

M. Andrew Jansen, Ph.D.

Curriculum Vitæ

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Personal Information

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Research Interests

Insect evolution, biomechanics, and systematics, with emphasis on weevils (Coleoptera: Curculionoidea: Curculionidæ); mathematical and finite element modeling of insect cuticle; structural adaptation and morphological optimization; mechanical behavior of biomaterials; biomimetic design of robotic systems and materials.

Education

2014 - 2019 Ph.D., Arizona State University, Evolutionary Biology.
“Evolutionary Biomechanics of the Rostrum of *Curculio* Linnaeus, 1758 (Coleoptera: Curculionidæ)”
2012 - 2014 M.Sc., Arizona State University, Biology.
“A Phylogenetic Revision of *Minyomeres* Horn, 1876 and *Piscatopus* Sleeper, 1960 (Curculionidæ: Entiminae: Tanymecini: Tanymecina)”
2007 - 2011 B.S., University of Florida, Entomology and Nematology.

Peer Reviewed Publications

- Jansen, M.A.** & N.M. Franz. 2018. Descriptions of four new species of *Minyomeres* Horn, 1876 (Coleoptera: Curculionidæ), with notes on their distribution and phylogeny. *PeerJ*. 6: e5633.
- Jansen, M.A.**, Luck, K., Campbell, J., Amor, H.B., & D. Aukes. 2017. Bio-inspired robot design considering load-bearing and kinematic ontogeny of Chelonioida sea turtles. In *Biomimetic and Biohybrid Systems*. p. 216-229
- Luck, K., **Jansen, M.A.**, Campbell, J., Aukes, D., & H.B. Amor. 2017. From the lab to the desert: fast prototyping and learning of robot locomotion. *Proceedings of Robotics: Science and Systems*. 13: p. 75-83.
- Jansen, M.A.**, Singh, S.S., Chawla, N., & N.M. Franz. 2016. A multilayer micromechanical model of the cuticle of *Curculio longinasus* Chittenden, 1927 (Coleoptera: Curculionidæ). *Journal of Structural Biology*. 195: p. 139-158.
- Singh, S.S., **Jansen, M.A.**, Franz, N.M., & N. Chawla. 2016. Microstructure and nanoindentation of the rostrum of *Curculio longinasus* Chittenden, 1927 (Coleoptera: Curculionidæ). *Materials Characterization*. 118: p. 206-211.
- Jansen, M.A.** & S.E. Halbert. 2016. Key to Florida Alydidae (Hemiptera: Heteroptera) and selected exotic pest species. *Insecta Mundi*. 0476: p. 1-14.
- Jansen, M.A.** & N.M. Franz. 2015. Phylogenetic revision of *Minyomeres* Horn, 1876 sec. Jansen & Franz, 2015 (Coleoptera, Curculionidæ) using taxonomic concept annotations and alignments. *ZooKeys*. 528: p. 1-133.

Manuscripts in Preparation

- Jansen, M.A.**, Williams, J., Chawla, N., & N.M. Franz. Avoidance of catastrophic structural failure as an evolutionary constraint: Biomechanics of the acorn weevil rostrum. *Submitted to Advanced Materials*.
- Jansen, M.A.**, Niverty, S., Chawla, N., & N.M. Franz. Acorn weevils modify rostral composite profile to reduce the risk of catastrophic bending failure. *In Prep*.
- Jansen, M.A.**, & N.M. Franz. Biomechanical constraint of rostral curvature in female acorn weevils. *In Prep*.

