**Sara A. Brewer**

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Asbury University ORCHID iD: https://orcid.org/0009-0007-6738-1660

**Career Objectives**

To obtain a Ph.D. that prepares me to pursue a career as a research scientist.

**Academic Preparation**

*B.A., Biology* -- Asbury University (Expected May 2024) Current GPA: 0.00

Asbury University, Wilmore, KY

**Publications**

***In Print or Press*:**

**Brewer, Sara A.**, Rebecca R. Piche, Florene G. Bell, Angie F. Flores, Kenton L. Sena, Thomas A. Maigret, Chi Jing Leow, and Ben F. Brammell. 2023. The use of eDNA in detection of Northern Red (*Pseudotriton ruber*) and Spring (*Gyrinophilus porphyriticus*) Salamanders: development and validation of quantitative PCR assays with notes on phylogeographic effectiveness. *In press*, Herpetology Notes.

Brammell, Ben F., Elizabeth K. Strasko, **Sara A. Brewer**, Rebecca R. Piche, Cierla M. Sams, Cy L. Mott, Malinda A. Stull. 2023. Detecting fossorial salamanders using eDNA; development and validation of quantitative and end-point PCR assays for the detection of five species of *Ambystoma*. Submitted to Conservation Genetics Resources, published 10/4/23.

**Grants and Funding**

$468. Kentucky Academy of Science. **Sara A. Brewer** and B. F. Brammell. Development and validation of qPCR assays for three species of Plethodon salamanders.

**Presentations**

(14) Brown, Hope A. Brown, Abigail K. Fletcher, **Sara A. Brewer**, Joanne Jung, Mary R. Johnson, Cierla V. McGuire, Malinda A. Stull, and Ben F. Brammell. 2023. Development of environmental DNA (eDNA) qPCR assays for the detection of darter species: Significance of phylogeography in assay efficacy. 108th Annual Kentucky Academy of Science Meeting, Nov. 3-4, 2023, Northern KY Univ. Highland Heights, KY. Poster.

(13) **Brewer, Sara A.**, Cy L. Mott, Rebecca R. Piche, Florene G. Bell, Elizabeth K. Strasko, Jarrett R. Johnson,Kenton L. Sena, Thomas A. Maigret, Ben. F. Brammell. 2023. eDNA detection of four-toed salamanders (Hemidactylium scutatum): Significance of mitochondrial evolution rates in assay development. 108th Annual Kentucky Academy of Science Meeting, Nov. 3-4, 2023, Northern KY Univ. Highland Heights, KY. Poster.

(12) Brammell, Ben F., **Sara A. Brewer**, Elizabeth K. Strasko, Jarrett R. Johnson and Madeline Cox. 2023. eDNA monitoring of a rare salamander: The use of eDNA in detection of Eurycea junaluska in the Great Smoky Mountains National Park. 108th Annual KAS, Nov. 3-4, 2023, NKU, Highland Heights, KY. Poster.

(11) **Brewer, Sara A.**, Florene G. Bell, Angie F. Flores, Kenton L. Sena, Thomas A. Maigret, Chi Jing Leow,and Ben F. Brammell. 2023. The use of eDNA in detection of Northern Red (Pseudotriton ruber) and Spring (Gyrinophilus porphyriticus) Salamanders: Development and validation of quantitative PCR assays with notes on phylogeographic effectiveness. 108th Annual KAS, Nov. 3-4, 2023, NKU. Highland Heights, KY. Poster.

(10) Brammell, Ben F., **Sara A. Brewer**, Elizabeth K. Strasko, and Jarrett R. Johnson. 2023. The search for a rare salamander: the use of eDNA in detection of *Eurycea junaluska* in the Great Smoky Mountains National Park. Annual meeting of the Tennessee Herpetological Society, Sept. 28-29th, 2023, Union City, TN. Poster.

(9) **Brewer, Sara A.**, Cy L. Mott, Rebecca R. Piche, Florene G. Bell, Elizabeth K. Strasko, Jarrett R. Johnson, Kenton L. Sena, Thomas A. Maigret, Ben. F. Brammell. 2023. An improved assay for eDNA detection of four toed salamanders (*Hemidactylium scutatum*): significance of mitochondrial genome region in primer development. Annual meeting of the Tennessee Herpetological Society, Sept. 28-29th, 2023, Union City, TN. Poster.

(8) **Brewer, Sara A.** Florene G. Bell, Angie F. Flores, Kenton L. Sena, Thomas A. Maigret, Chi Jing Leow, and Ben F. Brammell. 2023. eDNA detection of northern red (*Pseudotriton ruber*) and spring (*Gyrinophilus porphyriticus*) salamanders in eastern Kentucky streams. Kentucky Water Resources Annual Symposium, September 15, 2023, Lexington, KY. Poster.

(7) **Brewer, Sara A**. Florene G. Bell, Angie F. Flores, Kenton L. Sena, Thomas A. Maigret, Chi Jing Leow, and Ben F. Brammell. 2022. eDNA detection of northern red (*Pseudotriton ruber*), spring (*Gyrinophilus porphyriticus*), and mud (*Pseudotriton ruber*) salamanders in eastern Kentucky streams. 107th Annual KY Aca. Sci. Meeting, Nov. 10- 12, 2022, Morehead State Univ., Morehead, KY. Poster.

(6) Fletcher, Abigail K., Mary R. Johnson, Cierla V. McGuire, **Sara A. Brewer**, Joanne Jung, Malinda A. Stull, and Ben F. Brammell. 2022. eDNA detection of darters (Percidae: Etheostomatinae) in central Kentucky streams. 107th Annual KY Aca. Sci. Meeting, Nov. 10-12, 2022, Morehead State Univ., Morehead, KY. Poster.

