

**Todd Michael Gilligan, Ph.D.**

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**EDUCATION****Doctor of Philosophy Degree in Entomology/BSPM, 2012**

Colorado State University  
Fort Collins, CO 80523  
Major: Entomology  
GPA: 3.98 out of 4.0

**Master of Science Degree in Entomology, 2007**

The Ohio State University  
Columbus, OH 43210  
Major: Entomology  
GPA: 3.82 out of 4.0

**Bachelor of Science Degree in Entomology, 1996**

The Ohio State University  
Columbus, OH 43210  
Major: Entomology  
GPA: 3.11 out of 4.0

**Biology Program**

Ohio Northern University  
Ada, OH 45810  
Major: Biology  
GPA: 3.26 out of 4.0

**High School Diploma, 1992**

Arcadia High School  
Arcadia, OH 44804

**WORK EXPERIENCE**

**USDA-APHIS-PPQ-S&T**  
**Pest Identification Technology Laboratory**  
**2301 Research Boulevard, Suite 108**  
**Fort Collins, CO 80526**

**Dates Employed:** 14 Feb 2022 – 22 Apr 2022  
**Hours / Week:** 40  
**Grade:** GS-0401-14

**Title: *National Science Program Coordinator (Acting)***

Supervisor: Tara Holtz (Director, Domestic and Emergency Scientific Support), 919-855-7423,  
tara.m.holtz@usda.gov

Served as the acting National Science Program Coordinator for Biological Control, Imported Fire Ant, and Plant Protection Act (PPA) Section 7721 for PPQ-S&T Domestic and Emergency Scientific Support. Focused primarily on a special assignment to provide recommendations on improving the PPA 7721 review process. The resulting detailed report and specific recommendations will be used to make more informed funding decisions for the Plant Pest and Disease Management and Disaster Prevention

Program under PPA 7721, which awards \$63 million annually for projects that expand or enhance pest survey, identification, inspection, mitigation, risk analysis, and public education and outreach.

Specialized job experience:

- Assessed current program needs and capabilities
- Provided a detailed overview of the current review process
- Consulted with former goal team leads across all CFAs to determine past issues and potential solutions
- Developed a revised set of criteria used by reviewers of project submissions
- Revised and implemented changes in the Decision Lens project ranking software
- Addressed past conflict of interest concerns related to reviews
- Worked with the PPA 7721 CFWG to implement many recommendations for the FY23 funding cycle

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**USDA-APHIS-PPQ-S&T**  
**Pest Identification Technology Laboratory**  
**2301 Research Boulevard, Suite 108**  
**Fort Collins, CO 80526**

**Dates Employed:** 13 Dec 2015 – Present  
**Hours / Week:** 40  
**Grade:** GS-0401-13

**Title:** *Biological Scientist*

Supervisor: Andrew Brower (Acting Lab Director), 240-315-4408, [andrew.brower@usda.gov](mailto:andrew.brower@usda.gov)

**Awarded 2021 APHIS Scientist of the Year (November 2021)**

**Awarded 2020 PPQ Deputy Administrator's Outstanding Employee of the Year (June 2021)**

Serves as the lead scientist in the Fort Collins Pest Identification Technology Laboratory (PITL), obtaining funding for projects, managing agreements and cooperators, supervising non-USDA scientists, publishing results, and contributing to research. The PITL Molecular Laboratory designs and develops molecular methods used to detect, control, regulate, and eradicate exotic plant pests. Molecular diagnostics developed by PITL support PPQ's mission of safeguarding U.S. agriculture by strengthening pest exclusion at ports-of-entry and allowing for more efficient and accurate identification of both targets and non-targets encountered in domestic pest management programs and AQI scenarios. Also responsible for providing scientific support to the USDA-APHIS Pollinator Program, including support for honey bee health initiatives and the Asian giant hornet response in Washington.

Specialized job experience:

- Coordinates research programs across a variety of institutions, multidisciplinary scientists, and other cooperators that provide essential support to APHIS Field Operations and Policy
- Serves as the primary S&T lead for several pest portfolios and provides scientific research and support for the long-term management and mitigation of these pests
- Extensive experience with all types of USDA-APHIS programs, including domestic, AQI, import/export, emergency, and other special taxon-specific PPQ programs
- Served as the co-lead for the FY22 Plant Protection Act (PPA) Section 7721 Goal 3 (Pest ID & Detection Technology), coordinating reviews of 97 suggestions and providing final recommendations for \$6,250,000 in funding
- In FY21, administered 31+ active agreements totaling more than \$2,165,000 in funding to institutions, other USDA agencies, universities, and non-profits
- Provides scientific support for the USDA-APHIS Pollinator Program, focusing on nationwide honey bee health, managing bee pests and pathogens, and emergency response
- Coordinates administration of all PPQ pollinator agreements, with \$1 million in funding annually

