

Dr. Selina Bruckner

AUBURN UNIVERSITY

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Education

Ph.D. Entomology - Auburn University, USA	05/2017 – 12/2020
M.Sc. Biology - University of Bern, Switzerland	09/2015 – 02/2017
B.Sc. Biology - University of Bern, Switzerland	09/2012 – 05/2015

Honors and Awards

Extension Activities Award, American Association of Professional Apiculturists, 2024

Outstanding PhD Student, Department of Entomology and Plant Pathology,
Auburn University, 2021

Postdoctoral Researcher Travel Award, American Association of Professional Apiculturists,
2021

Best Master Student Presentation Award, South-Eastern Branch Entomological Society of
America, 2018

Professional Experience

Assistant Extension Professor – Auburn University, USA	08/2024 – present
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Post-Doctoral Scholar – Penn State University, USA	03/2023 – 07/2024
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Research

Organic colony management and honey bee products

- Coordinating biweekly and monthly meetings, developing management protocols, problem solving, colony management, pollen metabarcoding

Comparisons of different genetic honey bee stock

- Coordinating, colony management and assessments, hygienic behavior assays

Post-Doctoral Fellow - Auburn University, USA

01/2021 – 03/2023

Research

Beekeeper information seeking behavior and learning (PI)

- Developed and coordinated beekeeper learning study with seven regional beekeeper clubs alongside Julia Mahood (Georgia Beekeeper's Association)

Varroa mite management (Mentor)

- Serving as a mentor of a doctoral student, supporting field work as well as data collection and interpretation

Annual National Colony Loss and Management Survey (Co-investigator)

- Developing survey questions, data analyses and publication

Teaching

Bee Biology and Management course

(Lead instructor for honey bee management module)

- Developed and presented nine lectures on honey bee management, coordinated six practical lab sessions, evaluated eight student assignments

Extension

Apicultural recordings of Best Management Practices (PI)

- Script writing, demonstrate coordinate recordings of best management practices

Graduate Research Assistant – Auburn University, USA

05/2017 – 12/2020

Research

Genetic diversity in a honey bee colony and its potential to mitigate neonicotinoid pesticide effects

- Investigated mitigation effects on brood survivorship, worker longevity and food gland development

Potential combined effects of neonicotinoid pesticides and Varroa destructor mites on honey bee health

- Investigated combined stressor effects on honey bee worker longevity and food gland development

Losses of managed honey bee colonies in the United States between 2017 and 2020.

- Conducted an annual survey in collaboration with the Bee Informed Partnership

Teaching

Systematic Entomology and Morphology Fall 2019 (Teaching Assistant)

- Developed and presented two lectures, coordinated 14 practical lab sessions, evaluated 17 student assignments

General Entomology Fall 2018 (Teaching Assistant)

- Coordinated 14 practical lab sessions, evaluated three student assignments

Guest lectures (1)

- Honey bees and One Health. PAOH-5950-EA3. Public and One Health Program, Auburn University College of Veterinary Medicine.

Peer-reviewed Publications (25)

1. Brandt, S., Penaloza-Aponte, D., Underwood, R.M., **Bruckner, S.**, DeMoras B., López-Urbe, M.M., Urbina, J. 2025. BeeCam-AprilTag: timing the flight duration of individual honey bees in remote field settings with AprilTag and Raspberry Pi. *MethodsX* 15. <https://doi.org/10.1016/j.mex.2025.103624>
 - *My contributions: Field work and data collection, reviewed manuscript*
2. Carroll, E.P., Held, D.W., Turley, N.E., **Bruckner, S.** 2025. Crape myrtle bark scale *Acanthococcus lagerstroemiae* (Coccidae: Eriococcidae) infestation seasonally alters the abundance and composition of insect assemblages on crape myrtle trees. *Oecologia* 207, 155. <https://doi.org/10.1007/s00442-025-05792-3>
 - *My contributions: Field work and data collection, statistical analyses, reviewed manuscript*
3. **Bruckner, S.**, Tsuruda, J., Williams, G.R., Underwood, R.M. 2025. Let's not sugar coat it: the powdered sugar shake is not harmless for honey bee workers. *Journal of Apicultural Research* 1-6. <https://doi.org/10.1080/00218839.2025.2550855>
 - *My contributions: Experimental design, field work and data collection, statistical analyses, authored manuscript*

