

Caleb A. Aldridge

Graduate Research Assistant and Ph.D. Student • Wildlife, Fisheries & Aquaculture

Acorn 107 • Mississippi State University • Mississippi State, MS 39762

✉ caa134@msstate.edu ☎ +1 205 495 6483 🌐 aldridgecaleb.github.io | Updated: July 19, 2019

SHORT BIO

Caleb was born in Winfield, Alabama, USA, in 1989 and raised in rural portions of northwest Alabama. Some of his earliest memories are of playing in the creeks and ditches digging for crayfish and salamanders. It was these early experiences that lead him to pursue an education and employment in ecological science and natural resource conservation. His professional and research interests include the conservation of herpetofauna, ecology of headwater ecosystems, and optimizing decisions in natural resource management. When not reading or researching Caleb enjoys time outdoors-whether knelt in his home garden or hiking Angel's Landing trail in Zion Canyon National Park-and helping others to gain a better understanding of the natural world.

Google Scholar Citations: 3 | Google Scholar *h*-index: 1

R^G Reads: 10,718 | R^G Score: 12.82 | R^G Research Interest: 16.0

EDUCATION

Degree-seeking

Ph.D. Forest Resources—Wildlife, Fisheries & Aquaculture 2018-Current

Dept. of Wildlife, Fisheries & Aquaculture, Mississippi State University

Advisors: Michael E. Colvin and Leandro E. (Steve) Miranda

Proposed Course of Study: Decision Support Systems, Conservation and Natural Resource Decision Making

[Working] Dissertation Title: *Knowledge Discovery and Decision Analysis in Managing US Inland Fisheries*

M.S. Biological Sciences 2014-2017

Dept. of Biology, The University of Mississippi

Advisors: Stephen T. Threlkeld and William J. Resetarits

Selected Coursework: Biometry, Experimental Design, Wetlands Ecology, Multivariate Analysis of Ecological Data

Thesis Title: *The Effect of Road Crossings on Stream-associated Salamanders within Holly Springs National Forest*

Graduate Coursework 2013-2014

Dept. of Biological and Envir. Sciences, Alabama Ag. & Mech. University

Selected Coursework: Envir. Biology, GIS, Spatial Analysis and Modeling, Hydrology and Watershed Mgmt.

B.S. General Biology 2010-2012

Dept. of Biology, The University of North Alabama

Selected Coursework: Elementary Stats., Aquatic Ecology, Entomology, Comp. Vert. Morph., Plant Phys.

Undergraduate Coursework 2008-2010
Dept. of Biological, Physical, and Human Sciences, Freed-Hardeman University
Selected Coursework: Principles of Biology, Human Anatomy and Phys., Microbiology

Non-degree-seeking

GTA Series: Active Learning Techniques Workshop 2018
Center for Teaching and Learning (CTL), Mississippi State University

Teaching Effectively Online (TEO): Canvas Basics 2017
Mississippi Virtual Community College Academy

Sustainable Agricultural Land Management 2016
Massive online open course (MOOC) via coursera and University of Florida

The Land Ethic Reclaimed: Perceptive Hunting, Aldo Leopold, and Conservation 2015
MOOC via coursera and University of Wisconsin-Madison

Watershed Management Training Certificate 2015
The Watershed Academy Web-Based Training Program, U.S. Environmental Protection Agency

R Programming 2014
MOOC via coursera and John Hopkins University

University Teaching 101 2014
MOOC via coursera and John Hopkins University

'Building Models for GIS Analysis Using ArcGIS' webcourse 2014
esri Training Academy

Bird Bootcamp 2013
Alabama State Lands Division

RESEARCH EXPERIENCE

Graduate Research (Dissertation) 2018-Current
Dept. of Wildlife, Fisheries & Aquaculture, Mississippi State University
Supervisors: Michael E. Colvin and Leandro E. (Steve) Miranda

Review of management procedures of US state inland fisheries agencies and development of a prototype framework (procedures plus data tools) for adaptive management of Mississippi inland fisheries. Will include examination of long-term monitoring data (observational study) in estimates of fisheries parameters in response to management actions.

Research Assistant 2018-Current
Dept. of Wildlife, Fisheries & Aquaculture, Mississippi State University
Supervisors: Michael E. Colvin and Leandro E. (Steve) Miranda

Review of manuscripts and other scholarly works; perform statistical and numerical analytics; design experiments and sampling schemes; and conduct field and laboratory sampling.

