

## VITA - S. ALICIA MATHIS

Department of Biology   
Missouri State University  
Springfield, Missouri 65897

### Contact Numbers

Office: (417)836-5699

Fax: (417)836-4204

E-mail: AliciaMathis@missouristate.edu

Homepage: <https://people.missouristate.edu/aliciamathis/mathis.htm>

### Education and Training

**Post-doctoral fellowship.** 1990-1993, University of Saskatchewan

Field of study – Alarm pheromones in fishes; Dr. R. Jan F. Smith, supervisor.

**Ph.D.** 1989, University of Louisiana at Lafayette (formerly Univ. of Southwestern Louisiana)

Degree area: Environmental and Evolutionary Biology; Dr. Robert G. Jaeger, advisor.

Dissertation: Territoriality in a terrestrial salamander: costs, benefits, and intersexual spatial distributions

**M.S.** 1986, University of Southern Mississippi

Major - Biology; Minor - Psychology; Dr. Frank R. Moore, advisor.

Thesis: Geomagnetism and the homeward orientation of the box turtle, *Terrapene carolina*

**B.S.** 1982, University of Southern Mississippi

Major - Biology; Minors - Chemistry, English.

### Employment

**Distinguished Professor**, Missouri State Univ., Springfield, MO (8/2019-present)

**Department Head**, Missouri State Univ., Springfield, MO (7/2005-12/2023)

**Professor**, (Southwest) Missouri State Univ., Springfield, MO (8/2003 – 7/2019)

**Acting Department Head**, (Southwest) Missouri State Univ., Springfield, MO (6/2003-8/2003)

**Associate Professor (with tenure)**, (SW) MO State Univ., Springfield, MO (8/1998 – 8/2003)

**Assistant Professor**, (Southwest) Missouri State Univ., Springfield, Missouri (8/1993 - 7/1998)

**Postdoctoral Research Fellow in Fish Behavior**, University of Saskatchewan (2/1990 -5/1993)

**Sessional Lecturer**, University of Saskatchewan (9/1990 - 12/1991)

**Graduate Teaching Assistant**, University of Louisiana-Lafayette, (8/1985 - 12/1989)

**Biologist**, Army Corps of Engineers Waterways Exp Station (5/1985 - 8/1985)

**Graduate Teaching Assistant**, University of Southern Mississippi, (1/1983 - 5/1985)

## Courses Taught

Behavioral Ecology (MSU)	Ecosystems (U Sask)
Comparative Vertebrate Anatomy (MSU)	General Biology (majors) (U Sask)
Marine Conservation (MSU)	General Biology I and II (majors) (UL-L)
Biology in Your World (nonmajors) (MSU)	General Biology I & II labs (USM)
General Biology I (MSU)	Vertebrate Zoology labs (USM),
General Zoology (MSU)	Human Anat. and Physiol. I & II labs (USM)
Freshman Honors Seminar (MSU)	

## PUBLICATIONS

### Co-Edited Book

2009. Zaccane, G., C. Perrière, A. Mathis and B. G. Kapoor (Eds.). *Fish Defenses, Volume 2: Pathogens, Parasites and Predators*. Science Publishers, Enfield, New Hampshire.

### Papers in Review

Atteberry, A. K. (**Knudsen**). A. Mathis, M. J. Bashaw, N. Wielbnowski, C. Doyle, and D. M. Powell. Image context affects perceptions of tiger and cheetah wellbeing, but not opinions on their conservation status, exhibitry or interactions with the public.

### Refereed Journal Articles and Book Chapters (graduate students; undergraduates)

#### 2026

Mathis, A. Electrofishing Can Negatively Affect Nontarget Species of Conservation Concern: The Case of Multiple Life-stages of Hellbenders. *Herpetological Monographs*: in press. (91)

Brusseau, A. J. P, F. Dumaresq-Synott, A. **Nagl**, J. Morris, A. Mathis, I. Ramnarine, A. Crane and G. Brown. No evidence of sex-specific responses to chemosensory risk assessment cues in *Harts rivulus*. *Behavioral Processes*: in press. (90)

#### 2025

**Nagl**, A. C. Published online. Differential effects of predation risk on territory residents and intruders in a terrestrial salamander. *Behaviour*. doi: <https://doi.org/10.1163/1568539X-bja10340> (89)

**White**, S. A., J. M. **Baker**, and A. Mathis. 2026 (*published on-line Dec 2025*). Diel effects on antipredator behavior: nuanced temporal effects in a Dynamic Landscape of Fear. *Behavioral Ecology* 37: <https://doi.org/10.1093/beheco/araf155> (88)

Mathis Lab: Brusseau, A. J. P, F. Dumaresq-Synott, J. **Morris**, A. **Nagl**, I. Ramnarine, A. Crane and G. Brown.

Contextual use of male-male social information by Trinidadian guppies. 29:4. doi: [10.1007/s10071-025-02027-z](https://doi.org/10.1007/s10071-025-02027-z)

## 2021

**Johnson**, J. T., and A. Mathis. 2021. Do darters (*Ethoeostoma* sp.) in streams with introduced trout exhibit increased wariness? *Hydrobiologia* 848: 1873-1880. DOI: 10.1007/s10750-021-04561-6 (87)

## 2020

**Hunter**, A.N., and A. Mathis. Behavior in transition: Recovery of behavior by an obligate parasitic ant (*Formica subintegra*) following host removal. *Journal of Insect Behavior* 33, 48–58 (2020).  
<https://doi.org/10.1007/s10905-020-09746-w> (86)

Dalton, B., R. **Settle**, K. **Medley**, and A. Mathis. When neighbors cheat: a test of the dear enemy phenomenon in southern red-backed salamanders. *Behavioral Ecology and Sociobiology* 74(5): DOI: 10.1007/s00265-020-02838-9 (85)

**Gardner**, K., R. **Hunt**, and A. Mathis. Response to conspecific alarm cues by larval and juvenile Spotted salamanders (*Ambystoma maculatum*). *Ethology, Ecology and Evolution*: DOI: [10.1080/03949370.2019.1691058](https://doi.org/10.1080/03949370.2019.1691058) (84)

## 2019

**Lynn**, C. S., B. Dalton, and A. Mathis. Territorial behaviour in southern red-backed and Ozark zigzag salamanders: effects of sex, species and ownership. *Behaviour* 156: 1017-1037. (83)

## 2018

**Settle**, R.A., J.A. Ettlign, M.D. Wanner, C. Schuette, J.T. Briggler, and A. Mathis. Quantitative behavioral analysis of the first successful captive breeding of endangered Ozark Hellbenders. *Frontiers in Ecology and Evolution* <https://www.frontiersin.org/articles/10.3389/fevo.2018.00205/full> (open access) (82)

Crane, A., E. **Helton**, M. Ferrari, and A. Mathis. Learning to find food: evidence for embryonic sensitization and juvenile social learning in a salamander. *Animal Behaviour* 142:199-206. FEATURED ARTICLE ON ABS website (81)

**Settle**, R., J. Briggler and A. Mathis. A quantitative field study of paternal care in Ozark Hellbenders, North America's giant salamanders. *Journal of Ethology* 36:235-242. <https://doi.org/10.1007/s10164-018-0553-0>. (80)

## 2017

Mathis A., and A. Crane. Chemoreception. In: *APA Handbook of Comparative Psychology*, Volume 2 (J. Call, ed.), pp. 69-87. American Psychological Association, Washington, D.C. (79)

**Heuring**, C.A., W.L. **Heuring**, A.L. Crane, and A. Mathis. Effects of diet quality and stress on interference behaviour of larval Ringed Salamanders. *Amphibia-Reptilia* 38: 89-96. (78)

## 2016

**Anderson**, K., and A. Mathis. Friends in Low Places: Responses of a Benthic Stream Fish to Intra-Prey-Guild

Alarm Cues. *Ethology* 122: 954–962. [77]

**Abudayah**, W., and A. Mathis. Predator recognition learning in rainbow darters *Etheostoma caeruleum*: specific learning and neophobia. *Journal of Fish Biology* 89:1612-23. doi: 10.1111/jfb.13061. [76]

**Bortosky** R., and A. Mathis. Honest signaling in aggressive contests between Ozark Zigzag Salamanders (*Plethodon angusticlavius*). *Copeia* 2016 104: 60-66. [75]

Leslie C. **Brinkman**, J. M. Ray, A. Mathis, and B. D. Greene. Filling in the gaps: Natural history and conservation of bolitoglossine salamanders in Central Panama. *Copeia* 104: 140-148. [74]

## 2015

Crane, A. L., and A. Mathis. Observation of predation by a Lycosid spider on a captive-reared salamander larva, *Ambystoma annulatum*. *Herpetology Notes* 8: 455-457. (73)

Crane, A. L., M. **Lampe** and A. Mathis. Maladaptive behavioural phenotypes in captive-reared darters (*Etheostoma caeruleum*, Storer 1845). *Journal of Applied Ichthyology* 31: 787-792. (72)

## 2014

**Dalton**, B. and A. Mathis. Identification of sex and parasitism by the Ozark zigzag salamander. *Chemoecology* 24:189-199. (71)

**Heuring**, W. L. and A. Mathis. Landmark learning by juvenile salamanders (*Ambystoma maculatum*). *Behavioral Processes* 108:173–177. doi:10.1016/j.beproc.2014.10.015 (70)

Jefferson, D. M., M. Ferrari, A. Mathis, K. Hobson, E. **Britzke**, A. Blaustein, A. Crane, and D. Chivers. Shifty salamanders: transient trophic polymorphism and cannibalism within natural populations of larval ambystomatid salamanders. *Frontiers in Zoology* 1(1):76. DOI: 10.1186/s12983-014-0076-7 (IF = 3.82) (69)

**Unger**, S. D., A. Mathis, and R. Wilkinson. A comparison of sperm health in declining and stable populations of hellbenders (*Cryptobranchus alleganiensis alleganiensis* and *C. a. bishopi*). *The American Midland Naturalist* 170:382-392. (68)

## 2013

\*Crane, A. L., M. **Lampe** and A. Mathis. Detecting danger from prey-guild members: behavioural and metabolic responses of Ozark zigzag salamanders to alarm secretions from earthworms. *Ethology, Ecology & Evolution*, DOI:10.1080/03949370.2013.800162. (67)

Crane, A. L. and A. Mathis. Learning about danger by young hellbenders (*Cryptobranchus alleganiensis*): are antipredator strategies ontogenetically plastic? *Amphibia-Reptilia* 34:119-124. (66)

**Unger**, S. D. and A. Mathis. Larval growth and the potential for head-starting of Eastern and Ozark Hellbenders (*Cryptobranchus alleganiensis alleganiensis* and *C. a. bishopi*). *Herpetological Review* 44: 547-550. (65)

## 2012

Crane, A. L., C. **McGrane**, and A. Mathis. Socially facilitated antipredator behavior by ringed salamanders (*Ambystoma annulatum*). *Behavioral Ecology and Sociobiology* 66:811-817. (64)

Mathis, A. and S. D. **Unger**. Learning to avoid dangerous habitat types by aquatic salamanders, *Eurycea tynerensis*. *Ethology* 118:57-62. (63)

Crane, A. L., C. E. **McGrane**, and A. Mathis. Behavioral and physiological responses of Ozark zigzag salamanders

to stimuli from an invasive predator: the armadillo. *International Journal of Ecology* 2012:  
doi:10.1155/2012/658437 [on-line journal] (62)

