

TED C. MACRAE CURRICULUM VITA

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KEY CAREER ACCOMPLISHMENTS

- Critical role in development and commercialization of Intacta RR2 Pro® in South America, the first transgenic insect-protected soybean product and first transgenic crop developed exclusively for an ex-U.S. market (commercial launch 2013). In 2017, I was awarded the Edgar M. Queeny Award, Monsanto Company's highest award for scientific achievement due to my "start-to-finish" involvement in this project and key role in developing a *de novo* South American field-testing network.
- Critical role in development of 2nd Generation Insect Protected Soy (commercial launch 2021) and 3rd Generation Insect Protected Soy (anticipated commercial launch 2026).
- Technical leadership in development of methods for understanding spectrum and degree of insecticidal activity and interactive potential of *Bacillus thuringiensis* δ -endotoxins.
- Developed first artificial diet bioassays for *Lygus* and stink bugs.
- Designed, implemented, and initiated automation of insecticidal protein screen that is the basis of Monsanto's present-day discovery effort.
- Widely recognized as an entomological technical resource for questions regarding field trial design and conduct, rearing methods, bioassay design, basic biology, and taxonomy.

EDUCATION

- **B.S. General Agriculture**, December 1979. University of Missouri-Columbia. GPA 3.3/4.0. Recipient of the Phillip C. Stone Award in Entomology, May 1979.
- **M.S. Entomology**, December 1981. University of Missouri-Columbia. GPA 3.8/4.0. Thesis title: "Life history of *Forcipita loca* on three graminaceous hosts." Two publications (Quisenberry et al. 1983, MacRae & Yonke 1984).

EXPERIENCE

AREA ENTOMOLOGIST, 1982–1990

Missouri Department of Agriculture, St. Louis, Missouri

Enforced Missouri Plant Law in St. Louis and surrounding counties in Missouri. Duties included plant pest inspection and certification, surveys for pests of regulatory importance, and survey and redistribution of beneficial organisms.

RESEARCH ENTOMOLOGIST, 1990–1992

STAFF RESEARCH ENTOMOLOGIST, 1993–1995

Novo Nordisk Entotech, Inc., Davis, California

Established and supervised broad-spectrum insect rearing program to support bioevaluation of microbially derived insecticide candidates. Responsible for coordination of insect and greenhouse plant production; rearing and bioassay methods development; and staff supervision. Established quality control (QC) bioassay program to support product label requirements; Integrated management of QC bioassay and Insectary activities and personnel. Responsible for GLP and non-GLP bioassay coordination; insect and greenhouse plant production; rearing and bioassay methods development; QC bioassay data analysis, management, and reporting; and staff supervision.

RESEARCH ENTOMOLOGIST, 1995

AgraQuest, Inc., Davis, California

Initiated insect rearing and bioassay programs for natural products insecticide discovery. Responsible for insect colony establishment and development of efficient, high-throughput, screening bioassays.

RESEARCH ENTOMOLOGIST, 1995–2011

SENIOR RESEARCH ENTOMOLOGIST, 2011–2015

SENIOR RESEARCH ENTOMOLOGIST & SCIENCE FELLOW, 2015–2019

PROJECT FIELD ENTOMOLOGIST & SCIENCE FELLOW, 2019–2021 (retired)

Monsanto Company (1995–2019)

Bayer U.S. – Crop Science (2019–2021), Chesterfield, Missouri

1995–1997: Established insecticidal protein discovery screen. Responsible for development of efficient, high-throughput, feeding-based bioassays against multiple insect targets; optimization of artificial insect diets and rearing methods; coordination of bioassays and insect production; and staff supervision.

1998: Provided technical support for potato/specialty crop effort, including vegetables, sunflower, and alfalfa. Key contact for external cooperators evaluating insecticidal proteins for bioactivity.

1996–present: Lead entomologist for multiple insect-protected soybean projects. Established and managed diverse network of key academic and governmental cooperators in both the U.S. and South America to evaluate efficacy of transgenic soybean events and assess spectrum of activity and insect resistance management potential insecticidal proteins. Responsible for on-site and remote bioassay conduct/coordination, laboratory, screenhouse and field evaluation of soybean events, generation of data needed to support development of insect resistance management strategies, and identification of key entomological issues impacting commercialization of insect-protected soybean products. Project Lead for Bt/RR2Y Soybean (2005–2011) and Soy IP2 (2012–present).

ASSOCIATE INSTRUCTOR, FALL TERM, 1998–2000

Maryville University, St. Louis, Missouri

Co-taught Biology 302 “The Invertebrates.” Upper-level undergraduate course focusing on diversity, evolution, and biology of invertebrate animals. Responsible for two lectures and two laboratory sessions per week and four exams per term.

SYNERGISTIC EXPERIENCE

PERSONAL RESEARCH

I have a strong interest in beetle taxonomy and have studied them actively for most of my adult life. This has involved extensive fieldwork throughout the U.S. as well as Mexico, Ecuador, Argentina, and South Africa and the assembly of an insect collection that now numbers close to 100,000 specimens. From 1982–1990 I studied the distribution, occurrence, and host associations of wood-boring beetles in Missouri, resulting in the documentation of ~350 species/subspecies in the state (nearly 100 representing new state records) and the identification of innumerable new host plant associations (MacRae 1991, 1994). My field work has also resulted in the discovery and description of several species new to science (MacRae 2000, 2003, 2014, 2016; MacRae & Bellamy 2013; Nelson & MacRae 1994) and better understanding of distributions and host plants for species throughout the U.S. and Latin America (MacRae 2004, 2006; MacRae & Basham 2013; MacRae & Bellamy 2013; MacRae & Nelson 2003; MacRae & Rice 2007; Nelson & MacRae 1990; Nelson et al. 1996). More recently I conducted detailed faunal surveys of tiger beetles in the central U.S., clarifying the status of several species of conservation interest (Brown & MacRae 2011; MacRae & Brown 2011a, 2011b; Fothergill et al. 2011; MacRae et al. 2011). Strong writing skills and an interest in scientific publishing eventually led me to entomology journal editorial roles beginning 2005, and I now serve as Managing Editor for *The Pan-Pacific Entomologist* (and in several other editorial roles). Since 2009 I have taken up insect macrophotography and become a recognized authority and regular speaker within the entomology and nature photography communities. In addition to regular contributions to scientific journals and natural history newsletters, I write informally about entomology, insect photography and natural history at my personal website, [Beetles in the Bush](#) (928 posts).