Research Associate 2016-2018
Dept. of Wildlife, Fisheries & Aquaculture, Mississippi State University

Supervisor: Beth H. Baker

Investigation (field experiment) on the effects winter cover crops on soil properties and edge-of-field runoff.

Graduate Research (Thesis)

2015-2017

Dept. of Biology, The University of Mississippi

Supervisors: Stephen T. Threlkeld and William J. Resetarits

Investigation (quasi-experimental) on how road-crossings affected stream-associated salamander counts and richness in comparison to road-free streams.

Field Technician

2014

Dept. of Biological and Envir. Sciences, Alabama Ag. & Mech. University

Supervisor: Dawn Lemke

Sampling of water quality parameters in the investigation (quasi-experimental) of responses to differing prescribed fire applications.

Wildlife Biologist Intern

2013

Freedom Hills Wildlife Management Area, Alabama Department of Conservation and Nat. Resources

Supervisor: Mitchell Marks

Sampling and surveys of various wildlife populations for estimates of abundance, structure, and health.

TEACHING EXPERIENCE

Adjunct eLearning Biology Instructor

2018-Current

eLearning Science, Northwest Mississippi Community College

Supervisor: Angel Nickens

Instruction of elementary biological science and laboratory simulations; proctoring of examinations. (12 hrs taught; "Meets Expectations" on performance review)

Graduate Teaching Assistant

2014-2016

Dept. of Biology, The University of Mississippi

Supervisor: Denis C. Goulet

Instruction of elementary biological, human anatomy and physiology, and ecological science laboratories; proctoring of examinations. (22 hrs taught; 3.89/4.00 from student reviews)

Guest Lecture for Ecology

2015-09-28

Dept. of Biology, The University of Mississippi

Instructor: Stephen T. Threlkeld

"Population Dynamics" based on material from M.C. Molles Jr., "Ecology: Concepts and Applications."

Laboratory Assistant

2011-2012

Alabama Math, Science, and Tech. Initiative: Science in Motion

Supervisor: Kim Pounders

Prototyped and maintained laboratory equipment and demonstration supplies. Assisted with demonstrations and instruction to secondary school teachers.

ACADEMIC AND COMMUNITY SERVICE

Shackouls Honors College Undergraduate Research Symposium

Judge

Summer 2019

Shackouls Honors College Undergraduate Research Symposium

Judge

Spring 2019

12th Annual Biological Undergraduate Research Program

Judge

2019

2019 Nabi Award Selection Committee

Member

2019

Bridging 662

Interim Board Member

2018-Present

Cook Elementary P-16 Community Engagement Council

Councilmember

2018-Present

Earth Day Prairie Restoration, Osborne Prairie, Osborne, MS

ConservANTion and the MSU Biology Graduate Student Association

Volunteer

2017

The University of Mississippi Graduate Student Council

Social and Philanthropical Chair

2015-2016

SCIENTIFIC AND SCHOLARLY WORKS

Note: Names of undergraduate co-authors underlined.

Journal Articles

1. **Aldridge, C.A.**, B.H. Baker, and A.R. Omer. *Investigation of short-term effects of winter cover crops on compaction and total soil carbon in a long-term no-till agricultural system*. Journal of Soil and Water Conservation 74(1):78–85. Available from <https://doi.org/10.2489/jswc.74.1.77>
2. Baker, B.H., J.M. Prince Czarnecki, A.R. Omer, **C.A. Aldridge**, R. Kröger and J.D. Prevost. (2018). *Nutrient and sediment runoff from agricultural landscapes with varying suites of conservation practices in the Mississippi Alluvial Valley*. Journal of Soil and Water Conservation 73(1): 75–85. Available from <https://doi.org/10.2489/jswc.73.1.75>

Extension Articles

1. Baker, B.H., **C.A. Aldridge**, and A.R. Omer. (2018). *Assessing and protecting water quality in the home and community*. Mississippi State University Extension, Mississippi State University. Available from <https://tinyurl.com/y63wrh9j>
2. **Aldridge, C.A.** and B.H. Baker. (2017). *Watersheds: Role, importance, and stewardship*. Mississippi State University Extension, Mississippi State University. Available from <https://tinyurl.com/yyv2y9zj>
3. Baker, B.H., A.R. Omer, and **C.A. Aldridge**. (2017). *Water: Sink to sea*. Mississippi State University Extension, Mississippi State University. Available from <https://tinyurl.com/y2ZS5Z73>