## 2011

Crane, A., A. K. Fritts, A. Mathis, J. C. Lisek, and M. C. Barnhart. Do gill parasites influence the foraging and antipredator behaviour of rainbow darters, *Etheostoma caeruleum*? *Animal Behaviour* 83:817-823. (61)

Crane, A. L. and A. Mathis. Morphological and behavioral changes of salamanders infected with an amphibian chytrid fungus (*Batrachochytrium dendrobatidis*). *IRCF Reptiles and Amphibians* 18:139-143. (60)

Crane, A. L. and A. Mathis. Landmark learning by the Ozark zigzag salamander, *Plethodon angusticlavius*. *Current Zoology* 57:485-490. (59)

Gall, B. G. and A. Mathis. Ontogenetic shift in response to amphibian alarm cues by banded sculpins (*Cottus carolinae*). *Copeia* 2011:5-8. (58)

Crane, A., and A. Mathis. Predator-recognition training: a conservation strategy to increase survival of hellbenders in head-starting programs. *Zoo Biology* 30:611-622. (57)

## 2010

Gall, B. G. and A. Mathis. Innate predator recognition and the problem of introduced trout. *Ethology* 116: 47-58. (56)

Gall, B. G. and A. Mathis. Response of native and introduced fishes to presumed antipredator secretions of Ozark hellbenders (*Cryptobranchus alleganiensis bishopi*). *Behaviour* 147: 1769-1789. (55)

Gall, B. G., A. L. Crane, and A. Mathis. *Cryptobranchus alleganiensis alleganiensis* (Eastern hellbender). Secretion production. *Herpetological Review* 41:59. (54)

## 2009

Mathis, A. and A. Crane. Saving a giant salamander. *IRCF Reptiles & Amphibians* 16: 18-23. (53)

Mathis, A. Alarm responses as a defense: chemical alarm cues in nonostariophysan fishes. Pp. 323-386. *In: Fish Defenses, Volume 2: Pathogens, Parasites and Predators*. Science Publishers, Enfield, NH. (52)

Crane, A. L., D. Woods, and A. Mathis. Behavioural responses to alarm pheromones by free-ranging rainbow darters (*Etheostoma caeruleum*). *Behaviour* 146:1565-1572. (51)

## 2008

Mathis, A., M. C.O. Ferrari, N. Windel, F. Messier, and D. P. Chivers. Learning by embryos and the ghost of predation future. *Proceedings of the Royal Society B* 275: 2603-2607. (50)

King, R., R. Gosnell, and A. Mathis. Discrimination of predatory versus nonpredatory mammals by box turtles, *Terrapene carolina*. *Chemoecology* 18:61-64. (49)

## 2007

Chivers, D.P., and 21 others. Epidermal 'alarm substance' cells of fishes are maintained by non-alarm functions: possible defence against pathogens, parasites and UVB radiation. *Proceedings of the Royal Society B* 274: 2611-2619. (48)

**Commens-Carson**, A. and A. Mathis. Response of three species of darters of the Genus *Etheostoma* to chemical alarm signals from conspecifics and congeners. *Copeia* 2007:838—843. (47)

## 2006

**Gibson**, A. and A. Mathis. Opercular beat rate for rainbow darters, *Etheostoma caeruleum*, exposed to chemical stimuli from conspecific and heterospecific fishes. *Journal of Fish Biology* 69:224-232. (46)

**Mirza**, R. S., A. Mathis, and D. P. Chivers. Does temporal variation in predation risk influence the intensity of antipredator responses? A test of the risk allocation hypothesis. *Ethology* 112:43—511. (45)

## 2004

**Hickman**, C. R., M. D. **Stone**, and A. Mathis. Priority use of chemical over visual cues for detection of predators by neotenic graybelly salamanders, *Eurycea multiplicata griseogaster*. *Herpetologica* 60:203-210. (44)

**Watson**, T. R., A. Mathis, and R. **Thompson**. Influence of physical stress, distress cues, and predator kairomones on the foraging behavior of Ozark zigzag salamanders, *Plethodon angusticlavius*. *Behavioural Processes* 65:201-209. (43)

## 2003

Mathis, A. Use of chemical cues in detection of conspecific predators and prey by newts, *Notophthalmus viridescens*. *Chemoecology* 13:193-197. (42)

Mathis, A. and D. P. Chivers. Overriding the oddity effect in mixed-species aggregations: group choice by armored and non-armored prey. *Behavioral Ecology* 14: 334-339. (41)

**Frese**, P. W., A. Mathis, and R. Wilkinson. Population characteristics, growth, and spatial activity of *Siren intermedia* in an intensively managed wetland. *Southwestern Naturalist* 48:534-542. (40)

Mathis, A., K. L. **Murray**, and C. R. **Hickman**. Do experience and body size play a role in responses of larval ringed salamander, *Ambystoma annulatum*, to predator kairomones? Laboratory and field assays. *Ethology* 109:159-170. (39)

**Wheeler**, B. A., E. **Prosen**, A. Mathis, and R. F. Wilkinson. Population declines of a long-lived salamander: a 20+-year study of hellbenders. *Biological Conservation* 109:151-156. (38)

## 2001

**Maksimowich**, D. and A. Mathis. Pheromonal markers as indicators of parasite load: parasite-mediated behavior in salamanders (*Plethodon angusticlavius*). *Acta Ethologica* 3:83-87. (37)

## 2000

Mathis, A. and F. **Vincent**. Differential use of visual and chemical cues in predator recognition and threat-sensitive antipredator behaviour by larval central newts, *Notophthalmus viridescens*. *Canadian Journal of Zoology* 78: 1646-1652. (36)

**Whitham**, J. and A. Mathis. Effects of hunger and predation risk on foraging behavior of graybelly salamanders, *Eurycea multiplicata*. *Journal of Chemical Ecology* 26:1659-1665. (35)

**Sullivan**, A. M., P. W. **Frese**, and A. Mathis. Does the aquatic salamander, *Siren intermedia*, respond to chemical cues from prey? *Journal of Herpetology* 34:607-611. (34) **Goddard**, K. and A. Mathis. Opercular flaps as

sexual ornaments for male longear sunfish (*Lepomis megalotis*): male condition and male-male competition. *Ethology* 106:631-643. (33)

**Maksimowich**, D. and A. Mathis. Parasitized salamanders are inferior competitors for territories and food resources. *Ethology* 106:319-329. (32)

Mathis, A., D. W. Schmidt, and K. A. Medley. The influence of residency status on agonistic behavior of male and female Ozark zigzag salamanders, *Plethodon angusticlavius*. *The American Midland Naturalist* 143:245-249. (31)

## 1999

**Commens**, A. and A. Mathis. Alarm pheromones of rainbow darters (*Etheostoma caeruleum*): responses to skin extracts of conspecifics and congeners (*Etheostoma juliae*). *Journal of Fish Biology* 55:1359-1362. (30)

**Anderson**, M. and A. Mathis. Diets of two sympatric tropical salamanders, *Bolitoglossa mexicana* and *B. rufescens*, with notes on reproduction for *B. rufescens*. *Journal of Herpetology* 33:601-607. (29)

Mathis, A. and E. **Britzke**. Asymmetries in body size and experience influence agonistic displays in the zigzag salamander, *Plethodon angusticlavius*. *Herpetologica* 55:344-352. (28)

## 1998

Mathis, A., K. **Deckard** and C. **Duer**. Laboratory evidence for territorial behavior by the southern red-backed salamander, *Plethodon serratus*: Influence of residency status and pheromonal advertisement. *Southwestern Naturalist* 43:1-5. (27)

Mathis, A. and D. Lancaster. Response of terrestrial salamanders to chemical stimuli from distressed conspecifics. *Amphibia-Reptilia* 19:330-335. (26)

**Summey**, M. R. and A. Mathis. Alarm responses to chemical stimuli from damaged conspecifics by three species of Neotropical tadpoles. *Herpetologica* 54:402-408. (25)

Mason, R. T., D. P. Chivers, A. Mathis, and A. R. Blaustein. Bioassay Methods for amphibians and reptiles *In: Methods in Chemical Ecology, Volume II, Bioassay Methods* (J.G. Millar and K. F. Haynes, eds.), pp.271-325. Chapman and Hall. London. (24)

**Woody**, D. and A. Mathis. Acquired recognition of chemical stimuli from an unfamiliar predator: Associative learning by adult newts, *Notophthalmus viridescens*. *Copeia* 1998:1027-1031. (23)

## 1997

**Goddard**, K. and A. Mathis. Do opercular flaps of male longear sunfish (*Lepomis megalotis*) serve as sexual ornaments during female mate choice? *Ethology, Ecology, and Evolution* 3:223-231. (22)

**Woody**, D. and A. Mathis. Avoidance of areas labeled with chemical stimuli from damaged conspecifics by adult newts, *Notophthalmus viridescens*, in a natural habitat. *Journal of Herpetology* 31:316-318. (21)

Mathis, A. and W.W. **Hoback**. The influence of chemical stimuli from predators on pre-copulatory pairing by the amphipod, *Gammarus pseudolimnaeus*. *Ethology* 103:33-40. (20)

**Goddard**, K. and A. Mathis. Microhabitat preferences of longear sunfish: low light intensity versus submerged cover. *Environmental Biology of Fishes* 49:495-499. (19)

**1996**

Mathis, A., D.P. **Chivers** and R.J.F. Smith. Cultural transmission of predator recognition in fishes: Intraspecific and interspecific learning. *Animal Behaviour* 51:185-201. (18)

**1995**

Mathis, A., D.P. **Chivers** and R.J.F. Smith. Chemical alarm signals: Predator deterrents or predator attractants? *The American Naturalist* 145:994-1005. (17)

Mathis, A., R.G. Jaeger, W.H. Keen, P.K. Ducey, S.C. Walls and B.W. Buchanan. Aggression and territoriality by salamanders and a comparison with the territorial behavior of frogs. In: *Amphibian Biology*, Vol. 2 (H. Heatwole and B.K. Sullivan, eds.), pp. 633-676. Surrey Beatty and Sons, New South Wales, Australia. (16)

**1994**

Mathis, A. and R. Simons. Size-dependent responses of resident male red-backed salamanders to chemical stimuli from conspecifics. *Herpetologica* 50:335-344. (15)

**1993**

**Gelowitz**, C., A. Mathis and R.J.F. Smith. Chemosensory recognition of northern pike (*Esox lucius*) by brook stickleback (*Culaea inconstans*): Population differences and influence of predator diet. *Behaviour* 127:105-118. (14)

Mathis, A. and R.J.F. Smith. Chemical labelling of northern pike (*Esox lucius*) by the alarm pheromone of fathead minnows (*Pimephales promelas*). *Journal of Chemical Ecology* 19:1967-1979. (13)

Mathis, A. and R.J.F. Smith. Intraspecific and cross-superorder responses to a chemical alarm signal by brook stickleback. *Ecology* 74:2395-2404. (12)

Mathis, A. and R.J.F. Smith. Chemical alarm signals increase the survival time of fathead minnows (*Pimephales promelas*) during encounters with northern pike (*Esox lucius*). *Behavioral Ecology* 4:260-265. (11)

Mathis, A. and R.J.F. Smith. Fathead minnows (*Pimephales promelas*) learn to recognize pike (*Esox lucius*) as predators on the basis of chemical stimuli from minnows in the pike's diet. *Animal Behaviour* 46:645-656. (10)