4. Aurell, D., **Bruckner, S.**, Steury, T., Williams, G.R. 2025. Treating newly split *Apis mellifera* honey bee colonies with natural miticides – An opportunity for Integrated Pest Management of *Varroa destructor* mites (Mesostigmata: Varroidae). Journal of Economic Entomology. Toaf126, <http://doi.org/10.1093/jee/toaf126>
 - *My contributions: Field work and data collection, reviewed manuscript*
5. Camenzind, D.W., **Bruckner, S.**, Neumann, P., Van Oystaeyen, A.V., Strobl, V., Williams, G.R., Straub, L. 2025. Microsporidian parasite impairs colony fitness in bumblebees. Open Biology 15, 240304, <https://doi.org/10.1098/rsob.240304>
 - *My contributions: Dissection of bumble bee hypopharyngeal glands, manuscript review*
6. **Bruckner, S.**, Straub, L., Villamar-Bouza, L., Beneduci, Z.J., Neumann, P., Williams, G.R., December 2024. Life stage dependent effects of neonicotinoid exposure on honey bee hypopharyngeal gland development. Ecotoxicology and Environmental Safety 288|117337, <https://doi.org/10.1016/j.ecoenv.2024.117337>
 - *My contributions: Experimental design, field work and data collection, statistical analyses, authored manuscript*
7. Penaloza-Aponte, D., Brandt, S., Dent, E., Underwood, R.M., DeMoras, B., **Bruckner, S.**, López-Urbe, M.M., Urbina, J.V. December 2024. Automated entrance monitoring to investigate honey bee foraging trips using open-source wireless platform and fiducial tags. HardwareX 20|e00609, <https://doi.org/10.1016/j.ohx.2024.e00609>
 - *My contributions: Field work and data collection, manuscript revision*
8. Aurell, D., Wall, C., **Bruckner, S.**, Williams, G.R. May 2024. Combined treatment with amitraz and thymol to manage *Varroa destructor* mites (Acari: Varroidae) in *Apis mellifera* honey bee colonies (Hymenoptera: Apidae). Journal of Insect Science 24|3, <https://doi.org/10.1093/jisesa/ieae022>
 - *My contributions: Field work and data collection, manuscript review*
9. Bartlett, L.J., Alparslan, S., **Bruckner, S.**, Delaney, D.A., Menz, J.F., Williams, G.R., Delaplane, K.S. May 2024. Neonicotinoid exposure increases *Varroa destructor* (Mesostigmata: Varroidae) mite parasitism severity in honey bee colonies and is not mitigated by increased colony genetic diversity. Journal of Insect Science 24|3, <https://doi.org/10.1093/jisesa/ieae056>
 - *My contributions: Experimental design, field work and data collection, manuscript review*
10. Aurell, D., Bruckner, S., Wilson, M., Steinhauer, N., Williams, G.R. January 2024. A national survey of managed honey bee colony losses in the USA: Results from the Bee Informed Partnership for 2020-21 and 2021-22. Journal of Apicultural Research 0|0: 1-14 <https://doi.org/10.1080/00218839.2023.2264601>
 - *My contributions: Survey design, distribution and promotion, manuscript review*
11. Bartlett, L.J., Baker, C., **Bruckner, S.**, Delaplane, K.S., Hackmeyer, E.J., Phankaew, C., *Williams, G.R., *Berry, J.A. 2023. No evidence to support the use of glycerol–oxalic acid mixtures delivered via paper towel for controlling *Varroa destructor* (Mesostigmata: Varroidae) mites in the Southeast United States. Journal of Insect Science 23|6, <https://doi.org/10.1093/jisesa/iead097>. *equal contributions.

