

HEATHER GRAB

CONTACT

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landscape-agroecology.com

EDUCATION

2017 PhD, Entomology
Cornell University
Ithaca, NY

PI: Greg Loeb

2011 BS, **Ursinus College**
Collegetown, PA
Biology & Biostatistics

EXPERTISE

Landscape Ecology
Pollination Biology
Biological Control
Agroecology
Phyloecology
Conservation Ecology
Public Science Outreach

SKILLS

R
Python
ArcGIS
QGIS
Gephi
Genious
Bee Taxonomy
DNA Barcoding

PUBLICATIONS

- Grab, H.**, Branstetter, M., Amon*, N., Blitzer, E., Park, M., Loeb, G., Poveda, K., & B.N. Danforth (*in review*) Agriculturally dominated landscapes reduce bee phylogenetic diversity and crop pollination. *Science*.
- Figueroa, L., **Grab, H.**, Graystock, P., McFrederick, Q.S., & S. McArt (*in review*) Landscape influences network structure and pathogen prevalence across bee communities. *Science*.
- Grab, H.**, Perez, R., *Bergmann, A., Loeb, G., & K. Poveda (*in review*) Bees in simplified landscapes are smaller, less effective pollinators. *Ecology Letters*.
- Murray, E; J. Burand, *N. Trikoz, **H. Grab** & B. Danforth. (*in review*) Infection patterns of three viruses shared in honeybees and native bees, with a worldwide phylogeny of black queen cell virus. *Environmental Microbiology*
- Karp, D., Chaplin-Kramer, R., Meehan, T., Martin, E., DeClerck, F., **Grab, H.**, (2018) Crop pests and predators exhibit inconsistent responses to surrounding landscape composition. *PNAS* 115:33, E7863–E7870
- Grab, H.**, Danforth, B.N., Poveda, K. & G. Loeb (2018) Landscape shifts the balance of costs and benefits from wildflower borders on multiple ecosystem services. *Proc. R. Soc. B* 285: 20181102. <http://dx.doi.org/10.1098/rspb.2018.1102>
- Grab, H.**, Danforth, B.N., Poveda, K. & G. Loeb (2017) Landscape influences classical biological control and crop yield. *Ecological Applications*.
- *McCabe, E.A., Loeb, G.M, and **H. Grab** (2017) Responses of crop pests and natural enemies to wildflower borders depends on functional group. *Insects*.
- Grab, H.**, Blitzer, E.J., Danforth, B.N. Loeb, G & Poveda, K. (2017) Spillover of pollinators between crops: competition or facilitation. *Scientific Reports*
- Lichtenberg, E.M., Kennedy, C.M., Kremen, C., Batáry, P., Berendse, F., Bommarco, R., Bosque-Pérez, N.A., Carvalheiro, L.G., Snyder, W.E., Williams, N.M., Winfree, R., ..., **H. Connelly**, et al. (2017) A global synthesis of the effects of diversified farming systems on arthropod diversity at field and landscape scales. *Global Change Biology*.
- Wallingford, A.K., **H. Connelly**, G. Dore Brind'Amour, M.T. Boucher, A. Mafra-Neto, and G.M. Loeb (2016) Field evaluation of an oviposition deterrent for management of spotted-wing drosophila, *Drosophila suzukii*, and potential nontarget effects. *Journal of Econ. Entom.*:
- *Renauld, M., *Hutchinson, A., Loeb, G., Poveda, K & **H. Connelly** (2016) Landscape simplification constrains adult size in a native ground nesting bee. *PLOS One* 11(3), e0150946.
- Connelly, H.**, Poveda, K & Loeb, G. (2015) Landscape simplification decreases wild bee pollination services to strawberry. *Agriculture, Ecosystems and the Environment*, 211
- * indicates undergraduate co-author