Mathis, A., D.C. **Chivers**, and R.J.F. Smith. Population differences in responses of fathead minnows (*Pimephales promelas*) to chemical and visual stimuli from predators. *Ethology* 93:31-40. (9)

**1992**

Mathis, A. and R.J.F. Smith. Avoidance of areas marked with chemical alarm substances by fathead minnows (*Pimephales promelas*) in a natural habitat. *Canadian Journal of Zoology* 70:1473-1476. (8)

**1991**

Mathis, A. Large male advantage for access to females: evidence of male-male competition and female discrimination in a territorial salamander. *Behavioral Ecology and Sociobiology* 29:133-138. (7)

Mathis, A. Territories of male and female terrestrial salamanders: costs, benefits and intersexual spatial associations. *Oecologia* 86:433-440. (6)

**1990**

Mathis, A. Territorial salamanders assess sexual competitive information via chemical signals. *Animal Behaviour* 40:953-962. (5)

Mathis, A. Territoriality in a terrestrial salamander: the influence of resource quality and body size. *Behaviour* 112:162-175. (4)

**1989**

Walls, S.C., A. Mathis, R.G. Jaeger and W.F. Gergits. Male salamanders with high quality diets have faeces attractive to females. *Animal Behaviour* 38:546-548. (3)

Mathis, A. Do seasonal spatial distributions in a terrestrial salamander reflect reproductive behavior or territoriality? *Copeia* 1989:788-791. (2)

**1988**

Mathis, A. and F.R. Moore. Geomagnetism and the homeward orientation of the box turtle, *Terrapene carolina*. *Ethology* 78:265-274. (1)

**Non-refereed Publications**

2009. Zaccone, G., C. Perrière, A. Mathis and B. G. Kapoor. Preface. Pp. v-vii. *Fish Defenses, Volume 2: Pathogens, Parasites and Predators*. Science Publishers, Enfield, New Hampshire. (5)

2008. Mathis, A. Are we losing Missouri's giant salamanders? *Wild Times* 19(3):4-5. (4)

2002. Mathis, A. The fall of Missouri's giant salamanders: Decline of hellbender populations. *The Glade* 5: 2-3. (3)

2000. Mathis, A., D. P. Chivers, B. D. Wisenden, G. E. Brown, and R. S. Mirza. A tribute to R. Jan F. Smith 1940-1998. *Oikos* 88: 100-102. (2)

1999. Chivers, D. P., A. Mathis, G. E. Brown, R. S. Mirza, and B. D. Wisenden. Scratching the skin of predator-prey interaction in fishes: a tribute to R. Jan F. Smith (1940-1998). *Environmental Biology of Fishes* 56:343-350. (1)

**Papers Contributed at Scientific Meetings** (\*presenter) (**graduate students; undergraduates**)

2024. Nagl, A., Watson, R. T., and A. Mathis. The impact of physical stress and residency status on territorial behavior in two species of terrestrial salamanders. Mid-South Society of Integrative and Comparative Biology. Tulsa, OK. (October) (145)

2024. Mathis\*, A. Hellbenders: An unexpected journey. **Plenary address** (Herpetologists' League, Past President address). Joint meeting of Ichthyologists and Herpetologists. Pittsburg, PA. (July) (144)

2024. **Nagl, A.\***, **Watson, T.** and A. Mathis. The impact of physical stress and residency status on territorial behavior in two species of terrestrial salamanders. Joint Meeting of Ichthyologists and Herpetologists. Pittsburg, PA. (July) (143)

2022. Mathis, A.\* and **Heimbach**, S. Do varying levels of predation risk affect territorial behavior by male and female Ozark Zigzag Salamanders? Joint Meeting of Ichthyologists and Herpetologists. Spokane, WA. (142)
2022. Mathis, Alicia. Restoration of hellbenders, a threatened aquatic species. Ozark River Conference. **Invited**. (141)
2021. Mathis\*, Alicia, Jami **Baker** and **Sarah White**. Diel effects on the antipredator behavior of a terrestrial salamander. Joint Meeting of Ichthyologists and Herpetologists. Phoenix, AZ (140) (virtual)
2019. Mathis, Alicia\*, Jami **Baker** and Sarah **White**. Diel effects on the antipredator behavior of a terrestrial salamander. Animal Behavior Society. Chicago, IL. (137)
2019. **Morrison\***, Stephanie, Jeff Briggler and Alicia Mathis. Behavioral analysis of electroshocked post-metamorphic juvenile *Cryptobranchus alleganiensis bishopi* and subadult *Cryptobranchus alleganiensis alleganiensis*. Hellbender Symposium, Blacksburg, VA. (136)
2019. **Mosier\***, Megan and Alicia Mathis. Heavy going: effects of carrying eggs on the behavior of *Plethodon serratus*. MO Herpetological Association, Steeleville, MO. (135)
2018. **Johnson**, Shannon and Alicia Mathis\*. Do Oklahoma salamanders respond to aquatic predator scents and alarm cues after metamorphosis? Animal Behavior Society. Milwaukee, Wisconsin. (134)
2018. **Gardner**, Katy\* and Alicia Mathis. Response to conspecific alarm cues by larval *Ambystoma* salamanders. Animal Behavior Society. Milwaukee, Wisconsin. (133)
2018. **Morrison**, Stephanie\*, Jeff Briggler, and Alicia Mathis. Effects of electrofishing on behavior of two age classes of endangered hellbenders. Animal Behavior Society. Milwaukee, Wisconsin. (132)
2018. **Lynn**, Colton, Ben Dalton\*, and Alicia Mathis. The effects of sex, species and territorial ownership on the behavior of two woodland salamanders. Animal Behavior Society. Milwaukee, Wisconsin. (131)
2018. **White**, Sarah\*, **Jami Baker**, and Alicia Mathis. Diel effects on the antipredator behavior of terrestrial salamanders. MO Herpetological Association, Steeleville, MO (130)
2018. **Morrison**, Stephanie\*, Jeffrey T. Briggler, and Alicia Mathis. Effects of electrofishing on behavior of two age-classes of endangered hellbenders. MO Herpetological Association, Steeleville, MO (129)
2017. **Lynn**, Colton\* and Alicia Mathis. Influence of sex, territorial ownership, and species on aggression in two species of terrestrial salamander. Animal Behavior Society. Toronto, Canada. (127)
2017. Dalton, Benjamin\*, Rachel A. **Settle**, and Alicia Mathis. When territorial salamanders cheat: a test of the dear enemy phenomenon. Animal Behavior Society. Toronto, Canada. (126)
2017. **Gardner**, Katy\*, Benjamin Dalton, and Alicia Mathis. Response to conspecific alarm cues by larval spotted salamanders. Animal Behavior Society. Toronto, Canada. (poster) (125)
2017. **Heimbach**, Sarah\* and Alicia Mathis. Do varying levels of predation risk affect territorial behavior by male and female Ozark Zigzag salamanders? Animal Behavior Society. Toronto, Canada. (124)
2017. **Johnson**, Shannon\* and Alicia Mathis. Do Oklahoma Salamanders Respond to the Scent of Aquatic Predators and Alarm Cues After Metamorphosis? Missouri Herpetological Association, Steelville, MO.

(123)

2017. **Lynn**, Colton\* and Alicia Mathis. Influence of Sex, Territorial Ownership, and Species on Aggression in Two Species of Salamander. Missouri Herpetological Association, Steelville, MO. (122)
2016. **Gardner**, K.\*, B. Dalton, and A. Mathis. Response to conspecific alarm cues by larval Spotted Salamanders. Missouri Herpetological Association, Kirbyville, MO. (121)
2016. **Heimbach**, S.\* and A. Mathis. The effect of varying levels of predation risk on territorial behavior by male and female Ozark ZigZag Salamanders, *Plethodon angusticlavius*. Missouri Herpetological Association, Kirbyville, MO. (120)
2016. **Lynn**, C.\*, A. Mathis, and B. Dalton. Differences in agonism in two species of *Plethodon*. Missouri Herpetological Association, Kirbyville, MO. (119)
2016. **Settle**, R., B. Dalton and A. Mathis\*. When territorial salamanders cheat: a test of the dear enemy phenomenon. Highlands Conference on Plethodontid Salamanders. Highlands, North Carolina. (118)
2016. Dalton, B.\*, T. **Reeder**, R. **Bortosky**, and A. Mathis Differences in response to disturbance by two species of terrestrial salamanders: A field test. Animal Behavior Society, Columbia, MO. (117)
2016. A. **Farmer**, and A. Mathis Does tail autotomy by females and their potential mates influence female choice in salamanders? Animal Behavior Society, Columbia, MO. (116)
2016. A. Mathis\*, and S. **Blecha**. Effects of lead and zinc pollution on antipredator behavior and spatial learning in orange throat darters. Animal Behavior Society, Columbia, MO. (115)
2016. Anderson, K.\* and A. Mathis Eavesdropping on the alarm cues of heterospecific fishes by Rainbow Darters. Animal Behavior Society, Columbia, MO. (114)
2015. Settle, R.\*, J. Briggler and A. Mathis. Nest-guarding behavior of a male Ozark hellbender in a natural habitat. 7<sup>th</sup> Biennial Hellbender Symposium, St. Louis, MO. (113)
2015. Settle, R.\*, J. Ettlins, M. Wanner, J. Briggler, and A. Mathis. Quantitative analysis of reproductive behavior of the Ozark hellbender in captivity. 7<sup>th</sup> Biennial Hellbender Symposium, St. Louis, MO. (112)
2015. Dalton, B.\*, T. **Reeder**, R. **Bortosky**, and A. Mathis. A tale of two salamanders: Comparing behavior and metabolic rates. MO Herpetological Association, Steelville, MO. (111)
2015. Shelton, K.\* and A. Mathis. Behavioral responses of Ringed and Spotted Salamanders when exposed to cues from Predators with different diets. MO Herpetological Association, Steelville, MO. (110)
2015. Dalton, B.\*, T. **Reeder**, R. **Bortosky** and A. Mathis. Comparison of behavior and metabolic rates in two species of salamanders. Animal Behavior Society, Anchorage, AK. (109)
2015. Mathis, A.\* and K. **Anderson**. Response of rainbow darters to chemical alarm cues from sympatric and allopatric salamanders. Animal Behavior Society, Anchorage, AK. (108)
2014. Rudolph, L.\* and A. Mathis. Response to predatory threat by different sex classes of Oklahoma Salamanders. (107)
2014. Anderson, K.\*, Alicia Mathis, and Ben Dalton. Response to chemical alarm cues of Oklahoma Salamanders