- *My contributions: Experimental design, field work and data collection, statistical analyses, manuscript review*
12. **Bruckner, S.**, Wilson, M., Aurell, D., Rennich, K., vanEngelsdorp, D., Steinhauer, N., Williams, G.R. 2023. A national survey of managed honey bee colony losses in the USA: Results from the Bee Informed Partnership for 2017-18, 2018-19 and 2019-20. *Journal of Apicultural Research* 62|3:429-443
<https://doi.org/10.1080/00218839.2022.2158586>
 - *My contributions: Survey design, distribution and promotion, data management and statistical analyses, authored manuscript*
 13. **Bruckner, S.**, Straub, L., Neumann, P., Williams, G.R. 2023. Negative but antagonistic effects of neonicotinoid insecticides and ectoparasitic mites *Varroa destructor* on *Apis mellifera* honey bee food glands. *Chemosphere* 313: e137535
<https://doi.org/10.1016/j.chemosphere.2022.137535>
 - *My contributions: Experimental design, field work and data collection, statistical analyses, authored manuscript*
 14. Straub, L., Strobl, V., **Bruckner, S.**, Camenzind, D.W., Van Oystaeyen, A., Wäckers, F., Williams, G.R., Neumann, P. 2022 Buffered fitness components: Antagonism between malnutrition and an insecticide in bumble bees. *Science of the Total Environment* 833
<https://doi.org/10.1016/j.scitotenv.2022.155098>
 - *My contributions: Data collection, manuscript review*
 15. Bartlett, L.J., **Bruckner, S.**, Delaney, D.A., Williams, G.R., Delaplane, K.S. 2021. A computational approach to tracking age-based task frequency distributions of *Apis mellifera* worker cohorts. *Journal of Apicultural Research* 61:147–150
<https://doi.org/10.1080/00218839.2021.1909313>.
 - *My contributions: Field work and data collection, manuscript review*
 16. Berry, J., Bartlett, L.J., **Bruckner, S.**, Baker, C., Braman, K., Delaplane, K.S., Williams, G.R. 2022. Assessing repeated oxalic acid vaporization in honey bee (*Apis mellifera*) colonies for control of the ectoparasitic mite *Varroa destructor*. *Journal of Insect Science* 22:15, <https://doi-org.spot.lib.auburn.edu/10.1093/jisesa/ieab089>
 - *My contributions: Field work and data collection, manuscript review*
 17. **Bruckner, S.**, Straub, L., Neumann, P., Williams, G.R. 2021 Synergistic and antagonistic interactions between *Varroa destructor* mites and neonicotinoid insecticides in male *Apis mellifera* honey bees. *Frontiers in Ecology and Evolution* 9.
<https://doi.org/10.3389/fevo.2021.756027>
 - *My contributions: Experimental design, field work and data collection, statistical analyses, authored manuscript*
 18. Straub, L., Villamar-Bouza, L., **Bruckner, S.**, Chantawannakul, P., Kolari, E., Maitip, J., Vidondo, B., Neumann, P., Williams, G.R. 2021 Negative effects of neonicotinoids on male honeybee survival, behaviour, and physiology in the field. *Journal of Applied Ecology* 00:1-14, <https://doi.org/10.1111/1365-2664.14000>
 - *My contributions: Field work and data collection, dissection of honey bee drone reproductive organs, manuscript review*

