

Chris A. Hamilton

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Department of Entomology, Plant Pathology, & Nematology
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SUMMARY

PhD: 2015; Publications: 22 (2 *in review*); [Google Scholar](#) (h-index: 11, i10-index: 12, citations: 769); New species: 15; Grants: >\$1,160,000.

PROFESSIONAL POSITIONS

– Assistant Professor, University of Idaho, Department of Entomology, Plant Pathology, & Nematology. coPI of the Arthropod Molecular Systematics Lab. Member of the Institute for Bioinformatics and Evolutionary Studies (IBEST).

2019 – present

– NSF Postdoctoral Fellow, "Broadening Participation of Native Americans into Collections-Based Research: Testing Hypotheses on the Hawkmoth-Bat Evolutionary Arms Race"

Florida Museum of Natural History, University of Florida, Gainesville, Florida

June 2016 – present

Advisors – Dr. Akito Y. Kawahara & Dr. Charles Cobb

– Postdoctoral Research Associate, Florida Museum of Natural History, University of Florida, Gainesville, Florida

August 2015 – June 2016

Advisor – Dr. Akito Y. Kawahara

– Freelance reportage photojournalist based in Dallas, Texas

2000 – 2006

Clients: National Geographic, TIME, Newsweek, People, FORTUNE, Southern Living, Texas Monthly, (French) VSD, (German) Focus & GEO, and others.

EDUCATION

– Ph.D. Evolutionary Biology, Auburn University, Auburn, Alabama

Fall 2011 – Summer 2015

**transferred with major advisor*

Advisor – Dr. Jason E. Bond

– Ph.D. Evolutionary Biology, East Carolina University, Greenville, North Carolina

Fall 2009 – Spring 2011*

Advisor – Dr. Jason E. Bond

– M.S. Biology, The University of Texas at Arlington, Arlington, Texas

Spring 2006 – Spring 2009

Advisor – Dr. Daniel R. Formanowicz

- B.A. Photojournalism, Western Kentucky University, Bowling Green, Kentucky
*transferred; widely regarded as the top photojournalism school in the United States
Spring 1998 – Fall 1999
- The University of Kansas, Lawrence, Kansas
Fall 1994 – Fall 1997*

RESEARCH GRANTS

Funded

2017

- National Science Foundation (NSF) – DEB: Phylogenetic Systematics. "Living Fossils: Integrating Phylogenomics and Comparative Morphology to Assemble the Scorpion Tree of Life. (*Senior Personnel). PI - Lorenzo Prendini. Amount = \$808,499 (3 years).
*could not be a coPI due to my PRFB status

2016

- National Science Foundation (NSF) – Postdoctoral Research Fellowships in Biology (PRFB). "Broadening Participation of Native Americans into Collections-Based Research: Testing Hypotheses on the Hawkmoth-Bat Evolutionary Arms Race". Amount = \$207,000 (3 years). PI - Chris Hamilton; Sponsoring Scientists - Drs. Akito Y. Kawahara & Charles Cobb.
- Florida Museum of Natural History & University of Florida Department of Natural History Postdoctoral Professional Development grant. Advisor - Dr. Akito Y. Kawahara. Amount = \$1,000.

2015

- Smithsonian Peter Buck Postdoctoral Fellowship (NMNH). Advisor – Dr. Jonathan Coddington. Amount = \$104,000 (2 years; \$96,000 salary, \$8,000 research). *declined
- Smithsonian Biogenomics/Global Genome Initiative (NMNH) – Anchored Enrichment phylogeny of spiders based on diverse genome quality tissue sampling. PI - Jonathan Coddington, CoPI's - Chris Hamilton & Jason Bond. Amount = \$20,000.

