Alexandra G. Duffy

North Carolina State University, Department of Biology
850 Main Campus Drive, Raleigh, NC 27606
(919) 302-8289 | agduffy@ncsu.edu
Google Scholar | Research Gate | ORCID iD

EDUCATION

PhD, Biology	Brigham Young University Dissertation: *The influence of predation environment on the sensory ecology of Brachyrhaphis rhabdophora* Committee: Jerry Johnson (chair), Byron Adams, Ian Baldwin Seth Bybee, Blaine Griffen	2022
M.Sc, Entomology	Purdue University Thesis: *Sphenophorus spp. chemical ecology and seasonal biology* Committee: Douglas Richmond (chair), Matthew Ginzel, Ian Kaplan	2016
B.Sc, Biology	North Carolina State University Concentration: Ecology, Evolution, & Conservation Biology Minor: Genetics	2013

ACADEMIC APPOINTMENTS

Assistant Research Professor. North Carolina State University, Department of Biological Sciences. Nov 2024 – present.

Research Scholar. North Carolina State University, Department of Biological Sciences, Center for Human Health and the Environment. Nov 2023 – Oct 2024. Supervisor: Cathrine Hoyo

Postdoctoral Research Scholar. Florida State University, Department of Biology. Aug 2022 – Nov 2023. Supervisor: Kimberly Hughes.

PROFESSIONAL EXPERIENCE

Graduate Research Assistant. Brigham Young University, Dept. Biology. Aug 2017 – Aug 2022
Supervisor: Jerry Johnson. Evolution, behavior & sensory ecology of *Brachyrhaphis* fish

Museum Technician. Purdue University, Entomology Research Collection. May – Aug 2017
Supervisors: Stephen Cameron, Jen Zaspel. Assisted with curation and electronic specimen database.

Field Technician. Purdue University, Dept. Entomology. May – Aug 2017
Supervisor: John Couture. Collected hyperspectral data in a variety of agricultural field and greenhouse experiments

Graduate Research Assistant. Pennsylvania State University, Dept. Entomology. Jan – May 2017
Supervisor: Ben McGraw. *Listronotus maculicollis* Kirby behavioral ecology

Graduate Research Assistant. Purdue University, Dept. Entomology. Jan 2014 – Dec 2016

Supervisor: Doug Richmond. Seasonal biology and chemosensory behavior of *Sphenophorus* spp.

Undergraduate Researcher. NC State University, Dept. Entomology Apr 2011 – Oct 2013
Supervisor: Rick Brandenburg. Field pesticide trials and research on larval development.

Undergraduate Researcher. NC State University, Dept. Entomology May 2011 – Jun 2013
Supervisor: Fred Gould. Reared insect colonies to study the evolution of sexual communication

PUBLICATIONS (*undergraduate student, ^graduate student, +equally contributing author))