- Obtains funding for research projects in the Fort Collins lab as well as for cooperators in other institutions; average of approximately \$600,000 annually awarded from sources such as PPA
- Serves as on-site supervisor for 4 Colorado State University cooperators, in all levels from technician to Ph.D. scientist
- Routinely serves as the Acting Laboratory Director for the Fort Collins Lab; average of one day per week prior to Covid-19 restrictions
- Responds to emergency program requests, such as recent finds of Old World bollworm in the Midwest and the Asian giant hornet response in Washington
- Serves as lead S&T Subject Matter Expert on the Molecular Diagnostics Working Group Team responsible for implementing molecular diagnostics at USDA Plant Inspection Stations; one of a small group of individuals responsible for opening the first PIS molecular lab in Los Indios, Texas
- Experience in all aspects of developing molecular methods to detect or identify plant pests, including designing the studies, coordinating the research, validating and statistically analyzing the data, interpreting the data, writing reports, and publishing the results
- Collaborates with foreign governments and Plant Protection Organizations (PPO) to control plant pests that threaten U.S. agriculture including the Netherlands, Peru, Colombia, Mexico, etc.
- Maintains a full molecular lab, procures equipment and supplies, coordinates maintenance contracts, prepares operating budgets, and supervises scientists and technicians
- Draft proposals and agreements, obtains funding, manages budgets, writes reports, summarizes technical data for supervisors and the public
- Represents USDA-APHIS at professional meetings, agency meetings, stakeholder meetings, and in the public setting including outreach
- Reviews and evaluates published literature on exotic plant pests; publishes 3-5 scientific studies per year in peer-reviewed journals with both domestic and foreign collaborators
- Identifies and detects exotic plant pests in all life stages using published and newly developed molecular markers and the latest in molecular technologies
- Expert in identification of Lepidoptera plant pests (adults and larvae); develops taxonomic keys, screening aids, and other resources used by USDA and stakeholders around the world
- Provides taxonomic support to USDA-APHIS-PPQ National Identification Services and Domestic Identifiers in the form of identifications (morphological and molecular), instruction documents, identification resources, and reference specimens
- Serves as a National Specialist role in PPQ's Agricultural Risk Management for the purpose of providing final identifications to NIS from surveys and as requested
- Serves as a subject matter expert for Lepidoptera for revisions to the Prioritized Offshore Pest List (OPIS/POPL) of plant pests
- Serves as an Affiliate Faculty member at Colorado State University in the Department of Agricultural Biology
- Serves as an advisor for CSU graduate students
- Serves as a Research Associate for the Department of Zoology at the Denver Museum of Nature & Science, Denver, CO
- Publishes numerous scientific articles per year; author of four books on Lepidoptera systematics; describes numerous new species of Lepidoptera (50+), including new plant pests

My primary responsibility is the coordination of research in the PITL Molecular Laboratory. This includes providing funding and supervision to onsite Colorado State University cooperators as well as USDA and university cooperators in other locations/institutions. Since 2016 I have been responsible for the Old World bollworm (OWB) molecular research program, which consists of 10+ multidisciplinary scientists and technicians operating in 4 molecular laboratories and a quarantine facility in Puerto Rico. The goal of this on-going program is to provide molecular methods and survey support to exclude this important pest from establishing in the U.S. Since 2020, I have been responsible for coordinating all scientific support and funding for PPQ's Pollinator Program, which supports ongoing research related to honey bee health. Although I continue to conduct taxonomic and molecular research, primarily on Lepidoptera, my focus has shifted towards administration and coordination of research and obtaining funding for my many cooperators at CSU and elsewhere.

Although many USDA facilities have been closed for much of the past two years because of the Covid-19 pandemic, the PITL molecular lab has been open and actively conducting research. In 2020 and 2021, we provided emergency scientific support to two major pest outbreaks – Old World bollworm and Asian giant hornet. An outbreak of Old World bollworm (*H. armigera*) was detected in the Midwest, which resulted in emergency trapping and screening of tens of thousands of individual moths using a digital PCR assay that we developed in Fort Collins. The discovery of Asian giant hornet in Washington and the overwhelming public response resulted in extreme pressure to successfully locate and eradicate AGH nests in the region. Coordination between S&T labs, the Washington State Department of Agriculture, and USDA-ARS resulted in locating and eradicating four nests in 2020 and 2021.

I work closely with Policy Managers and National Operations Managers in other CFAs on a daily basis to manage and mitigate pests. This includes providing scientific support such as identifications as well as assessing risk, assisting with planning and development of management plans, and developing mitigation strategies. I enjoy working as a team and coordinating these efforts that have a measurable and meaningful impact on U.S. agriculture.

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**Colorado State University**  
**Bioagricultural Sciences and Pest Management**  
**1177 Campus Delivery**  
**Fort Collins, CO 80523**

**Dates Employed:** 3 Dec 2012 – 11 Dec 2015  
**Hours / Week:** 40

**Title: *Research Scientist / Assistant Professor (Joint Appointment)***

Supervisor: Dr. Thomas Holtzer (Department Head), [Retired]

Responsible for working on-site with the USDA-APHIS-PPQ-S&T Identification Technology Program in the Fort Collins Laboratory, safeguarding agricultural resources by developing and improving technologies for the identification and detection of plant pests.

Specialized job experience:

- Develops molecular methods and protocols used by USDA to detect and diagnose plant pests
- Heads the USDA-S&T Fort Collins molecular biology lab and all research at that location including managing CSU and USDA laboratory technicians, specifying/purchasing supplies and equipment, and arranging for vendor demos and maintenance
- Conducts research on Lepidoptera that is used for identification and detection in plant pest surveys, control of plant pests, and development of molecular diagnostics for plant pests
- Develops identification resources for immature and adult stages of Lepidoptera (including Tortricidae and Noctuidae) currently used by USDA-APHIS and ARS-SEL identifiers
- Produces systematic research on economically important Lepidoptera, primarily Tortricidae; includes the publication of monographs, phylogenetic studies, and new species descriptions
- Develops electronic resources to detect and diagnose plant pests, including matrix-based taxonomic keys, fact sheets, screening aids, image galleries, and websites
- Develops and maintains databases of taxonomic names and images that are used globally by scientists and USDA-APHIS for the identification of plant pests
- Regularly uses and trains others to use photography equipment and software in the USDA-S&T Fort Collins Imaging Laboratory to capture macroscopic and microscopic images of plant pests
- Manages CSU Ph.D. students, advises CSU Master's students, and manages USDA laboratory technicians
- Regularly collaborates with USDA and regional/state organizations (NPDN, etc.) to provide identification training and support for plant pests, both nationally and internationally
- Served as President of The Lepidopterists' Society (2013–2015; more than 1,000 members)