2013 to 2015

- National Science Foundation (NSF) – Doctoral Dissertation Improvement Grant (DDIG). Species delimitation and the evolution of dwarfism in the North American tarantula genus *Aphonopelma*. DEB1311494. PI's Jason Bond & Chris Hamilton. Amount = \$19,360

2010

- American Museum of Natural History (AMNH) – Theodore Roosevelt Memorial Grant. Deciphering systematic relationships among three Western North American tarantula sister species in the *Aphonopelma* "*eutylum* group". Amount = \$1,500

2009

- American Arachnological Society (AAS) – The Vincent Roth Fund for Systematic Research. Determining the phylogeographic dynamics of the edge relationships between *Aphonopelma hentzi* (Girard) and its neighbors along the Colorado River Basin (Araneae, Mygalomorphae, Theraphosidae). Amount = \$360

PUBLICATIONS ([Google Scholar](#))
in review

- Hamilton CA, St Laurent RA, Dexter, K, Kitching IJ, Breinholt J, Zwick A, Timmermans M, Barber JR, Kawahara AY. Phylogenomics resolves major relationships and reveals significant diversification rate shifts in the evolution of silk moths and relatives.
- Opatova V, Hamilton CA, Hedin M, Montes de Oca L, Král J, Haddad CR, Bond JE. Systematics and classification of the spider infraorder Mygalomorphae using genomic scale data.

Published

2019

- Kuntner M, Hamilton CA, Cheng R-C, Gregorič M, Lupše N, Lemmon EM, Lemmon AR, Agnarsson I, Coddington JA, Bond JE. Golden orbweavers ignore biological rules: Phylogenomic and comparative analyses unravel a complex evolution of sexual size dimorphism. *Systematic Biology*. 68(4): 555-572.
- Coddington JA, Agnarsson I, Hamilton CA, Bond JE. Spiders did not repeatedly gain, but repeatedly lost, foraging webs. *PeerJ*. 7: (e6703).

2018

- St Laurent RA, Hamilton CA, Kawahara AY. Museum specimens provide phylogenomic data to resolve relationships of sack-bearer moths (Mimallonidae). *Systematic Entomology*. 43(4): 729-761.
- Rubin J*, Hamilton CA*, Kawahara AY, Barber JR. The evolution of anti-bat sensory illusions in moths. *Science Advances*. 4(7): eaar7428 *co-first authors
- Chamberland L, McHugh A, Kechejian S, Binford G, Bond J, Coddington J, Dolman G, Hamilton C, Harvey M, Kuntner M, Agnarsson I. From Gondwana to GAARlandia: Evolutionary history and biogeography of ogre-faced spiders (*Deinopis*). *Journal of Biogeography*. 45(11): 2442-2457.
- Godwin RL, Opatova V, Garrison NL, Hamilton CA, Bond JE. Phylogeny of a cosmopolitan family of morphologically conserved trapdoor spiders (Mygalomorphae, Ctenizidae) using Anchored Hybrid Enrichment, with a description of the new family, Halonoproctidae. *Molecular Phylogenetics & Evolution*. 126: 303-313.
- Kitching IJ, Rougerie R, Zwick A, Hamilton CA, St Laurent RA, Ballesteros Mejia L, Kawahara AY. A global checklist of the Bombycoidea (Insecta: Lepidoptera). *Biodiversity Data Journal*. 6: e22236.
- Kawahara AY, Plotkin D, Hamilton CA, Gough H, St Laurent R, Owens H, Homziak, NT, Barber JR. Diel behavior in moths and butterflies: A synthesis of data illuminates the evolution of temporal activity. *Organisms Diversity & Evolution*. 18 (1): 13-27.

2017

- Maddison WP, Evans SC, Hamilton CA, Bond JE, Lemmon AR, Lemmon EM. A genome-wide phylogeny of jumping spiders (Araneae: Salticidae), using anchored hybrid enrichment. *ZooKeys*. 695: 89-101.

- Turner SP, Longhorn SJ, Hamilton CA, Gabriel R, Pérez-Miles F, Vogler AP. Re-evaluating conservation priorities of New World tarantulas in a molecular framework indicates non-monophyly of the genera *Aphonopelma* and *Brachypelma*. ***Systematics and Biodiversity***.
- Hamilton CA. 2017. Invited Book Review “Tarantulas: Breeding Experience & Wildlife” by Frédéric Cléton, Yannick Sigwalt, and Jean-Michel Verdez. Frankfurt am Main (Germany): Edition Chimaira. ***The Quarterly Review of Biology***. 92 (1): 111-112.