EDITORIAL ROLES (CURRENT)

- *The Pan-Pacific Entomologist* (Journal of the Pacific Coast Entomological Society)
 - Coleoptera Subject Editor, Jan 2005–Apr 2011 (52 manuscripts)
 - Managing Editor, Apr 2011–present (37 issues through 6/17/21)
- *Cicindela* (A quarterly journal devoted to Cicindelidae)
 - Layout Editor, 2011–2020 (106 manuscripts in 28 issues)
 - Review & Layout Editor, 2020–present (8 manuscripts in 2 issues through March 2021)
- *The Coleopterists Bulletin* (Journal of the Coleopterists Society)
 - Review Editor, 2016–present (103 manuscripts through 6/17/21)

EDITORIAL ROLES (PAST)

- *Zootaxa* (A mega-journal for zoological taxonomists in the world)
 - Coleoptera Subject Editor, 2009–2011 (32 manuscripts)
- *Nature Notes* (Journal of the Webster Groves Nature Study Society)
 - Editor, Sep 2009–Sep 2019 (100 issues produced)
- *Journal of Insect Science* (An Entomological Society of America journal)
 - Taxonomy Subject Editor, Jan 2016–Dec 2019 (14 manuscripts)

MANUSCRIPT REVIEWER

- *Acta Biochimica et Biophysica Sinica*, 2006 (1)
- *Acta entomologica musei nationalis Pragae*, 2016 (2)
- *Annals of the Entomological Society of America*, 2015 (2)
- *Arthropods*, 2011 (1)

- *Banisteria*, 2021 (1)
- *Biodiversity Data Journal*, 2014 (1)
- *Folia Entomologica Mexicana*, 2004 (2)
- *Holotipus*, 2021 (1)
- *Insecta Mundi*, 2017–2021 (5)
- *Journal of the Arkansas Academy of Science*, 2013 (1)
- *Northeastern Naturalist*, 2013 (1)
- *Proceedings of the Entomological Society of Washington*, 2017 (1)
- *Revista Acta Zoológica Mexicana*, 2013 (1)
- *Revista Chilena de Entomología*, 2020 (1)
- *Systematic Entomology*, 2014 (1)
- *The Canadian Entomologist*, 2001–2020 (3)
- *The Coleopterists Bulletin*, 1994–2016 (17)
- *The Maryland Entomologist*, 2008–2019 (7)
- *Terrestrial Arthropod Review*, 2010–2014 (2)
- *ZooKeys*, 2009–2016 (5)
- *Zootaxa*, 2005–2011 (19)
- Books, 2007–present (7):
 - *An Annotated List of the Insects of Big Bend National Park* [families Buprestidae, Cerambycidae, Cicindelidae], by A. Van Pelt (2007), Big Bend National Park Association, 204 pp.
 - *A Catalog and Bibliography of the Buprestoidea of America North of Mexico* [introduction], by G. H. Nelson et al. (2008), The Coleopterists Society, Special Publication No. 4, 274 pp.
 - *World Catalogue and Bibliography of the Jewel Beetles (Coleoptera: Buprestoidea) Vol. 1* [introduction], by C. L. Bellamy (2008), Pensoft Publishers, 606 pp.
 - *Jewel Beetles (Coleoptera: Buprestidae) of South Carolina*, by P. J. Harpootlian & C. L. Bellamy (2014), Clemson University Public Service Publishing, 127 pp.
 - *Beetles of Eastern North America*, by A. V. Evans (2014), Princeton University Press, 560 pp.
 - *Primary Types of Longhorned Woodboring Beetles (Coleoptera: Cerambycidae and Disteniidae) of the Smithsonian Institution*, by S. W. Lingafelter et al. (2014), Smithsonian Institution Scholarly Press, 390 pp.
 - *Illustrated guide to the emerald ash borer, Agrilus planipennis Fairmaire and related species (Coleoptera, Buprestidae)*, by M. L. Chamorro et al. (2015), Pensoft Publishers, 198 pp.

PROFESSIONAL & AVOCATIONAL ASSOCIATIONS

- Center for Systematic Entomology, regular member, 1993–present
- Entomological Society of America, regular member, 1990–present
 - ESA Calendar Committee, 2019–present
 - Taxonomy Subject Editor (*Journal of Insect Science*), 2016–2019
- Florida State Collection of Arthropods, research associate, 1986–present
- Maryland Entomological Society, regular member, 2009–present
- Michigan Entomological Society, regular member, 1987–2016
- Natural History Museum of Los Angeles County, field associate, 2001–present
- Pacific Coast Entomological Society, regular member, 1987–present
 - Coleoptera Subject Editor (*The Pan-Pacific Entomologist*), 2005–2011
 - Managing Editor (*The Pan-Pacific Entomologist*), 2011–present
- The Coleopterists Society, regular member, 1982–present
 - Review Editor (*The Coleopterists Bulletin*), 2016–present

- Webster Groves Nature Study Society, regular member, 1983–1990, 1996–present
 - Executive Board, 2009–2021
 - Newsletter Editor (*Nature Notes*), 2009–2019
 - Member-At-Large, 2019–2021
 - Education Committee, 2011–2016
 - Nature Photography Contest Judging Committee, 2013, 2015, 2017, 2019, 2021

INTERNATIONAL TRAVEL

- Argentina: Sep 1996, Sep 1997, Mar 1999, May 1999, Feb 2000, May 2000, Feb 2001, June 2001, July 2002, Feb 2008, Mar 2011, Nov 2011, Feb–Apr 2012, Nov 2012, Feb–Mar 2013, Oct 2013, Feb–Mar 2014, Oct 2014, Feb–Mar 2015, Oct 2015, Jan–Feb 2016, Oct 2016, Feb–Mar 2017, Oct 2017, Feb 2019, Feb 2020
- Belgium: Aug 1988
- Brazil: Sep 1997, May 1999, May 2000, Aug 2000, Feb 2001, July 2002, Feb 2008, Jan 2011, Feb 2013, Oct 2017
- Canada: Aug 1999
- Denmark: Mar 1992, Nov–Dec 1992, Mar 1993, Aug 1993
- Dominican Republic: May 1982
- Ecuador: Dec 1989–Jan 1990
- France: July 2007, July 2010, July 2016
- Germany: Aug 1988
- Haiti: Feb 2019
- Italy: Nov 2018
- Jamaica: June 2006
- Mexico: July 1992, Oct 2004, July–Aug 2005, Oct 2006, July 2014
- Netherlands: Aug 1988
- Russia: Dec 1996–Jan 1997, Oct 2002, Nov 2002
- Saint-Martin: Feb 2019
- South Africa: Nov–Dec 1999
- Sweden: Dec 1992

Languages: English, native; Spanish, highly functional; Portuguese (limited reading).

