

Hannah Elizabeth Quellhorst

Ph.D. Student

Department of Entomology

Kansas State University

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Education

Kansas State University Ph.D., Entomology Advisors: Dr. Rob Morrison & Dr. Kun-Yan Zhu	Manhattan, KS Expected Fall 2022
Purdue University M.S., Entomology Advisor: Dr. Dieudonné Baributsa	West Lafayette, IN Aug 2018
Purdue University B.S., Entomology Advisor: Dr. Jonathan J. Neal	West Lafayette, IN Fall 2015

Professional Experience

Graduate Student Researcher Kansas State University, Dept. of Entomology/USDA-ARS, SPIERU Worked on research related to the improvement of post-harvest management of maize in developing countries, under the supervision of Dr. Rob Morrison and Dr. Kun-Yan Zhu. Focused on International development, improving crop storage, and food security for smallholder farmers.	Aug 2018 – Present
Graduate Student Teaching Assistant Kansas State University, Dept. of Entomology Served as a teaching assistant to Dr. Greg Zolnerowich, Dr. Jeremy Marshall, and Dr. Tom Phillips for the General Entomology Laboratory (ENTOM 312) course. Served as a resource and mentor for the students in the class. Guided students through lab lectures and lab related field trips on campus. Assisted the major professors during class time. Graded exams. Gave short introductory lab lectures for two of the three lab sections.	Aug 2018 – Present
Field and Laboratory Technician Purdue University, Plant-Insect Chemical Ecology Lab Provided technical support in the field and the lab in order to explore the influence of chemical variation on trophic level interactions across multiple spatial scales.	May 2018 – Aug 2018
Graduate Student Researcher Purdue University, Purdue Improved Crop Storage (PICS) Studied insect oxygen consumption in hermetic storage systems under the supervision of Dr. Dieudonné Baributsa. Surveyed smallholder farmers in developing nations. Focused on international development, technology transfer, improving crop storage and food security	Jan 2016 – May 2018

for smallholder farmers.

Graduate Student Teaching Assistant

Aug 2017 – Dec 2017

Purdue University, Dept. of Agronomy

Served as a teaching assistant to Dr. Gebisa Ejeta and Dr. Elizabeth Brite for the Honors 299 Food Security course. Served as a resource and mentor for the students in the class and guided students through fieldwork on a campus survey assessing food security of students, faculty, and staff at Purdue. Assisted the major professor during class time and facilitated class discussion. Graded reflection assignments. Gave a guest lecture on the History of Purdue Improved Crop storage project and the Summer Borlaug Institute.

Research Abroad, Haiti

July 2017 – Aug 2017

Purdue University, Purdue Improved Crop Storage (PICS)

Conducted a survey on postharvest practices in 3 departments (Centre, Ouest, Artibonite) in Haiti. Was in charge of all technical aspects (planning) of the study and the field work. Interviewed over 200 farmers with the help of four Haitian enumerators. Provided a training session on the online survey software KoboToolbox, for the USAID, AREA UF/IFAS team in Port-au-Prince Haiti.

Borlaug Summer Institute on Global Food Security

June 2017

Purdue University, Center for Global Food Security

Participated in the annual 2-week long learning program designed for graduate students who are interested in developing a holistic understanding of the conceptual challenges around global food security. This introduction to global food security provided a working knowledge of these issues, with a focus on cross-disciplinary problem solving of real-world development challenges. Program included lectures, case studies, small group discussions, field trips, and a group project competition proposing an international intervention in an assigned developing country.

Graduate Student Teaching Assistant

Jan 2016 – Dec 2016

Purdue University, Dept. of Entomology

Taught four sections of the General Entomology Laboratory course (ENTM 207). Lectured students on insect structure and function, anatomy and physiology, and insect naming conventions and systematics. Guided students through laboratory exercises. Assisted the major professor during class time for the course Insect Friend and Foe (ENTM 105). Graded assignments for both classes.

Undergraduate Research Fellow

May 2015 – Aug 2015

Purdue University, Molecular Agriculture Summer Institute

Studied the chemical ecology of the peach bark beetle, *Phloeotribus liminaris*. Attended faculty and industry seminars and tours. Served as a forest entomology field and laboratory technician. Presented my research before my cohort and faculty at the Dow AgroSciences MASI Research Seminar.

