for a Programmatic Fee for the FIVS major effective Fall 2012, if approved. These fees will support several high impact learning activities such as, student based research programs, stipends for lecturers who teach specialized field-based courses and partial support for a summer stipend for the Director of the FIVS program – all of which will strengthen the high impact learning of students in the department. In this Action 2015 plan we are proposing specific complementary high impact learning activities that will enable us to continue to have 100% of our students reaching our graduation standard that meets the Action 2015 goal.
We currently have a modest number of students taking a study abroad program. Our goal is to increase student participation in this activity by offering more opportunities and by providing students with need-based scholarship to participate in a study abroad program. Faculty in two departments, Entomology and Wildlife & Fisheries Sciences, have continuously offered a study abroad program in *Tropical and Field Biology* for the past 20 years. This program is highly successful, but a major limitation to greater participation is the cost to the student. To allow for greater student participation, our budget request is directed toward a needs-based scholarship program. A second study abroad program, in collaboration with three other COALS departments through the Borlaug Institute, was just approved. The *Central American Agriculture and Natural Resources* program is to be offered for the first time in summer 2011. A needs-based scholarship program is requested for the major portion of the budget, but we also need faculty release time for the program to be successful.

Finally, because the FIVS program has a GPR requirement of 3.0 to enter upper division courses, a significant number of our upper division FIVS students are eligible for honors programs. We anticipate over the course of the 5 year plan to move from one course with an Honors section to a total of four courses offering an Honors section. We expect students served in our honors program to increase from the current 50 students (mostly in BIMS) to over 100 students with the increase mostly serving COALS students by the nature of the courses we are targeting. The budget request is to add a ¼ time TA matched by dedicating a matching departmental ¼ time TA for each for each honors section.
Entomology – plan for High Impact Learning

**Undergraduate Research Opportunity (UROE) – Entomology.** In the Entomology Department both degree programs, ENTO and FIVS, require students to complete an undergraduate research experience or an internship program prior to graduation. As enrollment continues to increase, we need a mechanism that will encourage a greater level of participation in undergraduate research both by the faculty mentors and by students. Here we propose to develop an **Undergraduate Research Opportunity – Entomology** (UROE) by providing a framework where students will work collaboratively with a faculty mentor, the semester before research will begin, to develop a short research proposal (1 page). The benefit to the faculty member is that a small research supply budget (up to $350) is available to help offset any consumables used. For the student, up to a $500 travel scholarship is available, after the project is completed to offset some of the costs of attending a professional society meeting.

**Desired Experience and Program Content:** For the student to access the $500 travel scholarship, faculty mentors must stipulate that the research results are of sufficient quality to warrant presentation of a poster or an oral presentation at a professional society meeting. Students must join the professional society as a student member and if available, present their results in a student competition. No student will be supported through UROE travel funds just to attend a meeting. We expect a high proportion (66%) of UROE projects to be of sufficient quality where presentation at a professional society is justified. Presentation of undergraduate student research at a scientific society meeting provides undergraduates an opportunity to network with professionals and seek opportunities for employment or graduate school. We expect to see an increase in the number of students applying to, being accepted by and attending graduate or professional schools if they chose to participate in UROE. We do not currently have such a program, so we cannot benchmark this metric.

**Metrics for Success/Outcome Assessment:** During the past academic year, faculty self-reported a total of 58 undergraduates working in their laboratories. Although this number does not count student workers merely employed in the lab, it does count all undergraduates which come from across the University which are engaged in research. Of this number, only a portion (19) registered for ENTO/FIVS 491, Research. Although a number of ENTO and FIVS students will register for ENTO 491 we clearly are not capturing all effort in undergraduate research, because much of this is done over the summer when students typically do not register for classes and is perhaps are being paid a stipend by the faculty member through their grants and contracts. Because we already have a requirement that 100% of students must either conduct research or complete an internship, we do not anticipate an increase in the number of students taking an advantage of the UROE. Where we do anticipate an impact is on the number of undergraduates attending professional meetings and by shifting more students in COALS majors working in Entomology laboratories.

**Budget implications.** The department has sponsored a competitive team at the regional and national Entomological Society of America meetings. The *Linnaean Games* is a College Quiz Bowl style format where teams compete against other Universities on general entomological knowledge and on history of Entomology. In 2010, our undergraduate team was the only undergraduate to reach the national meeting. Throughout the process this team competed and won repeatedly against all graduate student teams. We sponsored these 5 students with $500 per student to attend the national meeting. We are
sponsoring a team of graduate students to attend the 2011 national meeting. The UROE would increase the number of undergraduates attending professional meetings and increase visibility for Texas A&M.