CYCLING

I have been an active cyclist most of my adult life and a serious one (100+ miles/week) since 2001. In 1989 I traveled through western Europe (Belgium, Netherlands, Germany) by bicycle, covering 430 miles in two weeks. In 2002 I began racing as an amateur on a local team (Big Shark Racing), advancing to Category 4 in 2003 and Category 3 in 2005. I raced road races, criteriums, and time trials, specializing in the latter and winning one national and four state championship titles. I also participated in the Etape du Tour (amateur stage of the Tour de France) in 2007 and again in 2010, placing within the top 10% each time. Although I stopped racing after the 2010 season, I remain active in the local cycling scene and log on average 6000–7000 miles/year. My race resume follows.

CHAMPIONSHIPS

- 2010 Missouri State Time Trial, Merckx Open
- 2006 Missouri State Time Trial, Cat 3 (5th overall)
- 2005 ABR Masters National Time Trial, Men 40+

- 2005 Missouri State Time Trial, Cat 4/5 (8th overall)
- 2004 Missouri State Time Trial, Cat 4/5

OTHER WINS

- 2007 Great River Rendezvous Time Trial, Cat 3
- 2006 Kansas State Time Trial, Cat 3 (2nd overall)
- 2005 Columbia Apple Cup Time Trial, Cat 4/5 (3rd overall)
- 2004 Union County Colorfest Biathlon, Men 45-49 (2nd overall)
- 2004 Nebraska State Time Trial, Cat 4/5 (5th overall)
- 2004 SCWF Biathlon (overall winner)
- 2004 Touring Cyclist Biathlon, Coed Relay (1st bike split)
- 2004 HalfMax Triathlon, Coed Relay (top team)
- 2003 Touring Cyclist Biathlon, Coed Relay (1st team, top bike split)
- 2002 Touring Cyclist Biathlon, Coed Relay (1st team, 2nd bike split)

PODIUM FINISHES

- 2008 Velo In The Valley Time Trial, Men 50+ – 2nd place
- 2008 Tour of St. Louis Time Trial, Men 50+ – 3rd place
- 2007 ABR Masters National Time Trial, Men 50+ – 4th place
- 2007 Tour of St. Louis Time Trial, Cat 3 – 5th place
- 2006 ABR Masters National Time Trial, Men 50+ – 5th place
- 2006 Tour of St. Louis Time Trial, Cat 3 – 5th place
- 2006 Hillsboro Biathlon, Men 45-49 – 4th place (3rd bike split)
- 2005 Mercy Celebrity Classic Criterium (Sun), Cat 4/5 – 3rd place
- 2005 Cavanal Hill Climb, Cat 4/5 – 2nd place
- 2005 Hillsboro Biathlon, Men 45-49 – 3rd place (9th overall, 2nd bike split)
- 2005 Columbia Apple Cup Criterium, Cat 4/5 – 2nd place
- 2005 Arkansas State Time Trial, Cat 4/5 – 2nd place
- 2005 Rolla Hellbender Road Race, Cat 4/5 – 2nd place
- 2005 Rolla Hellbender Criterium, Cat 4/5 – 5th place
- 2005 Highland Lions Biathlon, Men 45-49 – 3rd place
- 2005 Tour of St. Louis Time Trial, Cat 4/5 – 2nd place
- 2005 MaxTrax Duathlon, Men 45-49 – 3rd place (3rd bike split)
- 2004 Millstadt Park Biathlon, Men 45-49 – 2nd place (13th overall, top bike split)
- 2004 Hillsboro Biathlon, Men 45-49 – 3rd place
- 2003 Millstadt Park Biathlon, Coed Relay – 2nd place
- 2003 Missouri State Time Trial, Men 45-49 – 2nd place
- 2003 Hillsboro Roubiax Road Race, Cat 5 – 3rd place
- 2003 Froze Toes Road Race, Cat 5 – 4th place
- 2002 Millstadt Park Biathlon, Coed Relay – 2nd place
- 2002 Delhi Road Race, Cat 5 – 2nd place
- *2002 Hillsboro Roubiax Road Race (Inaugural), Cat 5 – 4th place

OTHER NOTABLE RESULTS

- 2010 Etape du Tour, Finish time – 7:55:55 (Men 50–54 – 147/~2000; 1079/~10000 overall)
- 2008 Missouri State Time Trial, Men 50+ – 4th
- **2008 St. Louis Half Marathon, Finish time – 1:43:08 (Men 50–54 – 20/255; 609/8,131 overall)

- 2007 Etape du Tour, Finish time – 8:17:43 (Men 50–54 – 62/~1500; 494/~7000 overall)
- 2006 Missouri State Road Race, Cat 3 – 9th place
- 2005 Mercy Celebrity Classic Criterium (Race 1), Cat 4/5 – 7th
- 2005 ABR Masters National Road Race, Men 40+ – 6th

*1st career bike race

**1st career half marathon

AWARDS, RECOGNITIONS, PUBLICATIONS & PRESENTATIONS

AWARDS

1. **1979 Phillip C. & Ruth E. Stone Award in Entomology.** University of Missouri, Department of Entomology, Columbia, MO.
2. **20018 Reggie Award.** Monsanto Company, St. Louis, MO. Best Performance, Scientific Excellence: Insect Bioassay Support Team: “Insect Bioassay Support for MON89034 and SmartStax” [\[summary\]](#).
3. **2008 Above & Beyond Award.** Monsanto Company, St. Louis, MO. “First ever 5% reduced refuge for YieldGard VT PRO® and YieldGard VT Triple PRO Approvals that supports SmartStax Corn value capture” [\[summary\]](#).
4. **2012 Above & Beyond Award.** Monsanto Company, St. Louis, MO. Soy IP2 Project Team: “Acceleration of Second Generation INTACTA RR2 PRO” [\[summary\]](#).
5. **2015 Above & Beyond Award.** Monsanto Company, St. Louis, MO. Agronomic Traits Insect Control Platform: “Rapid Advancement of Lepidopteran Insect Control Traits for Corn and Soybean” [\[summary\]](#).
6. **2017 Edgar M. Queeny Award.** Monsanto Company, St. Louis, MO. “Intacta Soybean for South America” [\[announcement\]](#), [presentation](#).
7. **2020 Sustained Contributor Award.** Bayer Crop Sciences, Chesterfield, MO.