2016

- Hamilton CA, Lemmon AR, Lemmon EM, Bond JE. 2016. Expanding anchored hybrid enrichment to resolve both deep and shallow relationships within the spider Tree of Life. ***BMC Evolutionary Biology***. 16:212.
- Cho S, Epstein SW, Mitter K, Hamilton CA, Plotkin D, Mitter C, Kawahara AY. 2016. Preserving and vouchering butterflies and moths for large-scale museum-based molecular research. ***PeerJ***. 4:e2160.
- Garrison NL, Rodriguez J, Agnarsson I, Coddington JA, Griswold CE, Hamilton CA, Hedin M, Kocot KM, Ledford JM, Bond JE. 2016. Spider phylogenomics: untangling the Spider Tree of Life. ***PeerJ***. 4:e1719.
- *Hamilton CA, Hendrixson BE, Bond JE. 2016. Taxonomic revision of the tarantula genus *Aphonopelma* Pocock, 1901 (Araneae, Mygalomorphae, Theraphosidae) within the United States. ***ZooKeys***. 560: 1-340.
**Altmetric score of 963 – this quantifies the amount of popular attention an article has received. #2 highest-scoring output from ZooKeys and in the top 5% of all research outputs scored by Altmetric.*

2015

- Graham MR, Hendrixson BE, Hamilton CA, Bond JE. 2015. Miocene extensional tectonics explain ancient patterns of diversification among turret-building tarantulas (*Aphonopelma mojave* group) in the Mojave and Sonoran deserts. ***Journal of Biogeography***. 42(6): 1052-1065.

2014

- Bond JE, Garrison NL, Hamilton CA, Godwin RL, Hedin M, Agnarsson I. 2014. Phylogenomics resolves a spider backbone phylogeny and rejects a prevailing paradigm for orb web evolution. ***Current Biology***. 24: 1765-1771.
- Hamilton CA, Hendrixson BE, Brewer MS, Bond JE. 2014. An evaluation of sampling effects on multiple DNA barcoding methods leads to an integrative approach for delimiting species: A case study of the North American tarantula genus *Aphonopelma* (Araneae, Mygalomorphae, Theraphosidae). ***Molecular Phylogenetics & Evolution***. 71: 79-93.

2013

- Hendrixson BE, DeRussy BM, Hamilton CA, Bond JE. 2013. An exploration of species boundaries in turret-building tarantulas of the Mojave Desert (Araneae, Mygalomorphae, Theraphosidae, *Aphonopelma*). ***Molecular Phylogenetics & Evolution***. 66: 327-340.

2012

- Bond JE, Hendrixson BE, Hamilton CA, Hedin M. 2012. A reconsideration of the classification of the spider infraorder Mygalomorphae based on three nuclear genes and morphology (Arachnida: Araneae). *PLoS ONE*. 7(6): e38753.
- Bond JE, Hamilton CA, Garrison NL, Ray CH. 2012. Phylogenetic reconsideration of *Myrmekiaphila* systematics with a description of the new trapdoor spider species *Myrmekiaphila tigris* (Araneae, Mygalomorphae, Cyrtaucheniidae, Euctenizinae) from Auburn, Alabama. *ZooKeys*. 190: 95-109.

2011

- Hamilton CA, Formanowicz DR, Bond JE. 2011. Species delimitation and phylogeography of *Aphonopelma hentzi* (Araneae, Mygalomorphae, Theraphosidae): cryptic diversity in North American tarantulas. *PLoS ONE*. 6(10): e26207.

RESEARCH PRESENTATIONS (* denotes undergraduate researchers)

2019

- Hamilton CA. Arthropod systematics in the age of “big data” and machine learning. *XXI International Congress of Arachnology. February 10-15* (Canterbury, New Zealand). [invited speaker in the “Young Arachnologist” symposium]

2018

- Hamilton CA, Hendrixson BE, Bond JE. Integrative species delimitation and revision of a "taxonomic nightmare" spider genus using natural history collections and "big data". *2018 ESA, ESC, and ESBC Joint Annual Meeting, November 11-14* (Vancouver, BC, Canada). [invited presentation in the symposium "Species-Delimitation and Identification in the Age of Big Data and Artificial Intelligence: Molecular and Morphological Approaches."]
- Hamilton CA, Rubin J, Barber JR, Kawahara AY. Convergent evolution of anti-bat sensory illusions in silkmoths. *Evolution 2018, the Second Joint Conference on Evolutionary Biology, August 19th-23rd*. (Montpellier, France). [selected to present in the symposium “From development to function: what does drive morphological convergences?”]
- Hamilton CA. From root to tips: the use of genomic approaches to understand the evolution of arthropod diversity. University of Idaho (Moscow, ID). [Invited Seminar]