Laboratory Technician

Aug 2013 – Dec 2015

Purdue University, Purdue Improved Crop Storage (PICS)

Maintained insect colonies (Maize weevil, Cowpea weevil, Rice weevil, Red flour beetle, Indian meal moth) and aided with research projects for the PICS initiative (PICS 2 & PICS 3). Inventoried and maintained lab. Gained experience in digital insect macro photography using microscope, for use in projects and publications.

Undergraduate Laboratory Research Assistant

Aug 2013 - Dec 2015

Purdue University, Purdue Improved Crop Storage (PICS)

Developed and tested a novel method for measuring oxygen consumption in stored grain pests (Cowpea weevil and the Indian-meal moth) under the supervision of Dr. Larry Murdock.

Field and Laboratory Technician

Aug 2012 - Aug 2015

Purdue University, Indiana Cooperative Agricultural Pest Survey Program (CAPS)

Managed a statewide traveling cooperative agricultural pest survey under the supervision of Larry Bledsoe. Traveled to four sites spanning the state to empty insect traps. Screened these samples for invasive insect species. Traveled to two USDA offices to collect exotic wood borer/bark beetle survey samples. Spread, preserved, and labeled specimens. Worked with graduate students on research projects in field crops, including for a project on refuge structure in transgenic corn).

Awards & Honors

Graduate Teaching Assistant Certification Kansas State University	2019
Global Food Systems April Featured Student Kansas State University	2019
R. H. Painter Scholarship Outstanding accomplishment in first 3 semesters, Kansas State University - \$600	2019
1st place PhD, 3MT KSU, Plant Pathology & Entomology - \$100	2019
1st place PhD, Paper Competition KES, Overland Park - \$150	2019
1st place, Poster, Agricultural Sciences Section , Grad Forum KSU - \$500	2019
Student Travel Award ESA-NCB, Cincinnati, OH - \$200	2019
Outstanding MS Award Dept. of ENTM, Purdue University - \$1000	2017
2nd place Student Debates ESA, Denver, CO	2017
PGSG Travel Grant Purdue University - \$250	2017
D. Woods Thomas Award Purdue University - \$750	2017
2nd place M.S. Paper Competition OVEA, Columbus, OH - \$150	2017
2nd place B.S./M.S. Poster Competition NCB, ESA, Indianapolis, IN - \$200	2017
PGSG Travel Grant Purdue University - \$250	2016
2nd place M.S. Paper Competition OVEA, West Lafayette, IN - \$250	2016
2nd place B.S/M.S. Paper Competition NCB, ESA, Cleveland, OH - \$200	2016
1st place Undergraduate Paper Competition OVEA, Lexington, KY - \$350	2015
Outstanding Junior Award Dept. of ENTM, Purdue University	2014

Scholarships

Austin Frishman Scholarship Purdue University - \$2000	2017
R and W Rhodes Family Scholarship Purdue University - \$1500	2016
C. C. Alexander Memorial Scholarship Purdue University - \$2000	2016
John J. Davis Memorial Scholarship Purdue University - \$2000	2015
George E. Gould Scholarship Fund Purdue University - \$2000	2014
C. C. Alexander Memorial Scholarship Purdue University - \$2000	2013
George E. Gould Scholarship Fund Purdue University - \$2000	2012
Environmental Issues Essay The Coal Creek Chpt. of Pheasants Forever - \$500	2012