12. **Duffy AG+**, Pew MG*, +, Johnson JB. (2025) Mate-choice copying behavior in the livebearing fish *Brachyrhaphis rhabdophora*. Animal Behaviour. 222, 123148. https://doi.org/10.1016/j.anbehav.2025.123148
11. Clawson MN^, **Duffy AG**, Johnson JB. (2025) Does predation environment affect repeated responses to chemical predation cues in the fish *Brachyrhaphis rhabdophora*? Behavioral Processes. https://doi.org/10.1016/j.beproc.2025.105165
10. Gould E, Fraser HS, Parker TS, ...**Duffy AG** (65/273)...Zitomer RA. (2025) Same data, different analysts: variation in effect sizes due to analytical decisions in ecology and evolutionary biology. BMC Biology. 23, 35. https://doi.org/10.1186/s12915-024-02101-x
9. Powell GS, Saxton N, **Duffy AG**, Cameron S, Johnson JB, Bybee S, Gunter N. (2024) Repeated feeding guild evolution: the impact of competition on diversification. Evolutionary Journal of the Linnaean Society. https://doi.org/10.1093/evolinnean/kzae011
8. **Duffy AG**, Johnson JB. (2024) Behavioral response to chemical cues from injured conspecifics in the livebearing fish, *Brachyrhaphis rhabdophora*. Ethology. 00, e13490. https://doi.org/10.1111/
7. Garretson A, Cuddy T*, **Duffy AG**, Forkner RE. (2023) Citizen science data reveal regional heterogeneity in phenological response to climate in the large milkweed bug, *Oncopeltus fasciatus*. Ecology and Evolution, 13, e10213. https://doi.org/10.1002/ece3.10213
6. Mbaluto C, Ayelo PM, **Duffy AG**, Erdei AL, Tallon AK, Xia S, Caballero-Vidal G, Spitaler U, Szelenyi MO, Duarte GA, Walker III WB, Becher PG. (2020) Insect Chemical Ecology: Chemically mediated interactions and novel applications in agriculture. Arthropod-Plant Interactions. 14: 671 – 684. https://doi.org/10.1007/s11829-020-09791-4
5. **Duffy AG**, Richmond DS. (2020) Hunting Billbug *Sphenophorus venatus* (Coleoptera: Curculionidae: Dryophthorinae) adult feeding preference and attraction to warm- and cool-season turfgrasses. Great Lakes Entomologist. 53(1): 1 – 6. https://doi.org/10.22543/0090-0222.2359
4. Powell GS, Cline AR, **Duffy AG**, Zaspel JM. (2020) Phylogeny and reclassification of Carpophilinae (Coleoptera: Nitidulidae), with insights into the origins of anthophily. Zoological Journal of the Linnean Society. 189(4): 1359 – 1369. https://doi.org/10.1093/jee/tox340
3. **Duffy AG,** Hughes GP, Ginzel MD, Richmond DS. (2018) Volatile and contact chemical cues associated with *Sphenophorus venatus* and *Sphenophorus parvulus* (Coleoptera: Dryophthoridae) host- and mate-recognition behavior. Journal of Chemical Ecology. 44: 556-564. https://doi.org/10.1007/s10886-018-0967-8
2. **Duffy AG**, Powell GS, Zaspel JM, Richmond DS (2018) Billbug (Coleoptera: Dryophthoridae: *Sphenophorus*) seasonal biology and DNA-based life stage association in Indiana turfgrass. Journal of Economic Entomology. 111: 304-313. https://doi.org/10.1093/jee/tox340
1. Powell GS**, Duffy AG** (2017) New species of *Ctilodes* Murray (Coleoptera: Nitidulidae) from Southeast Asia, with a key to the members of the genus. Insecta Mundi. 0554: 1-5

Selected in prep manuscripts

13. **Duffy AG**, Callaway M[*], Clawson MN[^], Johnson JB. Predation environment affects social modulation of fear in a livebearing fish. *To be submitted to* Proceedings of the Royal Society B: Biological Sciences.
14. **Duffy AG**, Gregson L[*], Bybee SB, Johnson JB. The effects of sex and predator environment on brain size variation in *Brachyrhaphis rhabdophora*. *To be submitted to* Brain, Behavior, and Evolution.
15. **Duffy AG**, Ingley SJ, Williams T, Jerald B. Johnson. Male mate preference behavior in sympatric and allopatric populations of *Brachyrhaphis* (Poeciliidae) sister species. *To be submitted to* Current Zoology.
16. **Duffy AG**, Chou A[*], Topham K[*], Johnson JB. Testing chemical recognition of conspecifics in a livebearing fish, *Brachyrhaphis rhabdophora,* using a two-current choice flume assay. *To be submitted to* Frontiers in Ecology and Evolution. *Invited to special issue* "Women in Chemical Ecology".

Ad hoc peer-review duties

Ecology and Evolution, Behavioral Ecology, Western North American Naturalist, Florida Entomologist, Journal of Environmental Entomology

FUNDING & AWARDS (Total awarded: $78,517.81)

Pending (not included in total)

2025 North Carolina State University, Digital Education and Learning Technology Applications (DELTA) – DELTA Course Design Grant. "Building Biodiversity Literacy: Empowering Students to Connect, Communicate, and Engage". *In review*. $8,000.

2025 Burroughs Welcome Fund – Climate Change and Human Health Seed Grants. "Predicting the Evolutionary Consequences of Metal Pollution in a Changing Environment". *In review*. $50,000.