**Study Abroad Programs.** The goal of the Entomology Department is to develop programs that will lead to increased opportunities for COALS students to participate in study abroad programs. We have one existing study abroad program jointly developed by Entomology and Wildlife and Fisheries Sciences in *Tropical and Field Biology* taught at a field station on Dominica, West Indies. A second study abroad program in *Central American Agriculture and Natural Resources* was just approved by the Study Abroad Programs Office to be offered for the first time in summer 2012 in Honduras. This new study abroad program was developed in conjunction the Borlaug Institute with four participating departments (Agriculture Leadership, Education and Communications, Horticultural Sciences, Soil and Crop Sciences and Entomology). The host institution is Zamorano Agricultural University and one of the four courses offered is *IPM and Biological Control in Tropical Agriculture* (ENTO 489, 3cr). The Entomology faculty member who helped develop this program is a graduate of Zamorano so his participation is vital to the success of the program.

In Summer 2011 the *Tropical and Field Biology* study abroad program had 19 students (6 ENTO, 10 WFSC and 3 Other). The immediate goal is to provide COALS students need-based scholarships (20 @ $1,200), representing approximately 1/3 of the anticipated cost (see budget page for details). If the program were to expand to serve more students, additional instructors would be required to keep the student/instructor ratio at no more than 12:1. As a learning process we propose that Action 2015 funding be used to support travel of a 3rd faculty member that can learn from this team of experienced faculty so that a third study abroad program could be developed. Faculty have expressed interest in programs based in Costa Rica (Soltis Center), Brazil, Africa (western, northern and South Africa).

**Desired Experience and Program Content:** For the *Tropical and Field Biology* program, students enroll in ENTO/WFSC 485 *Directed Studies* in spring semester, and while in country ENTO/WFSC 300 *Field Studies* (3 cr); 451 *Caribbean Research Seminar* (1cr); and 450 *Caribbean Conservation* (2 cr). During spring semester they work with their faculty mentors to design group and individual research projects appropriate to their professional interests. In Dominica, students conduct research, gather data, analyze and interpret results, write reports in scientific journal format (see http://dominica.tamu.edu), and keep a detailed journal of their activities. For most students it is their first realistic research experience and for many students it is their first international experience. For *Central American Agriculture and Natural Resources* program, the goal is to experience low input tropical agriculture first hand and to focus on specific experiential learning through 4 intensive courses designed for this program.

**Metrics for Success/Outcome Assessment:** To encourage greater participation we propose to develop a need based scholarship for COALS students. The goal for *Tropical and Field Biology* is to increase participation by Entomology students by 33% and to increase total enrollment by 20% over the average of the past 5 years (ave: 18 students). For the *Central American Agriculture and Natural Resources* program, faculty from four departments: Agriculture Leadership, Education and Communications, Horticultural Science, Soil and Crop Sciences and Entomology are involved as instructors. This program will be offered for the first time summer session A, 2012. The cost of the *Central American Agriculture and Natural Resources* study abroad program is one of the least expensive programs available to students ($2,100), so we anticipate high demand for this program once it becomes known.
The Entomology faculty member is a graduate of Zamorano Agricultural University, but needs release time to participate, so a small summer stipend will be requested (fringe bearing stipend, 3 weeks).

**Internship Program.** Internships have been an essential element of experiential learning in our undergraduate ENTO and FIVS curricula, providing not only real-world experience, but opportunities for students to explore the diversity of employment opportunities. Both curricula require either an internship or research experience. In addition to our majors, our programs serve more than 50 double majors and a number of minors, who would also like to participate in internship experiences. At the present, most internship opportunities are unpaid or do not support transportation and housing expenses during the internship. Financial concerns are a principle limitation to increased student participation in internship experiences.

Here we request Action 215 funding to invest in financial incentives for students to participate in internship experiences (8 student scholarships). Granting of these funds would be through a proposal process overseen by our departmental administrative team. Assessment of the internship experience will be assessed by established procedures and captured as part of our current Outcome Assessment recorded in WeaveOnline. The numbers of internships will be tracked by records of ENTO/FIVS 484 *Professional Internship*, for those seeking credit. The scholarship could be made available to those students who either are taking a second internship but who have met their internship or research experience for graduation or by students who are employed over the summer by an employer who meets the intent of our professional internship program. We currently have no way to track such internships for those students not seeking course credit.