Publications

- Quellhorst, H.E.**, A. Njoroge, T. Venort, and D. Baributsa. 2019. Assessment of post-harvest management practices of cereal grains and legumes by smallholder farmers across three Departments in Haiti. In preparation.
- Quellhorst, H.E.**, C.G. Athanassiou, A. Bruce, and W.R. Morrison III. 2019. The outcome of interspecific competition between the invasive *Prostephanus truncatus* (Coleoptera: Bostrichidae) and the cosmopolitan *Sitophilus zeamais* (Coleoptera: Curculionidae) on progeny production, kernel damage, and mold growth in maize at different temperatures. Journal of Environmental Entomology. In preparation.
- Gula S., **H.E. Quellhorst**, T. Stewart, S. Stack. 2019. The most urgent and feasible use of CRISPR/Cas9 in Entomology is controlling mosquito-borne diseases. American Entomologist. 65: 50 – 60.
- Quellhorst HE**, Williams, SB, Murdock, LL, Baributsa, D, (2018). Cumulative oxygen consumption during development of two postharvest pests: *Callosobruchus maculatus* Fabricius and *Plodia interpunctella* Hübner. Journal of Stored Products Research, 77: 92-95.
- Quellhorst HE**, Venort T, Baributsa D, (2018). Assessing Post-Harvest Management Practices in Haiti. Purdue Improved Crop Storage Newsletter, 4: 2.
- Gula S, **Quellhorst HE**, Stewart T, Stack S, Nov. 2017. The most urgent and feasible use of CRISPR/Cas9 in Entomology is controlling mosquito-borne diseases. American Entomologist article.

Professional Presentations

Poster Presentations

- Quellhorst, H.E.**, F. Arthur, and W.R. III Morrison. Efficacy of a novel, reduced-risk insecticide for inducing mortality and changes in mobility for the post-harvest beetles, *Prostephanus truncatus* and *Sitophilus zeamais*. Annual meeting of the Entomological Society of America, St. Louis, MS. November 2019.
- Bruce, A., H.E. **Quellhorst**, R.V. Wilkins, T. Van Winkle, M. Ponce, and W.R. III Morrison. The Behavioral responses of *Rhyzopertha dominica* (Coleoptera: Bostrichidae) and *Tribolium castaneum* (Coleoptera: Tenebrionidae) to individual fungal volatiles in a wind tunnel and release-recapture experiment. Annual meeting of the Entomological Society of America, St. Louis, MS. November 2019.

- Albin C.E., H.E. **Quellhorst**, J.F. Campbell, F. Eller, W.R. III Morrison. Behavioral response of stored product insects to cedarwood oil from a novel extraction method to stored product insects. 2nd Annual Virtual Symposium of the International Branch of the Entomological Society of America. April 2019.
- Quellhorst H.E.**, C.G. Athanassiou, A. Bruce, and W.R. III Morrison. Competition of stored product insects, *Prostephanus truncatus* (Coleoptera: Bostrichidae) and *Sitophilus zeamais* (Coleoptera: Curculionidae), on maize at different temperatures. 2nd Annual Virtual Symposium of the International Branch of the Entomological Society of America. April 2019.
- Quellhorst H.E.**, C.G. Athanassiou, and W.R. III Morrison. Understanding the success of an invasive post-harvest pest of maize in a changing global climate. K-State Graduate, Arts, and Discovery (GRAD) Forum, Manhattan, KS. **1st place Agricultural Sciences, awarded \$500. March 2019.**
- Quellhorst H.E.**, C.G. Athanassiou, A. Bruce, and W.R. III Morrison. Competition of stored product insects, *Prostephanus truncatus* (Coleoptera: Bostrichidae) and *Sitophilus zeamais* (Coleoptera: Curculionidae), on maize at different temperatures. 74th Annual Meeting of the North Central Branch of the Entomological Society of America, Cincinnati, OH. March 2019.
- Albin C.E., H.E. **Quellhorst**, J.F. Campbell, F. Eller, and W.R. III Morrison. Potential repellency of cedarwood oil from a novel extraction method to stored product insects. 74th Annual Meeting of the North Central Branch of the Entomological Society of America, Cincinnati, OH. March 2019.
- Silvernail L., **H.E. Quellhorst**, A. Bruce, W.R. III Morrison. Elucidating the behavioral response of stored product insects to fungal volatiles in the wind tunnel and simulated warehouses. Department of Entomology Undergraduate Poster Symposium. Kansas State University, Manhattan, KS. December 2018.
- Albin C.E., **H.E. Quellhorst**, J.F. Campbell, and W.R. III Morrison. Potential repellency of cedarwood oil from a novel extraction method to stored products insects. Department of Entomology Undergraduate Poster Symposium. Kansas State University, Manhattan, KS. December 2018.
- Quellhorst H.E.**, J.F. Campbell, and W.R. III Morrison. Assessing a visual attract-and-kill device as an alternative management tactic for post-harvest insects in food facilities. Science and the State Poster Symposium. Kansas State University, Manhattan, KS. October 2018.
- Quellhorst H.E.**, T. Venort, and D. Baributsa. Assessment of Postharvest Management Practices by Smallholder Farmers in Haiti. Office of Interdisciplinary Graduate Programs Spring Reception Poster Session, West Lafayette, IN. May 2018.
- Quellhorst H.E.**, S.B. Williams, L.L. Murdock, and D. Baributsa. Cumulative oxygen consumption during development of two postharvest pests (*Callosobruchus maculatus* Fabricius and *Plodia interpunctella* Hübner). Borlaug Summer Institute on Global Food Security Poster session, Purdue University, West Lafayette, IN. June 2017.
- Quellhorst H.E.**, S.B. Williams, L.L. Murdock, and D. Baributsa. Cumulative oxygen consumption during development of two postharvest pests (*Callosobruchus maculatus* Fabricius and *Plodia interpunctella* Hübner). 72nd Annual Meeting of the North Central Branch of the Entomological Society of America and student poster competition, Indianapolis, IN. **2nd place B.S/M.S division, awarded \$200. June 2017.**
- Quellhorst H.E.**, S.B. Williams, L.L. Murdock, and D. Baributsa. Cumulative oxygen consumption during development of two postharvest pests (*Callosobruchus maculatus* Fabricius and *Plodia interpunctella* Hübner). Purdue in Africa Poster session, West Lafayette, IN. April 2017.