OTHER RECOGNITIONS

1. **Technology Quarterly Recognition.** Monsanto Company, St. Louis, MO. “For accelerating the Soy Insect Protection 2 project to enable a Phase 3 transition in FY12” – Jan 2012.
2. **Technology Quarterly Recognition.** Monsanto Company, St. Louis, MO. “For developing quantitative bioactivity data for individual Soy IP2 traits to determine IRM characteristics for the full stack against key targets” – Jan 2013.
3. **Technology Quarterly Recognition.** Monsanto Company, St. Louis, MO. “For the screenhouse implementation to accelerate Ag Traits product assessment, which accelerates early phase gene efficacy decisions by replacing costly early open field efficacy trials in the US & Argentina” – Oct 2014.
4. **Technology Quarterly Recognition.** Monsanto Company, St. Louis, MO. “For development of a protein dose determination assay to support phase 2 transition of insect control projects” – Jan 2016.
5. **Technology Quarterly Recognition.** Monsanto Company, St. Louis, MO. “For your efforts on picking up testers, using a novel crossing approach, designing, executing, and taking measurements in the first SD419 multi-tester trial in LAS, demonstrating that SD419 produced reduced stature hybrids with tropical/subtropical germplasm in Argentina” – May 2018.

PATENTS/PATENT APPLICATIONS

1. Gao, A.-G., K. H. Kolacz, **T. C. MacRae**, J. A. Miklos, M. S. Paradise, F. J. Perlak, A. S. Toedebusch & L. A. Harrison. 2011. Soybean plant and seed corresponding to transgenic event MON87701 and methods for detection thereof. *US Patent No. US 8049071 B2*, issued 1 November 2011 [\[abstract\]](#), [full text](#).

2. Gao, A.-G., K. H. Kolacz, **T. C. MacRae**, J. A. Miklos, M. S. Paradise, F. J. Perlak & A. S. Dressel Toedebusch. 2013. Soybean plant and seed corresponding to transgenic event MON87701 and methods for detection thereof. *US Patent No. US 8455198 B2*, issued 4 June 2015 [[abstract](#), [full text](#)].
3. Beazley, K. A., W. C. Burns, R. H. Cole, II, **T. C. MacRae**, J. A. Miklos, L. G. Ruschke, K. Tian, L. Wei & K. Wu. 2014. Soybean Transgenic Event MON87751 and Methods for Detection and Use Thereof. *US Patent Application No. 20140373191*, issued 18 December 2014 [[full text](#)].

JOURNAL ARTICLES (BIOTECHNOLOGY)

1. **MacRae, T. C.**, M. E. Baur, B. J. Fitzpatrick, A.-G. Gao, J. C. Gamundi, L. A. Harrison, V. T. Kabuye, R. M. McPherson, J. A. Miklos, M. S. Paradise, A. S. Toedebusch & A. Viegas. 2005. Laboratory and field evaluations of transgenic soybean exhibiting high-dose expression of a synthetic *Bacillus thuringiensis cry1A* gene for control of Lepidoptera. *Journal of Economic Entomology* 98(2):577–587 [[pdf](#)].
2. Miklos, J. A., M. F. Alibhai, S. A. Bledig, D. C. Connor-Ward, A. Gao, B. A. Holmes, K. H. Kolacz, V. T. Kabuye, **T. C. MacRae**, M. S. Paradise, A. S. Toedebusch & L. A. Harrison. 2007. Characterization of soybean exhibiting high expression of a synthetic *Bacillus thuringiensis cry1A* transgene that confers a high degree of resistance to lepidopteran pests. *Crop Science* 47(1):148–157 [[pdf](#)].
3. McPherson, R. M. & **T. C. MacRae**. 2009. Assessing lepidopteran abundance and crop injury in soybean lines exhibiting a sythetic *Bacillus thuringiensis cry1A* gene. *Journal of Entomological Science* 44(2):120–131 [[pdf](#)].
4. McPherson, R. M. & **T. C. MacRae**. 2009. Evaluation of transgenic soybean exhibiting high expression of a synthetic *Bacillus thuringiensis cry1A* transgene for suppressing lepidopteran population densities and crop injury. *Journal of Economic Entomology* 102(4):1640–1648 [[pdf](#)].

JOURNAL ARTICLES (BIOSYSTEMATICS)

1. Quisenberry, S. S., **T. C. MacRae** & T. R. Yonke. 1983. Preference of *Forcipita loca* (Homoptera: Cicadellidae) adults to forage plants. *Environmental Entomology* 12(4):1149–1153 [[pdf](#)].
2. **MacRae, T. C.** & T. R. Yonke. 1984. Life history of *Forcipita loca* (Homoptera: Cicadellidae) on three graminaceous hosts. *Journal of the Kansas Entomological Society* 51(1):69–78 [[pdf](#)].
3. Nelson, G. H. & **T. C. MacRae**. 1990. Additional notes on the biology and distribution of Buprestidae (Coleoptera) in North America, III. *The Coleopterists Bulletin* 44(3):349–354 [[pdf](#)].
4. **MacRae, T. C.** 1991. The Buprestidae (Coleoptera) of Missouri. *Insecta Mundi* 5(2):101–126 [[pdf](#)].
5. **MacRae, T. C.** 1994. Annotated checklist of the longhorned beetles (Coleoptera: Cerambycidae and Disteniidae) known to occur in Missouri. *Insecta Mundi* 7(4) [1993]:223–252 [[pdf](#)].
6. Nelson, G. H. & **T. C. MacRae**. 1994. *Oaxacanthaxia nigroaenea* Nelson and MacRae, a new species from Mexico (Coleoptera: Buprestidae). *The Coleopterists Bulletin* 48(2):149–152 [[pdf](#)].
7. Nelson, G. H., R. L. Westcott & **T. C. MacRae**. 1996. Miscellaneous notes on Buprestidae and Schizopodidae occurring in the United States and Canada, including descriptions of previously unknown sexes of six *Agrilus* Curtis (Coleoptera). *The Coleopterists Bulletin* 50(2):183–191 [[pdf](#)].
8. **MacRae, T. C.** 2000. Review of the genus *Purpuricen* Dejean (Coleoptera: Cerambycidae) in North America. *The Pan-Pacific Entomologist* 76(3):137–169 [[pdf](#)].
9. **MacRae, T. C.** & S. R. Penn. 2001. Additional records of adventive *Onthophagus* Latreille (Coleoptera: Scarabaeidae) in North America. *The Coleopterists Bulletin* 55(1):59–60 [[pdf](#)].
10. **MacRae, T. C.** 2001. Correction to holotype deposition of *Purpuricen* *linsleyi* Chemsak (Coleoptera: Cerambycidae). *The Pan-Pacific Entomologist* 77(4):281 [[pdf](#)].
11. **MacRae, T. C.** & G. H. Nelson. 2003. Distributional and biological notes on Buprestidae (Coleoptera) in North and Central America and the West Indies, with validation of one species. *The Coleopterists Bulletin* 57(1):57–70 [[pdf](#)].
12. **MacRae, T. C.** 2003a. *Mastogenius guayllabambensis* MacRae, a new species from Ecuador (Coleoptera: Buprestidae: Haplostethini). *The Coleopterists Bulletin* 57(2):149–153 [[pdf](#)].
13. Sakalian, V., **T. C. MacRae**, S. Bílý & A. Sundholm. 2003. Comments on the proposed conservation of usage of *Acmaeodera* Eschscholtz, 1829 and *Acmaeoderella* Cobos, 1955 (Insecta, Coleoptera) by