Conference Presentations

- Jansen, M.A.**, & N.M. Franz. 2018. “Comparative bending mechanics and morphology of the snout in *Curculio* Linnaeus 1756”. *Annual Meeting of the Entomological Society of America*, Vancouver, BC.
- Jansen, M.A.**, Chawla, N., & N.M. Franz. 2017. “Fracture mechanics and evolution of resilient cuticle in the rostrum of *Curculio* Linnaeus, 1758”. *Annual Meeting of the Entomological Society of America*, Denver, CO.
- Jansen, M.A.** & N.M. Franz. 2017. “Evolutionary mechanics of the rostrum in *Curculio* Linnaeus, 1758”. *Annual Meeting of the Willi Hennig Society*, St. Petersburg, FL.
- Jansen, M.A.**, Luck, K., Campbell, J., Amor, H.B., & D. Aukes. 2017. “Bio-inspired robot design considering load-bearing and kinematic ontogeny of Chelonioidea sea turtles”. *Living Machines*, Stanford, CA.
- Luck, K., **Jansen, M.A.**, Campbell, J., Aukes, D., & H.B. Amor. 2017. “From the lab to the desert: fast prototyping and learning of robot locomotion”. *Robotics: Science and Systems*, Cambridge, MA.
- Jansen, M.A.** & N.M. Franz. 2016. “Why the long face? Insights into the mechanical behavior of the rostrum in the genus *Curculio* Linnaeus, 1758”. *International Congress of Entomology*, Orlando, FL.
- Jansen, M.A.**, Singh, S.S., Chawla, N., & N.M. Franz. 2015. “Mechanical Behavior of the Rostrum of *Curculio* Linnaeus, 1758 (Coleoptera: Curculionidæ)”. *Annual Meeting of the Entomological Society of America*, Minneapolis, MN.
- Jansen, M.A.** & N.M. Franz. 2014. “A phylogenetic revision of *Minyomeres* Horn, 1876, and *Piscatopus* Sleeper, 1960 (Coleoptera: Curculionidæ: Entiminae: Tanymecini)”. *Annual Meeting of the Entomological Society of America Pacific Branch*, Tucson, AZ.
- Jansen, M.A.** & N.M. Franz. 2013. “A phylogenetic revision of *Minyomeres* Horn, 1876, and *Piscatopus* Sleeper, 1960 (Coleoptera: Curculionidæ: Entiminae: Tanymecini)”. *Annual Meeting of the Entomological Society of America*, Austin, TX.
- Jansen, M.A.** & N.M. Franz. 2013. “A phylogenetic revision of *Minyomeres* Horn, 1876, and *Piscatopus* Sleeper, 1960 (Coleoptera: Curculionidæ)”. *12th Biennial Conference of Science and Management on the Colorado Plateau*, Flagstaff, AZ.

Awards and Fellowships

- 2019** \$12,000.00 - ASU School of Life Sciences Completion Fellowship
- 2018** \$400.00 - ASU School of Life Sciences Fall Travel Award
- 2018** \$500.00 - ASU Q2 Graduate College Travel Award
- 2018** \$12,250.00 - ASU Biomimicry Center Fellowship (Corporate sponsorship by Google, Inc.)
- 2017** \$500.00 - The Willi Hennig Society Student Travel Award
- 2017** \$400.00 - ASU School of Life Sciences Fall Travel Award
- 2017** \$195.00 - ASU Q2 Graduate College Travel Award
- 2017** \$6,000.00 - ASU Evolutionary Biology Doctoral Program Summer Fellowship
- 2016** \$400.00 - ASU School of Life Sciences Fall Travel Award

Products Developed

C-Turtle

Website <https://sites.google.com/view/c-turtle/>

Design [Version 1.0 Cut-files](#)

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Patent Applications

Aukes, D., Amor, H.B., Luck, K., **Jansen, M.A.**, & J. Campbell, *inventors*; Arizona State University, Skysong Innovations, *assignee*. 2018. United States non-provisional patent application for systems and methods for rapid-prototyped robotic devices. *US Patent Application No. 16/215,910*. Filed 11 December 2018.

Aukes, D., Amor, H.B., Luck, K., **Jansen, M.A.**, & J. Campbell, *inventors*; Arizona State University, Skysong Innovations, *assignee*. 2017. United States provisional patent application for systems and methods for rapid-prototyped robotic devices. *US Patent Application No. 62/597,276*. Filed 11 December 2017.

Featured Media

Adams, D. 2017. "An army of these odd-looking robotic 'turtles' might help rid the world of landmines". *Digital Trends*. [26 May](#).

Ander, J. 2017. "Landmine-clearing Pi-powered C-Turtle". *Raspberry Pi Official Blog*. [26 July](#).

Coledey, D. 2017. "These flat-pack turtlebots will crawl across minefields for safety's sake". *Tech Crunch*. [25 May](#).

Crookes, D. 2017. "C-TURTLE". *The MagPi Magazine*: Issue 63 [1 November](#).