Grants (7) and scholarships (4)

2025 North Carolina State University – Global One Health Academy Seed Grant. "Genetic erosion in the Cape Fear River Basin: Testing the impacts of trace metal pollution and gene flow on ecosystem health". Principal Investigator. Co-Investigators: R. Brian Langerhans, Lily M. Hughes. **$9,909.81**

2019 American Livebearer Association- Vern Perish Student Research Grant. "Investigating sensory adaptations across divergent selective environments in *Brachyrhaphis*". Principal Investigator. **$2,000**

2019 Animal Behavior Society- Student Research Grant. "How does evolutionary history influence chemical recognition and learning?". Principal Investigator. **$1,500**

2018 Brigham Young University. Research Presentation Travel Grant. **$400**

2016 Entomological Society of America- North Central Branch. Student Travel Grant. **$250**

2016 J.T. Eaton Scholarship, Purdue University Dept. of Entomology. **$1000**

2016 A-Mark IPM Scholarship, Purdue University Dept. of Entomology $**1,500**

2015 Entomological Society of America- North Central Branch. Student Travel Grant. **$250**

2015 William Brehm Memorial Scholarship, Purdue University Dept. of Entomology **$1,000**

2014 United States Golf Association. Research Grant. "Understanding Billbug Chemical Communication to Improve Management". Principal Investigator. Co-PIs: Douglas S. Richmond, Matthew D. Ginzel. **$59,208**

2014 Bob Oakes Memorial Scholarship, Purdue University Dept. of Entomology **$1,500**

Awards (4)

2016 Outstanding Service by a Student, Purdue University Dept. of Entomology.

2016 1st place M.S. oral presentation. Entomological Society of America North Central Branch.

2015 3rd place M.S. oral presentation, Ohio Valley Entomological Association

2015 2nd place Linnaean Games, Entomological Society of America North Central Branch

TEACHING (*new course development)

Instructor of Record

LSC 101: Critical & Creative Thinking in the Life Sciences	North Carolina State University. Fall 2024, Fall 2025
**BSC 295: Biodiversity in a Changing World*	North Carolina State University. Spring 2025.

Lab Instructor

BIO 420: Evolutionary Biology Lab	Brigham Young University. Spring & Fall 2018, Spring 2019
ENTM 207: General Entomology Lab	Purdue University. Fall 2014
BIO 360: Ecology Lab (Co-instructor)	North Carolina State University. Fall 2012

Teaching Assistant

BIO 250: Evolutionary Medicine	Brigham Young University. Spring 2021
BIO 450: Biodiversity & *Conservation*	Brigham Young University. Fall 2020
BIO 100: Principles of Biology	Brigham Young University. Fall 2017
ENT 202: Insect Connections	Pennsylvania State University. Spring 2017

MENTORING ([1]co-authored manuscript, [2]funded grant, [3]co-authored presentation or poster, *manuscript in-prep, ^ undergraduate honors thesis, +graduate committee)

Undergraduate Students (55)

Aris Swanick	NCSU, insect husbandry, geometric morphometric landmarking
Andrew St. Germain	NCSU, Learning Assistant for *Biodiversity in a Changing World*
Alexandria Lupton^	NCSU, acid digestions of fish tissue for ICP-MS, geometric morphometrics
Isabelle Quadt	NCSU, sample preparation for DNA extractions
Abbygale Pearce*	NCSU, Ethovision automated animal tracking, primary scientific literature, BSC493
Lola Patel	NCSU, Geometric morphometric landmarking, ColorMesh pipeline, BSC493
Abigail Giambalvo	NCSU, Geometric morphometric landmarking, ColorMesh pipeline, BSC493
Specimen Process Lab	NCSU, 10-12 undergraduate students per semester from 2023 – present, biospecimen processing, BSL2 and GCLP, Laboratory Information Management Systems (OpenSpecimen)
Kenza Nsanzimana	NCSU, BSL2 lab practices, Laboratory Information Management Systems (OpenSpecimen), ICP-MS, acid digestions for blood samples
Urmila Shanmugam^	NCSU, ICP-MS, acid digestions for soil samples, sediment analyses,
Shreya Senthikumar	UNC, biospecimen processing, BSL2 lab practices, Laboratory Information Management Systems (OpenSpecimen), DNA extraction