- by sympatric and allopatric Rainbow Darters. Missouri Herpetological Association, Kirbyville, MO. (106)
2014. Bortosky, R.\* and Alicia Mathis. Honest signaling in aggressive contests between Ozark Zigzag salamanders. Missouri Herpetological Association, Kirbyville, MO. (105)
2014. Settle, R.\*, Jeff Briggler and Alicia Mathis. Video analysis of nest-guarding behavior of a male Ozark **Hellbender**. Missouri Herpetological Association, Kirbyville, MO. (104)
2014. Bortosky\*, R. and A. Mathis. Honest signaling in aggressive contests between Ozark zigzag salamanders. Conference on the Biology of Plethodontid Salamanders. Tulsa, Oklahoma. (103)
2014. Settle\*, R., M. **Smith** and A. Mathis. A test of the dear enemy phenomenon: Do southern red-backed salamanders abide by territorial agreements? Conference on the Biology of Plethodontid Salamanders. Tulsa, Oklahoma. (102)
2014. Reeder\*, T. and A. Mathis. A behavioral syndrome in the southern redback salamander. Conference on the Biology of Plethodontid Salamanders. Tulsa, Oklahoma. (101)
2013. Bortoski\*, R.\* and A. Mathis. Honest signaling in aggressive contests between Ozark zigzag salamanders (*Plethodon angusticlavius*). Missouri Herpetological Association. Steelville, Missouri. (100)
2013. Dalton, B.\* and A. Mathis. Identification of sex and parasitism via chemical cues in the Ozark Zigzag Salamander. Animal Behavior Society. Boulder, Colorado. (99)
2013. **Evans**, W.\*, A. Mathis, and B. Greene. Discrimination of substrate cues from predatory and non-predatory snakes by Ring-necked Snakes. Animal Behavior Society. Boulder, Colorado. (98)
2013. **Reeder**, T.\* and A. Mathis. Stability of behavioral syndromes in the Southern Red-backed Salamander, *Plethodon serratus*. Animal Behavior Society. Boulder, Colorado. (97)
2013. **Helton**, E.\*, A. Mathis and A. Crane. Embryonic learning of food-related cues in Ringed Salamanders (*Ambystoma annulatum*). Animal Behavior Society. Boulder, Colorado. (96)
2013. **Heuring**, W. and A. Mathis\*. Landmark learning by juvenile spotted salamanders (*Ambystoma maculatum*). Animal Behavior Society. Boulder, Colorado. (95)
2012. Dalton, B.\*, A. Mathis, and A. Crane. Sexual discrimination and parasitic effects in a territorial salamander, *Plethodon angusticlavius*. Missouri Herpetological Association. Jefferson City, Missouri. (94)
2012. Heuring, C.\*, W. **Heuring**\*, A. Mathis and A. Crane. Aggressive and foraging behavior of larval salamanders (*Ambystoma annulatum*): effects of diet quality. Missouri Herpetological Association. Jefferson City, Missouri. (93)
2012. Jones, V.\*, A. Mathis and A. Crane. 2012. Metabolic differences among clutches of newly-hatched larval spotted salamanders (*Ambystoma maculatum*). Missouri Herpetological Association. Jefferson City, Missouri. (93)
2012. Helton, E.\*, A. Mathis and A. Crane. Metabolic differences among clutches of newly-hatched larval spotted salamanders (*Ambystoma maculatum*). Missouri Herpetological Association. Jefferson City, Missouri. (91)
2012. Reeder\*, T., A. Mathis, and A. Crane. A behavioral syndrome in the southern redback salamander (*Plethodon*

- serratus*). Missouri Herpetological Association. Jefferson City, Missouri. (90)
2011. Mathis\*, A. and B. Gall. Hellbender recognition of native and nonnative fish. Ozark Hellbender Working Group. Springfield, Missouri (**Invited**) (89)
2011. Jones, V.\*, A. Mathis and A. Crane. Predatory chemical cues affect gill blood flow in larval ringed salamanders. Missouri Herpetological Association, Steelville, Missouri (September) (88)
2011. **Lampe**, M.\*, A. Mathis and A. Crane. Detecting danger from prey-guild members: behavioral and metabolic responses of Ozark zigzag salamanders to stress secretions from earthworms. Missouri Herpetological Association, Steelville, Missouri (September) (87)
2011. Crane, A.\* and A. Mathis. Socially facilitated antipredator behavior by ringed salamanders. Missouri Herpetological Association, Steelville, Missouri (September) (86)
2011. Mathis, A.\*, M. Lampe and A. Crane. Behavioral and metabolic responses of Ozark zigzag salamanders to a alarm/stress secretions from heterospecific members of the same prey guild. Joint meeting of Ichthyologists and Herpetologists, Minneapolis, Minnesota (July) (85)
2011. Crane, A.\* and A. Mathis. Socially facilitated antipredator behavior by ringed salamanders. Joint meeting of Ichthyologists and Herpetologists, Minneapolis, Minnesota (July) (84)
2011. Crane, A.\* and A. Mathis. Predator-recognition training: a conservation strategy to increase post-release survival of hellbenders in head-starting programs. Joint meeting of Ichthyologists and Herpetologists, Minneapolis, Minnesota (July) (83)
2010. **Parsons**, J.\* and Alicia Mathis. Predator risk has condition-dependent effects on territorial behavior. Missouri Herpetological Association, Steelville, Missouri (October) (82)
2010. Crane, A.\*, C. **McGrane** & A. Mathis. Ongoing studies on the responses of Ozark Zigzag Salamanders exposed to armadillo stimuli. Missouri Herpetological Association, Steelville, Missouri (October) (81)
2010. Mathis, A.\*, A. Crane, A. **Crownhart**, J. **Lisek** and C. Barnhart. Gill parasites affect behavior and growth of rainbow darters. Animal Behavior Society. Williamsburg, Virginia. (August) (80)
2010. Crane, A.\* and A. Mathis. Landmark learning by the Ozark zigzag salamander, *Plethodon angusticlavius*. Animal Behavior Society. Williamsburg, Virginia. (poster) (August) (79)
2010. **Hunt**, R.\* and A. Mathis. Response of spotted salamanders to alarm cues and diet-based predator cues. Animal Behavior Society. Williamsburg, Virginia. (poster) (August) (78)
2010. **Parsons**, J. and A. Mathis. Predation risk has condition-dependent effects on territorial behavior. Animal Behavior Society. Williamsburg, Virginia. (August) (77)
2009. Crane, A.\* and A. Mathis. Landmark learning by Ozark zigzag salamanders, *Plethodon angusticlavius*. Missouri Herpetological Association. Branson, Missouri. (76)
2009. Mathis, A.\* and A. Crane. Morphological and behavioral changes in the Ozark zigzag salamander, *Plethodon angusticlavius*, following infection with chytrid fungus. Missouri Herpetological Association. Branson, Missouri. (75)
2009. **Parsons**, J., A.\* Mathis, and A. Crane. Influence of prior exposure to predator cues on the Ozark zigzag

- salamander, *Plethodon angusticlavius*. Missouri Herpetological Association. Branson, Missouri. (74)
2009. **Gall, B.\*** and A. Mathis. Innate predator recognition in larval hellbenders (*Cryptobranchus alleganiensis*) and the problem of introduced trout. Joint Meeting of Ichthyologists and Herpetologists. Portland, Oregon (Poster) (July) (73)
2009. Mathis, A.\*, and B. **Gall**. Predator recognition in larval hellbenders from Missouri and the problem of introduced trout. 4<sup>th</sup> Hellbender Symposium. Corbin, Kentucky (June) (72)
2009. Crane, A.\*, and A. Mathis. Learned responses of larval hellbenders (*Cryptobranchus alleganiensis*) to introduced trout. 4<sup>th</sup> Hellbender Symposium. Corbin, Kentucky (June) (71)
2008. Crane, A.\* and A. Mathis. Predator-recognition training by larval hellbenders (*Cryptobranchus alleganiensis*). Missouri Herpetological Association. Kirbyville, Missouri (September) (70)
2008. **McGrane, C., A.\*** Crane and A. Mathis. 2008. Escape responses by Ozark zigzag salamanders (*Plethodon angusticlavius*) exposed to armadillo stimuli. Missouri Herpetological Association. Kirbyville, Missouri (September) (69)
2008. **Gall, B.\***, and A. Mathis. Influence of stress secretions from adult Ozark Hellbenders (*Cryptobranchus alleganiensis bishopi*) on feeding behavior of native and non-native predatory fishes. Southwestern Association of Naturalists. Memphis (April) (68)
2008. **Presley, M.\***, A. Mathis and B. Greene. Foraging tactics of the Ozark Zigzag Salamander (*Plethodon angusticlavius*) under predation pressure. Southwestern Association of Naturalists. Memphis (April) (67)
2007. **Gall, B.\*** and A. Mathis. Influence of stress secretions from the Ozark hellbenders (*Cryptobranchus alleganiensis bishop*) on feeding behavior of native and non-native fishes: preliminary data. Missouri Herpetological Association. Kirbyville, Missouri (September) (66)
2006. Mathis, A.\* and N. Windel. Learning by embryos: experience with predatory cues in the egg stage influences post-hatching behavior of salamanders. Missouri Herpetological Association. Steelville, Missouri (September) (65)
2006. Mathis, A.\* Collaboration with Missouri State University. National Park Service Heartland Network and Prairie Cluster Prototype Monitoring Program. Springfield, Missouri. (August) (64)
2006. Mathis, A.,\* R. Mirza, D. Chivers, N. Windel, P. Foam, M. Harvey, J. Golub, A. Leduc, T. Darwish, E. Roh, R. Kusch. Learning by embryos: Experience with predatory cues in the egg stage influences post-hatching behavior of salamanders and trout. American Society of Ichthyologists and Herpetologists. New Orleans Louisiana. (July) (63)
2005. **Windel, N.\*** and A. Mathis. Behavioral and metabolic responses of the southern red-backed salamander (*Plethodon serratus*) to predatory stimuli: influence of body size. Missouri Herpetological Association. Steelville, Missouri (62)
2005. **Windel, N.\*** (student of A. Mathis). Behavioral and metabolic responses of the southern red-backed salamander (*Plethodon serratus*) to predatory stimuli: influence of body size. Joint meeting, ASIH, HL, and SSAR. Tampa, Florida. *JAEGER AWARD FOR OUTSTANDING GRADUATE RESEARCH*. (61)
2004. Mathis, A.\* Sex, safety, and survival: Behavior and conservation biology of salamanders. Kansas Herpetological Society. Manhattan, Kansas. (**Keynote address**) (60)

2004. **Windel**, N.\* and A. Mathis. Behavioral and metabolic responses of the southern red-backed salamander (*Plethodon serratus*) to predatory stimuli: influence of body size. Missouri Herpetological Association. Mound City, Missouri (September) (59)
2003. **Gibson**, A.\* and A. Mathis. Experience with predators and conspecifics influences habitat choice by rainbow darters. Association of Southeastern Biologists. Memphis, Tennessee (58)
2003. **Windel**, N.\*, A. Mathis, and L. **Sanders**. Size-dependent behavioral and metabolic responses of the southern red-backed salamander (*Plethodon serratus*) to predatory stimuli – preliminary findings. Missouri Herpetological Association. Steelville, Missouri (57)
2003. **Unger**, S.\* and A. Mathis. Comparison of sperm from declining and healthy populations of hellbenders. Hellbender Conservation Symposium. Helen, Georgia (56)
2003. **Unger**, S.\* and A. Mathis. Comparison of sperm from declining and healthy populations of hellbenders. American Society of Ichthyologists and Herpetologists. Manaus, Brazil (55)
2003. Mathis, A. \* and S. **Unger**. Neotenic graybelly salamanders learn to avoid dangerous habitats. American Society of Ichthyologists and Herpetologists. Manaus, Brazil (54)
2002. Mathis, A.\* Social behavior of terrestrial salamanders. Symposium: Social behavior of animals. Association of Southeastern Biologists. Memphis, Tennessee. (**Invited**) (53)
2002. Mathis, A\*. Provenance, predators, and parasites: behavior of Ozark zigzag salamanders. Symposium: Contemporary Herpetological Research: A Tribute to Robert Jaeger as 20-year Editor of *Herpetologica*. Herpetologists' League. Kansas City, Missouri. (**Invited**) (52)
2002. Mathis, A.\* Poxes and perils: parasites, predation risk and the behavior of zigzag salamanders. Missouri Academy of Science, student award ceremony. Springfield, Missouri. (**Keynote address**) (51)
2002. **Unger**, S.\* and A. Mathis. Comparison of sperm from declining and healthy populations of hellbenders. Southwestern Association of Naturalists. Norman, Oklahoma (50)
2002. **Unger**, S.\* and A. Mathis. Associative learning in the graybelly salamander, *Eurycea multiplicata*. Missouri Herpetological Association. Steelville, Missouri. (49)
2002. **Hickman**, C.\* (graduate student of A. Mathis) Response of salamanders to chemical stimuli from predators in natural habitats. Herpetologists' League. Kansas City, Missouri. (48)
2002. **Stone**, M. D.\* and A. Mathis. The effects of visual stimuli on the ability of *Eurycea multiplicata griseogaster* to distinguish predators from non-predators. Herpetologists' League/ Society for the Study of Amphibians and Reptiles. Kansas City, Missouri. (47)
2001. Mathis, A.\* and R. **Watson**. Predation risk influences foraging and territorial behavior of Ozark zigzag salamanders. Herpetologists' League/Society for the Study of Amphibians and Reptiles. Indianapolis, Indiana. (46)
2001. **Rippetoe**, D. O.\* and A. Mathis. Effects of an alarm pheromone on the foraging behavior of graybelly salamanders, *Eurycea multiplicata*. Southwestern Association of Naturalists. Hays, Kansas (45)
2001. **Watson**, T. R.\* and A. Mathis. The influences of stress and alarm pheromones on the foraging behavior of

