

# Jesse Alan Eiben, PhD

## Career Focus - Applied Arthropod Biodiversity Research and Education

Residence:  
50 Alani St.  
Hilo, HI 96720  
Home: (808) 221-9001  
E-mail: eiben@hawaii.edu

Office:  
UH Hilo, CAFNRM  
200 W. Kawili St.  
Hilo, HI 96720  
Office: (808) 932-7153

---

## DEGREES

---

### University of Hawai‘i at Mānoa

Honolulu, Hawai‘i

*Ph.D. Entomology - 2012 - Specialization: Ecology, Evolution and Conservation Biology*

- Dissertation: Applied conservation research of the wēkiu bug in Hawai‘i: Life table analysis, population genetics, and phylogenetics create a holistic view of a rare and unique species
- Major Advisor: Dr. Dan Rubinoff

### Oklahoma State University

Stillwater, Oklahoma

*M.S. Entomology - 2004*

- Thesis: Characterizing the overwintering and emergence behaviors of the adult squash bug, *Anasa tristis* (DeGeer)
- Major Advisor: Dr. Jonathan Edelson

### Albright College

Reading, Pennsylvania

*B.S. Psychobiology - 2001 - Biological Basis of Behavior*

---

## PROFESSIONAL EXPERIENCE

---

### University of Hawai‘i at Hilo (UHH)

Hilo, Hawai‘i

2013-present

#### Assistant Professor of Applied Entomology

*College of Agriculture, Forestry, and Natural Resource Management (CAFNRM)*

**Non-Tenure Track August 2013 – July 31, 2014**

**Tenure Track Aug 1, 2014 - present**

- Teaching
  - General Entomology, ENTO304 (FA13, SP14, FA14, SP15, FA15)
  - Advanced Insect Taxonomy and Ecology, CBES697 (FA15)
  - University 101, Paths to Academic and Lifelong Success, UNIV101 (FA15)
  - Insect Pest Control, ENTO374 (SP14)
  - Farm Animal Anatomy and Physiology, ANSC350 (FA14, SP16)
  - Directed Work Experience, AG291 (FA13)
  - Directed Research, ENTO399, 499, 699 (SP15, FA15)
- Research
  - Lantana Lace Bug Biological Control Non-Target Host Research
    - Dr. Tracy Johnson, USDA/PBARC collaboration

- Mauna Kea Arthropod Biodiversity Project (Funded 2012-2016)
  - Oversight of student research team including undergraduate and graduate student employees with over 24,000 arthropods collected, and over 240 species of arthropods sorted for assessing native and invasive arthropod community above 9,000ft on UH managed lands
  - Collaborative research project with Professor and UH Insect Museum Director Dan Rubinoff at UH Mānoa
- Collaboration with Big Island Invasive Species Committee (BIISC) and a graduate student for rapid identification and risk assessment of insects in alpine regions of Mauna Kea
- Real-time wēkiu bug population density and growth metrics field evaluation and validation of lab derived growth metrics with one graduate student
- “Kipuka 10” Arthropod biodiversity surveys (UHH education partnership with landowner)
  - ENTO304 students assist specimen collection and identification

**UHH CAFNRM** **Hilo, Hawai‘i** **Spring 2013**

**Lecturer** - *College of Agriculture, Forestry, and Natural Resource Management*

- Teach General Entomology (ENTO304)

**University of Hawai‘i at Mānoa (UHM)** **Hilo/Honolulu, Hawai‘i** **2012-2013**

**Junior Researcher** - *Non-Tenure Track Faculty, UH Insect Museum Affiliate*

*Department of Plant and Environmental Protection Sciences, Entomology Program*

- Led a research program cataloguing arthropod biodiversity in the alpine ecosystem above 9,000ft on Mauna Kea, HI
- Created scientifically sound arthropod survey plans for community-level ecosystem monitoring working collaboratively with land management agencies
- Directed a research team of three undergraduate students

**UHH, Office of Mauna Kea Management (OMKM)** **Hilo, Hawai‘i** **2011-2012**

**Project Specialist** - *Research Corporation of the University of Hawai‘i*

- Developed experimental design for high elevation arthropod surveys
- Consulted with and advised OMKM on natural resource management decisions