Erin Walton	NCSU, biospecimen processing, BSL2 lab practices, Laboratory Information Management Systems (OpenSpecimen), DNA extractions, project development, ICP-MS and acid digestions for sample prep, scientific writing, GN496
Justin Cusano	NCSU, BSL2 lab practices, Laboratory Information Management Systems (OpenSpecimen), BSC493
Avery Jordan-White[*]	FSU, mate-choice copying behavior, BORIS ethogram, geometric morphometrics, tropical fish husbandry
Aliya Himawan[^]	FSU, mate-choice copying behavior, BORIS ethogram
Addison Crews[2, 3]	FSU, tropical fish husbandry, behavioral assays (insect aggression), color quantification (ImageJ)
Taylor Henderson	FSU, *Poecilia reticulata* novelty-seeking behavior, fish brain dissections & tissue preservation, cryostat
Hughes Fish Lab	FSU, 10-12 undergraduate students per semester from 2022 – 2023. Tropical fish husbandry and IACUC compliance training.
Hughes Morpho Lab	FSU, 3-5 undergraduate students per semester (2023). Morphometric landmarking of images to quantify guppy body coloration.
Lilly Gregson[*]	BYU, fish brain dissections, stacked imaging
Maren Callaway[*, 2]	BYU, behavioral bioassays (behavioral contagion, alarm cue detection)
Cassandra Peterson[*, 2]	BYU, behavioral bioassays (social learning), tropical field biology in Costa Rica (fish seining & identification, freshwater abiotic assessments, field behavior assays)
Eric Morrison	BYU, behavioral bioassays (fish alarm cue detection, automated animal tracking (Ethovision)
Hallie Birdsong[*]	BYU, behavioral bioassays (mate-choice copying)
Erik Johnson[2]	BYU, behavioral assays (fish alarm cue detection), automated animal tracking, statistics in R, fish brain dissections, tropical field biology in Costa Rica
Lexie Chamberlain [*, 2, 3]	BYU, *Brachyrhaphis* taxonomy and identification, geometric morphometrics
Kaelamae Topham [*, 2, 3]	BYU, behavioral assays (dichotomous choice aquatic flume tank, fish alarm-cue detection), experimental design, chemical alarm cue extraction, tropical fish rearing and maintenance,
Audrey Chou [*, 2, 3]	BYU, behavioral assays (dichotomous choice aquatic flume tank), chemical alarm cue extraction, Ethovision, IDTracker, tropical fish rearing and maintenance.
Megan Pew [1, 2, 3]	BYU, behavioral bioassay (mate-choice copying), data management, tropical fish rearing and maintenance, basic statistics in R, IDTracker
Ellie Johnson [2, ^]	BYU, basic statistics in R, grantsmanship, tropical field biology in Costa Rica
Jackson Linde	BYU, aquatic insect collecting and trapping, fish seining, teaching methods and curriculum for BIO 420: Evolutionary Biology Lab
Kirsten Brichler	Purdue, experimental design (insecticide field efficacy trials), insect pitfall trapping, *Sphenophorus* spp. identification and larval soil sampling.
Danielle Craig	Purdue, insect pitfall trapping, *Sphenophorus* spp. identification and larval soil sampling, undergraduate capstone project on the effects of insecticide residues on pollinators in turfgrass ecosystems.