19. Minnameyer, A., Strobl, V., **Bruckner, S.**, Van Oystaeyan, A., Wackers, F., Williams, G.R., Yañez, O., Neumann, P., Straub, L. 2021. Eusocial insect declines: insecticide impairs sperm and feeding glands in bumblebees. *Science of The Total Environment* 785:12, <https://doi.org/10.1016/j.scitotenv.2021.146955>
 - *My contributions: data collection, manuscript editing*
20. Strobl, V., **Bruckner, S.**, Radford, S., Wolf, S., Albrecht, M., Villamar-Bouza, L., Maitip, J., Kolari, E., Chantawannakul, P., Glauser, G., Williams, G.R., Neumann, P., Straub, L. 2021 No impact of neonicotinoids on male solitary bees *Osmia cornuta* under semi-field conditions. *Physiological Entomology* 46:105-109, <https://doi.org/10.1111/phen.12349>
 - *My contributions: Dissection of male Osmia cornuta reproductive organs, manuscript review*
21. Friedli, A., Williams, G.R., **Bruckner, S.**, Neumann, P., Straub, L. (2020) The weakest link: Haploid honey bees are more susceptible to neonicotinoid insecticides. *Chemosphere* 242:e125145, <https://doi.org/10.1016/j.chemosphere.2019.125145>
 - *My contributions: Field work and data collection, manuscript review*
22. Giroud, B., **Bruckner, S.**, Straub, L., Neumann, P., Williams, G.R., Vulliet, E. (2019) Trave-level determination of two neonicotinoid insecticide residues in honey bee royal jelly using ultra-sound assisted salting-out liquid extraction followed by ultra-high-performance liquid chromatography-tandem mass spectrometry. *Microchemical Journal* 151:e104249, <https://doi.org/10.1016/j.microc.2019.104249>
 - *My contributions: Queen rearing, royal jelly collection, coordination of sample shipment, manuscript review*
23. Mortensen, A., **Bruckner, S.**, Williams, G.R., Ellis, J. 2019. Comparative morphology of adult honey bees, *Apis mellifera*, reared in vitro or in their parent hive. *Journal of Apicultural Research* 58:580-586, <https://doi.org/10.1080/00218839.2019.1616976>
 - *My contributions: Dissection and measuring of honey bee worker hypopharyngeal glands, manuscript review*
24. Strobel, V., Straub, L., **Bruckner, S.**, Albrecht, M., Maitip, J., Kolari, E., Chantawannakul, P., Williams, G.R., Neumann, P. 2019. Not every sperm counts: Male fertility in solitary bees, *Osmia cornuta*. *PLoS ONE* 14:e0214597. <https://doi.org/10.1371/journal.pone.0214597>
 - *My contributions: Rearing of Osmia cornuta, Dissection of male Osmia cornuta reproductive organs, manuscript review*
25. Straub, L., Villamar-Bouza, L., **Bruckner, S.**, Chantawannakul, P., Gauthier, L., Khongphinitbunjong, K., Retschnig, G., Troxler, A., Vidondo, B., Neumann, P., Williams, G.R. 2016. Neonicotinoid insecticides can serve as inadvertent insect contraceptives. *Proceedings of the Royal Society B - Biological Sciences* 283, <https://doi.org/10.1098/rspb.2016.0506>
 - *My contributions: Field work and data collection, dissection of honey bee drone reproductive organs, manuscript review*

Extension Publications (37)