4. Baker, B.H., **C.A. Aldridge**, and A.R. Omer. (2016). *Water: Availability and use*. Mississippi State University Extension, Mississippi State University. Available from <https://tinyurl.com/yxtcto7c>
5. **Aldridge, C.A.**, B.H. Baker, and A.R. Omer. (2016). *Concerns about long-term water security*. Mississippi State University Extension, Mississippi State University. Available from <https://tinyurl.com/y25uwm6g>

Manuscripts Pending

1. **Aldridge, C.A.** (In revision). *The Effect of Forest Roads on Plethodontidae Abundance in the Eastern US: A Field Study and Synthesis*. Copeia.
2. Omer, A.R., **C.A. Aldridge**, and B.H. Baker. (Under review). *Outflow hydrology of tailwater recovery systems with comparisons to a control catchment*. Journal of Irrigation and Drainage Engineering.
3. **Aldridge, C.A.**, A.R. Omer, and B.H. Baker. (Submitted). *Exploring potential effect of tailwater recovery systems on downstream hydrology*. Journal of Irrigation and Drainage Engineering.
4. Brooks, J.P., R.K. Smith, **C.A. Aldridge**, **B. Chaney**, A.R. Omer, G.M. Street, and B.H. Baker. (In preparation). *A preliminary investigation of Feral Hog (*Sus scrofa*) impacts on water quality*.
5. Baker, B.H. and **C.A. Aldridge**. (In preparation). *Farmer-initiated research in providing scientific support: Morton Farm case study*.

Presentations and Outreach

1. Bush, C., S.A. Rush, C. Bethel, and **C.A. Aldridge**. (Content author). (2019-08-02). *A web-based interface designed to promote biological conservation and education within Mississippi*. Poster presentation at the Shackouls Honors College 2019 Summer Undergraduate Research Symposium, Mississippi State University, Mississippi State, MS.
2. **Aldridge, C.A.** (Presenter). (2019-05-02). *A planning support tool for MDWFP statewide fisheries management*. Oral presentation at the Mississippi Cooperative Fish and Wildlife Research Unit Annual Coordinating Committee Meeting, Berryman Institute, Mississippi State University, Starkville, MS.
3. Wilmoth, B.M., D.A. Schumann, B.M. Richardson, **C.A. Aldridge**, and M.E. Colvin. (Content author). (2019-04-16). *Ontogeny of Southern Brook Lamprey (*Ichthyomyzon gagei*) with emphasis on abundance, distribution, and morphology in a small watershed*. Poster presentation at the Shackouls Honors College 2019 Spring Undergraduate Research Symposium, Mississippi State University, Mississippi State, MS. Available from <https://tinyurl.com/y536pzdj>
4. **Aldridge, C.A.**, M.E. Colvin, and L.E. Miranda. (Presenter). (2019-02-20-22). *Early look: Performance of machine learning to classify age from age-length data*. Poster presented at the 45th Annual Meeting of the Mississippi Chapter of the American Fisheries Society. Mississippi Museum of Natural Science, Jackson, MS. Available from <https://tinyurl.com/y28gqycg>
5. Wilmoth, B.M., D.A. Schumann, B.M. Richardson, **C.A. Aldridge**, and M.E. Colvin. (Content author). (2019-02-20-22). *Ontogeny of Southern Brook Lamprey, *Ichthyomyzon gagei*, with emphasis on abundance, distribution, and morphology in a small watershed*. Oral presentation at the 45th Annual Meeting of the Mississippi Chapter of the American Fisheries Society. Mississippi Museum of Natural Science, Jackson, MS. Available from <https://tinyurl.com/y456pvtd>