<u>Graduate Students (11)</u>

Anna Blight[+]	PhD, NCSU, behavioral ecology, experimental design, scientific writing, international fieldwork
Sarah Ruckman[3,*]	PhD, FSU, *Drosophila* behavior experimental design, scientific writing
Alexa Guerrera[*]	PhD, FSU, *Poecilia reticulata* social behavior, geometric morphometrics, statistics in R, machine learning pipelines in Python
Diego Ardon[*]	PhD, BYU, automated animal tracking (Ethovision), tropical field biology in Costa Rica (collection permitting)
Madeleine Clawson[1]	M.Sc., BYU, Tropical fish rearing and breeding, behavioral assays (fish alarm cue detection), chemical alarm cue extraction, automated animal tracking (Ethovision), tropical field biology in Costa Rica (collection permitting, fish seining & identification, field behavior assays), meta-analysis in R
Ellie Johnson	M.Sc., BYU, agent-based modeling in NetLogo, teaching methods and curriculum for BIO 420: Evolutionary Biology Lab
Kaitlyn Golden[2]	M.Sc., BYU, grantsmanship, agent-based modeling in NetLogo
Raquel Peron	M.Sc., Purdue, hyperspectrometry
Marguerite Bolt	M.Sc., Purdue, hyperspectrometry
Garrett Price	M.Sc. Purdue, behavioral assays (y-tube olfactometry), chemical ecology analytical techniques (GC-MS).
Michael Patterson	M.Sc. University of Missouri- Columbia. behavioral assays (olfactometry), *Sphenophorus* spp. identification and larval soil sampling

Post-graduate mentorship & supervision (6)

Austin Yoder	NCSU (lab technician), biospecimen processing, BSL2 lab practices, Laboratory Information Management Systems (OpenSpecimen), development of standard operating procedures
Adam Christopher	NCSU (lab technician), biospecimen processing, BSL2 lab practices, Laboratory Information Management Systems (OpenSpecimen)
Troy Davis	NCSU (lab manager), BSL2 and GLP lab practices, experimental design, student mentorship
Dr. Evan Lloyd	FSU (postdoctoral scholar), IACUC compliance
Dr. Zhiwen Zou	Purdue (visiting scholar from Nanchang University), behavioral assays (y-tube olfactometry)
Jacqie Eggers Rino[*]	Lab Manager, BYU, behavioral assays (behavioral contagion), data storage & management, automated animal tracking (Ethovision)

PRESENTATIONS (*undergraduate co-author)

Invited presentations (6) and lectures (5):

2025 **Duffy AG,** Sorenson C, Claytor J, Isabella Z, Reiskind M. *All panelists equally contributed.* Discussion Panel on Effective Pedagogy Approaches for Early Undergraduate Education in Biodiversity Science. Carolina Biodiversity Collaborative. May.

2025 **Duffy AG**. A multi-scale perspective on behavior: integrating evolution, sensory ecology, and environmental stress. North Carolina State University. Department of Biological Sciences. April.

2024 **Duffy AG**. Speciation. BIO 270: Evolution. North Carolina State University. March.

2024 **Duffy AG**. Using animal behavior research to enhance experiential learning and understanding of evolutionary processes in undergraduate students. Meredith College. Department of Biology. February.

2023 **Duffy AG**. Risk assessment and social information conflict in livebearing fish. Florida State University. Department of Biology. March.

2019 **Duffy AG**. The phylogenetic relationships and evolution of habitat utilization within the tribe Hydroporini (Coleoptera: Dytiscidae). Brigham Young University, Dept of Biology: Phylogenetic Systematics Graduate Student Research Symposium. February.

2017 **Duffy, AG.** Invertebrate sampling and identification in lotic ecosystems. BIO 220: Animal Diversity. Brigham Young University, Dept. of Biology. 16 September 2017.

2017 **Duffy, AG.** Field sampling and identification of Scarabaeidae larvae. ENT 317: Turfgrass Insect Pest Management. Pennsylvania State University, Dept. of Entomology. April.

2017 **Duffy, AG.** *Sphenophorus* spp. (Coleoptera: Dryophthoridae) biology and management. ENT 317: Turfgrass Insect Pest Management. Pennsylvania State University, Dept. of Entomology. March.

2016 **Duffy, AG**. Crown and thatch insect pests. ENTM 44300: Arthropods and Diseases of Turfgrass. Purdue University, Dept. of Entomology. February.

2015 **Duffy AG**, MD Ginzel, DS Richmond. Chemical mediation of hunting billbug (*Sphenophorus venatus*) host-finding and mating behavior: Implications for management in the transition zone. Entomological Society of America 63rd annual national meeting. Turfgrass Insect Management New and Emerging Issues. Minneapolis, MN. November.