1. Kirby, S., Abbate, A.A., **Bruckner, S.** Lifestyles of Alabama's bees: Solitary, social and somewhere in between. ACES Website ANR-3211, January 2026, Peer-Reviewed [[Link](#)]
2. **Bruckner, S.** Science distilled – Double the trouble. Effects of small hive beetles and varroa on the winter cluster of bees. ACES Beekeeping Newsletter, January 2026, [[Link](#)]
3. **Bruckner, S.** Science distilled – New mite, new methods? Efficacy of common varroa monitoring methods to detect *Tropilaelaps*. ACES Beekeeping Newsletter, December 2025, [[Link](#)]
4. Woolford, M., Underwood, R.M., Tsuruda, J.M., Williams, G.R., **Bruckner, S.** Do bees survive a sugar shake? American Bee Journal, November 2025, [[Link](#)]
5. **Bruckner, S.** The Auburn Series – The third pillar. Bee Culture: The Magazine of American Beekeeping, October 2025, [[Link](#)]
6. **Bruckner, S.** Science distilled – Interesting Developments: Norroa. ACES Beekeeping Newsletter, October 2025, [[Link](#)]
7. **Bruckner, S.** Science distilled – *Nosema ceranae*: an important disease to consider during Fall feeding. ACES Beekeeping Newsletter, September 2025, [[Link](#)]
8. **Bruckner, S.** Science distilled – It's hot out here, boys and girls! Exploring the heat resilience of honey bee queens and drones. ACES Beekeeping Newsletter, August 2025, [[Link](#)]
9. **Bruckner, S.**, López-Urbe, M., Underwood, R. Choosing the right honey bee stock. American Bee Journal, July 2025, [[Link](#)]
10. **Bruckner, S.** Science distilled – Do colonies have different personalities, and why should we care? ACES Beekeeping Newsletter, June 2025, [[Link](#)]
11. **Bruckner, S.** Science distilled – Swarm or not to swarm? - Detecting honey bee (queen) piping via machine learning, ACES Beekeeping Newsletter, May 2025, [[Link](#)]
12. **Bruckner, S.**, López-Urbe, M., Underwood, R. Choosing an apiary location for organic honey bee colony management. American Bee Journal, April 2025, [[Link](#)]
13. **Bruckner, S.** Science distilled – How effective is the EFB field test kit? ACES Beekeeping Newsletter, February 2025, [[Link](#)]
14. **Bruckner, S.** Science distilled – Microplastics as hitch-hikers on honey bee foragers. ACES Beekeeping Newsletter, January 2025, [[Link](#)]
15. **Bruckner, S.** Science distilled – Winter brood monitoring program. ACES Beekeeping Newsletter, December 2024, [[Link](#)]
16. **Bruckner, S.** Science distilled – Brood or season, what makes a winter bee? ACES Beekeeping Newsletter, November 2024, [[Link](#)]
17. **Bruckner, S.** Science distilled – The diet-breadth of varroa mites: Fat or no fat? ACES Beekeeping Newsletter, October 2024, [[Link](#)]
18. **Bruckner, S.**, López-Urbe, M., Underwood, R. Preparing Honey Bee Colonies for Winter — What You Should Know. American Bee Journal, October 2024, [[Link](#)]
19. **Bruckner, S.**, López-Urbe, M., Underwood, R. Approved chemicals for organic colony management. American Bee Journal, July 2024, [[Link](#)]
20. **Bruckner, S.**, López-Urbe, M., Underwood, R. Non-chemical Control Methods for *Varroa destructor* — They Exist! American Bee Journal, April 2024, [[Link](#)]

21. **Bruckner, S.**, López-Urbe, M., Underwood, R. Current Challenges for the Production of Certified Organic Honey Bee Products. American Bee Journal, January 2024, [\[Link\]](#)
22. **Bruckner, S.**, López-Urbe, M., Underwood, R. Organic and Treatment-free Colony Management – They are not the same. American Bee Journal, October 2023, [\[Link\]](#)
23. López-Urbe, M., Underwood, R., **Bruckner, S.** The benefits of organic beekeeping and how management affects honey bee colony health, survival and productivity. American Bee Journal, July 2023
24. **Bruckner, S.** Management of the Month March – Soon to swarm? Alabama Cooperative Extension System Monthly Beekeeping Newsletter, March 2022, [\[Link\]](#)
25. **Bruckner, S.**, Dan Aurell. Management of the Month February – The big three: Varroa, queens, and nutrition. Alabama Cooperative Extension System Monthly Beekeeping Newsletter February 2022, [\[Link\]](#)
26. **Bruckner, S.** Management of the Month December – A wishlist for bees and beekeepers. Alabama Cooperative Extension System Monthly Beekeeping Newsletter, December 2021, [\[Link\]](#)
27. **Bruckner, S.** Management of the Month October – Types of Sugar Syrup Feeders. Alabama Cooperative Extension System Monthly Beekeeping Newsletter, October 2021, [\[Link\]](#)
28. **Bruckner, S.** Management of the Month August – Varroa mite control options. Alabama Cooperative Extension System Monthly Beekeeping Newsletter, August 2021, [\[Link\]](#)
29. **Bruckner, S.** Management of the Month June – Promote bees to draw comb. Alabama Cooperative Extension System Monthly Beekeeping Newsletter, June 2021, [\[Link\]](#)
30. **Bruckner, S.** Management of the Month April – Splitting a colony. Alabama Cooperative Extension System Monthly Beekeeping Newsletter, April 2021, [\[Link\]](#)
31. **Bruckner, S.**, Aurell, D., Williams, G. Hot off the press: BIP’s State Specific Colony Losses! The Bee Informed Partnership Blog, August 2020, [\[Link\]](#)
32. **Bruckner, S.**, Aurell, D., Williams, G. Preliminary Results of the 2019-2020 National Honey Bee Colony Loss Survey. The Bee Informed Partnership Blog, June 2020, [\[Link\]](#)
33. **Bruckner, S.** Food. Did you know that before the grocery store and the food truck, there are bees? Auburn University Office of Sustainability Online Blog, 28 February 2020, [\[Link\]](#)
34. **Bruckner, S.** (Spo)Oktober Blog: Don’t be afraid of state specific colony losses! Bee Informed Partnership Online Blog, 24 October 2019. [\[Link\]](#)
35. **Bruckner, S.**, Steinhauer, N., Rennich, K., vanEngelsdorp, D., Williams, G. Latest Loss Survey Results 2018-2019. The Bee Informed Partnership Blog, June 2019. [\[Link\]](#)
36. **Bruckner, S.**, Steinhauer, N., Rennich, K., vanEngelsdorp, D., Williams, G. SURVEY FAQs – Tips and Tricks to answering the Bee Informed Partnership’s National Colony Loss and Management Survey. The Bee Informed Partnership Blog, April 2019. [\[Link\]](#)
37. **Bruckner, S.**, Abbate, A. 2018. Bee Bods – Spring Edition. The Stinger (The Newsletter of the Alabama Beekeepers' Association), April 2018.