USDA-funded research projects include: “*Molecular diagnostic tools for the reliable and rapid identification of *Helicoverpa armigera* and relatives*” and “*Developing Coleoptera screening aids for*

CAPS.” Other USDA-funded projects include: “*Morphological and molecular diagnostic tools for Lepidoptera larvae intercepted at U.S. ports of entry (LepIntercept)*,” “*Developing Lepidoptera screening aids for CAPS*,” and “*Lepidoptera identification training for Peru’s Plant Health Diagnostic Center*.” LepIntercept was the first identification tool for Lepidoptera larvae intercepted at U.S. ports of entry to incorporate dichotomous and interactive taxonomic keys, detailed photographs of diagnostic characters, larval setal map drawings for all species, and extensive larval diagnosis and identification authority discussions. The CAPS screening aid project involved the development of 15 new screening aids for Lepidoptera in a variety of families; these documents are used by CAPS and USDA screeners and identifiers performing domestic surveys. Other research involves the systematics of Lepidoptera, including regular descriptions of new species and production of phylogenetic studies and revisions. In addition, Lepidoptera adults and larvae are regularly identified using both morphological and molecular techniques at the request of USDA-NIS, USDA-APHIS, CAPS, and local extension agents. A website ([www.tortricid.net](http://www.tortricid.net)) is maintained that hosts information about the Tortricidae, a very economically important family, including a current world taxonomic database of all 15,099 published names.

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**Colorado State University**  
**Bioagricultural Sciences and Pest Management**  
**1177 Campus Delivery**  
**Fort Collins, CO 80523**

**Dates Employed:** 24 Mar 2008 – 1 Mar 2012  
**Hours / Week:** 20-30 [student]

**Title: Graduate Research Assistant**

Supervisor: Dr. Paul Opler, 970-219-0046, [paul.opler@colostate.edu](mailto:paul.opler@colostate.edu)

Worked on two USDA-funded projects for the USDA-APHIS-PPQ-S&T Identification Technology Program while completing a Ph.D. degree in entomology at Colorado State University. Both projects involved developing morphological and molecular identification resources for economically important tortricid plant pests. Also produced a phylogenetic study of the largest genus in the Tortricidae based on morphological and molecular data.

**Specialized job experience:**

- Identified and diagnosed tortricid plant pests, including new U.S. records, for USDA, State Departments of Agriculture, and other organizations (NPDN, CAPS, etc.)
- Produced complete taxonomic identification tools for tortricid plant pests, including interactive identification (Lucid) keys, websites, image galleries, and fact sheets
- Produced hundreds of digital photos of plant pests using macroscopic and microscopic techniques in the USDA-S&T Fort Collins Imaging Laboratory
- Produced molecular data used in the detection, identification, and control of plant pests
- Served as project manager on grants, including all writing and submitting of project plans, managing budget, tracking milestones, managing project objectives, and directing contractors
- Conducted field work for systematic research on several continents, including North America, Europe, Australia, and Africa
- Produced statistical analyses of data related to tortricid plant pests
- Published all results (new species descriptions, phylogenetic analyses, new pest records) in peer reviewed journals
- Presented oral presentations (both invited and non-invited) on systematics/taxonomy at national and international meetings
- Served as a Subject Matter Expert (Lepidoptera) for the revised ranking of pests by the USDA-APHIS Offshore Pest Information System (OPIS)
- Received numerous awards, including the first Colorado State Distinguished Professors Scholarship, and the 2011 USDA-APHIS-PPQ Deputy Administrator’s Safeguarding Award

The major component of my Ph.D. dissertation involved two successful web-based USDA-funded projects developing taxonomic keys and molecular diagnostics to assist in the identification of plant pests. The

first, “*Diagnostic tools for the identification of Western U.S. Tortricidae easily confused with the light brown apple moth*,” was produced to assist identifiers in the detection and identification of light brown apple moth in California. The second, “*Diagnostic tools for tortricid moths of immediate and future concern to United States agriculture*,” was produced to assist in the identification of tortricid plant pests encountered during domestic surveys and at U.S. ports of entry using both Lucid taxonomic keys and molecular biology methods. Modified existing and developed new molecular biology methods to detect tortricid plant pests using DNA barcoding and molecular phylogenetics. Performed extensive surveys for tortricid plant pests in North America, Europe, Australia, and Africa. Published numerous scientific articles on the systematics, detection, and identification of tortricid plant pests and described several new species of tortricids. Conducted multiple tortricid identification workshops for Federal and State organizations. In 2011, I served as a Subject Matter Expert for the revised ranking of pests by the USDA-APHIS Offshore Pest Information System (OPIS), evaluating lepidopteran plant pests and identification methods for future prioritization of surveys, detection, exclusion treatments, control, and eradication. Our team received the 2011 USDA-APHIS-PPQ Deputy Administrator’s Safeguarding Award for this work.