2017

- Hamilton CA, Rubin J, Barber JR, Kawahara AY. Bat predation drives convergent evolution of wild silk moth (Lepidoptera: Saturniidae) hindwing shape. *XXXVI Annual Meeting of the Willi Hennig Society* (St. Petersburg, FL). [invited symposium speaker]
- Hamilton CA, Keller N, Breinholt J, Barber JR, Rougerie R, Kawahara AY. The evolution of wing shape tradeoffs in the subfamily Arsenurinae (Lepidoptera, Bombycoidea, Saturniidae)...and how their bat predators have played a significant role. *Evolution 2017, the annual meeting for The Society for the Study of Evolution* (Portland, Oregon). [talk]
- *Mahadai A, *McGiveron S, *Philoctete D, Hamilton CA. The evolution of wing shape across an evolutionary arms race. *Undergraduate Research Scholars, Research Week, The University of Florida*. [poster]

2016

- Hamilton CA. From root to tips: genomic approaches to resolving the arthropod Tree of Life. University of Pittsburgh (Pittsburgh, PA). [Invited Seminar]
- Hamilton CA. From so simple a beginning: understanding how evolution has shaped arthropod diversity. *FLMNH McGuire Center Seminar Series* (Gainesville, FL). [Invited Seminar]
- Hamilton CA. Using genomics to understand the evolution of *Aphonopelma*: miniaturization and other tales of North American tarantulas. *2016 Colorado Desert Natural History Research Symposium. Anza-Borrego Foundation* (Borrego Springs, CA). [Invited Seminar]
- Hamilton CA, Keller N, Breinholt J, Barber JR, Kawahara AY. Phylogenetic relationships, wing shape, and the evolution of tails across the Arsenurinae (Lepidoptera, Bombycoidea, Saturniidae). *Southern Lepidopterists' Society and Association for Tropical Lepidoptera 2016 Annual Meeting* (Gainesville, FL). [talk]
- Hamilton CA, Keller N, Breinholt J, Barber JR, Kawahara AY. Phylogenetic relationships, wing shape, and the evolution of tails across the Arsenurinae (Lepidoptera, Bombycoidea, Saturniidae). *XXV International Congress of Entomology* (Orlando, FL). [talk]
- Hamilton CA. Evolution of the Bombycoidea: the role bat predation has played on their diversification. *Bombycoidea Workshop 2016* (Ecuador). [talk]
- Hamilton CA, Hendrixson, BE, Bond JE. Phylogenomics and taxonomic revision of the tarantula genus *Aphonopelma* Pocock, 1901 (Araneae, Mygalomorphae, Theraphosidae) within the United States. *20th International Congress of Arachnology* (Colorado School of Mines, Golden, CO). [talk]
- Hamilton CA, Lemmon AR, Lemmon EM, Bond JE. Expanding Anchored Hybrid Enrichment to resolve both deep and shallow relationships within the Spider Tree of Life. *Evolution 2016, the annual meeting for The Society for the Study of Evolution* (University of Texas, Austin, TX). [talk]
- *Sewnath, N, Hamilton CA, Hill, GM, Kawahara, AY. Moth wing shape and size as a defense strategy against bats. *Undergraduate Research Scholars, Research Week, The University of Florida*. [poster] *winner Best Student Research Exhibit at the FLMNH (2017)

2014

- Hamilton CA, Lemmon AR, Lemmon EM, Bond JE. A new age for spider phylogenomics: expanding Anchored Hybrid Enrichment to resolve both deep and shallow relationships within spiders. *28th European Congress of Arachnology* (University of Torino, Torino, Italy). [talk]

2013

- Hamilton CA, Bond JE. An integrative approach to species boundaries - incorporation of differing DNA barcoding methods: a case study of the North American tarantula genus *Aphonopelma*. *37th Annual Meeting of the American Arachnological Society* (East Tennessee State University, Johnson City, TN). [talk]
- Hamilton CA, Lemmon AR, Lemmon EM, Bond JE. Anchoring spiders into the world of phylogenomics: expanding anchored hybrid enrichment for species lacking reference genomes. *37th Annual Meeting of the American Arachnological Society* (East Tennessee State University, Johnson City, TN). [poster]