Quellhorst H.E., S.B. Williams, L.L. Murdock, and D. Baributsa. Cumulative oxygen consumption during development of two postharvest pests (*Callosobruchus maculatus* Fabricius and *Plodia interpunctella* Hübner). Indiana Academy of Sciences 132nd Annual Meeting poster symposium, Indianapolis, IN. March 2017.

Oral Presentations

Quellhorst, H.E., C. Albin, J.F. Campbell, F. Eller and W.R. Morrison III. When beetles prove uncooperative: the behavioral response of the red flour beetle, *Tribolium castaneum* (Coleoptera: Tenebrionidae) to attractive and repellent compounds that are neither. 67th Annual Meeting of the Entomological Society of America, St. Louis, MO. November 2019. (Invited)

Quellhorst, H.E., F.H. Arthur, and W.R. Morrison III. Efficacy of novel, reduced-risk insecticides for inducing mortality and sublethal changes in the behavior of post-harvest beetles, *Prostephanus truncatus* and *Sitophilus zeamais* after exposure on concrete surfaces and maize. Integrated Protection of Stored Products, International Organization for Biological and Integrated Control of Noxious Animals and Plants, West Palearctic Regional Section, Pisa, Italy. September 2019.

Morrison III W.R., R.V. Wilkins, **H.E. Quellhorst**, R. Grosdidier, and C.E. Albin. Can we afford to stop IPM after harvest? Farm to Fork IPM programs to improve the sustainability of pest management for the entire agricultural supply chain. P-IE Section Symposium: Advocating for IPM in a Dynamic Agricultural World. November 2019. (Invited)

Quellhorst H.E. Improving Management of the Larger grain borer (*Prostephanus truncatus*) and the Maize Weevil (*Sitophilus zeamais*). Three Minute Thesis competition for the Plant Pathology and Entomology Departments. **1st place PhD, awarded \$100. April 2019.**

Quellhorst H.E., C.G. Athanassiou, A. Bruce, and W.R. III Morrison. Competition of stored product insects, *Prostephanus truncatus* (Coleoptera: Bostrichidae) and *Sitophilus zeamais* (Coleoptera: Curculionidae), on maize at different temperatures. 95th Annual Kansas Entomological Society Meeting. **1st place PhD division, awarded \$150. March 2019.**

Quellhorst H.E. Improving Management of the Larger grain borer (*Prostephanus truncatus*) and the Maize Weevil (*Sitophilus zeamais*). Kansas State University Three Minute Thesis competition. February 2019.