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**Colorado State University**  
**Bioagricultural Sciences and Pest Management**  
**1177 Campus Delivery**  
**Fort Collins, CO 80523**

**Dates Employed:** 20 Aug 2007 – 12 Dec 2008  
**Hours / Week:** 20 [student]

***Graduate Teaching Assistant***

Supervisor: Dr. Cynthia Brown, 970-491-1949, [cynthia.s.brown@colostate.edu](mailto:cynthia.s.brown@colostate.edu)

Responsible for teaching lab sections of BSPM320 (Ecology and Management of Weeds) and BZ120 (Principles of Plant Biology) with up to 50 students per semester. Prepared lectures, lab exams, and lab exercises for students.

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**Ohio State University**  
**Museum of Biological Diversity**  
**1315 Kinnear Road**  
**Columbus, OH 43212**

**Dates Employed:** 26 Aug 2004 – 14 Dec 2007  
**Hours / Week:** 20 [student]

***Title: Graduate Teaching Assistant, Head Teaching Assistant***

Supervisor: Dr. John Wenzel, 724-593-4555, [wenzelj@carnegiemnh.org](mailto:wenzelj@carnegiemnh.org)

Served as a Teaching Assistant (TA) and Head TA for the largest Introductory Biology Program in the U.S. (approximately 9,000 students enrolled annually). Taught biology lab for majors/non-majors with up to 75 students per quarter. As Head TA, coordinated and supervised 15 other TAs teaching 30+ labs per week. Prepared and coordinated exams and on-line course content. Presented lectures to classes of up to 700 students on various topics.

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**inChord Communications**  
**500 Olde Worthington Road**  
**Westerville, OH 43082**

**Dates Employed:** 1999 – 30 May 2004  
**Hours / Week:** 40

***Title: Senior Systems Administrator***

Administered computer operations for inChord and its eight subsidiary companies. Server support consisted of 100+ Windows NT/2000/2003 servers in 10+ locations. Duties included installation, administration, and technical support/troubleshooting for multiple Exchange 2000 (email) servers, SMS

2.0/2003 (management) sites, Windows NT/2000 file servers, Microsoft IIS web servers, and Active Directory Domain Controllers (2000/2003; including DHCP/DNS services). Responsible for administering inChord's production web hosting environment, including 20+ development/staging servers, E-commerce sites, and approximately 90 extranet sites. Project lead for a 12+ month initiative to redesign and implement the company intranet using new web technologies and Microsoft Sharepoint. Also responsible for the design, implementation, and installation of a company-wide OPI and file storage system using Xinet FullPress and Xiotech SAN drive arrays. Trained end-users on the functionality and best practices of using the OPI system software. Obtained numerous professional/technical certifications (Microsoft Certified Professional; Dell Certified Server Technician; Certified Xiotech Engineer; Certified Xinet FullPress Engineer).

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**Qwest Communications**  
**4650 Lakehurst Court**  
**Dublin, OH 43016**

**Dates Employed:** 1998 – 1999  
**Hours / Week:** 40

**Title:** *LAN Administrator*

Responsible for administering computers on an enterprise-wide, multiple-domain network consisting of more than 7,000 nodes in approximately 100 locations. Administrative duties included support for Windows NT 4.0 workstations and servers running in a mixed TCP/IP / IPX (Novell) environment. Installed and configured numerous software packages and provided software training to end-users for Microsoft products. Certified as a Dell Support Technician.

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**XL Connect Solutions**  
**Westerville, OH 43081**

**Dates Employed:** 1997 – 1998  
**Hours / Week:** 40

**Title:** *Customer Engineer*

Member of large team responsible for company-wide migration of new and existing machines to Windows NT 4.0 for Qwest Communications (formally LCI Communications). Served as on-site (desktop) support for workstations at Qwest.

### **FUNDED MOLECULAR RESEARCH PROJECTS AT PITL (USDA)**

(Total exceeds \$3.5 million in past 5 years)

2021-2022	<i>Molecular research to support the Asian Giant Hornet (AGH) response</i> – Washington State Department of Agriculture; Purdue University; Colorado State University; University of California, Davis – <b>\$232,931</b>
2020-2022	<i>Diagnostic Tools to Identify Exotic Tortricidae that Threaten U.S. Agriculture</i> – University of Hawaii; Colorado State University; Cornell University; California Department of Food and Agriculture – <b>\$463,061</b>
2021-2022	<i>Identification resources for Plusiinae pests (Lepidoptera)</i> – University of Florida; Colorado State University; USDA-ARS – <b>\$117,113</b>
2020-2021	<i>Molecular diagnostics development for intercepted Lepidoptera larvae</i> – Colorado State University – <b>\$130,000</b>
2020-2021	<i>Molecular diagnostics for Chrysodeixis</i> – Colorado State University – <b>\$125,000</b>
2020-2021	<i>Identification of Tuta absoluta to minimize its threat to U.S. tomato production</i> – Colorado State University – <b>\$99,134</b>
2019-2022	<i>Screening OWB trap samples</i> – Colorado State University (PI: L. Tembrock) – <b>\$180,000</b>

