

Hannah Weller

Research interests: relationships between form, function, and behavior; fish biodiversity; evolutionary transitions; image processing.

Education

- 2017—Present** **Graduate student, Ecology and Evolutionary Biology**
Brown University (Providence, RI)
Thesis: Functional morphology of mouthbrooding in fishes
- 2007—2010** **Honors BSc, Biology**
University of Chicago (Chicago, IL)
*Honors thesis: Winnowing in the geophagine cichlid *Satanoperca daemon**

Peer-reviewed publications

- Weller, H.I.**, and Westneat, M.W. (2019) Quantitative color profiling of digital images with earth mover's distance using the R package colordistance. *PeerJ*. [10.7717/peerj.6398](https://doi.org/10.7717/peerj.6398)
- Weller, H.I.** (2019) colordistance: Distance Metrics for Image Color Similarity (ver. 1.1.0). CRAN repository. <https://CRAN.R-project.org/package=colordistance>
- Weller, H.I.** (2018) countcolors: Locates and Counts Pixels Within Color Range(s) in Images (ver. 0.9.1). CRAN Repository. <https://CRAN.R-project.org/package=countcolors>
- Weller, H.I.**, McMahan, C.D., and Westneat, M.W. (2016) Dirt-sifting Devilfish: Winnowing in the geophagine cichlid *Satanoperca daemon* and evolutionary implications. *Zoomorphology*. [10.1007/s00435-016-0335-6](https://doi.org/10.1007/s00435-016-0335-6)

Publications in preparation

- Weller, H.I.**, Olsen, A., Camp, A.L., Hernandez, L.P., Manafzadeh, A.R., and Brainerd, E.L. (2019) An XROMM study of intra-oral transport and swallowing in catfish. *Integrative Organismal Biology* (in prep).
- Cohen, K.E., **Weller, H.I.**, and Summer, A.P. (2019) Functional homodonty: a statistical measure of tooth stress as it relates to shape. *Journal of Anatomy* (in prep).
- Hooper, S., **Weller, H.I.**, and Amelon, S. (2019) Creation and validation of the R-package countcolors for repeatable, objective quantification of the fluorescence emitted by *Pseudogymnoascus destructans* on the wing membrane of hibernating bats. *Journal of Wildlife Diseases* (accepted).
- van Meer, N.M., **Weller, H.I.**, Manafzadeh, A.R., Kaczmarek, E.B., Scott, B., Gussekloo, S.W.S, Wilga, C.D., Brainerd, E.B., and Camp, A.L. (2018) Food capture, transport and swallowing in white-spotted bamboo sharks. *Journal of Experimental Biology* (in prep).

Presentations

- Weller, H.I.**, Cohen, K.E., Gibb, A., and Brainerd, E.L. (Jan. 2019) Poster: Using tethers to measure food transport in a flatfish. *Society for Integrative and Comparative Biology, Tampa, FL*.
- Weller, H.I.**, Olsen, A., Camp, A.L., Hernandez, L.P., Manafzadeh, A.R., and Brainerd, E.L. (Jan. 2019) Talk: An XROMM study of intra-oral transport and swallowing in catfish. *Society for Integrative and Comparative Biology, Tampa, FL*.

Weller, H.I. and Brainerd, E.L. (Oct. 2017) Talk: How do fish swallow food? *Regional Division of Vertebrate Morphology (Northeast), Lowell, MA.*

Weller, H.I., McMahan, C.D., and Westneat, M.W. (July 2016) Poster: Dirt-sifting devilfish: winnowing in earth-eater cichlids. *American Society of Ichthyologists and Herpetologists, New Orleans, LA.*

Awards and Fellowships

April 2019	Graduate Research Fellowship \$138,000, National Science Foundation
Dec. 2018	Field Museum Visiting Scientist Scholarship \$1,500, Field Museum of Natural History
May 2017	Presidential Fellowship \$108,000, Brown University
June 2015	Jeff Metcalf Undergraduate Research Fellowship \$5,000, Marine Biological Laboratory
March 2015	Elected to Phi Beta Kappa Society
Sept. 2014	Best Presentation, Undergraduate Research Symposium \$150, University of Chicago
June 2014	Elliott and Eileen Hinkes Research Fellowship \$4,000, University of Chicago

Research experience

2017—Present	Graduate student, Brainerd Lab ; adviser: Elizabeth Brainerd <i>Brown University, Dept. of Ecology & Evolutionary Biology</i> Morphology and biomechanics of mouthbrooding fishes; XROMM fish feeding and transport.
Sept. 2013— July 2017	Research assistant ; adviser: Mark Westneat <i>University of Chicago, Dept. of Organismal Biology & Anatomy</i> Data mining pipelines; image processing and simple machine learning; quantitative color analysis; comparative 2D morphometrics; high-speed video kinematics.
June 2015— Sept. 2015	Jeff Metcalf Summer Research Fellow ; adviser: Roger Hanlon <i>Brown University, Dept. of Ecology & Evolutionary Biology</i> Hyperspectral imaging; image analysis pipelines; camouflage analyses.
June 2014— Sept. 2014	Summer Research Fellow, Westneat Lab ; adviser: Mark Westneat <i>University of Chicago, Dept. of Organismal Biology & Anatomy</i> Ontogenetic scaling; biomechanical model; geometric morphometrics.

Teaching and outreach

Sept. 2018— Present	Marine Science Club <i>Paul Cuffee High School (Providence, RI)</i> Collaborating with high school teachers for weekly science activities with high school students.
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Sept. 2017— Dec. 2017	Teaching assistant <i>Brown University, Dept. of Ecology & Evolutionary Biology</i> (Providence, RI) <i>Diversity of Life</i> (lecture)
Jan. 2015— April 2017	Teaching assistant <i>University of Chicago, Dept. of Biological Sciences</i> (Chicago, IL) Presenting and supervising lab experiments; writing and grading assignments; lecturing; leading paper discussions and review sessions; guiding dissection-based anatomy labs. <i>Genetic and Developmental Biology</i> (lab & lecture) <i>Multiscale Modeling of Biological Systems</i> (lecture) <i>Molecular Biology of the Cell</i> (lab) <i>Comparative Vertebrate Anatomy</i> (lab & lecture)
June 2013— Sept. 2013	Animal care intern <i>New England Aquarium</i> (Boston, MA) Daily animal care and maintenance; visitor outreach; collection trips.

Skills

Coding	R, Python (OpenCV, Scrappy, & BioPython libraries), MATLAB, UNIX, MEL
Software	Latex, Maya, FIJI/ImageJ, Horos, 3DSlicer, XMALab, Mesquite, Pandoc, Microsoft Office
Languages	English (native), French (intermediate)

References

Lab: Biomedical Center 426, 171 Meeting St., Providence, RI 02906

Email: hannahiweller@gmail.com

Website: hiweller.github.io