- designation of *Buprestis cylindrica* Fabricius, 1775 as the type species of *Acmaeodera*. *Bulletin of Zoological Nomenclature* 60(3):218 [\[pdf\]](#).
14. **MacRae, T. C.** 2003b. *Agrilus* (s. str.) *betulanigrae* MacRae (Coleoptera: Buprestidae: Agrilini), a new species from North America, with comments on subgeneric placement and a key to the *otiosus* species-group in North America. *Zootaxa* 380:1–9 [\[pdf\]](#).
 15. **MacRae, T. C.** 2004. Notes on host associations of *Taphrocerus gracilis* (Say) (Coleoptera: Buprestidae) and its life history in Missouri. *The Coleopterists Bulletin* 58(3):388–390 [\[pdf\]](#).
 16. Brown, C. R. & **T. C. MacRae**. 2005. Occurrence of *Cicindela* (*Cicindelidia*) *trifasciata ascendens* (Coleoptera: Cicindelidae) in Missouri. *Cicindela* 37(1–2):17–19 [\[pdf\]](#).
 17. **MacRae, T. C.** 2006. Case 3302. *Buprestis sexsignata* Say, 1839 (Insecta, Coleoptera): proposed precedence of the specific name over those of *Chrysobothris ignipes* Gory & Laporte, 1838 and *Chrysobothris germari* Gory & Laporte, 1838. *Bulletin of Zoological Nomenclature* 63(1):36–38 [\[pdf\]](#), ICZN Ruling [here](#).
 18. **MacRae, T. C.** 2006. Distributional and biological notes on North American Buprestidae (Coleoptera), with comments on variation in *Anthaxia* (*Haplanthaxia*) *viridicornis* (Say) and *A. (H.) viridifrons* Gory. *The Pan-Pacific Entomologist* 82(2):166–199 [\[pdf\]](#).
 19. **MacRae, T. C.**, J. Rifkind, R. L. Westcott & P. Zabransky. 2007. Case 3335. Comments on the proposed fixation of the feminine gender of the genus *Trachys* Fabricius, 1801 (Insecta, Coleoptera) and the form of derivation of family-group names based on *Trachys*. *Bulletin of Zoological Nomenclature* 64(1):64–66 [\[pdf\]](#).
 20. **MacRae, T. C.** & M. E. Rice. 2007. Distributional and biological observations on North American Cerambycidae (Coleoptera). *The Coleopterists Bulletin* 61(2):227–263 [\[pdf\]](#).
 21. **MacRae, T. C.** 2007. Comment on the proposed precedence of *Buprestis angustula* Illiger, 1803 (Insecta, Coleoptera) over *Buprestis pavida* Fabricius, 1793. *Bulletin of Zoological Nomenclature* 64(4):261 [\[pdf\]](#).
 22. McDowell, W. T. & **T. C. MacRae**. 2009. First record of *Typocerus deceptus* Knull, 1929 (Coleoptera: Cerambycidae) in Missouri, with notes on additional species from the state. *The Pan-Pacific Entomologist* 84(4) [2008]:341–343 [\[pdf\]](#).
 23. **MacRae, T. C.** 2009. The species of *Purpuricenius* Dejean (Coleoptera: Cerambycidae) occurring in Maryland. *The Maryland Entomologist* 5(1):5–10 [\[pdf\]](#).
 24. Brown, C. R. & **T. C. MacRae**. 2011. Assessment of the conservation status of *Habroscelimorpha circumpecta johnsonii* (Fitch) in Missouri. *Cicindela* 42(4) [2010]:77–90 [\[pdf\]](#).
 25. **MacRae, T. C.** & C. R. Brown. 2011a. Distribution, seasonal occurrence and conservation status of *Dromochorus pruinina* (Casey) in Missouri. *Cicindela* 43(1):1–13 [\[pdf\]](#).
 26. **MacRae, T. C.** & C. R. Brown. 2011b. Historical and contemporary occurrence of *Cylindera* (s. str.) *celeripes* (LeConte) (Coleoptera: Carabidae: Cicindelinae) and implications for its conservation. *The Coleopterists Bulletin* 65(3):230–241 [\[pdf\]](#).
 27. Fothergill, K., C. B. Cross, K. V. Tindall, **T. C. MacRae** & C. R. Brown. 2011. *Tetracha carolina* L. (Coleoptera: Cicindelidae) associated with polypipe irrigation systems in southeastern Missouri agricultural lands. *Cicindela* 43(3):45–58 [\[pdf\]](#).
 28. **MacRae, T. C.**, C. R. Brown & K. Fothergill. 2011. Distribution, seasonal occurrence and conservation status of *Cylindera* (s. str.) *cursitans* (LeConte) (Coleoptera: Cicindelidae) in Missouri. *Cicindela* 43(3):59–74 [\[pdf\]](#).
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ABSTRACTS

1. Gamundi, J. C., S. M. Riart, **T. C. MacRae** & S. Zampierin. 2004. Geographic variation in susceptibility of *Epinotia aporema* (Lepidoptera: Olethreutidae) and *Rachiplusia nu* (Lepidoptera: Noctuidae) to *Bacillus thuringiensis* toxin Cry1Ac in Argentina. In: Proceedings of the VII World Soybean Research Congress, 1–6 March 2004, Iguassu Falls, Brazil.