2019-2021	<i>Molecular diagnostics for invasive Diabrotica leaf beetles</i> – Colorado State University – <b>\$113,793</b>
2019-2022	<i>Multi-Institutional Analysis and Surveillance of OWB</i> – University of Florida – <b>\$156,410</b>
2018-2021	<i>Insect pest detection using Droplet Digital PCR (ddPCR)</i> – Colorado State University – <b>\$278,560</b>
2017-2021	<i>Insect rearing to support OWB research programs</i> – University of Puerto Rico – <b>\$335,484</b>
2016-2019	<i>Molecular-based initiatives to support the Old World Bollworm Strategic Management Plan</i> – Texas A&M AgriLife Research – <b>\$394,536</b>
2016-2019	<i>Molecular-based initiatives to support the Old World Bollworm Strategic Management Plan</i> – USDA-ARS Stoneville – <b>\$276,918</b>
2016-2019	<i>Molecular-based initiatives to support the Old World Bollworm Strategic Management Plan</i> – Colorado State University – <b>\$514,173</b>
2017-2018	<i>Use of E-probe Diagnostic Nucleic acid Assays for the early detection of exotic pests in bulk CAPS trap samples</i> – Mississippi State University – <b>\$103,420</b>
2016-2018	<i>Old World Bollworm molecular diagnostics using Droplet Digital PCR</i> – Colorado State University – <b>\$138,000</b>

### **RESEARCH GRANTS AND AWARDS (CSU)**

(Total exceeds \$650,000)

2015-2016	<i>Real-time PCR methods for noctuid moth identification: Autographa gamma and Helicoverpa armigera</i> – USDA-APHIS-PPQ-S&T – <b>\$101,536</b>
2014-2015	<i>Molecular diagnostic tools for the reliable and rapid identification of Helicoverpa armigera and relatives</i> – USDA-APHIS-PPQ-S&T – <b>\$107,407</b>
2014-2015	<i>Coleoptera screening aids for CAPS</i> – USDA-APHIS-PPQ-S&T – <b>\$42,748</b>
2013-2014	<i>Developing Lepidoptera screening aids for CAPS</i> – USDA-APHIS-PPQ-S&T – <b>\$93,976</b>
2013	<i>Lepidoptera identification training for Peru's Plant Health Diagnostic Center</i> – USDA-FAS – <b>\$9,863</b>
2012-2013	<i>Morphological and molecular diagnostic tools for Lepidoptera larvae intercepted at U.S. ports of entry</i> – USDA-APHIS-PPQ-S&T – <b>\$98,406</b>
2012	<i>Colorado State University Distinguished Professors Scholarship</i> , awarded by the College of Agricultural Sciences – CSU – <b>\$10,000</b>
2011	<i>John Henry Comstock Graduate Student Award</i> , awarded by the Entomological Society of America-North Central Branch – ESA – <b>\$1,000</b>
2011	<i>USDA-APHIS-PPQ Deputy Administrator's Safeguarding Award</i> , awarded by the USDA for work as a Lepidoptera Subject Matter Expert on the 2011 Analytic Ranking of Lepidopteran Pests by the USDA/APHIS Offshore Pest Information System (OPIS)
2011	<i>Karl K. Kinney Outstanding Graduate Student Scholarship in Entomology</i> , awarded by the Department of Bioagricultural Sciences and Pest Management – CSU – <b>\$500</b>
2009-2012	<i>Diagnostic tools for tortricid moths of immediate and future concern to United States agriculture</i> – USDA-CPHST (PIs: T. M. Gilligan & P. A. Opler) – <b>\$154,000</b>
2008-2011	<i>Ynez Morey and Chuck Reagin Memorial Entomology Scholarship</i> , awarded by the Department of Bioagricultural Sciences and Pest Management – CSU – <b>\$4,000</b> [Received four consecutive years]
2008	<i>Diagnostic tools for the identification of Western U.S. Tortricidae easily confused with the light brown apple moth</i> – USDA-CPHST (PIs: T. M. Gilligan & P. A. Opler) – <b>\$42,680</b>
2006	<i>The President's Prize</i> , First Place for 10-minute Presentation in Systematics and Evolution, Annual Meeting of the Entomological Society of America, Indianapolis, IN



**JOB-RELATED SKILLS (OTHER)**

Specialized job experience not listed above:

- Experience with configuring and administering Decision Lens for use by USDA for special projects involving prioritization/ranking
- Extensive experience curating insect collections, including major university collections and regular work in the Smithsonian collection for the past 15+ years
- Former manager of the USDA-S&T-ITP Visionary Digital imaging lab, providing demonstrations, training, and maintenance on the micro- and macroscopic photography systems used to capture images of plant pests
- Extensive field experience collecting Lepidoptera and other insects using a variety of methods in the following locations:
  - Africa (Kenya, South Africa, Tanzania)
  - Australia (Queensland, ACT, NSW)
  - Europe (Spain, France, Italy, Netherlands, Romania, United Kingdom, Belgium, Poland)
  - South America (Peru, Argentina)
  - North America (nearly all 50 states, specializing in the Midwest and Mountain West)
- Extensive experience with PC and Macintosh computers: software installation and support; hardware installation and support; server setup and maintenance (Windows Server, SQL Server)
- Proficient in various specialized software packages for: photo editing and document creation (Adobe Photoshop, Adobe Illustrator, Adobe InDesign, Zerene Stacker, Helicon Focus); phylogenetic analysis and manipulation of molecular data (PAUP, Garli, Mesquite, TNT, Geneious, various alignment programs and other custom phylogenetic packages); grid computing (HTCondor cluster install with approximately 300 processors)
- Experience with website design, coding (HTML, XML, JavaScript), and hosting (IIS, SQL; dedicated or shared)
- Knowledge of photography systems (primarily Canon), photo stacking software, microscopes (historic and modern), and specialized microscopy techniques
- Experience creating, updating, and administering large (> 15K records) web-based taxonomic databases