**Metrics for Success/Outcome Assessment.** Students write a 1-page proposal for internship program scholarships. Students will be required to enroll in ENTO/FIVS 484 Professional Internship if this is their first internship, but can opt out of this requirement in subsequent internships, with a concomitant reduction in scholarship support, i.e., only travel expenses might be supported. Advising office and faculty advisor will develop an employer satisfaction survey. We currently had a total of 19 students taking ENTO or FIVS 484 *Professional Internship*. We propose that student participation in internship experiences through our department programs could be increased by 25% if financial incentives could be offered to offset current constraints. We see a need for this program to expand to keep up with the demand as the FIVS program grows.

**Budget implications.** For any internship to be successful requires a dedicated faculty member whose role is to work with current employers and student interns. We request 1-month summer stipend for the faculty member who takes on this role. Work will occur throughout the year, but compensation will help ensure program success.
Honors Program. The Department of Entomology proposes to expand its offerings of Honors sections from one to four courses and to more than double the number of Honors contact hours over the next 3 years. By the fifth year a fourth course will have honors sections added. The Department of Entomology has successfully offered as many as three Honors Sections per semester in ENTO 208 Veterinary Entomology for many years. Two sections are currently filled serving 50 Honors students. New interest in offering Honors sections has been stimulated by faculty participation in a recent critical thinking workshops held by the Center for Teaching Excellence. The opportunity to work with the brightest students is simply a joy and faculty are anxious to expand honors offerings.

Table 1. Planned expansion of Honors sections in key courses in ENTO and FIVS.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>Fall</td>
<td>Spring</td>
<td>Fall</td>
<td>Spring</td>
<td>Fall</td>
</tr>
<tr>
<td>ENTO 201 (New)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ENTO 210 (New)</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ENTO 208 (Existing)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>FIVS 205 (New)</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
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</tr>
<tr>
<td>Total Sections</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
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<tr>
<td>Students Served/sem</td>
<td>50</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>100</td>
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</table>

ENTO 201 General Entomology currently serves approximately 140 students per semester; has broad interest across the campus and is a service course to our College.

ENTO 210 Global Public Health Entomology, serves approximately 100 students per semester; has increased interest from BioMedical Sciences.

FIVS 205 Introduction to Forensic and Investigative Sciences, serves approximately 150 students each Fall semester. This entry level course into the FIVS major attracts students across the campus with about half the students as new majors in FIVS.

In order to implement these additional sections, we request ¼-time TA support for each new Honors sections that will be matched by ¼-time TA from Departmental resources. The TA will serve in the Honors laboratory or recitation sections of ENTO 201 Spring 2012 and as each course adds an honors section over the Action 2015 time frame, we will add one additional ¼ –time TA matched by Departmental resources. The incentive for faculty to add an Honors Section is that we will ask them to be involved in the selection of TAs and preference will be given to the instructor’s students if their PhD students have had appropriate TA experience and are known as quality instructors.
## Budget

<table>
<thead>
<tr>
<th>Study Abroad Programs</th>
<th>COALS</th>
<th>ENTO/FIVS expenditures</th>
<th>Budget justification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tropical and Field Biology</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Student Support</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Need Based Scholarships 20 @ $1,200* per student</td>
<td>$24,000</td>
<td>$9,600</td>
<td>8 ENTO, 12 WFSC</td>
</tr>
<tr>
<td>Materials &amp; Supplies</td>
<td>$0</td>
<td>$0</td>
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<tr>
<td><strong>Faculty/Staff Support</strong></td>
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<td></td>
</tr>
<tr>
<td>Travel 1 additional instructor</td>
<td>$1,100</td>
<td>$1,100</td>
<td>ENTO faculty</td>
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<tr>
<td>Other - per diem 48/day 24 d</td>
<td>$1,152</td>
<td>$1,152</td>
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<tr>
<td><strong>Subtotal</strong></td>
<td>$26,252</td>
<td>$11,852</td>
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<tr>
<td><strong>Central American Agriculture and Natural Resources</strong></td>
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<tr>
<td><strong>Student Support</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need Based Scholarships 20 @ $700* per student</td>
<td>$14,000</td>
<td>$3,500</td>
<td>5 ENTO students</td>
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<tr>
<td>Materials &amp; Supplies</td>
<td>$0</td>
<td>$0</td>
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<tr>
<td><strong>Faculty/Staff Support</strong></td>
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<tr>
<td>Release time for Faculty (3 weeks)</td>
<td>$4,497</td>
<td>$2,698</td>
<td>ENTO Fringe Bearing</td>
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<td><strong>Subtotal</strong></td>
<td>$18,497</td>
<td>$6,198</td>
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<td><strong>Subtotal Study Abroad</strong></td>
<td>$44,749</td>
<td>$18,050</td>
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<tr>
<td><strong>Undergraduate Research Opportunity Entomology (UROE)</strong></td>
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<tr>
<td><strong>Student Support</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials and Supplies (20 at 350)</td>
<td>$7,000</td>
<td>$7,000</td>
<td>ENTO/FIVS</td>
</tr>
<tr>
<td>Travel to Professional Meeting (12 @ $500)</td>
<td>$6,000</td>
<td>$6,000</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$13,000</td>
<td>$13,000</td>
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<tr>
<td><strong>Internships</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Student Support</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scholarships - need based, 8 @ $1,200</td>
<td>$9,600</td>
<td>$9,600</td>
<td>ENTO/FIVS</td>
</tr>
<tr>
<td><strong>Faculty/Staff Support</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1 month summer stipend to coordinate internships</td>
<td>$7,416</td>
<td>$7,416</td>
<td>Fringe Bearing</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$17,016</td>
<td>$17,016</td>
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<tr>
<td><strong>Honors</strong></td>
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<tr>
<td><strong>Student Support</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$0</td>
<td>$0</td>
<td></td>
</tr>
<tr>
<td><strong>Faculty/Staff Support</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/4 time TA per semester (matched w/ dept funds)</td>
<td>$5,550</td>
<td>$5,550</td>
<td>Fringe Bearing</td>
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<tr>
<td><strong>Subtotal</strong></td>
<td>$5,550</td>
<td>$5,550</td>
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<tr>
<td><strong>Total for COALS Depts (5)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Total Request for Entomology**                          | $53,616  |                        |                      |
| **Fringe Bearing portion of ENTO request**                | $15,664   |                        |                      |