(5) Jeffrey, Brendan C., **Sara A. Brewer**, Florene G. Bell, and Ben F. Brammell. 2022. eDNA detection of four toed salamanders (*Hemidactylium scutatum*): significance of mitochondrial genome region in primer development. 107th Annual KY Aca. Sci. Meeting, Nov. 10-12, 2022, Morehead State Univ., Morehead, KY. Poster.

(4) **Brewer, Sara A.** Florene G. Bell, Angie F. Flores, Kenton L. Sena, Thomas A. Maigret, Chi Jing Leow,and Ben F. Brammell. 2022. Use of eDNA in the detection of semiaquatic salamanders in eastern Kentucky streams. Meeting of the Tennessee Herpetological Society, Sept. 29-30th, Austin Peay Univ., Clarksville, TN. Poster.

(3) Jeffrey, Brendan C., **Sara A. Brewer**, Florene G. Bell, and Ben F. Brammell. 2022. Development and validation of qPCR assays for detection of four toed salamanders (*Hemidactylium scutatum*). Meeting of the Tennessee Herpetological Society, Sept. 29-30th, Austin Peay Univ., Clarksville, TN. Poster.

(2) Fletcher, Abigail K., Mary R. Johnson, Cierla V. McGuire, **Sara A. Brewer**, Joanne Jung, Malinda A. Stull, and Ben F. Brammell. 2022. Development of eDNA protocols for detection of four dater (Percidae: Etheostomatinae) species in central Kentucky streams. Kentucky Water Resources Annual Symposium, September 19, 2022, Lexington, KY. Poster.\*

\*Recipient of the Most Outstanding Undergraduate Poster Presentation award

(1) **Brewer, Sara A.** Florene G. Bell, Angie F. Flores, Kenton L. Sena, Thomas A. Maigret, Chi Jing Leow,and Ben F. Brammell. 2022. Development and validation of qPCR assays for use in eDNA detection of four species of semiaquatic salamanders. Kentucky Water Resources Annual Symposium, September 19, 2022, Lexington, KY. Poster.

**Published GenBank® Sequences**

**Sara A. Brewer**, Rebecca R. Piche, Florene G. Bell, Angie F. Flores, Kenton L. Sena, Thomas A. Maigret, Chi Jing Leow, Jung, Joanne, and Ben F. Brammell. 2023. *Pseudotriton ruber ruber* cytochrome b, partial cds, 861 BP, GB Accession # OQ376719

**Professional Experience**

Student Research Technician, University of Kentucky, *Lexington, KY Present*

Teaching Assistantship (Biology 219), Asbury University, *Wilmore, KY Fall 2023*

Environmental Science & Biotechnology Camp Assistant, Asbury University, *Wilmore, KY* Summer 2023

Full-Time Summer Research Student, Asbury University, *Wilmore, KY* Summer 2023

Teaching Assistantship (Biology 354), Asbury University, *Wilmore, KY* Spring 2023

Teaching Assistantship (Biology 229), Asbury University*Wilmore, KY* Spring 2023

Teaching Assistantship (Biology 374), Asbury University, *Wilmore, KY* Fall 2022

Full-Time Summer Research Student, Asbury University, *Wilmore, KY* Summer 2022

Teaching Assistantship (Biology 101), Asbury University, *Wilmore, KY* Fall 2021

Biology 100, 201, and 203 Peer Course Tutor**,** Asbury University, *Wilmore, KY* Fall 2021-Spring 2022

Pharmacy Cashier, Mason Family Drug, *Maysville, KY* Summer 2021

Reunion Ambassador, Asbury University, *Wilmore, KY* Summer 2021

Transition and Guidance (Freshman Orientation) Leader, Asbury University, *Wilmore, KY* Summer 2021

**Awards and Honors**

*2023*

-“Thoroughbred” designation (highest award) for undergrad poster presentation, 2023 Annual Kentucky Academy of Science Meeting, November 2023.

-Best Student Poster Presentation, Tennessee Herpetological Society, Annual Meeting, September 2023

-Niemiller Travel Scholarship, Tennessee Herpetological Society, Annual Meeting, September 2023

*2022*

-“Thoroughbred” designation (highest award) for undergrad poster presentation, 2022 Annual KY

Academy of Science Meeting, November 2022.

-Cecil Hamann Memorial Scholarship – Awarded to a Christian who commits themselves to serving mankind and shows a high potential for success.

*2021*

Hagar Pre-Health Scholarship – Awarded to a Christian science or math major with a minimum GPA of 3.2 who is committed to medicine as a vocation.

*Fall 2020, Spring 2021, Fall 2022, Spring 2023, Fall 2023*

Asbury University Dean’s List – Students who have passed a minimum of 12 graded semester hours with a grade point average of 3.50 or higher.

*2020-Present*

Asbury PresidentialScholarship -- 30% tuition scholarship awarded to students who obtained ACT scores of 30 or above.

**Certifications**

*2023*

CPR and AED -- Certified by the American Safety & Health Institute

*2017*

Microsoft Office Specialist – Certified in Word, Excel, and PowerPoint

**Professional Memberships**

*2021-Present*

Sigma Zeta National Science and Mathematics Honors Society Member – Members must be a science or math major, have completed at least 15 mathematic/science credits, maintain an overall GPA of ≥3.0, and maintain a science/math-specific GPA of ≥3.0.

*2022-Present*

Kentucky Academy of Science Member