**PEER-REVIEWED PUBLICATIONS****Books**

4. Royals, H. R., J-F. Landry, **T. M. Gilligan**. 2019. *Paralobesia* (Lepidoptera: Tortricidae), a systematic revision. Memoirs of the Lepidopterists' Society, No. 6. Washington, D.C. 149 pp. (ISBN 978-1-7342874-0-0)
3. Wright, D. J. & **T. M. Gilligan**. 2017. *Pelochrista* Lederer of the Contiguous United States and Canada (Lepidoptera: Tortricidae: Eucosmini). Wedge Entomological Research Foundation, Alamogordo, New Mexico. 376 pp. (ISBN 978-0-933003-20-0)
2. Wright, D. J. & **T. M. Gilligan**. 2015. *Eucosma* Hübner of the Contiguous United States and Canada (Lepidoptera: Tortricidae: Eucosmini). Wedge Entomological Research Foundation, Alamogordo, New Mexico. 256 pp. (ISBN 978-0-933003-16-3)
1. **Gilligan, T. M.**, D. J. Wright & L. D. Gibson. 2008. Olethreutine moths of the midwestern United States: an identification guide. Ohio Biological Survey, Columbus, OH. 334 pp. (ISBN 978-0-86727-160-7)

**Journal articles, book chapters, websites**

55. Marcelino, J. A., J. D. Ellis, C. Braese, K. Christmon, J. D. Evans, **T. Gilligan**, T. Giray, A. Nearman, E. L. Niño, R. Rose, W. S. Sheppard & D. vanEngelsdorp. 2022. The movement of western honey bees (*Apis mellifera* L.) among U.S. states and territories: history, benefits, risks, and mitigation strategies. *Frontiers in Ecology and Evolution*. [in press]
54. Stahlke, A. R., J. Chang, L. R. Tembrock, S. B. Sim, S. Chudalayandi, S. M. Geib, B. E. Scheffler, O. P. Perera, **T. M. Gilligan**, A. K. Childers, K. J. Hackett & B. S. Coates. 2022. A chromosome-scale genome assembly of a *Bacillus thuringiensis* Cry1Ac insecticidal protein resistant strain of *Helicoverpa zea*. *Genome Biology and Evolution*. [in press]
53. Butterworth, V., H. Dansby, F. A. Zink, L. R. Tembrock, **T. M. Gilligan**, A. Godoy, W. E. Braswell & A. Y. Kawahara. 2022. A DNA extraction method for insects from sticky traps: targeting a low abundance pest, *Phthorimaea absoluta* (Lepidoptera: Gelechiidae), in mixed species communities. *Journal of Economic Entomology*. doi:10.1093/jee/toac046
52. Chorbajian, R.A., M. I. Ahumada, F. Urrea, M. Elgueta & **T. M. Gilligan**. 2021. Biogeographical patterns of herbivore arthropods associated with *Chenopodium quinoa* grown along the latitudinal gradient of Chile. *Plants*, 10, 2811. doi:10.3390/plants10122811
51. Oliveira, T. M. R., F. A. Zink, R. C. Menezes, E. C. Dianese, K. C. Albernaz-Godinho, M. G. Cunha, A. E. Timm, **T. M. Gilligan** & L. R. Tembrock. 2021. A tale of two assays: How optimization can equalize the sensitivity of real-time PCR with ddPCR for detection of *Helicoverpa armigera* (Lepidoptera: Noctuidae) in bulk samples. *Insects*, 12, 885. doi:10.3390/insects12100885
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31. Zink, F. R., L. R. Tembrock, A. E. Timm, R. E. Farris, O. P. Perera & **T. M. Gilligan**. 2017. A droplet digital PCR (ddPCR) assay to detect *Helicoverpa armigera* (Lepidoptera: Noctuidae) in bulk trap samples. PLoS ONE 12(5): e0178704. doi:10.1371/journal.pone.0178704
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24. Tembrock, L. R., J. M. McAleer & **T. M. Gilligan**. 2016. A revision of native North American *Humulus* (Cannabaceae). *Journal of the Botanical Research Institute of Texas*, 10: 11–30.
23. **Gilligan, T. M.**, L. R. Tembrock, R. E. Farris, N. B. Barr, M. J. van der Straten, B. T. L. H. van de Vossenbergh & E. Metz-Verschure. 2015. A multiplex real-time PCR assay to diagnose and separate *Helicoverpa armigera* and *H. zea* (Lepidoptera: Noctuidae) in the New World. *PLoS ONE* 10(11): e0142912. doi:10.1371/journal.pone.0142912
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12. **Gilligan, T. M.**, J. W. Brown & M. S. Hoddle. 2011. A new avocado pest in Central America (Lepidoptera: Tortricidae) with a key to Lepidoptera larvae threatening avocados in California. *Zootaxa*, 3137: 31-45.
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10. Barr, N. B., L. A. Ledezma, R. E. Farris, M. E. Epstein & **T. M. Gilligan**. 2011. A multiplex real-time polymerase chain reaction assay to diagnose *Epiphyas postvittana* (Lepidoptera: Tortricidae). *Journal of Economic Entomology*, 104: 1706-1719.
9. Tooman, L. K., C. J. Rose, C. Carraher, D. M. Suckling, S. R. Paquette, L. A. Ledezma, **T. M. Gilligan**, M. Epstein, N. B. Barr & R. D. Newcomb. 2011. Patterns of mitochondrial haplotype diversity in the invasive pest *Epiphyas postvittana* (Lepidoptera: Tortricidae). *Journal of Economic Entomology*, 104: 920-932.
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7. Brown, J. W., M. E. Epstein, **T. M. Gilligan**, S. Passoa & J. A. Powell. 2010. Biology, identification, and history of the light brown apple moth, *Epiphyas postvittana* (Walker) (Lepidoptera: Tortricidae: Archipini) in California: an example of the importance of local faunal surveys to document the establishment of exotic insects. *American Entomologist*, 56: 34-43.
6. Wright, D. J. & **T. M. Gilligan**. 2010. Two new species of *Phaneta* Stephens from Western United States (Tortricidae). *Journal of the Lepidopterists' Society*, 64: 103-107.
5. Barr, N. B., L. A. Ledezma, J. D. Vasquez, M. E. Epstein, P. H. Kerr, S. Kinnee, O. Sage & **T. M. Gilligan**. 2009. Molecular identification of the light brown apple moth (Lepidoptera: Tortricidae) in California using a polymerase chain reaction assay of the internal transcribed spacer 2 locus. *Journal of Economic Entomology*, 102: 2333-2342.
4. **Gilligan, T. M.** & M. E. Epstein. 2009. LBAM ID: Tools for diagnosing light brown apple moth and related western U.S. leafrollers (Tortricidae: Archipini). CD-ROM. Center for Plant Health Science and Technology, USDA-APHIS-PPQ, Raleigh, NC.
3. **Gilligan, T. M.**, T. Harrison & L. D. Gibson. 2009. Rediscovery and redescription of *Hystrichophora loricana* (Grote) (Tortricidae: Olethreutinae). *Zootaxa*, 2117: 65-68.
2. **Gilligan, T. M.** & J. W. Wenzel. 2008. Extreme intraspecific variation in *Hystrichophora* (Lepidoptera: Tortricidae) genitalia — questioning the lock-and-key hypothesis. *Annales Zoologici Fennici*, 45: 465-477.
1. **Gilligan, T. M.**, S. Passoa & T. Harrison. 2007. A bibliography of the works of Annette F. Braun. *Journal of the Lepidopterists' Society*, 61: 113-115.