DeLisle, J.J. 2017. "Raspberry-Pi-powered turtle robot learns to navigate new terrains on its own - From planetary exploration to swarm robotic landmine sensing, C-Turtle's possibilities are endless". *Electronic Products*. [11 August](#).

Fagan, K. 2017. "The landmine-detecting robot 'turtle'". *BBC News*. [22 July](#).

Horse, J. 2017. "Raspberry Pi used to create C-Turtle, landmine clearing robot". *Geeky Gadgets*. [27 July](#).

Kety, S. 2017. "'C-Turtle', the 3D printed robot whose movements are similar to a sea turtle". *3D Adept News*. [16 August](#).

Koslow, T. 2017. "Out of the shell - C-Turtle: the paper turtle robot that can detect landmines". *All3DP*. [20 August](#).

Lavars, N. 2017. "Turtle-bot teaches itself to waddle through the desert". *New Atlas*. [26 May](#).

Ludacer, R. 2017. "Researchers are using robotic sea turtles to find land mines". *Tech Insider*. [10 June](#).

Ray, A. 2017. "A new turtle explorer - This \$70 robot that mimics a sea-turtle may eventually reach Mars". *Quartz*. [15 August](#).

Massaouden, L. 2017. "C-Turtle, le robot tortue en carton qui doit un jour explorer Mars". *Mashable avec France 24*. [25 August](#).

Mathews, L. 2017. "Robotic Turtles With Raspberry Pi Brains Are Sniffing Out Land Mines". *Geek.com*. [27 July](#).

Sabin, D. 2017. "This crawling C-Turtle robot could hunt for landmines". *Inverse*. [26 May](#).

Reynolds, M. 2017. "Robotic turtles can be used to detect landmines in the desert". *New Scientist Magazine*: Issue 3127. [24 May](#).

Sant, J.V. 2017. "ASU Robotics turns to nature for inspiration". KPHO Broadcasting Corporation: *3TV/CBS5*. [5 June](#).

Scott, C. 2017. "Partially 3D printed C-Turtle robots crawl and adapt in the desert". *3Dprint.com*. [17 August](#).

Seckel, S. 2017. "Technology comes from collaboration between computer science, mechanical engineering and biology". *ASU Now*. [25 May](#).

Seckel, S. 2017. "ASU-designed C-Turtle robot teaches itself to get around". *ASU Now*. [25 May](#).

Wehner, M. 2017. "These robotic turtles could save your life". *New York Post*. [25 May](#).

Unknown - 'Hackster Staff'. 2017. "Nature-inspired C-Turtle robot waddles the desert with ease". *Hackster*. 26 May.

Unknown - 'Gadget Junkie'. 2017. "C-Turtle: cardboard turtle robot with Raspberry Pi". *gadgetify*. 27 July.

Unknown - 'Robot Man'. 2017. "C-Turtle cardboard robot turtle learns to navigate different terrains". *Robotic Gizmos*. 27 July.

Design and Prototyping Services

Western Entomological Supply (Co-founder)

github.com/western-entomological

2017 - 2019 Design, production, and sale of insect mounting points for entomological collections (Universal Laser Cutter VLS 6.60)

2017 - 2019 Design, production, and sale of curation equipment for insect specimens (MakerBot Replicator 2x)

2018 Production of cassette cartridge spacer and brackets prototypes for TechShot (MakerBot Replicator 2x)

Programming Languages and Software

Languages

Most proficient with R, Python, and \LaTeX

Intermediate experience with Bash, Abaqus Script, MATLAB

Dabbled in HTML, XML, Visual Basic, JavaScript, Git

Software

Most proficient with Solidworks, Makerbot Print/Desktop, Adobe Illustrator

Intermediate experience with Abaqus/CAE, GitHub Desktop, GraphPad Prism

Dabbled in ImageJ, Amira, Adobe Photoshop

Society Memberships

2013 - 2019 Entomological Society of America, Pacific Branch

2013 - 2019 Coleopterists Society

Academic Service

Manuscript Reviewer

Coleopterists Society Monographs (Patricia Vaurie Series)

The Pan-Pacific Entomologist

Zootaxa

Book Chapter Reviews

"Weevils (Coleoptera: Dryophthoridæ, Brachyceridæ, Erirhinidæ, Curculionidæ) of the Prairie Ecozone in Canada". Robert S. Anderson, Patrice Bouchard, & Hume Douglas. In Volume 4 of *Arthropods of Canadian Grasslands*.