TOTAL REQUEST $80,315

* Student scholarships are estimated to cover 1/3 of total costs and represent the total for COALS programs

** Faculty member has split appointment between Entomology (60%) and Plant Pathology & Microbiology (40%)
Minnie Bell Heep (1502)  
Classroom Renovations  
10/3/2013

Paul Gregg  

paul.gregg@agnet.tamu.edu  
O - (979) 862-5191  
C - (979) 777-2766

**Project Scope**

<table>
<thead>
<tr>
<th>Room 108</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Test for asbestos in existing flooring</td>
<td>$500.00</td>
</tr>
<tr>
<td>2) If asbestos IS found to be present, removal and abatement of asbestos-containing materials.</td>
<td>TBD</td>
</tr>
<tr>
<td>3) Demo existing VCT floor, lay new VCT floor and cove base</td>
<td>$2,559.00</td>
</tr>
<tr>
<td>4) Paint all sheetrock walls</td>
<td>$737.25</td>
</tr>
<tr>
<td>5) VWR - Benches/Counters/Electrical</td>
<td>$26,575.40</td>
</tr>
<tr>
<td>6) SSC - Area Maintenance</td>
<td>$500.00</td>
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<tr>
<td><strong>Subtotal</strong></td>
<td>$30,871.65</td>
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<tr>
<td><strong>Contingency (10%)</strong></td>
<td>$3,087.17</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$33,958.82</td>
</tr>
<tr>
<td><strong>SSC Administrative Overhead (5%)</strong></td>
<td>$1,697.94</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$35,656.76</td>
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</table>

**Room 208**

<table>
<thead>
<tr>
<th>Room 208</th>
<th>Cost</th>
</tr>
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<tbody>
<tr>
<td>1) Test for asbestos in existing flooring</td>
<td>$500.00</td>
</tr>
<tr>
<td>2) If asbestos IS found to be present, removal and abatement of asbestos-containing materials.</td>
<td>TBD</td>
</tr>
<tr>
<td>3) Demo existing VCT floor, lay new VCT floor and cove base</td>
<td>$2,961.00</td>
</tr>
<tr>
<td>4) Demo existing chalkboard, stage, and wooden turntable</td>
<td>$640.00</td>
</tr>
<tr>
<td>5) Install six new mini-blinds</td>
<td>$900.00</td>
</tr>
<tr>
<td>6) Purchase and install new whiteboard</td>
<td>$500.00</td>
</tr>
<tr>
<td>7) Paint all sheetrock walls</td>
<td>$554.25</td>
</tr>
<tr>
<td>8) VWR - Benches/Counters/Electrical</td>
<td>$26,575.40</td>
</tr>
<tr>
<td>9) SSC - Area Maintenance</td>
<td>$500.00</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$33,130.65</td>
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<tr>
<td><strong>Contingency (10%)</strong></td>
<td>$3,313.07</td>
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<tr>
<td><strong>Subtotal</strong></td>
<td>$36,443.72</td>
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<tr>
<td><strong>SSC Administrative Overhead (5%)</strong></td>
<td>$1,822.19</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$38,265.90</td>
</tr>
</tbody>
</table>