**UHM** **Honolulu, Hawai‘i** **2005-2011**

**Graduate Research Assistant** - *Department of Plant and Environmental Protection Sciences, Entomology Program*

- Research focus: Life history and population genetics of the wēkiu bug (Lygaeidae)
- Other duties: Field surveys for many insect species (sea level to 13,796ft), habitat assessments, laboratory based insect growth and fecundity experiments, DNA extraction, PCR, DNA sequence analysis for population genetics and phylogenetics, insect identification and species description.

**Independent Scientific Consultant** **Hawai‘i** **2007-present**

**Owner/Operator** - *Scientific Consulting Business*

Provide contract based expert arthropod-related scientific council for conservation and agriculture related projects including arthropod and botanical field surveys

- Previous clients include: the British Broadcasting Company (BBC), Pacific Analytics LLC, US Army Natural Resource Program

**Oklahoma State University (OSU)** **Stillwater, Oklahoma** **2002-2004**

**Graduate Research Assistant - Department of Entomology and Plant Pathology**

- Conducted population estimation and immigration/emigration research using mark-recapture techniques for squash bug (Coreidae) IPM programs
- Provided general entomology research support at an agriculture field station (Lane, OK) with duties involving arthropod pest surveys in diverse cropping systems

**Graduate Teaching Assistant - Department of Entomology and Plant Pathology**

- ENTO2003 - Insects and Society – Instructor support for a General Education course of 150+ students, one semester (Fall 2004)

**Albright College**

**Reading, Pennsylvania**

**2001-2002**

**Laboratory Demonstrator / Lecturer - Biology Department**

- Taught laboratory sessions and managed supplies, logistics and chemical inventory for three Biology classes
  - Fall 2001 taught six, 3-hour labs each week for BIO201 (Biology for Majors)
  - Spring 2002 taught 5, 3-hour labs each week for BIO202 (Diversity and Ecology), and one lab section for BIO234 (Human A&P)
  - Class sizes of 16 to 120, managed 16 undergraduate laboratory assistants

**PUBLICATIONS / PRESENTATIONS / GRANTS and AWARDS**

---

**Publications:**

- Eiben, J. and Rubinoff, D. (2014) Application of agriculture developed demographic analysis for the conservation of the Hawaiian alpine wēkiu bug. *Conservation Biology*, 28(4). 1077-1088.
- Medeiros, M.J., Eiben, J.A., Haines, W.P., Kaholoaa, R.L., King, C.B.A., Krushelnycky, P.D., Magnacca, K.N., Rubinoff, D., Starr, F., & Starr, K. (2013) The importance of insect monitoring to conservation actions in Hawai‘i. *Proceedings of the Hawaiian Entomological Society* 45. 149-165.
- Eiben, J. and Rubinoff, D. (2010) Life history and captive rearing of the Wēkiu bug (*Nysius wekiuicola*, Lygaeidae), an alpine carnivore endemic to the Mauna Kea volcano of Hawai‘i. *Journal of Insect Conservation*, 14(6). 701-709
- Eiben, J., Mackey, C., Roberts, W., and Edelson, J. (2004) Foliar applied insecticides for controlling squash bug, 2003, *Arthropod Management Tests*, E74

**In Prep:**

- Eiben, J. and Rubinoff, D. Conservation value of a population genetics analysis using mitochondrial DNA of the wēkiu bug (*Nysius wekiuicola* Ashlock and Gagné 1983) throughout its range (Manuscript formatted for *Conservation Genetics*)
- Eiben, J., Rubinoff, D. and Polhemus, D. The phylogenetics and evolution of Hawaiian endemic seed bugs (*Nysius*: Lygaeidae), including *N. kaala*, a new species endemic to Oahu Island. (Manuscript intended for *Annals of the ESA*)