Contributed presentations (11):

2022 **Duffy AG**, Ingley S, Williams T, Johnson JB. Reinforcement or hybridization? Puzzling mate choice behavior in sympatric populations of *Brachyrhaphis* sister species. Conference of Poeciliid Biologists. Wageningen, Netherlands.

2021 **Duffy AG**, Ingley S, Williams T, Chamberlain L*, Johnson JB. Asymmetric mate choice in sympatric vs. allopatric sister species (*Brachyrhaphis*). Animal Behavior Society. Virtual meeting. August.

2021 **Duffy AG**, Johnson JB. The effect of predation risk on intraspecific variation in response to chemical alarm cues in *Brachyrhaphis rhabdophora*. Virtual Poeciliidae Forum. February

2020 Chou AL*, **Duffy AG**, Johnson JB. Does phylogenetic relatedness influence response to heterospecific alarm cues in *Brachyrhaphis rhabdophora*? Utah Undergraduate Research Conference. February. Utah State University. Logan, UT. February

2019 Pew MG*, **Duffy AG**, Johnson JB. Evaluating the role of sociability in mate-choice copying behavior in *Brachyrhaphis rhabdophora*. Conference of Poeciliid Biologists. Mexico City, Mexico. September.

2018 Richmond DS, **Duffy AG**, Enders L, Rodriguez-Soto M. Grass-feeding billbugs: A complex and changing management landscape. Entomological Society of America 66th annual national meeting. Know Your Weevils, Fear No Weevil: Synthesizing Weevil Biology across Continents. November.

2018 **Duffy AG**. Predaceous diving beetles (Coleoptera: Dytiscidae) as non-model organisms to study inducible defenses. International Society of Chemical Ecology: Short Course in Insect Chemical Ecology. Alnarp, Sweden. June.

2016 **Duffy AG**. Billbug (*Sphenophorus* spp.) chemical ecology and seasonal biology in Indiana turfgrass. Purdue University, Dept of Entomology M.S. defense seminar. November.

2016 **Duffy AG**, GP Hughes, MD Ginzel, DS Richmond. Volatile and tactile chemical cues associated with billbug (Coleoptera: Curculionidae) behavior in managed turfgrass. Entomological Society of America: North Central Branch 71st annual meeting. Cleveland, OH. June.

2015 **Duffy AG**, MD Ginzel, DS Richmond. Chemically-mediated billbug (*Sphenophorus*) behavior. Entomological Society of America 63rd annual national meeting: Graduate ten-minute paper competition P-IE Chemical Ecology. Minneapolis, MN. November.

2015 **Duffy AG**, MD Ginzel, DS Richmond. Hunting billbug *Sphenophorus venatus* adult feeding preference and chemically-mediated behavior. Ohio Valley Entomological Association 26th annual meeting. Lexington, KY. October.

2014 **Duffy AG**, DS Richmond. Feeding Preference of Hunting Billbug (*Sphenophorus venatus*) for warm-season or cool-season turfgrasses. Ohio Valley Entomological Association 25th annual meeting. Columbus, OH. October.

Contributed posters (11):

2025 Walton E*, **Duffy AG**, Davis T, Smith B, Enders J, Hoyo C. Effects of lead in drinking water on a liver disease. North Carolina State University. Undergraduate Research & Creativity Symposium. April

2025 Shanmugman U*, **Duffy AG**, Nsanzimana K*, Enders J, Smith B, Hoyo C. Soil Metallomics and association with hepatocellular carcinoma. North Carolina State University. Undergraduate Research & Creativity Symposium. April

2023 Taylor Henderson*, Paulina Montes Mendez*, Katelyn McCaffrey*, Sarah Ruckman, Alexandra Duffy, and Kimberly Hughes. Exploring the relationship between melanic coloration and aggression in *Drosophila melanogaster*. Florida State University. Undergraduate Research Symposium. March.

2023 Nicholas Tan*, Addison Crews*, Anthony Romero*, Sarah Ruckman, Alexandra Duffy, and Kimberly Hughes. The correlation between coloration and aggression in *Drosophila melanogaster*. Florida State University. Undergraduate Research Symposium. March.