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1. *Tetracha carolina* (Coleoptera: Cicindelidae), cover. *Cicindela* 43(3) (September 2011) [image].
2. *Hemidactylus mabouia* (Reptilia: Squamata), cover & pg. 182, Fig. 1. In: K. H. Short & K. Petren, Multimodal dispersal during the range expansion of the tropical house gecko *Hemidactylus mabouia*. *Ecology & Evolution* 1(2):181–190 (October 2011) [image-online, image-pdf].
3. *Cicindelidia floridana* (Coleoptera: Cicindelidae), cover. *Cicindela* 43(4) (December 2011) [image].
4. *Cicindela arenicola* (Coleoptera: Cicindelidae), cover. *Cicindela* 44(1) (March 2012) [image].
5. *Buprestis rufipes* (Coleoptera: Buprestidae), cover. In: S. M. Paiero, M. D. Jackson, A. Jewiss-Gaines, T. Kimoto, B. D. Gill & S. A. Marshall, *Field Guide to the Jewel Beetles (Coleoptera: Buprestidae) of Northeastern North America* (2012). Canadian Food Inspection Agency and University of Guelph Insect Collection, Canada, 411 pp. [description, image].
6. *Aphis glycines* (Hemiptera: Aphididae), cover. *Molecular Plant-Microbe Interactions* 26(1) (January 2013) [image-online, image-pdf].
7. *Eurhinus* cf. *adonis* (Coleoptera: Curculionidae), cover. *The Coleopterists Bulletin* 67(2) (June 2013) [image].
8. *Chrysobothris octocola* (Coleoptera: Buprestidae), cover. *The Coleopterists Bulletin* 67(3) (September 2013) [image].
9. *Cicindela limbalis* (Coleoptera: Cicindelidae), pg. 69. In: A. V. Evans, *Beetles of Eastern North America* (2014). Princeton University Press, Princeton, New Jersey, 560 pp. [description].
10. *Elytrimitatrix undata* (Coleoptera: Disteniidae), pg. 387. *Ibid.*
11. *Plinthocoelium suaveolens suaveolens* (Coleoptera: Cerambycidae), pg. 404. *Ibid.*

12. *Eurhinus* cf. *adonis* (Coleoptera: Curculionidae), pg. 96. In: Featured Insect, *American Entomologist* 60(2) (Summer 2014) [[image](#)].
13. *Perisphaerus* sp. (Blattodea: Blaberidae), pg. 96 (3 photos). In: D. Rentz, *A Guide to the Cockroaches of Australia* (2014). CSIRO Publishing, Collingwood, Victoria, Australia, 318 pp. [[description](#)].
14. *Agrilus fuscipennis* (Coleoptera: Buprestidae), pg. 4, Fig. 1B. In: A. M. Evans, D. D. McKenna, C. L. Bellamy & B. D. Farrell, Large-scale molecular phylogeny of metallic wood-boring beetles (Coleoptera: Buprestoidea) provides new insights into relationships and reveals multiple evolutionary origins of the larval leaf-mining habit. *Systematic Entomology*, DOI: 10.1111/syen.12108 (27 October 2014) [[article](#)].
15. *Acmaeodera macra* (Coleoptera: Buprestidae), pg. 4, Fig. 1D. *Ibid*.
16. *Crossidius coralinus fulgidus* (Cerambycidae: Cerambycinae), cover. *The Coleopterists Bulletin* 69(1) (18 March 2015) [[image](#)].
17. *Cicindelidia politula* (Coleoptera: Cicindelidae), pl. 26.1. In: D. L. Pearson, C. B. Knisley, D. P. Duran & C. J. Kazilek, *A Field Guide to the Tiger Beetles of the United States and Canada: Identification, Natural History, and Distribution of the Cicindelinae* (2015). Oxford University Press, New York, 251 pp., 33 color plates [[description](#)].
18. *Cicindela arenicola* (Coleoptera: Cicindelidae), pl. 26.2, *Ibid*.
19. *Cicindelidia obsoleta* (Coleoptera: Cicindelidae), pl. 29.1, *Ibid*.
20. *Ellipsoptera marginata* (Coleoptera: Cicindelidae), pl. 32, *Ibid*.
21. *Parandra polita polita* (Cerambycidae: Parandrinae), fig. 1A. In: S. Haddad & D. D. McKenna, Phylogeny and evolution of the superfamily Chrysomeloidea (Coleoptera: Cucujiformia). *Systematic Entomology*, DOI: 10.1111/syen.12179 (16 May 2016) [[image](#)].
22. *Linsleya convexa* (Coleoptera: Meloidae), cover. *The Coleopterists Bulletin* 70(2) (18 June 2016) [[image](#)].
23. *Panorpa helena* (Mecoptera: Panorpidae). In: D. J. Stevenson, Natural Georgia: In search of scorpionflies in rural Georgia. *Savannah Now, Savannah Morning News* (26 November 2017) [[article](#)].
24. *Moneilema armatum* (Coleoptera: Cerambycidae), cover. *The Coleopterists Bulletin* 71(4) (31 Dec 2017) [[image](#)].
25. *Agrilus walsinghami* (Coleoptera: Buprestidae), cover. *The Coleopterists Bulletin* 74(1) (31 Mar 2020) [[image](#)].