- the Ozark zigzag salamander, *Plethodon angusticlavius*. Southwestern Association of Naturalists. Hays, Kansas. (44)
2000. Mathis, A.\* and J. **Whitham**. Effects of hunger and predation risk on the foraging behavior of neotenic salamanders. Joint Meeting of Ichthyologists and Herpetologists. La Paz, Baja California Sur, Mexico (43)
2000. **Frese**, P., R.\* Wilkinson & A. Mathis. Spatial activity, growth, and population characteristics of *Siren intermedia* in an intensively managed wetland. Southwestern Association of Naturalists. Denton, TX. (42)
1999. Mathis, A.\* and J. **Whitham**. Effects of hunger and predation risk on the foraging behavior of the graybelly salamander. Missouri Herpetological Association. Louisiana, Missouri (41)
1999. **Frese**, P., R.\* Wilkinson & A. Mathis. Preliminary observations on population characteristics and growth of the lesser siren in southeastern Missouri. Missouri Herpetological Association. Louisiana, Missouri. (40)
1999. **Wheeler**, B.\* E. **Prosen**, R. F. Wilkinson, and A. Mathis. A comparison of current and historic populations of Missouri hellbenders. American Society of Ichthyologists and Herpetologists. State College, Pennsylvania. (39)
1999. Mathis, A. and A. **Commens**\*. Alarm pheromones of conspecific and congeneric darters. American Society of Ichthyologists and Herpetologists. State College, Pennsylvania. (38)
1998. Mathis, A. and K. **Murray**\*. Size-dependent responses to chemical stimuli from predatory newts by larval ringed-salamanders. Missouri Herpetological Association. Jefferson City, Missouri. (37)
1998. Mathis, A.\* and K. **Murray**. Size-dependent responses to chemical stimuli from predatory newts by larval ringed-salamanders. Animal Behavior Society. Carbondale, Illinois. (36)
1998. **Commens**, A.\* and A. Mathis. Alarm pheromones of rainbow darters. Animal Behavior Society. Carbondale, Illinois. (Poster) (35)
1998. **Maksimowich**, D.\* and A. Mathis. A role for parasites in the behavior of zigzag salamanders. Animal Behavior Society. Carbondale, Illinois. (34)
1997. Mathis, A. Concluding remarks: Chemical Ecology of Predation Symposium. Joint Meeting of Ichthyologists and Herpetologists. Seattle, Washington. (**invited**) (33)
1997. **Maksimowich**, D.\* and A. Mathis. Assessment of parasite load of conspecifics by zigzag salamanders (*Plethodon dorsalis*): use of chemical cues. MO Herpetological Association. Jefferson City, MO. (32)
1997. Mathis, A., K. **Deckard**\*, and C. **Duer**. Territorial behavior by the southern red-backed salamander, *Plethodon serratus*. Prairie State Ecology Conclave. Pittsburg, KS. (31)
1997. Greene, B.\* and A. Mathis. Responses of the blunt-headed tree snake, *Imantodes cenchoa*, to chemical stimuli from potential prey. Southwestern Association of Naturalists. Fayetteville, Arkansas. (30)
1997. Mathis, A., K. **Deckard**\*, and C. **Duer**. Territorial behavior by the southern red-backed salamander, *Plethodon serratus*. Southwestern Association of Naturalists. Fayetteville, Arkansas. (29)
1996. **Birt**, R.\* R. Powell and A. Mathis. Selected aspects of the ecology of *Anolis barkeri*, a semi-aquatic lizard from southern México. Missouri Herpetological Association. Lebanon, Missouri. (September) (28)

1996. **Grow**, S.\*, S. **Daniels**, A. Mathis and R. Vogt. Notes on the life histories of three sympatric tropical treefrogs from southern México. Missouri Herpetological Association. Lebanon, Missouri. (September) (27)
1996. Mathis, A.\* and D. **Woody**. Chemical recognition of predators and associative learning by newts. Animal Behavior Society. Flagstaff, Arizona (August). (26)
1995. Lancaster, D.L.\* and A. Mathis. The responses of familiar conspecifics to substances produced by stressed southern red-backed salamanders (*Plethodon serratus*). Society for the Study of Amphibians and Reptiles. Boone, North Carolina (Poster) (August). (25)
1995. **Cantrell**, J.\*, D. Moll, and A. Mathis. Parental care in prothonotary warblers. Animal Behavior Society. Lincoln, Nebraska (July). (24)
1995. Chivers, D.P.\*, A. Mathis, G. E. Brown, and R.J.F. Smith. Evolution of chemical alarm signals: Attracting secondary predators benefits alarm signal senders. Animal Behavior Society. Lincoln, Nebraska (July). (23)
1995. Mathis, A.\* and F. **Vincent**. Predator recognition by larval central newts. Animal Behavior Society. Lincoln, Nebraska (July). (22)
1995. Chivers, D.P.\*, B. Wisenden, G. Brown, A. Mathis and R.J.F. Smith. The role of alarm signalling in fish predator/prey interactions. American Society of Ichthyologists and Herpetologists. Edmonton, Alberta, Canada. (Poster) (June) (21)
1995. Chivers, D.P.\*, A. Mathis, G. Brown and R.J.F. Smith. The evolution of chemical alarm signaling. Prairie University Biology Seminars. Winnipeg, Manitoba, Canada. (February) (20)
1995. Chivers, D.P.\*, A. Mathis, G. Brown and R.J.F. Smith. The evolution of chemical alarm signals: Attracting secondary predators benefits alarm signal senders. American Society of Ichthyologists and Herpetologists. Edmonton, Alberta, Canada. (19)
1994. Mathis\*, A. Male-male competition, female choice territoriality in terrestrial salamanders. Second World Congress of Herpetology. Adelaide, South Australia. (**invited**) (18)
1994. Mathis, A.\* and E. **Britzke**. Asymmetries in body size influence agonistic displays in the zigzag salamander, *Plethodon dorsalis*. Herpetologist's League/Society for the Study of Amphibians and Reptiles. Athens, Georgia. (17)
1994. Mathis, A. and F. **Vincent**\*. The role of chemical and visual stimuli in recognition of predators by larval central newts, *Notophthalmus viridescens*. Missouri Herpetological Association. Steelville, Missouri. (September) (16)
1994. Mathis, A. and E. **Britzke**\*. Body size asymmetries influence agonistic displays by the Ozark zigzag salamander, *Plethodon dorsalis*. Missouri Herpetological Association. Steelville, Missouri. (September) (15)
1994. Smith, R.J.F.\*, A. Mathis, D.P. Chivers and C. **Gelowitz**. Alarm signals and learned predator recognition in fishes. Vth International Behavioral Ecology Congress. Nottingham, England. (August) (14)
1994. Smith, R.J.F.\*, A. Mathis, D.P. Chivers and C. **Gelowitz**. Alarm signals: A key element in fish predator/prey

- interactions. Fisheries Society of the British Isles. Glasgow, Scotland. (July) (13)
1994. Smith, R.J.F.\*, A. Mathis, D.P. Chivers and C. **Gelowitz**. Alarm signals: A key element in fish predator/prey interactions. Ecological and Evolutionary Ethology of Fishes conference. Victoria, British Columbia. (May) (12)
1993. Mathis, A.\* and R.J.F. Smith. Intraspecific and cross-superorder responses to chemical alarm signals by brook stickleback. Joint Meeting of Ichthyologists and Herpetologists. Austin, Texas. (11)
1993. Mathis, A.\* and R.J.F. Smith. Intraspecific and cross-superorder responses to chemical alarm signals by brook stickleback. XXIII International Ethological Conference. Torremolinos, Spain. (10)
1992. Mathis, A.\* and R.J.F. Smith. Predator diet affects predator recognition by naive fathead minnows. Animal Behavior Society. Kingston, Ontario, Canada. (9)
1992. Mathis, A.\* Interactions between territoriality and mating success in *Plethodon cinereus*. The Highlands Conference on Plethodontid Salamanders. Highlands, North Carolina. (8)
1991. Mathis, A.\* and R.J.F. Smith. Avoidance of areas marked with chemical alarm substances by fathead minnows. Animal Behavior Society. Wilmington, North Carolina. (7)
1990. Mathis, A.\* Territorial salamanders assess conspecifics via chemosignals. Animal Behavior Society. Binghamton, New York. (6)
1989. Mathis, A.\* A field experiment for territoriality in a terrestrial salamander. Animal Behavior Society. Highland Heights, Kentucky. (5)
1988. Mathis, A.\* Intraspecific competition for cover objects by a territorial salamander. Joint Meeting of Ichthyologists and Herpetologists. Ann Arbor, Michigan. (4)
1987. Walls, S.C., A. Mathis and R. G. Jaeger\*. Male salamanders have sexy feces. Animal Behavior Society. Williamstown, Massachusetts. (3)
1986. Mathis, A.\* Patch choice based on food abundance in red-backed salamanders. Joint meeting, Herpetologist's League and the Society for the Study of Amphibians and Reptiles. Springfield, Missouri. (2)
1985. Mathis, A. and F.R. Moore\*. Geomagnetism and the homeward orientation of the box turtle, *Terrapene carolina*. Animal Behavior Society. Raleigh, North Carolina. (Poster) (1)

### Invited Research Presentations (Academic institutions/organizations)

2022. James River Basin Partnership. Hellbender conservation. (April) (19)
2015. University of Southern Mississippi. Hattiesburg, Mississippi. Functional ecology of learning in salamanders. (April) (18)
2013. Crowder College. Neosho, Missouri. Salamander behavioral ecology and conservation biology. (April) (17)
2004. Texas State University. San Marcos, Texas. Sex, safety, and survival: Behavior and conservation biology of