6. **Aldridge, C.A.**, B.M. Richardson, D.A. Schumann, and M.E. Colvin. (Presenter). (2018-11-08). *Identifying barriers to the use and detection of passive integrated transponder (PIT) tags in Southern Brook Lamprey ammocoetes (Ichthyomyzon gagei, Hubbs & Trautman, 1937)*. Oral presentation at Southeastern Fishes Council 44th Annual Meeting. Hickory Knob State Park Resort, McCormick, SC. Available from <https://tinyurl.com/y8hvb2sw>
7. **Aldridge, C.A.** (Presenter). (2018-11-06). *Equipment and video demonstration of stream fish sampling techniques*. Demonstration at New Hope STEM Night. New Hope High School, New Hope, MS.
8. Richardson, B.M., **C.A. Aldridge**, D.A. Schumann, M.E. Colvin. (Content author). (2018-08-20). *Assessing viability of passive integrated transponder (PIT) tags for ecological studies of lamprey ammocoetes*. Poster presented at the 148th Annual Meeting of the American Fisheries Society, Atlantic City, NJ. Available from <https://tinyurl.com/yazju8mm>
9. **Aldridge, C.A.** (Guest). (2017-11-15). *White-tailed deer: Hunting regulations and concerns* [Radio program]. In J. Campbell and J. Webster (Hosts and Producers), Tennessee Valley Outdoor Report Live. Florence, AL:WSBM.
10. Chaney, B., J.P. Brooks, **C.A. Aldridge**, A.R. Omer, G.M. Street, and B.H. Baker. (Content author). (2017-04-13). *Preliminary investigation of Feral Hog impacts on water quality*. Poster presented at the Shackouls Honors College 2017 Spring Undergraduate Research Symposium, Mississippi State University, Mississippi State, MS. Available from <https://tinyurl.com/y9p63j9q>
11. Omer, A.R., B.H. Baker, B., and **C.A. Aldridge**. (Co-presenter). (2017). *Water resources lecture and demonstrations for 6th - 8th graders*. Demonstration at 2017 Conservation Camp–Day Camp Edition. Department of Wildlife, Fisheries & Aquaculture, Mississippi State University, Starkville, MS.
12. Omer, A.R., B.H. Baker, **C.A. Aldridge**, and A. Firth. (Co-presenter). (2017). *Water resources lecture and demonstrations for 7th graders*. Demonstration at 2017 Conservation Camp–Wildlife and Recreation Edition, Department of Wildlife, Fisheries & Aquaculture, Mississippi State University, Starkville, MS.
13. Baker, B.H., A.R. Omer, and **C.A. Aldridge**. (Co-presenter). (2017). *Water resources lecture and demonstrations*. Demonstrations for Grade 5 Classrooms. Lawndale Elementary, Tupelo, MS.
14. **Aldridge, C.A.** (Presenter). (2017). *The effect of road crossings on stream-associated salamanders within Holly Springs National Forest*. Oral presentation at Departmental Seminar Series–Thesis Defense. Department of Biological Sciences, University of Mississippi, University, MS.
15. Baker, B.H., A. Jacobs, J. Estes, and **C.A. Aldridge**. (Co-presenter). (2017-02-23). *Cover crops field day*. Demonstration and discussion at MSU Extension and USDA–NRCS field day. Graves Farm, Ripley, MS.
16. **Aldridge, C.A.** (Presenter). (2016). *Results: Comparisons of stream-associated salamander abundance and richness in road-crossed and road-free low-order streams in Holly Springs National Forest*. Oral presentation at Brown Bag Presentation Series. Holly Springs Ranger District, University, MS.
17. **Aldridge, C.A.** (Presenter). (2015). *The effect of road crossings on stream-associated salamanders*

within Holly Springs National Forest. Oral presentation at Departmental Seminar Series–Thesis Prospectus. Department of Biology, University of Mississippi, University, MS.

18. Bohenek, J. and **C.A. Aldridge** (Co-presenter). (2015). *Chittum Tubby Pond cleanup: A restoration effort*. Oral presentation for Wetland Ecology Course. Department of Biology, University of Mississippi, University, MS. Available from <https://youtu.be/VwtDOspsTGo>
19. **Aldridge, C.A.** (Content author). (2014). *Influences of forest management on flow regime, Bankhead National Forest, AL*. Poster presentation at STEM Day 2014. Department of Biological and Envir. Sciences, Alabama Ag. & Mech. University, Normal, AL.
20. **Aldridge, C.A.** (Content author). (2014). *Facts for flow study: Bankhead National Forest, AL*. Oral presentation for GIS, Spatial Analysis, and Modeling Course. Department of Biological and Envir. Sciences, Alabama Ag. & Mech. University, Normal, AL.
21. **Aldridge, C.A.** (Presenter). (2014-02-05). *Assessing the impact of active forest management on watershed stream flow, turbidity, and dissolved oxygen*. Oral presentation for student project proposal. Center for Forest Ecosystems Assessment, Alabama Ag. & Mech. University, Normal, AL.