- Hamilton CA, Bond JE. An integrative approach to species boundaries - incorporation of differing DNA barcoding methods: a case study of the North American tarantula genus *Aphonopelma*. *Auburn University Graduate Scholars Forum*. [talk]

2012

- *Fredette K, Garrison N, Hamilton CA, Bond JE. Potential hybridization of two species of trapdoor spiders in the genus *Cyclocosmia*. *Auburn University REU project presentation*. [poster]

2011

- *Atkinson XJ, Hamilton CA, Bond JE. Phylogeography of the *Aphonopelma reversum* species complex (Araneae, Mygalomorphae, Theraphosidae): population fragmentation in an endemic California spider. *East Carolina University Research Week*. [poster]

2010

- Hamilton CA, Hendrixson BE, Bond JE. Testing the efficacy of DNA barcoding in the North American tarantula genus *Aphonopelma*. *Evolution 2010, the annual meeting for The Society for the Study of Evolution* (Portland State University, Portland, OR). [talk]
- Hamilton CA, Hendrixson BE, Bond JE. Testing the efficacy of DNA barcoding in the North American tarantula genus *Aphonopelma*. *34th Annual Meeting of the American Arachnological Society* (East Carolina University, Greenville, NC). [poster]
- "The *Aphonopelma* of North America: evolutionary relationships and historical biogeography". *2010 British Tarantula Society Annual Lectures* (Bristol, England). [Invited Seminar]
- Longhorn SJ, Turner S, Hamilton CA, Vogler A. Resolving the nomenclatural nightmare for tarantulas with molecular analyses. *XVIII International Congress of Arachnology* (Siedlce, Poland). [poster]

2009

- Hamilton CA, Formanowicz DR. Determining the phylogeographic dynamics of the edge relationships between *Aphonopelma hentzi* (Girard) and its neighbors along the Colorado River Basin (Araneae, Mygalomorphae, Theraphosidae). *33rd Annual Meeting of the American Arachnological Society* (Arkansas Tech University, Russellville, AR). [talk]

TEACHING EXPERIENCE

Workshops

2017

- Phylogenomics/Bioinformatics workshop on preparing and using Anchored Hybrid Enrichment datasets (McGuire Center for Lepidoptera and Biodiversity, University of Florida)
- Geometric Morphometrics workshop on using the R package ‘Momocs’ for shape analysis (McGuire Center for Lepidoptera and Biodiversity, University of Florida)

Classes

Spring 2019

ENT 440/540 – Insect Identification; University of Idaho

- Class size = 20. Survey of approximately 200 major arthropod families; collecting and preservation techniques.

Spring 2018

ENY 6934 – Seminar in Arthropod Phylogenetic Systematics; University of Florida

- Class size = 12. The primary goal was for students to read and discuss key literature in the development and application of modern phylogenetic methods, in particular, those that have influenced arthropod systematics.

Fall 2015, 2016, 2017

ZOO 4926/ENY 4905 (lecture and labs) – Spider Biology; University of Florida

- Class size approximately 30. Presented lectures on the evolution of spider silk and webs, the other arachnid families, and assisted with teaching lab and assisting field work.

Spring 2012 & 2014

BIOL 1011 (lab) – A Survey of Life; Auburn University

- Class size approximately 40; 4 classes. The purpose of this laboratory was to emphasize the contrasting strategies that animals employ to meet their similar biological needs. The class was heavily human focused, a mini A&P for non-majors, then followed by how humans interact with the world around them, much like the other organisms that students come across on a daily basis.

Fall 2009

BIOL 1061 (lab) – Environmental Biology; East Carolina University

- Class size of 14; 1 class. The main objectives of this course were to expose students to the field of Biology, familiarize them with the scientific method, and get them to think about the living world and their impact on it, in particular, how humans share many ecological connections with the organisms around them. Most classes incorporated a field component, allowing the students to explore the natural areas around campus.

Spring 2006 – Spring 2009

BIOL 1442 (lab) – Structure & Function of Organisms; University of Texas at Arlington

- Class size approximately 30; 3 classes. The primary purpose of this laboratory was to teach basic scientific and laboratory skills necessary to conduct research and understand/interpret the results. By participating in a variety of quantitative exercises that focused on data collection, statistical analyses, and presentation of results, students began to understand the scientific method, how to search library and electronic databases for published papers, and how to generate lab reports following accepted formats and standards for published research.