- salamanders. (November) (16)
2003. College of Natural and Applied Sciences, SMSU. Hellbender conservation. (Sept) (15)
2003. New Mexico State University, Las Cruces. Poxes and perils: parasites, predation risk and behavior. (April) (14)
2003. University of Missouri, Columbia. Poxes and perils: parasites, predation risk and behavior (November) (13)
2001. University of Missouri at Rolla. Poxes and perils: parasites, predation risk and amphibian declines. (November) (12)
2001. William Jewell College, Liberty, Missouri. Poxes and perils: parasites, predation risk and behavior. (November) (11)
2001. Kansas State University, Manhattan. Poxes and perils: parasites, predation risk and behavior. (November) (10)
2000. University of Saskatchewan, Saskatoon, Saskatchewan Canada. Chemical communication in ectothermic vertebrates. (October) (9)
1998. Mississippi State University, Starkville. Chemical ecology of predation in ectotherms. (October) (8)
1997. Emporia State University, Emporia, Kansas. Chemical communication and predation in ectothermic vertebrates. (October) (7)
1997. University of Southern Mississippi, Hattiesburg. Chemical communication and predation in ectothermic vertebrates. (February) (6)
1994. University of Missouri, Columbia. Chemical alarm signals and predator recognition in a community of freshwater fishes. (September) (5)
1993. University of Saskatchewan, Saskatoon, Saskatchewan, Canada. Predator/prey interactions in a fish community: chemical alarm signals, recognition of predators and survival of prey. (4)
1992. University of Saskatchewan. Saskatoon, Saskatchewan. Canada. Territorial asymmetries in a terrestrial salamander: implications for resource acquisition and intersexual associations. (3)
1992. Southwest Missouri State University, Springfield. Predator/prey interactions in a fish community: chemical alarm signals, recognition of predators and survival of prey. (2)
1988. Mountain Lake Biological Station, Pembroke, Virginia. Territoriality and reproductive behavior in the red-backed salamander. (1)

### Invited Teaching Presentations

2002. "Adding excitement to your course: The 'Skull of the Week' example". *SMSU Showcase on Teaching*. (January) (3)
2000. "Learning by doing: Undergraduate student participation in faculty research". *SMSU Faculty Development Workshop*. (April) (2)

2000. "Integrating research and teaching". *SMSU Showcase on Teaching*. (January) (1)

### Grants Received: External

- 2007—2023. Grants related to *National Park Service* Partnerships with MSU (served as grant administrator).
  - 2022. *National Park Service*. Partnership for ecological monitoring in the NPS-HTLN (\$153,371)
  - 2017. *National Park Service*. Vital Signs Monitoring Partnership (\$274,199)
  - 2016. *National Park Service*. Partnership to improve vital signs monitoring (\$67,143)
  - 2015. *National Park Service*. Partnership to improve vital signs monitoring (\$80,285.71)
  - 2014. *National Park Service*. Partnership to improve vital signs monitoring (\$37,584)
  - 2012. *Bureau of Land Management*. Great Plains Fire Exchange (19,809)
  - 2013. *National Park Service*. Fire effects monitoring (\$112,752)
  - 2013. *National Park Service*. Partnership to improve vital signs monitoring (\$34,420)
  - 2012. *National Park Service*. Fire effects monitoring (\$73,500)
  - 2012. *Bureau of Land Management*. Great Plains Fire Exchange (16,775)
  - 2011. *National Park Service*. Fire effects monitoring" (\$240,000)
  - 2011. *National Park Service*. Partnership to improve vital signs monitoring" (\$30,429)
  - 2010. *National Park Service*. Fire effects monitoring" (\$79,298)
  - 2009. *National Park Service*. Partnership to improve vital signs monitoring" (\$16,391)
  - 2009. *National Park Service*. Fire effects monitoring" (\$79,690)
  - 2007. *National Park Service*. Student internships to improve vital signs monitoring" (\$21, 150)
  - 2007. *National Park Service*. Fire effects monitoring" (\$248,184)
- 2023. *National Science Foundation*. Katangur et al., 4<sup>th</sup> author out of 11. ELATE: Enhanced Learning and Teaching Experiences (\$1,499,928)
- 2017-2020. *Missouri Dept of Conservation*. Effects of Electrofishing on Hellbenders" (\$73,586)
- 2008-2010. *Missouri Dept of Conservation*. Interactions of native and non-native fish with hellbenders" (\$11,650)
- 2004. *U.S. Fish and Wildlife Service*. Predator recognition training: a conservation strategy to increase survival of hellbenders (\$5000)
- 2001. *U. S. Fish and Wildlife Service*. Decline of the Ozark hellbender, co-PI, R. Wilkinson. (\$30,000)
- 1999. *MO Dept of Conservation*: A survey of Missouri hellbenders, co-PI , R. Wilkinson. (\$12,478)
- 1997. *MO Dept of Conservation*: A survey of Missouri hellbenders, co-PIs, B. Greene, R. Wilkinson. (\$18,757)
- 1996. *National Science Found.*: Res. Experience for Undergraduates: Natural history of a tropical fauna (\$49,975)
- 1993. *Young Ethologist's Travel Award*, XXIII International Ethological Conference, Torremolinos, Spain (\$1200)
- 1988. *Sigma Xi Grant-in-Aid of Research* (\$300)
- 1988. *Pre-Doctoral Research Fellowship*, Mountain Lake Biological Station (\$1800)
- 1987. *Sigma Xi Grant-in-Aid of Research* (\$250)

### Grants Received: Internal

- 2002. *MSU Funding for Results*: Charismatic megafauna: adding excitement to biology laboratories (\$2200)
- 2000. *MSU*, Sabbatical leave. Antipredator behavior of fishes: research at the Univ. of Saskatchewan.
- 2000. *MSU International Education Committee*: Travel Award for meeting of the Herpetologists' League in La Paz, Baja California Sur, Mexico (\$500)
- 1997. *MSU Funding for Results*. Project Exotic: Using exotic animals to stimulate student interest in zoology (\$1900)
- 1995. *MSU Summer Faculty Research Fellowship*: Chemical communication and the behavioral ecology of predator/prey relationships in a pond community (\$4000)
- 1994. *MSU Faculty Research Grant*: Aggressive behavior and spacing patterns in terrestrial and stream-side salamanders (\$5270)

## Recognition

- Research.com 2025. Ranking of Best Scientists in Ecology and Evolution (2165<sup>th</sup> nationally, 6515 world)
- Research.com 2024 Ranking of Best Scientists in Ecology and Evolution (2010<sup>th</sup> nationally; 5700 world)
- *Research.com 2023 Ranking of Best Scientists in Ecology and Evolution* (2010<sup>th</sup> nationally; 5700 world)
- *Penny Bernstein Distinguished Teaching Award*, Animal Behavior Society, 2019
- *Outstanding Reviewer*, Animal Behavior Society, 2013—2015
- *MSU CNAS Student Award for Faculty Excellence*, 2013
- *Council for Advancement and Support of Education (CASE) District VI, Gold Award*: Don Hendricks, Alicia Mathis and Mike Smith, Excellence in Multimedia: Radio; interview about hellbenders, 2006
- *MSU University Research Award* (one of eight university-wide awards), 2005
- *MSU University Teaching Award* (one of twelve university-wide awards), 1999, 2002
- *MSU College of Natural and Applied Sciences Service Award*, 2000
- *MSU Outstanding Thesis Advisor Award* (one of two university-wide awards), 2000
- *MSU Foundation Award for Research* (one of two university-wide awards), 1998
- *Master Advisor* designation, 1997, 2001, 2004, 2008
- *Excellence in Scholarship Award*, SMSU College of Natural and Applied Sciences, 1996
- *Who's Who in Science and Engineering*, Bibliographical listing, 1996-
- *American Men and Women of Science*, Bibliographical listing, 1996 -
- *2000 Outstanding Scientists of the 21<sup>st</sup> Century*, 1<sup>st</sup> Edition, Bibliographical listing, 2002-
- *Woman of Achievement*, Bibliographical listing, 2002 -
- *Who's Who in America*, Bibliographical listing, 2002 -
- *Who's Who of American Women*, Bibliographical listing, 2002 -
- *Young Ethologist's Travel Award*, XXIII International Ethological Conference, 1993
- *Who's Who Among Students in American Colleges and Universities*, 1988.
- *Omicron Delta Kappa*, Honor Society for Student Leadership, 1983 - 1985.
- *Beta Beta Beta*, Biological Honor Society, 1981 - 1985.
- *George Oliphant Scholarship*, 1980 - 1982.
- *Academic Scholarship*, 1978 - 1981.

## University Activities—selected

- *University Representative for Great Rivers CESU*, 2015-2023
- *CNAS Foundation Awards Committee*, 2025
- *Department Curriculum Committee*, Ecology and Evolution program, 2024-
- *Department Faculty liaison with Advising/Recruitment Coordinator*, 2025-
- *Department Representative for Gulf Coast Research Lab*, 2024-
- *Department Representative for National Association of Wildlife & Fisheries Programs*, 2020-
- *Co-Advisor Pre-medical Society*, 2013-2014
- *Panel participant*: “Research ethics”. MSU Academic Integrity Week.
- *Presented Faculty and Student Seminar*: “Environmental Assessment and Animal Behavior”, 2008
- *Panel participant*: MSU Graduate Student Orientation, “Doing Well in Graduate School”, 2007
- *Interviewer*: SMSU Presidential scholarship candidates, 2004, 2005, 2006, 2007, 2010-2018
- *Judge*: SMSU Graduate Interdisciplinary Forum, 2004, 2005, 2006
- *Panel participant*: “Starting/completing a thesis”, SMSU grad student orientation, 2001, 2002
- *Departmental representative*: Majors’ Fair, 2001—2007
- *Departmental representative*: Springfield College Fair, 2005, 2006
- *Departmental representative*: MSU Showcase (recruitment fair), 2005, 2006
- *Panel participant*: “Darwin”, SMSU English Week event, 1999
- *Panel participant*: ENG 625 (Rhetoric of Science): “Darwin and related issues”, 1998
- *Judge*, SMSU Sigma Xi Symposium of Undergraduate Research, 1994
- *Participant*, SMSU Round-table discussion: “The role of the university”, 1994
- *Reporter*, SMSU Round-table discussion: “Welcoming the 21<sup>st</sup> century”, 1994

- *Executive officer*, Women in Natural Sciences, University of Saskatchewan, 1991-1992.
- *Graduate Student/Faculty Liaison*, USL, 1987
- *Vice President*, Graduate Student Forum in the Biological Sciences, USM, 1984-1985
- *Executive Chair*, Graduate Student Symposium of Graduate Student Research, USM, 1985

### Seminars/Workshops Attended (teaching/administrative) --selected

- Advising seminars (3), 2025
- Advising seminars (3), 2024
- Diversity Week lecture (Dr. Scott Page), 2017
- "Group Advising", 2017
- "Repackaging minors to align and grow certificate offerings", 2017
- "Advising Saudi Arabian Cultural Mission Students", 2016
- "Search briefings", annually or bi-annually since 1996
- "STEM diversity" webinar, 2015
- "Faculty assessment", 2014
- "Promotion and Tenure document", 2014
- "Program Assessment", 2013
- "Course transformation", 2012 (4)
- "Assessment plans and Student Learning Outcomes", 2012 (2)
- "Major Field Test" (webinar), 2009
- "Banner" (administrative software), 2009
- "University Development (fundraising)", 2009
- "APG-web design", 2008
- "Banner introduction" (administrative software), 2008
- "Dealing with the challenging customer", 2008
- "Faculty mentoring", 2008
- "Evaluation of Teaching" (series of 5 workshops), 2007
- "Leadership training", 2006
- "Supervisor training", 2006
- "Equity and diversity in recruiting", 2005
- "Scholarship up-date", 2005
- "Academic integrity and plagiarism", 2005
- "Advising: What's new for 2003-2004", 2003
- "Faculty hiring procedure guidelines", 2001
- "When tolerance conflicts with student ideology", 2001
- "EEO/AA update", 1997
- "Affirmative action recruitment guidelines", 1996
- "Americans with Disabilities Act", 1996
- "Enrollment decline and retention efforts", 1995
- "How students learn, how teachers teach", 1995
- "Teaching intensive courses", 1994
- "Computer assisted student advisement", 1993