SIGNIFICANT MONSANTO/BAYER INTERNAL PRESENTATIONS

1. “Insect Protected Soybean”. Ag Technology Forum, Monsanto Chesterfield, 9 December 1998.
2. “Insect Protected Soybean”. Ag Technology Forum, Monsanto Chesterfield, 17 October 2000.
3. “Bugs & Bones: A Natural History Tour through South Africa”. Agronomic Traits Ice Cream Social, Monsanto Chesterfield, 14 July 2000.
4. “Bt Soybean Lead Commercial Track Lines—2002 Field Efficacy Trials”. Ag Technology Forum, Monsanto Chesterfield, 25 September 2002.
5. “Efficacy of Second-Generation Insect-Protected Soybeans Against An Expanded Pest Spectrum”. Technology Community Monsanto, Sheraton Westport Chalet, Westport Plaza, St. Louis, Missouri, 13 June 2011.
6. “Soja Bt2 Para el Control de Plagas de Lepidópteros: Los Resultados de las Evaluaciones de Eficacia en Argentina y los EE.UU.” (in Spanish). LAS Technology Development Representatives Meeting, Monsanto Pergamino, Argentina, 17 November 2011 [[ppt](#)].
7. “BIO210: Insects in Relation to Crops”. Biotech Education Committee Seminar Series, Monsanto Creve Coeur, 13 May 2013 [[video](#), [ppt](#)].
8. “Entomology 101—Part 1: Fundamentals; Part 2: Major Groups of Insects; and Part 3: Major Pests of Soybean, Cotton, and Corn”. Monsanto Union City, 30 January 2014 [[ppt](#)].
9. “How Developing Bt Soybean Made Me a Better Entomologist”. Agronomic Traits Speaker Series, Monsanto Chesterfield, 13 April 2015 [[ppt](#)].
10. “Entomology Photo Exposé”, TIE Booth. Technology Community Monsanto, St. Charles Convention Center, St. Charles, Missouri, 7–8 June 2016 [[photo](#)].

EXTERNAL PRESENTATIONS & CLASSES

1. "Making an Insect Collection" (co-presented w/ Phillip Koenig). Webster Groves Nature Study Society, Entomology Group, Marshall Magner residence, Webster Groves, Missouri, 25 March 1985.
2. "Range, Life Cycle, and Food Habits of Clear-winged Moths (Family Sesiidae)". Webster Groves Nature Study Society, Entomology Group, Marshall Magner residence, Webster Groves, Missouri, 28 October 1985.
3. "Clearwing Moth Wood Borers Encountered in Missouri Nurseries". Missouri Association of Nurserymen, Cape Girardeau, Missouri, 13 June 1987.
4. "A Summer in Search of Insects with a Camera". Webster Groves Nature Study Society, Entomology Group, Marshall Magner residence, Webster Groves, Missouri, 25 January 1988.
5. "Beetling and Beeing in Michigan" (co-presented w/ Michael S. Arduser). Webster Groves Nature Study Society, Entomology Group, Marshall Magner residence, Webster Groves, Missouri, 26 March 1990.
6. "Effect of Artificial Diet Composition on Growth and Survival of Beet Armyworm". Entomological Society of America, Formal Conference: *Insect Rearing*, Reno Convention Center, Reno, Nevada, 10 December 1991.
7. "Insect Research at Novo Nordisk Entotech, Inc". University of California Davis Biotechnology Retreat, St. Helena, California, 27 February 1993.
8. "Arthropod Rearing and Allergy: A Professional Hazard". Entomological Society of America, Symposium: *Allergy and Immune Disorders Induced by Arthropods*, Indianapolis, Indiana, 13 December 1993 [absentee presentation].
9. "Rearing Insects for Research". Webster Groves Nature Study Society, Entomology Group, Marshall Magner residence, Webster Groves, Missouri, 11 February 1996.
10. "Rain Forest Natural History". Webster Groves Nature Study Society, Entomology Group, Marshall Magner residence, Webster Groves, Missouri, 21 March 1999.
11. "The New Field of Biotechnology—Good or Bad?". Webster Groves Nature Study Society, Entomology Group, Marshall Magner residence, Webster Groves, Missouri, 24 October 1999.
12. "Bugs & Bones: A Natural History Tour through South Africa". Webster Groves Nature Study Society, St. Louis Public Library, Frontenac, Missouri, 14 April 2000.
13. "Beetle Safari in Africa". Webster Groves Nature Study Society, Entomology Group, Marshall Magner residence, Webster Groves, Missouri, 28 May 2000.
14. "Discovering New Insects: A Detective Story". Webster Groves Nature Study Society, Entomology Group, Marshall Magner residence, Webster Groves, Missouri, 25 March 2001.
15. "The Membracids of Missouri and Beyond". Webster Groves Nature Study Society, Entomology Group, Ted MacRae residence, Wildwood, Missouri, 18 December 2005.
16. "Potential Value of Bt in Soybean Host-Plant Resistance". Soybean Breeders/Entomologists Workshop, Westport Plaza, St. Louis, Missouri, 14 February 2006. Plenary Speaker.
17. "Bugs & Bones: A Natural History Tour through South Africa". San Juan College, Farmington, New Mexico, 24 February 2006.
18. "From Hilltops to Swamps: Insects in Missouri's Rarest Prairies". Illinois Butterfly Monitoring Network Annual Workshop, Gail Borden Public Library, Elgin, Illinois, 7 March 2009.
19. "From Hilltops to Swamps: Insects in Missouri's Rarest Prairies". Webster Groves Nature Study Society, Entomology Group, Ted MacRae residence, Wildwood, Missouri, 9 April 2009.
20. "Recognition of Wood Boring Insects in Missouri Nurseries... and Beyond". Horticulture Inspector Society, Innsbrook Conference Center, Innsbrook, Missouri, 19 October 2010.
21. "The Bizarre and the Beautiful: Bugs from Brazil and Beyond". Webster Groves Nature Study Society, Powder Valley Nature Conservation Center, Kirkwood, Missouri, 1 November 2011.
22. "Nine Days, Ten States, 4,300 Miles: My Peripatetic Quest for North America's Rarest Tiger Beetles". Webster Groves Nature Study Society, Entomology Group, Butterfly House, Chesterfield, Missouri 23 January 2012 [pdf].
23. "Intacta RR2 Pro: La Primera Tecnología Desarrollada Exclusivamente Para Sudamérica". Monsanto Latin America South Producer Technical Conference, Salta, Argentina, 26 March 2012 [in Spanish].