2021 Topham K*, **Duffy AG**, Chou AI*, Johnson JB. Chemosensory ecology and behavior in *Brachyrhaphis rhabdophora*. Brigham Young University Undergraduate Research Poster Competition. Provo, UT. March

2021 Chamberlain L*, Williams TJ, **Duffy AG**, Johnson JB. *Brachyrhaphis* fish morphological variation when faced with competition. Brigham Young University Undergraduate Research Poster Competition. Provo, UT. March.

2020 Chou AI*, **Duffy AG**, Johnson JB. Chemical sensory ecology of *Brachyrhaphis rhabdophora.* Brigham Young University, College Undergraduate Research Awards. April 2020.

2019 **Duffy AG**, Johnson JB. Evaluating the role of olfaction in predation risk assessment for *Brachyrhaphis rhabdophora*. Conference of Poeciliid Biologists. Mexico City, Mexico. September.

2018 Roth-Monzón AJ, **Duffy AG**, Johnson JB. Does sympatry influence dietary niche overlap? An analysis of gut contents in *Poeciliopsis prolifica* and *Poeciliopsis latidens* (Cypprinodontiformes: Poeciliidae). XVI Congreso Nacional y VII Simposio Latinoamericano de Ictiología. Mexico. November.

2016 **Duffy AG**, GP Hughes, MD Ginzel, and DS Richmond. Chemically mediated dispersal and mating behavior of billbugs (Coleoptera: Curculionidae) associated with turfgrass. International Congress of Entomology. Orlando, FL. September.

2015 **Duffy AG** and DS Richmond. Hunting billbug (*Sphenophorus venatus*) adult feeding preference and host volatile recognition. Entomological Society of America North Central Branch 70th annual meeting: Horticulture IPM. Manhattan, KS. June.

EXTENSION ARTICLES & PRESENTATIONS

2018 **Duffy AG**, Carson T**.** Midwestern billbugs: seasonal biology and DNA-based life-stage association. Cutting Edge Featured Article. *Golf Course Management* magazine. http://gcmonline.com/research/2018/04/01/midwestern-billbugs

2016 **Duffy AG.** Managing billbugs in cool- and warm-season turfgrass. Purdue University/Midwest Regional Turf Foundation: Turf and Landscape Field Day. West Lafayette, IN. July.

2015 Richmond DS, **Duffy AG**. Monitoring and managing caterpillars. Purdue University/Midwest Regional Turf Foundation: Turf and Landscape Field Day. West Lafayette, IN. July.

2015 Richmond DS, **Duffy AG**. Hunting billbug larvae overwintering in Indiana. Purdue Turf Tips website. http://purdueturftips.blogspot.com/2015/04/hunting-billbug-larvae-overwintering-in.html

PROFESSIONAL & PEDAGOLOGICAL TRAINING

2025 Preparing students for environmental studies/biology majors Faculty Mentoring Network (FMN): Four-Dimensional Ecology Education (4DEE) framework initiative. Ecological Society of America: Transforming Ecology Education to 4D (TEE) project. Virtual.

2023 Management Essentials. North Carolina State University. Raleigh, NC.

2023 Grant Writing Workshop. Florida State University. Tallahassee, FL.

2021 Responding to Undergraduate Student Writing. Brigham Young University, Teaching Assistant Training. Provo, UT.

2020 Data Analysis and Visualization in R for Ecologists, Virtual Workshop by Data Carpentry.

2018 PhD Short Course in Insect Chemical Ecology, International Society of Chemical Ecology, Swedish Agricultural University, Alnarp, Sweden

2016 Instructional Presentation Techniques to Engage Students, Purdue University, West Lafayette, IN

2016 Encouraging Active Learning, Purdue University, West Lafayette, IN

2016 Grant and Proposal Writing, Purdue University, West. Lafayette, IN

PROFESSIONAL SOCIETIES

2024 – Present	Carolina Biodiversity Collaborative
2020 – Present	Ecological Society of America
2019 – Present	Society for the Study of Evolution
2018 – Present	Animal Behavior Society
2018 – 2020	Sigma Xi
2017 – 2019	Society for Freshwater Science
2014 – 2018	Entomological Society of America
2016	Indiana Academy of Science
2015 – 2017	American Association for the Advancement of Science
2014 – 2016	Ohio Valley Entomological Association