**Room 210**

<table>
<thead>
<tr>
<th>Room 210</th>
<th>Cost</th>
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<tbody>
<tr>
<td>1) Test for asbestos in existing flooring</td>
<td>$500.00</td>
</tr>
<tr>
<td>2) If asbestos IS found to be present, removal and abatement of asbestos-containing materials.</td>
<td>TBD</td>
</tr>
<tr>
<td>3) Demo existing VCT floor, lay new VCT floor and cove base</td>
<td>$2,946.00</td>
</tr>
<tr>
<td>4) Demo existing chalkboard</td>
<td>$160.00</td>
</tr>
<tr>
<td>5) Install five new mini-blinds</td>
<td>$750.00</td>
</tr>
</tbody>
</table>
6) Purchase and install new whiteboard $ 500.00
7) Paint all sheetrock walls $ 761.25
8) VWR - Benches/Counters/Electrical $ 26,575.40
9) SSC - Area Maintenance $ 500.00

Subtotal $ 32,692.65
Contingency (10%) $ 3,269.27
Subtotal $ 35,961.92
SSC Administrative Overhead (5%) $ 1,798.10
Total $ 37,760.01

Room 205

1) Test for asbestos in existing flooring $ 500.00
2) If asbestos IS found to be present, removal and abatement of asbestos-containing materials. TBD
3) Demo existing VCT floor, lay new VCT floor and cove base $ 2,946.00
4) Install five new mini-blinds $ 750.00
5) Paint all sheetrock walls $ 815.25
6) VWR - Benches/Counters/Electrical $ 32,129.84
7) SSC - Area Maintenance $ 500.00

Subtotal $ 37,641.09
Contingency (10%) $ 3,764.11
Subtotal $ 41,405.20
SSC Administrative Overhead (5%) $ 2,070.26
Total $ 43,475.46

Room 207

1) Test for asbestos in existing flooring $ 500.00
2) If asbestos IS found to be present, removal and abatement of asbestos-containing materials. TBD
3) Demo existing VCT floor, lay new VCT floor and cove base $ 2,955.00
4) Demo existing chalkboard $ 160.00
5) Purchase and install new whiteboard $ 500.00
6) Paint all sheetrock walls $ 554.25
7) VWR - Benches/Counters/Electrical $ 17,782.94
8) SSC - Area Maintenance $ 500.00

Subtotal $ 22,952.19
Contingency (10%) $ 2,295.22
Subtotal $ 25,247.41
SSC Administrative Overhead (5%) $ 1,262.37
Total $ 26,509.78
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<tr>
<th>The Numbers:</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
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</thead>
<tbody>
<tr>
<td>All Candidates</td>
<td>148/155 (95%)</td>
<td>141/150 (94%)</td>
<td>112/119 (94%)</td>
</tr>
<tr>
<td>Tenure &amp; Promotion</td>
<td>76/79 (96%)</td>
<td>82/86 (95%)</td>
<td>57/62 (92%)</td>
</tr>
<tr>
<td>Tenure Only</td>
<td>5/7 (71%)</td>
<td>4/4 (100%)</td>
<td>5/5 (100%)</td>
</tr>
<tr>
<td>Promotion Only (TT)</td>
<td>43/45 (96%)</td>
<td>34/38 (89%)</td>
<td>31/33 (94%)</td>
</tr>
<tr>
<td>Promotion Only (NTT)</td>
<td>24/24 (100%)</td>
<td>21/22 (95%)</td>
<td>19/19 (100%)</td>
</tr>
<tr>
<td>Males</td>
<td>85/90 (94%)</td>
<td>91/97 (94%)</td>
<td>67/73 (92%)</td>
</tr>
<tr>
<td>Females</td>
<td>63/65 (97%)</td>
<td>50/53 (94%)</td>
<td>45/46 (98%)</td>
</tr>
<tr>
<td>White</td>
<td>105/109 (96%)</td>
<td>95/98 (97%)</td>
<td>80/83 (96%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>7/7 (100%)</td>
<td>12/14 (86%)</td>
<td>5/7 (71%)</td>
</tr>
<tr>
<td>Asian</td>
<td>29/32 (91%)</td>
<td>20/22 (91%)</td>
<td>22/23 (96%)</td>
</tr>
<tr>
<td>African American</td>
<td>7/7 (100%)</td>
<td>6/7 (86%)</td>
<td>5/6 (86%)</td>
</tr>
</tbody>
</table>