#### **ORGANIZED MEETINGS, TRAINING WORKSHOPS AND SYMPOSIA**

2022 – Asian giant hornet Overview 2022 – Two days of meetings to summarize the 2021 season. Held remotely. [Co-organizer, presenter]

2021 – Asian giant hornet Status and Planning Meeting – Four days of meetings to summarize the 2020 season. Held remotely. [Co-organizer, presenter]

2020 – Tomato leaf miner, *Tuta absoluta* – Diagnostic and surveillance training course. Four days, attended by 18 Caribbean countries, in collaboration with the Greater Caribbean Safeguarding Initiative. Held remotely, facilitated by the University of Florida. [Instructor]

2017 – Old World Bollworm Training – Identification and survey training for *Helicoverpa armigera*. Three days, attended by 14 Caribbean countries, in collaboration with the Greater Caribbean Safeguarding Initiative. Held at the University of the West Indies, St. Augustine, Trinidad. [Facilitator, instructor]

2017 – The Second North American Microlepidopterists' Meeting. University of Arizona, Tucson, AZ. [Co-organizer, presenter]

2016 – Preparing a Strategic Response Plan to Minimize the Impact of *Helicoverpa armigera* on Agriculture in the United States (USDA). Gainesville, FL. [Detection Group leader]

2015 – Invasive Species Pathways Seminar. Training for regulators and growers on identification of lepidopteran grape pests in California. Hosted by National Plant Diagnostic Network / Napa County, CA. [Instructor]

2013 – USDA Lepidoptera identification training for Peru's Plant Health Diagnostic Center. Five day training workshop held at SENASA, Lima, Peru, included both morphological and molecular diagnostics. [Organizer, instructor]

2013 – Taxonomic workshop for the early detection of important Tortricidae and other lepidopteran agricultural pests. Three day training workshop held at the University of Massachusetts, Amherst. Attended by CAPS/USDA-PPQ screeners and identifiers from eight states. [Instructor]

2012 – Joint meeting of the Lepidopterists' Society (61<sup>st</sup> annual) and Societas Europaea Lepidopterologica. Denver Museum of Nature and Science, Denver, CO. [Program chair]

2012 – Tortricid2012: An International meeting of Tortricid Systematists. Denver Museum of Nature and Science, Denver, CO. [Organizer, program chair, presenter]

2011 – Light brown apple moth / European grapevine moth (Tortricidae) Identification Workshop. National Plant Diagnostic Network Annual Meeting, Berkeley, CA. [Co-organizer and instructor]

2009 – Tortricidae symposium. 16<sup>th</sup> European Congress of Lepidopterology, Cluj-Napoca, Romania. [Organizer and presenter]

2009 – USDA Lepidoptera adult identification workshop. University of California-Davis/USDA, Davis, CA. [Instructor]

### **PRESENTATIONS (SELECTED from 100+ total)**

**Gilligan, T. M.**, B. Harpur. 2022. Asian giant hornet population genetics. Asian giant hornet Research Overview 2022.

**Gilligan, T. M.** 2021. Asian giant hornet in Washington State. National Association of Plant Protection and Quarantine Managers Annual Meeting. (Invited)

**Gilligan, T. M.** 2021. Digital PCR, A new tool in the fight against invasive species. APHIS Science Talks. The Story Behind the Science – Sci Spy. (Invited)

**Gilligan, T. M.**, T. Wilson, C. Looney, A. Timm, A. H. Smith-Pardo, B. Harpur & L. Tembrock. 2021. Asian giant hornet (*Vespa mandarinia*) in North America: Population genetics and potential origins. Annual Meeting of the Entomological Society of America, Denver CO.