**Selected Presentations:**

- Oral Presentation, 15 min. – Eiben J., Rubinoff, D. Exploring the status and definitions of rare arthropod taxa on Maunakea: Toward data-centric metrics of conserving biodiversity. Aug. 2015. Hawaii Conservation Conference, Hilo, HI
- Invited Speaker: The little things that help make Maunakea special: What we know about the insects of the summit. June 2015. Common Ground Community Lecture Series: TMT & Maunakea organized by Hilo-Hamakua Community Development Corporation,

Laupahoehoe, HI. Video: <http://hilo.hawaii.edu/news/stories/2015/06/10/video-jesse-eiben/>

- Symposium Co-Organizer and Invited Speaker, 15 min. – Eiben, J., Rubinoff, D., Medeiros, M. The role of high elevation habitat stability in the evolution of Hawaiian *Nysius* seed bugs. April 2015. Pacific Entomology Conference, Honolulu, HI.
- Oral Presentation, 15 min. – Eiben, J. Kirkpatrick, J. Life tables and population growth modeling guide conservation actions for an alpine restricted rare insect, the wekiu bug, *Nysius wekiuicola*, in Hawaii. November 2014. Entomological Society of America Annual Meeting, Portland, OR
- Symposium Organizer and Speaker, 15 min. - Eiben, J. Arthropod biodiversity baseline survey and monitoring methodology for conservation and land management in high alpine Hawaiian ecosystems. 2013. Entomological Society of America National meeting, Austin, TX
- Invited Speaker, 25 min. - Eiben, J. Research programs centered on a single high alpine insect informs ecosystem level resource management on Mauna Kea, HI. 2012. International Symposium: Vulnerable Islands in the Sky: Science and Management of Tropical Alpine & Sub-Alpine Ecosystems, Gordon and Betty Moore Foundation, Waimea, HI
- Invited Plenary Speaker, 50 min. - Eiben, J. The Life and Times of the Wēkiu Bug. 2011. Pacific Branch Meeting of the Entomological Society of America, Waikoloa, HI
- Oral presentation, 15 min. - Eiben, J. and Rubinoff, D. Degree day modeling and population genetics aid in the conservation management of the Wēkiu bug in Hawai‘i. 2010. National Meeting of the Entomological Society of America, San Diego, CA
- Oral presentation, 15 min. - Eiben, J. and Rubinoff, D. Exploring the evolution and diversity of Hawai‘i’s endemic seed bugs: *Nysius* (Hemiptera: Lygaeidae) 2009. National Meeting of the Entomological Society of America, Indianapolis, IN
  - 1<sup>st</sup> place President’s Prize winner

#### **Grants and Monetary Awards:**

**UHH obtained grants = \$76,210; Total research grants awarded - \$424,121**

- **Successful:**
    - **PI** - The exceptional case of the lantana lace bug: Host shift from lantana to naio, USDA Forest Service, Tracy Johnson Collaborator – **\$38,500 (2015-2016)**
    - **PI** - Invasive species identification and rapid response monitoring in Thirty Meter Telescope construction areas – TMT/PCSU/BIISC – **\$12,028 (2014), \$25,682 (2015)**
    - **Co-PI**, with Dan Rubinoff, UH Manoa – Study of Arthropod Diversity Assessment and Species Descriptions on Mauna Kea – Primary author and author of amendment budget extension and additional \$18,006 for UHH TCBES student employee June, 2014 – \$347,911 – UHM/UHH/OMKM (2011-2016)
  - **Unsuccessful:**
    - **Co-PI**, Shihwu Sung lead author - NSF EPSCOR Track II - Coastal Resources Integration Initiative for Global Food and Energy Sustainability Project. Submitted February 2015 - \$4 million
-

## SCIENTIFIC ACTIVITIES, AWARDS AND OUTREACH

---

### Service, Outreach Activities and Awards:

- **Service:**

To UH Hilo

- 7-Year Program Review Committee, CAFNRM
- CAFNRM Faculty Senate Secretary (2014-15, and 2015-16)
- Faculty Search Committee member, engineering faculty search (2015)
- Staff Search Committee Chair, CAFNRM Office Asst. IV (2015)
- TCBES graduate student selection committee member (2015)
- Office of Mauna Kea Management Environment Committee (2009-present)
- Expert Witness for the University of Hawai'i (2011) - unpaid professional courtesy - Contested Case Hearing for the Conservation District Use Permit to build the Thirty Meter Telescope. Provided expertise on scientific basis of threats to the possible extinction of the wēkiu bug on Mauna Kea due to construction activities. Hilo, Hawai'i, DLNR Docket no. HA-11-05
- Identify pest insects and recommend control methods for UH Auxiliary Services (Bed Bugs, Spiders, Ants, Termites, Psocids)