24. "Intacta RR2 Pro: La Primera Tecnología Desarrollada Exclusivamente Para Sudamérica". Monsanto Latin America South Producer Technical Conference, San Miguel de Tucumán, Argentina, 26 March 2012 [in Spanish].
25. "Intacta RR2 Pro: La Primera Tecnología Desarrollada Exclusivamente Para Sudamérica". Monsanto Latin America South Producer Technical Conference, La Banda, Argentina, 27 March 2012 [in Spanish].
26. "Intacta RR2 Pro: La Primera Tecnología Desarrollada Exclusivamente Para Sudamérica". Monsanto Latin America South Producer Technical Conference, Saenz Peña, Argentina, 28 March 2012 [in Spanish].
27. "Tiger Beetles of Missouri". Miramiguoa Master Naturalists, Valley Park, Missouri, May 2012 [pdf].
28. "Approaching the Unapproachable: Tips and Tricks for Photographing Live Insects in Their Native Habitats". Entomological Society of America, Symposium: *Entomologists Beyond Borders: Hands on Macrophotography to Help Think Globally*, Knoxville Convention Center, Knoxville, Tennessee, 13 November 2012 [program listing].
29. "Fossil Insects of the Green River Formation: A Case Study". Eastern Missouri Paleontological Society, Washington University, St. Louis, Missouri, 12 April 2013.
30. "Insect Photography: It's Not That Hard!". Webster Groves Nature Study Society, Entomology Group, Butterfly House, Chesterfield, Missouri, 15 April 2013.
31. "Approaching the Unapproachable: Tips and Tricks for Photographing Live Insects in Their Native Habitats". Missouri Nature and Environmental Photographers Society, Powder Valley Nature Conservation Center, Kirkwood, Missouri, 21 May 2013 [recap].
32. "Approaching the Unapproachable: Tips and Tricks for Field Photography of Wary Insects". Entomological Society of America [webinar], 8 August 2013.
33. "Approaching the Unapproachable: Tips and Tricks for Field Photography of Wary Insects". Entomological Society of America [webinar], 22 August 2013 [video].
34. "Tiger Beetles of Missouri: Distribution, habitat preferences, seasonal occurrence, and comments on species of conservation concern". Illinois Natural History Survey, Fall Seminar Series, Champaign, Illinois, 29 October 2013 [abstract].
35. "Tigers in My Backyard: An Introduction to Missouri's Tiger Beetles and Their Conservation". Day of Insects, Reiman Gardens, Iowa State University, Ames, 29 March 2014 [program].
36. "Natural History of Oklahoma's Glass Mountains, with Emphasis on Insects". Webster Groves Nature Study Society, Entomology Group, Butterfly House, Chesterfield, Missouri, 21 April 2014 [pdf].
37. "Next Generation Transgenic IR Products in Soybeans". Entomological Society of America, Member Symposium: *Transgenic Insect Resistant Soybeans*, Portland Convention Center, Portland, Oregon, 19 November 2014 [abstract].
38. "From Hilltops to Swamps: Insects in Missouri's Rarest Prairies". Missouri Master Naturalists, Confluence Chapter, Busch Conservation Area, Weldon Spring, Missouri, 9 December 2014 [pdf].
39. "2nd Generation Transgenic Insect Protected Soybean". 2015 Soybean Breeders Workshop: Entomology and Agronomy; SESSION I: *Lepidoptera: A Metamorphosis in Management Strategies?* Westport Plaza, St. Louis, Missouri, 17 February 2015 [also Session Chair].
40. "Antlions & tiger beetles & woolly bears, oh my! A local entomologist's look at some of Missouri's more interesting insects". University of Guelph, Entomology class field trip, Reis Biological Station, Steelville, Missouri, 30 April 2015 [pdf].
41. "Insects of 2015". Webster Groves Nature Study Society, Entomology Group, Butterfly House, Chesterfield, Missouri, 21 September 2015.
42. "Flash Lighting Techniques for Close-up and Macrophotography". Missouri Nature & Environmental Photographers, Ethical Society of St. Louis, Clayton, Missouri, 20 October 2015 [review].
43. "Creating Insect Protected Crops through Biotechnology". Lewis & Clark Community College, Godfrey, Illinois, 2 December 2015.
44. "IB468 Classification & Evolution of Insects: Coleoptera & Strepsiptera" (Guest Lecturer). University of Illinois, Urbana-Champaign, 7 December 2015.

45. "Classification & Evolution of Coleoptera & Strepsiptera". Webster Groves Nature Study Society, Entomology Group meeting, Butterfly House, Chesterfield, Missouri, 17 April 2016.
46. "2016 Summer Insect Collecting "iReport"". Webster Groves Nature Study Society, Entomology Group, Butterfly House, Chesterfield, Missouri, 19 September 2016.
47. "IRM value and potential for protein interaction in Bt soybean pyramids". International Congress of Entomology, Contributed Papers: *Ecology of Pesticides, Resistance, Toxicology, and Genetically Modified Crops*, Orlando Convention Center, Orlando, Florida, 30 September 2016 [abstract].
48. "Tigers in My Backyard: An Introduction to Missouri's Tiger Beetles and Their Conservation". Webster Groves Nature Study Society, Entomology Group, Butterfly House, Chesterfield, Missouri, 21 November 2016.
49. "Flash Lighting Techniques for Nature Photography". Webster Groves Nature Study Society, Nature Photography Group, Powder Valley Conservation Nature Center, Kirkwood, Missouri, 7 March 2017.
50. "Insect Macrophotography" (Guest Lecturer). Missouri Botanical Garden Photography Series, Shaw Nature Reserve, Gray Summit, Missouri, 9 Sep 2017.
51. "Insects of 2017: An iPhone Diary". Webster Groves Nature Study Society, Entomology Group, Butterfly House, Chesterfield, Missouri, 18 September 2017.
52. "Antlions & Tiger Beetles & Woolly Bears, Oh My! A Local Entomologist's Look at Some of Missouri's More Interesting Insects". Webster Groves Nature Study Society, Entomology Group, Butterfly House, Chesterfield, Missouri, 20 November 2017 [event].
53. "Insects (mostly) of 2018: An iPhone Diary". Webster Groves Nature Study Society, Entomology Group, Butterfly House, Chesterfield, Missouri, 17 December 2018.
54. "Highlights from Nearly 20 Years of Chasing Tiger Beetles in Missouri". Webster Groves Nature Study Society, Entomology Group, Shaw Nature Reserve, Gray Summit, Missouri, 21 January 2019 [pdf].
55. "The Botanists Among Us: Host Plant Specialization in Insects". Missouri Native Plant Society, St. Louis Chapter, Sunset Hills Community Center, Sunset Hills, Missouri, 23 January 2019 [pdf].
56. "Fall Insect Collecting in the U.S. Desert Southwest". Webster Groves Nature Study Society, Entomology Group, Butterfly House, Chesterfield, Missouri, 25 November 2019 [pdf].

In addition to the above, innumerable presentations on science and entomology at local parks, elementary, middle, and high schools, and community events.