Quellhorst H.E. Guest lecture on the history of Purdue Improved Crop Storage and the Borlaug Summer Institute on global food security. Honors 299 Food Security, West Lafayette, IN. Fall 2017. (Invited)

Quellhorst H.E. Guest lecture on the assessment of postharvest management practices by smallholder farmers in Haiti. Honors 299 Food Security, West Lafayette, IN, Fall 2017. (Invited)

Gula S., **H.E. Quellhorst**, T. Stewart, and S. Stack. The most urgent and feasible use of CRISPR/Cas9 in Entomology is controlling mosquito-borne diseases. Student Debate at the annual meeting of the Entomological Society of America, Denver, CO. ***2nd place overall. November 2017.**

Quellhorst H.E. and D. Baributsa. The effect of temperature and insect population size on the rate of oxygen consumption by a postharvest pest: cowpea bruchid (*Callosobruchus maculatus* Fabricius) during hermetic storage. Annual meeting of the Entomological Society of America, Denver, CO. November 2017.

Quellhorst H.E. and D. Baributsa, The effect of temperature and insect population size on the rate of oxygen consumption by a postharvest pest: cowpea bruchid (*Callosobruchus maculatus*

Fabricius) during hermetic storage. Ohio Valley Entomological Association Annual Forum and Student Paper Competition, Columbus, OH. ***2nd Place M.S. division, awarded \$150. October 2017.**

Quellhorst H.E. Assessing Postharvest Practices in Haiti Using KoboToolbox. Guest lecture for YDAE 491, West Lafayette, IN.. October 2017. (Invited)

Quellhorst H.E. Data collection tools for challenging environments; KoBoToolbox software training. USAID, AREA-UF/IFAS guest presentation, Port-au-Prince, Haiti. August 2017. (Invited)

Quellhorst H.E., Y. Deg, S. Acheampong, J. Fulton, B. Heard, Enhancing the Baobab Value Chain to Improve Food Security and Nutrition in the Southern Forest Zone of Senegal. Borlaug Summer Institute on Global Food Security Team Presentation, Purdue University, West Lafayette, IN. June 2017.

Quellhorst H.E., S.B. Williams, L.L. Murdock, and D. Baributsa. Cumulative oxygen consumption during development of two postharvest pests (*Callosobruchus maculatus* Fabricius and *Plodia interpunctella* Hübner). Ohio Valley Entomological Association Annual Forum and Student Paper Competition, West Lafayette, IN. **2nd Place M.S. division, awarded \$250.** October 2016.

Quellhorst H.E., S.B. Williams, L.L. Murdock, and D. Baributsa. Cumulative oxygen consumption during development of two postharvest pests (*Callosobruchus maculatus* Fabricius and *Plodia interpunctella* Hübner). 25th International Congress of Entomology, Orlando, FL. September 2016.

Quellhorst H.E., S.B. Williams, L.L. Murdock, and D. Baributsa. Cumulative oxygen consumption during development of two postharvest pests (*Callosobruchus maculatus* Fabricius and *Plodia interpunctella* Hübner). 71st Annual Meeting of the North Central Branch of the Entomological Society of America and Student Paper Competition, Cleveland, OH. ***2nd Place B.S./M.S. division, awarded \$200. June 2016**

Quellhorst H.E., G.H. Hughes, and M.D. Ginzel. Chemical signaling in the peach bark beetle, *Phloeotribus liminaris*. Ohio Valley Entomological Association Annual Forum and Student Paper Competition, Lexington, KY. ***1st Place Undergraduate division, awarded \$350. October 2015.**

Quellhorst H.E., G.H. Hughes, and M.D. Ginzel. Chemical signaling in the Peach Bark Beetle, *Phloeotribus liminaris*. Dow AgroSciences MASI Research Presentation, Indianapolis, IN. August 2015. (Invited)

Professional Memberships

Kansas Entomological Society	2019 – Present
Popenoe Entomology Club	Aug 2018 - Present
U.S. Borlaug Food Security Fellow & Alumni	2017 – Present
Indiana Academy of Science (IAS)	2017 – Present
Pi Chi Omega: The National Pest Control Fraternity	2016 – Present
Entomology Graduate Student Organization (EGO), Member	2016 – 2018
Entomological Society of America (ESA)	2015 – Present
Ohio Valley Entomological Association (OVEA), Member-at-large	2015 – Present
Entomology Undergraduate Organization, Treasurer	Aug 2014 – May 2015