To Hawaii State

- Co-Preparer, lead author – University of Hawaii at Hilo, Report to Hawaii State Legislature Regarding Invasive Species Needs
- Wēkiu bug advisory group member (2006-present)
- Hawaii County Parks Little Fire Ant Eradication and Control Team – Experimental design consultant for LFA control and efficacy
- Hawaii Department of Agriculture – source for insect taxonomy expert opinion and first detector of agriculture pests through research and teaching activities
- Hawaii Department of Land and Natural Resources – State-wide taxonomic expert in seed bugs (Lygaeidae), first detector point of contact for native ecosystem altering invasive species records, and point of contact for rare and endangered species consultations

To Nation and Professional Organizations

- Hawaiian Entomological Society President (2016), member (2005-present)
- Entomological Society of America member (2002-present)

To Students and Faculty

- TCBES MS Students:

**Major Advisor:**

- Heather Stever, 2014-present: Arthropod Biodiversity Estimates of Three Dominant High-Alpine Endemic Shrubs on Maunakea
- Jordan Zarders, 2014-present: Rapid Identification and Risk Assessments of Invasive Arthropod Species on Maunakea
- Jessica Kirkpatrick, 2015-present, Wēkiu bug population estimates using intensive stratified random sampling and mark-recapture methods for estimates of habitat suitability

**On TCBES Committee**

- Ala Malia Leka, 2014-present, Host specificity of gall-forming *Trioza* psyllids on *Metrosideros polymorpha*
- Nathan Stephenson, 2015-present, Using New and Available datasets to identify optimal endemic wēkiu bug habitat on Maunakea
- UH Hilo PIPES (Pacific Internship Programs for Exploring Science) program
  - Mentor**
    - 2012 - Jessica Kirkpatrick - Arthropod diversity and host specificity on *Sophora chrysophylla* and *Chenopodium oahuense*.
  - Guest Lecturer**
    - 2014: University 101 (UNIV101), Comfort Sumida – Academic Journey in Applied Sciences in Hawaii
    - 2013, 2014: Sustainable Agriculture (AG230), Norman Arancon – Beneficial Insects
    - 2011, 2012: Hawaiian Natural History (BIOL 156), Instructors Rebecca Ostertag and Laura Shiels – The Alpine Ecosystem in Hawai‘i (2 one-hour lectures)
- **Outreach Activities:**
  - To Local Schools and Community Members
    - **School Science Fairs**
      - **Hawaii District Science Fair Judge (Senior Division), Feb 7, 2015**
      - **Science Fair Project Mentor**
      - 2015-16 - Waiakea Intermediate School, 7<sup>th</sup> grade student, 5 Awards at district and State Science Fair. Maunakea summit Noctuidae caterpillar feeding preferences and trapping effectiveness
      - 2014-15 - Waiakea Intermediate School, 6<sup>th</sup> grade student, 6 Awards at district fair. What’s Bugging the Mamane? Insect differences between curled and healthy leaves
      - 2013-14 - Waiakea Intermediate School, 8<sup>th</sup> grade student, Hawaii District Overall Honorable Mention; Best in Subject Category, Junior Research, Animal Sciences. Ant Appetites: A study of feed preferences of the recent invader *Cardiocondyla kagutsuchi* in Hale Pohaku
      - 2012-13 - Waiakea Intermediate School, 7<sup>th</sup> grade student, 1<sup>st</sup> place winner, junior division, Hawai‘i State Science Fair - Two Bees or Not Two Bees, native and non-native pollinator rates on the native Mamane trees and invasive Fireweed plants in the sub-alpine ecosystem on Mauna Kea
    - **Information Displays and Interaction:**
      - Kealakehe Elementary School Science Showcase, April 22, 2015 – create information displays of pinned native and introduced insects, show live arthropods, games related to insect life cycles and solar radiation warming cold blooded insects
      - Invasive ant and native insect information displays and discussions at Anti-TMT protest camp at 9,200ft on Maunakea (May 1, July 1, 2015)