### Science-related Community Activities

- *Presentation on Squid*, Willard Elementary School, 2025
- *BIO Day for Discovery Center*, 2016-2019
- *Member, Springfield City Council Animal Task Force*, 2012-2013
- *Speaker*, Expanding Your Horizons, 2013
- *Presentation on "Endangered Species: hellbenders"*: Dickerson Park Zoo Docent Training, 2008
- *Lecture on "anatomy"*: Kickapoo High School class, 2004
- *Lecture on "amphibians"*: McGregor Elementary School class (Julie Chapin), 2004
- *Lecture on "amphibians"*: Delaware junior high school class (J. Chapin), 2003

- *Event leader*: Science Olympiad, “Disease Detectives”, 2003, 2004, 2005, 2006, 2007, 2008
- *Event leader*: Science Olympiad, “Herpetology”, 2009
- *Adult Group leader*, Expanding Your Horizons, science program/middle school girls, 2005
- *Research Design lectures (2)*: 6<sup>th</sup> grade classes, New Covenant Academy (T. Cook), 2001
- *Volunteer Coordinator*, Expanding Your Horizons, science program/middle school girls, 1998
- *Advisory Board member*, Ozark Center for Wildlife Research, 1994-1997
- *Judge*, Missouri Academy of Science, Jr. Division, 1996
- *Planning committee and speaker*: Expanding Your Horizons, 1994

## Professional Activities

- **Past President**, The Herpetologists’ League, 2024-2028
- **External Committee Member**, Master’s Thesis, Mount Allison University (Canada), 2025
- **President**, The Herpetologists’ League, 2022-2024
- **External Committee member**, Honor’s Thesis; Moravian University, 2024
- **Moderator** of Lightening talks, Joint Meeting of Ichthyologists and Herpetologists,, 2022, 2023
- **Vice President/President Elect**, The Herpetologists’ League, 2020-2021
- **Editor**, *Animal Behaviour* (2021-2023)
- **Moderator** of paper session on Predation and Foraging, Animal Behavior Society, Columbia, MO (2016)
- **Presentation**, SW Missouri Herpetological Association (“Salamanders of Missouri”), 2013
- **Moderator** of technical papersession on Herp Behavior, Joint meeting of Ichthyologists and Herpetologists, 2011
- **Editor**, *Herpetologica*, 2004-2009
- **NSF Panel**, Doctoral Dissertation Improvement Grants, Environmental Biology, 2001
- **Councilor**, Board of Trustees, The Herpetologists’ League, 2000-2003
- **Associate Editor**, *Behavioral Ecology and Sociobiology*, 2000-2003
- **Associate Editor**, *Journal of Herpetology*, 1997-2000
- **Editor**, Newsletter (*Communications*) for the Herpetologists' League, 1995 – 2002
- **Tenure/promotion reviewer**: Univ. of Illinois-Urbana-Champaign (2007); Univ of MO-Rolla (2007)
- **Co-organizer** of Symposium on the Chemical Ecology of Predation, 1997 American Society of Ichthyologists and Herpetologists, Seattle, WA
- **Mentor**, American Society of Ichthyologists and Herpetologists Equal Opportunities Committee, 1997
- **Reviewer**: US Fish & Wildlife Service, Barton Springs Salamander Recovery Plan, 2005
- **Moderator**, technical paper session on theory and evolution, Animal Behavior Society, Flagstaff, Arizona, 1996
- **Moderator**, technical paper session on predator/prey relationships, Animal Behavior Society, Wilmington, NC, 1991

### - **Reviewer** of manuscripts (partial list)

*Acta Ethologica*  
*American Naturalist*  
*American Midland Naturalist*  
*Animal Behaviour*  
*Animal Cognition*  
*Aquatic Biology*  
*Behavioral Ecology*  
*Behavioral Ecology & Sociobiology*  
*Behaviour*  
*Behavioural Processes*  
*Biological Conservation*  
*Biology Letters*  
*Biotropica*  
*Canadian J. of Fisheries & Aq. Sci.*

*Canadian Journal of Zoology*  
*Chemical Signals in Vertebrates*  
*Chemoecology*  
*Copeia*  
*Conservation Biology*  
*Diversity*  
*Ecology*  
*Environmental Biology of Fishes Ethology*  
*Functional Ecology*  
*Genetica*  
*Great Lakes Research*  
*Herpetologica*  
*Herpetological Conservation & Behavior*  
*Herpetological Natural History*

*Nature Scientific Reports*  
*Oecologia*  
*Oikos*  
*PLoS One (Public Library of Science)*  
*J. of the Arkansas Acad. of Science*  
*Journal of Chemical Ecology*  
*Journal of Comparative Psychology*  
*Journal of Experimental Zoology*  
*Journal of Fish Biology*  
*Journal of Herpetology*  
*Journal of Zoology*

*N American Journal of Aquaculture*  
*Physiological and Biochemical Zoology*  
*Proc. of the Royal Society B*  
*Reviews in Fish Biology & Fisheries*  
*Royal Society Open Science*  
*Southwestern Naturalist*  
*Transactions of the Am Fisheries Soc*  
*Urban Naturalist*

### Coverage in Popular Press

- 2023. *The Standard*. Alicia Mathis: Professor and esteemed researcher shares her story and advice to new Bears
- 2021. *The Standard*. New endangered species: Eastern hellbenders of Missouri.
- 2018. *KSMU Stem Spots*. Women in STEM: Mathis research lab. <http://ksmu.org/post/women-stem-dr-alicia-mathis>
- 2017. Mathis, Alicia. Dr. Alicia Mathis. Missouri State alumni magazine. <http://magazine.missouristate.edu/2017/01/31/dr-alicia-mathis/>
- 2016. *Springfield News-Leader* article. “MSU Biology faculty, students present research”.
- 2016. *MSU Mind’s Eye; MSU Spotlights* (video). “She studies swimming and scampering species.” <http://www.missouristate.edu/spotlights/?id=5932>
- 2016. *BioScience* interview. Fear Factor: The surprising consequences of being scared (by L. E. Ogden). *BioScience* 2016 66: 625-63. doi: 10.1093/biosci/biw082
- 2016. *KSMU-Missouri State Journal*: “What can amphibians tell us about human health?” <http://ksmu.org/post/what-can-amphibians-tell-us-about-human-health#stream/0>
- 2016. *KSMU* (radio interview) “What fish talk about in the water”. <http://ksmu.org/post/what-fish-talk-about-water>.
- 2016. *BBC Earth* (article). Baby animals start learning before they are even born. <http://www.bbc.com/earth/story/20160704-baby-animals-start-learning-before-they-are-even-born?ocid=fbert>
- 2015. *KSMU* (radio interview) The hellbender: an original member of the Ozarks community. Stem Spots, KSMU.
- 2014. *Joplin Globe*. (newspaper article). “Missouri trout may be a factor contributing to hellbender decline” [http://www.joplinglobe.com/news/missouri-trout-may-be-a-factor-contributing-to-hellbender-decline/article\\_15077ff6-3516-11e4-93e0-0019bb2963f4.html](http://www.joplinglobe.com/news/missouri-trout-may-be-a-factor-contributing-to-hellbender-decline/article_15077ff6-3516-11e4-93e0-0019bb2963f4.html)
- 2013. *Science Weekly* via NewsRx.com. (Web article). “Report Summarizes Amphibian Research Study Findings from Missouri State University”.
- 2013. *KSMU*. (Radio interview). “One Way to Gauge the Health of Local Waterways? Check the Ozark Hellbender Population”.
- 2009. *ScienceNews* (magazine article): “Smart from the start: animal embryos get some respect for their survival skills”
- 2008. *Natural History magazine* (magazine article): “Early life lessons”
- 2008. *Animal Planet/Discovery Channel UK*. (Interview): “Nick Baker’s Weird Creatures: The Hellbender”
- 2008. Non-native fishes threatening hellbenders in Missouri. Conservation Research Reports, in *Iguana* 3: 177.
- 2007. *KSMU radio*, 10 October 2007 (interview): “Endangered species: The hellbender salamander”
- 2007. *Springfield Newsleader*, 4 July 2007 (newspaper article): “Ozark hellbenders at risk of extinction”
- 2005. *ESPN on-line* (article). “Pollution news: salamander numbers plummet”. [http://sports.espn.go.com/outdoors/bassmaster/news/story?page=b\\_fea\\_bt\\_0501\\_news\\_pollution\\_news\\_salamander](http://sports.espn.go.com/outdoors/bassmaster/news/story?page=b_fea_bt_0501_news_pollution_news_salamander)
- 2004. *Springfield Newsleader*, 11 November 2004 (newspaper article): “Scientists’ quest: save the hellbender”
- 2004. *St Louis Post-Dispatch*, 24 October 2004 (associated press; newspaper article). “Scientists seek to save once-thriving hellbender”

- 2003. *Springfield Newsleader*, 15 June 2003 (newspaper article). "Hellbenders".
- 2003. *Park Hills Daily Journal*, 17 June 2003 (newspaper article). "Researchers looking to save Ozarks salamanders from extinction".
- 1999. *Australia Nature* magazine, Volume 26 (6), p. 10. "Sunfish flaps and female choice"; report concerning Goddard and Mathis (1997; *Ethol. Ecol. Evol.* 9:223-231)
- 1996. *Australia Nature* magazine, Volume 25 (6), p. 11. "Predators to the rescue?" report concerning Mathis et al. (1995; *Am. Nat.* 145:994-1005)
- 1996. *Discover* magazine, Feb. issue, "Science classics", pp. 88-89; illustration of Mathis et al. (1995; *Am. Nat.* 145:994-1005)
- 1995. The *Toronto Globe & Mail*, 14 October 1995; Report of Mathis et al. (1995; *Am. Nat.* 145:994-1005)
- 1995. *New Scientist* issue 1991:14 (15 Aug 1995); Report of Mathis et al. (1995; *Am. Nat.* 145:994-1005)
- 1994. The *In-Fisherman* magazine 19(5):14. Synopsis of Mathis and Smith (1993; *J. Chem. Ecol.* 19:1967-1977).
- 1994. Interviewed for *Earthwatch* radio program (fish alarm signals and predator-labeling)
- 1993. *BBC Wildlife* magazine 12(2):13. Synopsis of Mathis and Smith 1992 (*Anim. Behav.* 46:645-665).
- 1991. BBC's *Trials of Life: Courtship* videocassette. Video illustration of Walls, Mathis, Jaeger and Gergits (1989; *Anim. Behav.* 38:546-548).