Community Outreach

2013 - 2016 ASU - SoLS Night of the Open Door

2013 - 2016 ASU - IAFSE Engineering Open House

2014 - 2015 ASU - SoLS Graduate Partners in Science Education

Insect Identification and Collection Services

2019 Greater Good, Madrean Discovery Expedition - Sierra Chivato, SO, México

2017 - 2018 US Department of Agriculture - Tempe, AZ, USA

2017 Greater Good, Madrean Discovery Expedition - Cajón Bonito, SO, México

2014 Madrean Discovery Expedition - Patagonia, AZ, USA

2013 Madrean Discovery Expedition - Sierra la Púrica, SO, México

2013 US National Park Service, BioBlitz - Joshua Tree National Park, CA, USA

2012 Madrean Discovery Expedition - Sierra Aconchi, SO, México

Teaching Appointments

Course	Subject	Semester	Position
BIO 386	Entomology	Fall - 2018	Instructor
BIO 201	Human Anatomy and Physiology	Spring - 2017	Teaching Assistant
BIO 281	Biology (1 st Semester)	Fall - 2016	Teaching Assistant
BIO 182	Biology (2 nd Semester)	Summer - 2016	Teaching Assistant
BIO 181	Biology (1 st Semester)	Spring - 2016	Teaching Assistant
BIO 386	Entomology	Fall - 2015, 2014, 2013	Teaching Assistant
BIO 282	Biology (2 nd Semester for Majors)	Spring 2014	Teaching Assistant

Field and Museum Work

Field Work

United States AZ, CA, CO, FL, GA, ID, NM, NV, SC, TX, UT (2010-2019)

Mexico SO (2012, 2013, 2017, 2019)

Guatemala AV, BV, CM, CQ, ES, GU, HU, IZ, JA, PR, QC, QZ, SA, SO, SR, SU, TO, ZA (2014)

Collections Visited

ASUT USA, Arizona, Tempe, Arizona State University, Hasbrouck Insect Collection

BYUC USA, Utah, Provo, Brigham Young University, Monte L. Bean Life Science Museum

CASC USA, California, San Francisco, California Academy of Sciences

CSCA USA, California, Sacramento, California State Collection of Arthropods

CSDS USA, California, Baker, Desert Studies Center

CSUC USA, Colorado, Fort Collins, Colorado State University

CWOB USA, Arizona, Green Valley, Charles W. O'Brien Collection

EMEC USA, California, Berkeley, University of California, Essig Museum of Entomology

FSCA USA, Florida, Gainesville, Division of Plant Industry, Florida State Collection of Arthropods

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

LBOB USA, Arizona, Green Valley, Lois B. O'Brien Collection

MGCL USA, Florida, Gainesville, University of Florida, McGuire Center for Lepidoptera and Biodiversity

NAUF USA, Arizona, Flagstaff, Northern Arizona University

NMSU USA, New Mexico, Las Cruces, New Mexico State University, Museum of Southwestern Biology

NVDA USA, Nevada, Reno, Nevada State Department of Agriculture

RLAC USA, California, El Dorado Hills, Rolf L. Aalbu Collection

SWRS USA, Arizona, Portal, Southwestern Research Station

TAMU USA, Texas, College Station, Texas Agricultural and Mechanical University
TTUZ USA, Texas, Lubbock, Texas Tech University
UAIC USA, Arizona, Tucson, University of Arizona
UCDC USA, California, Davis, University of California, R.M. Bohart Museum of Entomology
UCRC USA, California, Riverside, University of California, Entomology Research Museum
UNMC USA, New Mexico, Albuquerque, University of New Mexico
UMNH USA, Utah, Salt Lake City, University of Utah, Utah Museum of Natural History
UVGC Guatemala, Guatemala City, Universidad del Valle de Guatemala, Colección de Artrópodos

Employment History

2019 Research Consultant - The Biomimicry Center, Arizona State University
2012 Museum Technician - Florida State Collection of Arthropods & McGuire Center for Lepidoptera
2011 Research Technician - Honeybee Research and Extension Laboratory, University of Florida
2011 Research Assistant - Division of Insect Behavior, USDA-ARS, Gainesville, FL
2009 - 2011 Senior Counsellor - Center for Precollegiate Education and Training, University of Florida