Tembrock, L., F. Zink, A. Timm, **T. M. Gilligan**. 2019. Nanobiosensors for tracking pesticide resistance genes in *Helicoverpa armigera* (Lepidoptera: Noctuidae) and interspecific hybrids. Annual Meeting of the Entomological Society of America, St. Louis, MO.

van Warmerdam, T., A. Drury, **T. M. Gilligan**, J. King. 2019. Biosurveillance using raw sequence data analysis from mixed insect traps. Annual Meeting of the Entomological Society of America, St. Louis, MO.

**Gilligan, T. M.**, P. Z. Goldstein & A. E. Timm. 2018. Using DNA data to improve identifications: Examples from *Helicoverpa* interceptions at U.S. ports of entry. Entomological Society of America, ESC, and ESBC Joint Annual Meeting, Vancouver, BC.

Zink, F., L. Tembrock, A. Timm & **T. M. Gilligan**. 2018 A duplex ddPCR assay for simultaneously detecting *Ips sexdentatus* and *Ips typographus* (Coleoptera:Curculionidae) from bulk trap samples. Entomological Society of America, ESC, and ESBC Joint Annual Meeting, Vancouver, BC.

**Gilligan, T. M.**, L. R. Tembrock, R. Farris, L. A. Ledezma & N. B. Barr 2017. A real-time PCR assay for the separation of *Autographa gamma* (Noctuidae: Plusiinae) from morphologically similar species in North America. Annual Meeting of the Entomological Society of America, Denver, CO.

Zink, F. A., L. R. Tembrock, A. E. Timm, R. E. Farris, O. P. Perera & **T. M. Gilligan**. 2017. A droplet digital PCR (ddPCR) assay to detect *Helicoverpa armigera* (Lepidoptera: Noctuidae) in bulk trap samples. Annual Meeting of the Entomological Society of America, Denver, CO.

**Gilligan, T. M.**, N. B. Barr, R. E. Farris & L. Tembrock. 2016. Molecular-based initiatives to support the Old World Bollworm Strategic Management Plan. Preparing a Strategic Response Plan to Minimize the Impact of *Helicoverpa armigera* on Agriculture in the United States (USDA), Gainesville, FL. (Invited)

Tembrock, L. R., **T. M. Gilligan**, N. B. Barr & R. E. Farris. 2016. Molecular methods for the identification of *Autographa gamma* (Linnaeus). ICE 2016, XXV International Congress of Entomology, Orlando, FL.

**Gilligan, T. M.**, L. R. Tembrock, N. B. Barr & R. E. Farris. 2016. Molecular-based initiatives to support the identification of *Helicoverpa armigera* (Hübner) in the New World. 65th Annual Meeting of the Lepidopterists' Society, Florissant, CO.

**Gilligan, T. M.** & D. J. Wright. 2015. *Eucosma* Hübner of the Contiguous United States and Canada (Lepidoptera: Tortricidae: Eucosmini). 64th Annual Meeting of the Lepidopterists' Society, West Lafayette, IN.

**Gilligan, T. M.** 2014. Lepidopterology in a globalized world [Presidential address]. 63<sup>rd</sup> Annual Meeting of the Lepidopterists' Society, Park City, UT. (Invited)

**Gilligan, T. M.** 2013. Interactive identification keys for pest detection and quarantine: incorporating non-traditional data. Interactive keys transforming identification: Melding traditional methods with new technologies (SysEB Section Symposium). Annual Meeting of the Entomological Society of America, Austin, TX. (Invited)

**Gilligan, T. M.** & D. J. Wright. 2013. Molecular phylogeny and revised classification of *Eucosma* Hübner and related genera. Lepidopterists' Society 62<sup>nd</sup> Annual Meeting with Southern Lepidopterists' Society and Association for Tropical Lepidoptera, McGuire Center for Lepidoptera & Biodiversity, Gainesville, FL.

**Gilligan, T. M.** & M. E. Epstein. 2011. Tortricids of Agricultural Importance. Annual Meeting of the Entomological Society of America, Reno, NV.

Barr, N. & **T. M. Gilligan**. 2008. Molecular diagnostics of LBAM: species recognition and population structure. Light brown apple moth (*Epiphyas postvittana*) – A new quarantine problem (Symposium). Annual Meeting of the Entomological Society of America, Reno, NV. (Invited)

**JOB-RELATED SERVICE, SPECIAL ACCOMPLISHMENTS, and OUTREACH**

2020-Present USDA PPQ, CFWG S&T Representative, Pollinator Program  
2018-2021 Secretary, The Lepidopterists' Society, Executive Council  
2018-Present USDA PPQ, Molecular Diagnostics Working Group SME  
2016-Present USDA PPQ, CFWG S&T Representative, Old World Bollworm Program  
2015-Present Board of Editors, Wedge Entomological Research Foundation (publishers of the Moths of America North of Mexico [MONA] series)  
2015-Present Webmaster, The Lepidopterists' Society  
2015-2017 Past President, The Lepidopterists' Society, Executive Council  
2015 Team Lead, Lepidoptera Subject Matter Expert, Revisions to the 2012 Prioritized Offshore Pest List (OPIS)  
2014-Present Board of Directors, Wedge Entomological Research Foundation  
2013-2015 President, The Lepidopterists' Society, Executive Council  
2011 Lepidoptera Subject Matter Expert, USDA-APHIS Offshore Pest Information System (OPIS)  
2010-2013 Member at Large, The Lepidopterists' Society, Executive Council  
2007-Present Reviewer of journal articles or monographs for 40+ Journal titles