ACADEMIC SERVICE & LEADERSHIP

2024, 2025	National Science Foundation, Ad hoc Reviewer
2015 – 2016	Executive Board, Purdue Graduate Women in the College of Agriculture

2015 – 2016 Student representative, Purdue Entomology Departmental Awards Committee
2015 – 2016 Student Editor, Purdue Entomology *Boiler Buzz* newsletter
2014 – 2016 Vice President**,** Purdue Entomology Graduate Organization
2014 – 2016 Student representative, Purdue Entomology Departmental Advisory Committee

COMMUNITY OUTREACH

2024 The Cary School – Pre-K Outreach event, NC
2022 BYU Dept. of Biology tour guide & science advocate for visiting 9th graders, UT
2022 American Fork High School semester science project judge, UT
2020 – 2022 BYU Evolutionary Biology- Species Concept Debate judge, UT
2020 Woodland Hill's Trail- Citizen Science Project Co-creator & Facilitator, UT
2016 Purdue University Bug Bowl, West Lafayette, IN
2016 Purdue Spring Fest: flower anatomy and pollinators, West Lafayette, IN
2015 Celebrate Science Indiana, Indianapolis, IN
2015 Butterfly Encounter, West Lafayette, IN
2015 2nd-6th grade Bug Barn tour, West Lafayette, IN
2015 Brooks Elementary Math and Science Night, Fishers, IN
2015 Head Start Program: Insects & Spiders, Lafayette, IN
2014 Purdue Entomological Research Collection labeling, West Lafayette, IN
2014 Purdue 2nd grade Outreach: Insect petting zoo, West Lafayette, IN
2014 Research Round Table, presenter on Insect Ecology, West Lafayette, IN
2014 Purdue University Bug Bowl: honey-tasting room, West Lafayette, IN
2013 NC State University Agroecology Education Farm, West Lafayette, IN
2012 Carolina Tiger Rescue, Pittsboro, NC
2010-2011 NC Museum of Natural Science, Living Conservatory, Raleigh, NC

RELEVANT SKILLS

Data Curation, Analyses, Statistics and Programming
Ecological statistics, R, Python, agent-based models (NetLogo, R), high-performance computing (supercomputer environments), relational databases and LIMS (RedCap, OpenSpecimen, TaxonWorks)

Chemical Ecology Methods & Techniques
Gas chromatography-mass spectrometry (GC-MS), GC-electroantennogram (GC-EAD), Solid-phase microextraction (SPME), olfactometry bioassays, head-space volatile collections, inductively coupled plasma mass spectrometry (ICP-MS)

Field Biology & Ecology
International and domestic collection and exportation permitting (live and preserved specimens), U.S. FWS importation permitting, live animal and specimen preservation and transport, electrofishing, seining, biotic and abiotic water quality assessment, soil sample collection, behavioral field observations and experimentation, experimental design in agroecological and natural field systems (terrestrial and freshwater), insect pest survey and damage assessment.

Molecular Techniques & Phylogenetics
DNA extractions (insect muscle and cuticle tissue, fish muscle tissue, human saliva, human blood), Nanopore library prep, DNA quantification (Nanodrop, Quibit), PCR, Gel electrophoresis, sequence alignment (Geneious, MAFFT, MUSCLE), maximum parsimony (Mesquite), maximum

likelihood (RAxML, IQTree), Bayesian inference (MrBayes), ancestral state reconstruction (RASP), tree visualization and editing

Image Acquisition & Processing
microCT scanning, Leica Z-stack imaging system, DSLR and Olympus macro-imaging systems, image editing with Adobe Photoshop and Illustrator, Scanning Electron Microscopy (SEM), qGIS, IDTracker, Noldus Ethovision animal tracking software

Certifications & specialized trainings
NAUI scuba diver and Enriched Air Nitrox Diver, Institutional Animal Care and Use Committee procedures and training (e.g., Animal biosafety training, Hazardous waste awareness and laboratory safety, Bloodborne pathogens training for animal research, Occupational health and safety in the care and use of research animals, Using hazardous agents in research animals