MENTOR EXPERIENCE*2015 to 2018*

- University of Florida undergraduates Shaelyn McGiveron (Emerging Scholar recipient), Adena Mahadai (Emerging Scholar recipient; graduated, now medical student), Dominique Philoctete (University Scholar), and Neeka Sewnath (University Scholar; graduated, preparing for grad school) work on the molecular phylogeny and wing shape evolution of the families Sphingidae and Saturniidae. Training includes: DNA extractions and quantification; usage of high-throughput sequencing data in phylogenetics; digitization of specimens, landmark placement, and shape analysis for geometric morphometrics.
- University of Florida undergraduate Simone Yen (University Scholar) works on determining whether female vision in luna moths (*Actias luna*) is a driver in male hindwing tail length, a putative sexually-selected, sexually dimorphic trait. Training includes: study design, mating

trials, Lepidoptera rearing, and statistics.

2012 to 2013

- Auburn University undergraduate Miranda Reich (Masters student at Auburn) worked on the *Aphonopelma* taxonomic revision. Training included: georeferencing museum specimens for geospatial analyses; databasing specimen info; application of geospatial data into species delimitation and species descriptions.

2012

- Summer REU student Kellie Fredette (Stetson University; Masters student in the Bond Lab at Auburn) worked on the trapdoor spider genus *Cyclocosmia*. Training included: specimen collection of mygalomorph spiders; georeferencing of specimens for geospatial analyses; standard molecular lab protocols (DNA extraction, PCR amplification, electrophoresis, Sanger sequencing); application of molecular, morphological, and geospatial data into phylogenetic analyses and species delimitation.

2009 to 2011

- East Carolina University undergraduate Xavier Atkinson (received Masters at ECU) worked on the *Aphonopelma* taxonomic revision. Training included: specimen collection of mygalomorph spiders; standard molecular lab protocols (DNA extraction, PCR amplification, electrophoresis, Sanger sequencing); application of molecular, morphological, and geospatial data into phylogenetic analyses and species delimitation.

HONORS, AWARDS, & WORKSHOPS

2019

- Selected participant in the Evolutionary Quantitative Genetics workshop, Friday Harbor Labs (University of Washington)

2017

- Selected participant in Dan Rabosky's (University of Michigan) workshop on estimating diversification rates, Oregon State University

2016

- ICE 2016 travel award to participate in the ICE 2016 symposium "Insect effects on ecosystem services"
- Participant in Bombycoidea Workshop 2016, August 4-14, Wild Sumaco Biological Station, Ecuador

2014

- Auburn University Cellular and Molecular Biosciences Peaks of Excellence Research Fellowship

2013

- First Place Oral Presentation, Biological Sciences, Auburn University Research Week Graduate Symposium
- Selected participant in the Bodega Bay Applied Phylogenetics workshop
- Auburn University COSAM travel grant
- Auburn University Graduate School travel grant

2010 to 2015

- Chickasaw Nation Higher Education Grant for Doctoral Students

2010 to 2011

– UNC Campus Scholarship

2009

– American Arachnological Society travel grant

1999

– College Photographer of the Year, Pictures of the Year International competition (POYi)

PROFESSIONAL SERVICE

Proposal Reviewer – NSF DEB-Phylogenetic Systematics; SSB – Mini-ARTS; (Germany) Deutsche Forschungsgemeinschaft (DFG) - Lebenswissenschaften 1: Molekulare und Organismische Biologie

Subject Editor – *ZooKeys*

Ad hoc reviewer for: *Arachnology*, *Journal of Arachnology*, *African Invertebrates*, *Journal of Biogeography*, *Biodiversity Data Journal*, *Bionomina*, *Insect Conservation & Diversity*, *Invertebrate Systematics*, *Molecular Ecology*, *Molecular Phylogenetics & Evolution*, *Organisms, Diversity & Evolution*, *PeerJ*, *PLoS Currents - Tree of Life*, *PLoS ONE*, *Revista de Biología Tropical* (International Journal of Tropical Biology and Conservation), *Revista Columbiana de Entomología*, *Systematic Biology*, *Systematic Entomology*, *Subterranean Biology*, *ZooKeys*, *Zoologia*, *Zoologica Scripta*, *Zoological Journal of the Linnean Society*, *Zootaxa*.