Professional Service

Organizer, ESA Section Symposium	2019
“Advocating for Entomological Solutions to the Grand Challenge of Global Food Security in the 21 st Century”	
Organizer, NCB-ESA Symposium on global food security (~60 people)	2019
ESA SAC Writer for American Entomologist “Student Life” Articles	2019
Entomology Today Article Writing Subcommittee, ESA SAC	2019
Team Captain, KSU Debate Team for ESA	2019
ESA Student Activity Award Selection Committee	2019 – 2021
SWB-NCB-ESA Joint Branch Meeting Local Arrangements Committee	2019 – 2020
ESA-NCB National Student Affairs Committee (SAC) Rep	2019 – 2021
KSU Popenoe Entomology Club, Treasurer	2019 – 2020
KSU Grad Rep, ESA-NCB Student Affairs Committee (SAC)	2019 – 2021
Grad Rep, Entom Building Planning Committee	2019
Reviewer. Journal of Stored Products Research. Reviewed 2 manuscripts.	2018 – 2019
Member, KSU Linnaean Games Team for ESA	2019
KSU Entomology Undergraduate Research Poster Symposium, Mentor	2018
Guiding a student through their very first research experience and helping to prepare them to present at the poster symposium at the end of the Fall 2018 semester.	
Revitalizing Extension for Agricultural Development, Washington, D.C.	2017
A team member representing Purdue in the University Student “Hackathon” challenge.	
ESA, Purdue Student Debate Team, Member	2017
Presented the introductory 7-minute argument.	
ESA, NCB Local Arrangements Committee	2017
Prepared student and professional award winner biography posters.	
Chicago Council on Global Affairs, Social Media Ambassador	2017
Advertised for the conference and live tweeted on the sessions and speakers.	
Purdue Ag Awards Committee, Member	2015 – 2017
Served as the graduate student evaluator for the several Ag awards.	
Purdue Ag Grad Student Panel: “Is Grad School Right For You?”	2016
Served as a graduate student panel member, answering questions of undergraduates about grad school. Recounted my personal experiences as a M.S. student.	
Curriculum and Student Relations Committee, Grad Rep	2016 – 2017
Served as the representative and collective voice for graduate students in the college of Ag. Provided a student perspective on issues that come before the committee.	
Intramural Soccer, Member and Team Captain	2012 – 2017

Volunteer Work & Community Outreach

Department of Entomology/USDA Open House, KSU, Manhattan, KS (~400 people) 2019
 Developed workshop on influential people of color in entomology for middle schoolers.

Girls Researching Our World (GROW) workshop, workshop organizer (~40 people) 2019
 Developed workshop on influential people of color in entomology for middle schoolers.

Girls Researching Our World (GROW) workshop, workshop organizer (~40 people) 2018
 Developed workshop on pollinators for middle school girls.

81st annual Purdue Pest Management Conference, Volunteer (~135 people) 2017
 Served at the info booth during the conference.

International Congress of Entomology, Registration Volunteer 2016
 Helped members check-in, print name badges, and register for the conference.
 Helped to prepare conference bags filled with programs and other items.

Indiana State Fair, Improved Crop Storage Info Booth, Volunteer (~80 people) 2016
 Engaged the public and shared information about Purdue Improved Crop storage (PICS). Helped to run our PICS completion throughout the day.

Purdue Bug Bowl, Volunteer (30,000 people/yr) 2012 – 2017
 Helped with setup and teardown of the various entomology booths.
 Helped to run the insect petting zoo, the Thomas Say Society club booth, and the PICS info booth.

Purdue University Entomology Outreach, Volunteer (~300 people/yr) 2012 – 2018
 Participated in many outreach events. Served as a presenter during the Headless Horseman event at Conner Prairie. Served at several elementary school events. Gave bug barn tours. Participated in Insectaganza.
 Helped in undergraduate recruitment events.

Boone Co. 4-H Entomology, Mentor (~20 people) 2012 – 2018
 Helped students with collecting and identifying insects. Encouraged students to get involved with Entomology as a career choice.
 Aided the project leader at the fair and in judging insect displays.