### Awards by Students Working in my Laboratory (MSU)

- 2019. **Megan Mosier** (MS) CNAS 3-minute Thesis excellence award (one of three)
- 2019. **Sarah Morrison** (MS) Hellbender Conference, presentation award
- 2019. **Sarah White** (BS) Student Gov Assoc Undergraduate Research, 1<sup>st</sup> place, presentation award
- 2018. **Amber Clover** (MS) Graduate Interdisciplinary Forum, Presentation Award
- 2018. **Katy Gardner** (MS) Graduate Interdisciplinary Forum, Presentation Award
- 2017. **Colton Lynn** (MS) MSU Outstanding TA Award (sole winner); MAGS honorable mention (2<sup>nd</sup> place)
- 2017. **Colton Lynn** (MS) CNAS 3-minute Thesis excellence award (one of three)
- 2016. **Sarah Heimbach** (MS) CNAS 3-minute Thesis excellence award (one of three)
- 2016. **Kelsey Anderson** (MS) Biology Dept Outstanding Thesis (one of two)
- 2015. **Kelsey Anderson** (MS) MSU 3-minute Thesis, second place
- 2014. **Dana Wynen, Eric Green, Tom Radomski** (BS) CNAS Undergrad Research Day, BIO 1<sup>st</sup> place (poster)
- 2014. **Kaci Meyer** (BS) CNAS Undergraduate Research Day, BIO 2<sup>nd</sup> place (poster)
- 2013. **Emilee Helton** (MS) Graduate Interdisciplinary Forum, Presentation Award
- 2013. **Kendell Loyd** (BS) CNAS Undergraduate Research Day, BIO 1<sup>st</sup> place (poster)
- 2013. **Courtney Heuring** (BS) CNAS Undergraduate Research Day, BIO 2<sup>nd</sup> place (poster)
- 2011. **Valerie Jones** (BS) CNAS Undergraduate Research Day, 2<sup>nd</sup> (poster)
- 2010. **John Lisek** (BS). Missouri Academy of Science, 1<sup>st</sup> place (poster)
- 2010. **John Lisek** (BS) CNAS Undergraduate Research Day, BIO 2<sup>nd</sup> place (poster)
- 2008. **Brian Gall** (MS) Biology Department Distinguished Thesis Award (sole winner)
- 2007. **Brian Gall** (MS) Boritzki Scholarship for outstanding graduate student at MSU. (one of two)
- 2005. **Nathan Windel** (MS) Herpetologists' League Jaeger Award for Graduate Research. (sole winner)
- 2005. **Nathan Windel** (MS). Biology Department and MSU's Distinguished Thesis Award (sole winner)
- 2003. **Shem Unger** (MS). Biology Department and MSU's Distinguished Thesis Award. (sole winner)
- 2002. **Caleb Hickman** (MS). Finalist and travel award, student paper competition (R. G. Jaeger Award), Herpetologists' League.
- 1999. **Aaron Sullivan** (MS). Outstanding Research Pres. MSU's Interdiscip Forum for Grad Student Research.
- 1999. **Ethan Prosen** (MS). Outstanding Master's Thesis. Awarded by the MSU Biology Department
- 1999. **Paul Frese** (MS). Travel award to the Mid-West Fish and Wildlife Conference. Awarded by Missouri chapter of the American Fisheries Society.
- 1998. **Kevin Murray** (undergraduate). 2<sup>nd</sup> place. MSU's College of Natural and Applied Sciences' competition for undergraduate research, sponsored by Sigma Xi.
- 1997. **Kaye Goddard** (MS). Best master's thesis. Missouri chapter of the American Fisheries Society.
- 1997. **Danelle Boeckmann** (undergraduate). 3<sup>rd</sup> place. MSU's College of Natural and Applied Sciences'

- competition for undergraduate research, sponsored by Sigma Xi. Poster competition.
- 1995. **Eric Britzke** (undergraduate). 1st place. MSU's College of Natural and Applied Sciences' competition for undergraduate research, sponsored by Sigma Xi.
  - 1995. **Kaye Goddard** (MS). MSU's Boritzki Scholarship, awarded for academic excellence by a grad student.

### M.S. Theses Completed by Graduate Students from my Lab (MSU)

- 2025. **Abigail Nagl**. Territorial behavior of a terrestrial salamander: effect of physical stress, residency status, and sex. (36)
- 2022. **Abbie Knudsen**. Public perceptions of human physical interactions, exhibition, and conservation of tigers and cheetahs. (35)
- 2022. **Megan Mosier**. Effects of sex and reproductive condition on behavior of Southern Red-backed Salamanders: Activity, Agonistic Behavior and Escape Velocity (34)
- 2021. **Sarah White**. On the rocks: changes in substrate alter antipredator behavior in benthic stream fish (33)
- 2021. **Caleb O'Neal**, 2021, Effects of heavy metal pollution on the antipredator behavior of Orangethroat darters (*Etheostoma spectabile*) (32)
- 2019. **Sarah Heimbach**. Territorial behavior of the Ozark Zigzag Salamander, *Plethodon angusticlavius*, altered by mode of predator cue and sex of intruder. (31)
- 2019. **Katy (Katlyn) Gardner**. Response to conspecific alarm cues by spotted salamander (*Ambystoma maculatum*) larvae. (30)
- 2019. **Stephanie Morrison**. The effects of electrofishing on different life stages of Ozark and eastern hellbenders. (29)
- 2018. **Colton Lynn**. Territorial behavior in southern red-backed and Ozark zigzag salamanders: effects of sex, species, and ownership. (28)
- 2017. **Rachel Settle**. Quantitative behavioral analyses of Ozark hellbender reproduction and paternal care. (27)
- 2016. **Kayla Shelton**. Behavioral responses of ringed and spotted salamanders to diet-related cues from predators. (26)
- 2016. **Kelsey Anderson**. Friends in low places: responses of a benthic stream fish to intra-guild alarm cues. (25)
- 2015. **Lauren Rudolph**. Variation in behavior and different sex classes of padomorphic Oklahoma salamanders. (24)
- 2014. **Wafa Abudayah**. Predator recognition learning in Rainbow Darters. (23)
- 2014. **Rachel Bortosky**. Honest signaling in aggressive contests between Ozark Zigzag Salamanders (*Plethodon angusticlavius*) (22)
- 2013. **Benjamin D. Dalton**. Identification of sex and parasitism via chemical cues by the Ozark Zigzag Salamander. (21)
- 2013. **Emilee Helton**. Learning of dietary cues by embryos and larvae of ringed salamanders (*Ambystoma annulatum*). (20)
- 2013. **Travis W. Reeder**. A behavioral syndrome in the Southern Red-backed Salamander (*Plethodon serratus*) (19)
- 2011. **Rob Hunt**. Behavioral and metabolic responses of juvenile spotted salamanders (*Ambystoma maculatum*) to alarm cues from damaged skin and predator diet (18)
- 2010. **Jennifer Parsons**. Effects of prior exposure to predatory chemical cues on territorial and foraging behaviors of the Ozark zigzag salamander, *Plethodon angusticlavius* (17)
- 2009. **David A. Woods**. Sub-lethal effects of copper on foraging and alarm behavior of rainbow darters (*Etheostoma caeruleum*) (16)
- 2009. **Brian Gall**. Predator-prey interactions between hellbenders (*Cryptobranchus alleganiensis alleganiensis* and *C. A. Bishopi*) and native and nonnative fishes. (15)
- 2007. **Kyle Shull**. Influence of physical stress, sex, and body size on metabolic rates of Ozark zigzag salamanders, *Plethodon angusticlavius*. (14)
- 2005. **Nathan Windel**. Behavioral and metabolic responses of the southern red-backed salamander (*Plethodon serratus*) to predatory stimuli: influence of body size. (13)
- 2004. **Angela Gibson**. Experience with chemical cues influences subsequent behavior of rainbow darter,

- Etheostoma caeruleum*. (12)
- 2003. **Shem D. Unger**. Sperm production and larval development in hellbenders (*Cryptobranchus alleganiensis alleganiensis* and *C. a. bishopi*): a comparison of declining and stable populations. (11)
  - 2002. **Caleb Hickman**. Response of salamanders to chemical stimuli from predators in natural habitats. (10)
  - 2001. **R. Todd Watson**. The influence of predation risk on the foraging and territorial behavior of the Ozark zigzag salamander (*Plethodon angusticlavius*). (9)
  - 2000. **Paul W. Frese**. Spatial activity, growth, and population characteristics of *Siren intermedia* in an intensively managed wetland. (8)
  - 2000. **Amy M. Commens**. Response of three species of darters of the genus *Etheostoma* to chemical alarm signals from conspecifics and congeners. (7)
  - 1999. **Benjamin Wheeler**. Status of the Ozark hellbender (*Cryptobranchus alleganiensis bishopi*): A long-term assessment. (6)
  - 1999. **Aaron M. Sullivan**. Reproduction, body condition and dietary variation of the lesser siren (*Siren intermedia*). (5)
  - 1999. **Ethan Prosen**. Status of the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*) in Missouri: A comparison of past and present populations. (4)
  - 1998. **Daria Maksimowich**. A role for parasites in the behavior of the Ozark zigzag salamander, *Plethodon angusticlavius*. (3)
  - 1996. **Kaye Goddard**. "Opercular flaps as sexual ornaments for male longear sunfish (*Lepomis megalotis*). (2)
  - 1996. **David Woody**. "The role of alarm pheromones in predation avoidance by a adult central newts, *Notophthalmus viridescens*." (1)

## Committee Memberships (MSU)

### *University level*

- Representative to Great Rivers Cooperative Ecosystems Unit (2015-present)
- Space Committee (2011-present)
- Faculty Handbook Revision Committee (2014-2018)
- Pre-medical committee (2005-2008), *Co-Chair* (2009-2010)
- Honor's committee (2006-2009)
- Service Learning Committee (Fall 2006)
- *Chair*, University Grants committee (1997-2000)
- University Grants committee (1996-1997)
- University Scholarship Committee (1994-1997; 2000-2003)
- Faculty Senate subcommittee on teaching effectiveness (1997)

### *College level (College of Natural and Applied Sciences)*

- *Member*, Personnel Committee (faculty Foundation awards) (2025)
- *Chair*, Search Committee for PAMS Department Head (2017)
- *Chair*, Search Committee for Chemistry Department Head (2014, 2020)
- *Member*, Search Committee for Animal Facility Engineering Consultant (2011)
- *Member*, Professional Master's Committee (2009-2010)
- *Chair*, Search Committee for Physics Department Head (2009-2010)
- *Member*, Animal Facility Planning and Building Committees (2011)
- *Chair*, College Council (2001-2003)
- *Chair*, Search committee for Director of Bull Shoals Field Station (1999, 2002)
- Bull Shoals Field Station committee (1997-2001)
- Awards committee (1996-1997; 1999)
- College Council (Fall 1999)

- Search Committee for Interim Dean (1994)

*Department level (Biology Department)*

- *Chair*, Search Committee, Biology Education (2025-2026)
- Faculty Advisor, Advising and Recruitment (2025-)
- Search Committee member, Fisheries (2024-2025)
- Curriculum Committee, Environmental Biology and Evolution (2024-)
- GCRL representative (2024-)
- Representative to National Assoc for Univ Wildlife & Fisheries Programs (2016-)
- Advisory committee (1993-1998; 2000-2005)
- Graduate committee (1993-2004)
- *Chair*, Higher Learning Commission self-study Committee (2004)
- *Chair*, Recruitment Committee (1994-present)
- *Chair*, Committee to Design a Comprehensive Biology Major (1998-1999)
- Scholarship committee (1998-1999, 2001, 2003, 2004)
- Representative to the Faculty Senate (Spring 1998)
- *Chair*, Search Committee for lecturer (1994, 1995)