FIELD WORK

Extensive specimen collecting for research and natural history collections throughout the SE and SW United States (California, Nevada, Arizona, Utah, Colorado, New Mexico, Texas, Oklahoma, Kansas, Arkansas, Missouri, Alabama, Florida, Georgia, North Carolina, South Carolina), as well as international: Ecuador, Panama, Mexico, Cuba, the Dominican Republic, Haiti, Puerto Rico, Trinidad & Tobago, Sierra Leone and Liberia.

POPULAR PRESS COVERAGE FOR RESEARCH

Radio/TV – [BBC Radio 5 Live](#) (UK), BBC Radio Scotland, NewsRadio KFBK 93.1 FM (Sacramento, CA), [SkyNews](#) (UK), The Rubber Room on Triple M (Australia), and the late night Comedy Central game show [@midnight](#)

Print/Internet – The Associated Press, [BBC](#), [CNN](#), [Discovery](#), [Gizmodo](#), [IFL Science](#), [Live Science](#), [Mic.com](#), [National Geographic](#), [Newsweek](#), [Science News](#), [The Sacramento Bee](#), [The Washington Post](#), [Scientific American](#), among others.

Book – “The Lost Species: Great Expeditions in the Collections of Natural History Museums” by Christopher Kemp (2017, The University of Chicago Press Books). *Aphonopelma atomicum* got its very own chapter describing the story of how this species was originally collected and finally discovered ([Chapter 18](#). It Came from Area 51: The Atomic Tarantula Spider).

OUTREACH

I am particularly interested in, and very committed to, training and mentoring the next generation of biologists – including groups underrepresented in the sciences. As a member of the

Chickasaw Nation of Oklahoma, I have a personal investment to engage and mentor fellow Native American students. My career aim is to establish a research program that serves as a model to increase diversity in the sciences – particularly in the fields of entomology and evolutionary biology, disciplines with a documented lack of diversity.

An NSF Survey of Earned Doctorates from 1999-2009 reveals just how underrepresented Native Americans actually are in the Life Sciences; out of 481,556 Ph.D.'s awarded during that time period, only 1,684 were to Native Americans (0.35%). The inclusion of underrepresented groups in biology, is essential to enhancing scientific literacy in the United States. Because of this, I recently created a small pilot program involving middle school and high school students from the Chickasaw Nation of Oklahoma to engage them into modern biological research. The program uses the exciting bat-moth evolutionary arms race to get students out into nature, collect specimens, and teaches them how to participate in DNA extraction, prep work, and high-throughput sequencing with an Oxford Nanopore MinION. Following sequencing, students take the assembled sequences, identify the *COI* barcode, and use BOLD (the largest repository of Lepidoptera barcodes) to determine the species they have collected. Currently, I am working to expand this program to the Native communities throughout Idaho.

REFERENCES

(PhD advisor)

Dr. Jason E. Bond, Professor & Department Chair
 Department of Biology; Auburn University Museum of Natural History
 Auburn University
 101 Rouse Life Sciences
 Auburn, AL 36849
 jbond@auburn.edu

(Postdoctoral advisor)

Dr. Akito Y. Kawahara, Associate Professor & Curator of Lepidoptera
 Florida Museum of Natural History
 University of Florida
 3215 Hull Road
 Gainesville, FL 32611
 kawahara@flmnh.ufl.edu

(collaborators)

Dr. Brent Hendrixson, Professor & Department Chair
 Department of Biology
 Millsaps College
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 Jackson, MS 39210
 hendrb@millsaps.edu

Dr. Matjaž Kuntner, Principal Investigator
 Evolutionary Zoology Lab; Biological Institute Jovan Hadzi
 Research Centre of the Slovenian Academy of Sciences and Arts (ZRC SAZU)
 Novi trg 2, P.O. BOX 306, SI-1001 Ljubljana, Slovenia

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Dr. Ingi Agnarsson, Assistant Professor & Curator of Invertebrates
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Dr. Jonathan Coddington, Lead: Global Genome Initiative, Senior Research Entomologist and
Curator of Arachnida and Myriapoda
National Museum of Natural History
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