- Hawaii Volcanoes National Park and National Geographic BioBlitz Event – Invited subject expert to lead two 3-hour native insect biodiversity hikes, be available at insect question and answer table, and identified ~80 insect taxa for the event, May 15 and 16, 2015
- Invasive ant and native insect information displays and discussions at Hawaii Community College, Kūkākūkā Aloha Aina meeting, May 21, 2015
- OMKM Open House at Hale Pohaku to demonstrate environmental research and management to Anti-TMT protest groups, May 28, 2015
- OMKM Rule Making Open House, arthropod ecosystem education, June 24, 2015
- Aloha Art Festival at Imiloa Center, Aug 2, 2015
- Participate in DOFAW Hawaii Nei Art Hike to find native insects in Waiakea Uka Forest Reserve and lead identification in my lab, Sept 5, 2015
- Hosted 11 community members (nine 10-12 year old children and parents) to learn about insects and observe/discuss the insect teaching collection at UH Hilo, Aug 15, 2015
- Puu Waawaa ‘Run for the Dry Forest’ benefit event: Create demonstrate invasive ant and native insect information displays and discussions, Oct 24, 2014
- **Inquiries from the Public:**
  - Regularly receive pictures and specimens of insects and spiders from the public and give information about nativity and/or control (~4 inquiries per month)
  - Agriculture practitioners often come to CAFNRM office for advice, and I offer support and recommendations (~1 visit per month)

- **ARCHIVE: Student Activities and Awards:**

- **Student Grants and Awards (2002-2012)**

- Elmo Hardy Award in Insect Systematics – \$2,000 – UHM (2009)
- Ecology, Evolution and Conservation Biology travel grant – \$967 – UHM (2009)
- Ecology, Evolution and Conservation Biology research grant – \$800 – UHM (2007)
- Robberson Summer Research Fellowship Winner – OSU – \$2,000 (2004)
- Snodgrass Memorial Research Award in insect morphology and taxonomy - Pacific Branch of the Entomological Society of America (2010)
- Psychobiology Graduation Award (#1 rank in major) - Albright College (2001)
- Society of Jacob Albright Scholars, Lifetime Member - Albright College (2001)
- Graduate Student Organization department representative - UHM (2006-2009)

- Sanborn Entomology Club Secretary - OSU (2003-2004)
- 

## PROFESSIONAL REFERENCES

---

Dr. Dan Rubinoff  
Co-P.I. Mauna Kea Biodiversity Project  
University of Hawai‘i at Mānoa  
3050 Maile Way, Gilmore Hall 310  
Honolulu, HI 96822  
Office: (808) 956-8432  
Email: rubinoff@hawaii.edu

Dr. Rebecca Ostertag  
Professor of Biology  
University of Hawai‘i at Hilo  
200 W. Kawili St.  
Hilo, HI 96720  
Office: (808) 932-7573  
Email: ostertag@hawaii.edu

Dr. Sheila Conant  
Professor of Biology, Emeritus  
University of Hawai‘i at Mānoa  
2538 McCarthy Mall  
Edmondson Hall 216  
Honolulu, HI 96822  
Office: (808) 956-8308  
Email: conant@hawaii.edu

Ms. Cynthia King, M.S.  
Collaborator  
Division of Forestry & Wildlife  
Native Invertebrate Conservation Program  
1151 Punchbowl Street, Rm. 325  
Honolulu, HI 96813  
Office: (808) 587-0019  
Email: cynthia.b.king@hawaii.gov

Dr. Michael Shintaku  
Professor of Plant Pathology  
University of Hawai‘i at Hilo  
200 W. Kawili St.  
Hilo, HI 96720  
Office: (808) 932-  
Email: shintaku@hawaii.edu