Papers

1. **Aldridge, C.A.** (2018). *A report for Morton Farms on the effects of winter cover on select soil metrics*. REACH, Department of Wildlife, Fisheries & Aquaculture, Mississippi State University, Mississippi State, MS.
2. **Aldridge, C.A.** and B.H. Baker. (2018). *Mississippi State University 201 and 202 monitoring network for Mike Graves and the USDA–Natural Resource Conservation Service Annual report, January 2018*. REACH, Department of Wildlife, Fisheries & Aquaculture, Mississippi State University, Mississippi State, MS.
3. **Aldridge, C.A.**. (2017). *The Effect of road crossings on stream-associated salamanders within Holly Springs National Forest* (Master’s thesis). Available from ProQuest Dissertations and Theses Global. (1925911777). Retrieved from <https://search.proquest.com/docview/1925911777>
4. **Aldridge, C.A.** and B.H. Baker. (2017). *Mississippi State University 201 and 202 monitoring network for Mike Graves and the USDA–Natural Resource Conservation Service Semi-annual report, July 2017*. REACH, Department of Wildlife, Fisheries & Aquaculture, Mississippi State University, Mississippi State, MS.
5. **Aldridge, C.A.** and B.H. Baker. (2017). *Mississippi State University 201 and 202 monitoring network for Mike Graves and the USDA–Natural Resource Conservation Service Annual report, January 2017*. REACH, Department of Wildlife, Fisheries & Aquaculture, Mississippi State University, Mississippi State, MS.
6. **Aldridge, C.A.** and B.H. Baker. (2016). *Mississippi State University 201 and 202 monitoring network for Mike Graves and the USDA–Natural Resource Conservation Service Semi-annual report, July 2016*. REACH, Department of Wildlife, Fisheries & Aquaculture, Mississippi State University, Mississippi State, MS.

Code and Programming

1. **Aldridge, C.A.**, M.E. Colvin, and L.E. Miranda. (Author). (2019). *FRASps: Fisheries Resources Analysis System—Planning Support*. (Version 0.1) [Software], Department of Wildlife, Fish-

eries and Aquaculture, Mississippi State University, Mississippi State, MS and Mississippi Department of Wildlife, Fisheries, and Parks, Jackson, MS.

2. **Aldridge, C.A.** (Contributor). (2018). *Age-length key*. In Miranda, L.E. and M.E. Colvin (Authors), FRAS: Fisheries Resources Analysis System (Version 3.0) [Software], Department of Wildlife, Fisheries and Aquaculture, Mississippi State University, Mississippi State, MS and Mississippi Department of Wildlife, Fisheries, and Parks, Jackson, MS.
3. **Aldridge, C.A.** (2018). *Calculations of common metrics of hydrographs* [R Code]. Available from <https://tinyurl.com/y9yh6pw7>
4. **Aldridge, C.A.** (2017). *Unique dates axis labels in multi-panel lattice graphics* [R Code]. Available from <https://tinyurl.com/y9mkv663>
5. **Aldridge, C.A.** (2017). *Functions to convert DD to DMS for ggmap axis plotting* [R Code]. Available from <https://tinyurl.com/ycr3m9k4>

Contributed Blog Posts

1. **Aldridge, C.A.** (2019-04-03). Story Framing with the Message Box: A tool for writing a SUCCES story. Available from <https://tinyurl.com/yynbj44>
2. **Aldridge, C.A.** (2019-03-22). Design and Decisions, Part II: Using crunched numbers in decision support. Available from <https://tinyurl.com/y4uq64xb>
3. **Aldridge, C.A.** (2019-01-25). Design and Decisions, Part I: Thinking about the decision to be made *before* the numbers are crunched. Available from <https://tinyurl.com/y5x4wqex>
4. **Aldridge, C.A.** (2018-10-18). You so random: Selecting random stream sampling locations using R. Available from <https://tinyurl.com/y473zkbz>
5. **Aldridge, C.A.** (2018-10-05). The effects of sediment on PIT tag detection-The setup. Available from <https://tinyurl.com/y38sjsk7>
6. **Aldridge, C.A.**, B.M. Richardson, D.A. Schumann, and M.E. Colvin. (2018-10-05). Lamprey abstract for Southeastern Fishes Council meeting. Available from <https://tinyurl.com/y4qbdhwa>