Podcasts (4)

1. Steinhauer, N. and **Bruckner, S.** Let’s talk about the Bee Informed Partnership. Two bees in a podcast, USA, 05 April 2023. [Link](#)
2. **Bruckner, S.** Bee Informed Partnership Survey. Beekeeper Confidential Podcast | Bees & Beekeeping, USA, 23 April 2022. [Link](#)

3. **Bruckner, S.** Save the Bees with the Auburn Bee Lab. Actual Ag Podcast, USA, 16 March 2021. [Link](#)
4. Williams, G.R. and **Bruckner, S.** Bee Informed Partnership Annual Colony Loss Survey. Beekeeping Today Podcast, USA, 26 April 2019. [Link](#)

Extension programs (5)

1. Regional Queen Rearing Workshops
 - a. Tuscaloosa Extension Office, 22 March 2025, **Participants: 12**
 - b. University of Alabama in Huntsville, 12 April 2025, **Participants: 18**
 - c. Escambia County Extension Office, 19 April 2025, **Participants: 19**
 - d. Auburn University at AU-Bees lab, 26 April 2025, **Participants: 12**
2. AU-Bees Spring Beekeeping Workshop, Morgan County Extension Office, 5 April 2025, **Participants: 50**
3. Meet and Greet for Alabama Beekeeping Club Officers, ACES Beekeeping Symposium, Clanton AL, 1 February 2025, **Participants: 12**
4. 30th ACES Beekeeping Symposium, Clanton AL, 1 February 2025, **Participants: 300**
5. Hap-Bee Hour for Alabama Beekeeping Club Officers, Virtual, 19 November 2024, **Participants: 6**

Professional Service

Research Symposium Committee, Department of Entomology and Plant Pathology, Auburn University	03/2025 - present
Graduate Women in STEM (GWIS) Connect Editor	01/2024 - present
Graduate Women in STEM (GWIS) Empower Content Editor	11/2022 - present
Penn State Postdoc Society Council Member	09/2023 – 07/2024
President, Post-Doc Association, Auburn University	08/2022 – 06/2023
President elect, Post-Doc Association, Auburn University	08/2021 – 08/2022
Member of Diversity, Inclusion and Equity Task Force/Committee, College of Agriculture, Auburn University	09/2021 – 03/2023
Reviewer for Scientific Journals	03/2021 – present
Journal of Apicultural Research, Journal of Economic Entomology, Journal of Applied Entomology, PlosOne, Journal of Insect Science, Chemosphere, Animals, Insects,	

Skills

Languages

German (Native language)
 English (Proficient)
 Spanish (Basic)
 French (Basic)
 American Sign Language (Basic)

Technical

Beekeeping

Microsoft Office and Adobe Suite

Statistical Software R