CONFERENCES ATTENDED

1. *45th Annual Meeting of the Mississippi Chapter of the American Fisheries Society*. (2019-02-20–22). Mississippi Museum of Natural Science, Jackson, MS.
2. *2019 Diversity Conference: Our Voices, When Diversity Matters*. (2019-01-31–02-01). The Mill Conference Center at Mississippi State University, Starkville, MS.
3. *Southeastern Fishes Council 44th Annual Meeting*. (2018-11-08–09). Hickory Knob State Park Resort, McCormick, SC.
4. *Data Summit 2018*. (2018-09-13–14). The Mill Conference Center at Mississippi State University, Starkville, MS.
5. *Cover Crop Symposium*. (2017-11-29). Capps Building, Delta Research and Extension Center, Stoneville, MS.
6. *2017 SEC Academic Conference: The Future of Water*. (2017-03-27–28). The Mill Conference Center at Mississippi State University, Starkville, MS.

RESEARCH INTERESTS

Development of and decision support tools for adaptive natural resource and ecosystem management.

Development of data exploration and mining procedures for natural resource and ecological sciences (i.e., ecoinformatics).

Ecology of the Southern Brook Lamprey (*Ichthyomyzon gagei*), and methodologies in their study.

Herpetofauna surveys and mapping, especially of Urodela (Salamanders) along the western Fall Line of Alabama.

Ecology and conservation of headwater ecosystems.

PROFESSIONAL AFFILIATIONS

American Fisheries Society

Mississippi Chapter

Fisheries Management Section

Student Subsection of the Education Section

Student Member

2018-Current

Miss. St. Univ. Sub-unit

Treasurer

2018-2020

American Society of Ichthyologists and Herpetologists

Student Member

2018-Current

Southeastern Fishes Council

Student Member

2018-Current

Association of Southeastern Biologists

Student Member

2017-Current

Southeastern Partners in Amphibian and Reptile Conservation

Member

2016-Current

ACCOLADES

1. AAAS/Science Program for Excellence in Science Nominee [Sponsored membership] 2019
2. Fernando Vizcarra Memorial Photo Contest (Fall) [3rd Place]
"Sunrise Mesa Arch, Canyonlands National Park, Utah" 2018
3. Boschung Student Travel Award [\$100] 2018
4. Graduate Research Assistantship, Mississippi State University 2018-Current
5. Graduate Teaching Assistantship, University of Mississippi 2014-2016
6. Pate—Sterling Mermorial Scholarship 2008-2009
7. NUCOR Steel Foundation Scholarship 2008-2012
8. Alabama Youth Leadership Conference 2007
9. Alabama Boys' State 2007

COMPUTER SKILLS

Created personal professional website (link above), programmed minor functions and applications within R (see 'Other Works' section) and JavaScript (e.g., for retrieval of scholarly metrics under 'SHORT BIO' section of this CV), and analyzed and created content using software tool listed below.

Programming: R, Git, SQL, T_EX, markdown, R Markdown, HTML, CSS (Novice), JavaScript (Novice), Python (Novice), VBA (Novice)

Applications: RStudio, Microsoft Office Suite, Mendeley Desktop, G Suite, Shiny, GitHub Desktop, Atom, Quantum GIS, HOBOWare PRO, Blackboard, Canvas, GRASS (Novice), JMP (Novice), PAST (Novice), InVest (Novice)

Platforms: Microsoft Windows, Android, macOS (Novice), Linux (Novice)

LANGUAGES

English (Native), Spanish (Novice)

OTHER

National Parks Conservation Association 2016-Current

National Parks Foundation 2016-Current

Tennessee Valley Outdoor Report

Content Contributor 2017-Current

Sipsey River Rats

Content Contributor 2017-Current

REFERENCES

Available upon request.

Please send questions, feedback, or type errors to caa134@msstate.edu. This document was produced using RStudio, an Integrated Development Environment (IDE); it was written using R (statistical and programming language), R Markdown (markup language), T_EX (macro language), HTML (markup language), and JavaScript (programming language).