SELECTED INVITED TALKS

- Grab, H.**, K. Poveda, B. Danforth and G. Loeb, "Managing farms and landscapes for pollination and biological control" Entomology Society National Meeting, Denver CO (2017)
- Grab, H.**, K. Poveda, B. Danforth and G. Loeb, "Landscape, Biodiversity and ecosystem services to agriculture" PSU Entomology Dept. Seminar, State College, PA (2017)
- Grab, H.**, K. Poveda, B. Danforth and G. Loeb, "Landscape, Biodiversity and ecosystem services to agriculture" Cornell Entomology Dept. Seminar, Ithaca, NY (2017)
- Grab, H.**, B. Danforth, K. Poveda and G. Loeb, "Managing farms and landscapes for pollination and biological control" 3rd Int. Pollinator Meeting, State College PA (2016)
- Poveda, K., **H. Grab** and R.P. Alvarez "Advantages from natural habitats for yield: How landscape simplification can affect yield through arthropod mediated ecosystem services and disservices" Ecological Society National Meeting, Ft. Lauderdale FL (2016)
- Connelly, H.**, B. Danforth, K. Poveda and G. Loeb. "Interactive effects between local and landscape diversity on ecosystem services" ESA National Meeting, Minneapolis MN (2015)
- Connelly, H.**, K. Poveda B. Danforth and G. Loeb. "Spatial and temporal drivers of pollination services in agroecosystems" Chapman Seminar, Dept. of Entomology, Ithaca NY (2015)

APPOINTMENTS

POSTDOCTORAL RESEARCHER
POVEDA LAB
CORNELL UNIVERSITY
JUNE 2017 – PRESENT

EXTENSION & OUTREACH
ASSISTANT |
DEPT OF ENTOMOLOGY
AUG 2011 – MAY 2012

Design and implement outreach and extension projects for the department including talks at 35 venues reaching a total audience of over 3,550

PROFESSIONAL MEMBERSHIPS

Pollinator Partnership,
2014-Present

National Pollinator Protection
Campaign, 2014-Present

Sigma Xi Scientific Research
Society, 2013-Present

Entomological Society of
America, Sept 2012-Present

AWARDS

Student Talk Award at the
Entomology Department
Symposium (2013 & 2015)

President's Prize for 1st Place in the
ESA 10 minute paper competition
(2013 & 2014 & 2015 & 2016)

Entomology Society of America
John Henry Comstock Award (2015)

Palmer Fellowship (2016)

Gyrisco Award in Applied
Entomology (2016)

CALS Outstanding Graduate
TA Award (2017)

GRANTS

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| 2017 | USDA NIFA Postdoctoral Fellowship, \$165,000 |
| 2016 | CALS Alumni Association Grant, \$500 Andrew W. Mellon Student Research Grant, \$1,000 Grace H. Griswold Fund, \$1,442 Paul J. Chapman Graduate Student Fellowship, \$44,000 Hatch Grant Supplement, 2015, \$1,000 |
| 2015 | CALS Alumni Association Grant*, \$500 Rawlins Graduate Travel Grant, \$572 Cornell Conference Travel Grant, \$414 |
| 2014 | Cornell Conference Travel Grant, \$515 Cornell Research Travel Grant, \$1,880 Rawlins Graduate Travel Grant, \$550 USDA NIFA Student Travel Grant, \$500 Atkinson Sustainable Biodiversity Fund, \$5,000 Rawlins Graduate Travel Grant, \$365 Towards Sustainability Fund, \$9,000 |
| 2013 | Grace H. Griswold Fund, \$1,561 Cornell Conference Travel Grant, \$440 |
| 2012 | Northeastern SARE Graduate Student Grant, \$14,975 |

MENTORED STUDENTS

72% of mentored students are female, 33% from underrepresented minorities

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| JACOB LEIBY | Influence of landscape structure on wild bee communities in strawberry |
| BRETT MORGAN | Pollinator communities of the wild strawberry, <i>Fragaria virginiana</i> |
| HAYLEY STANBORO | Effects of flowering field margins on predator and herbivore communities |
| MELANIE MACMULLEN | Assessing potential pollinator competition between apple and strawberry |
| ALENA HUTCHINSON | Intra-specific body size variation in wild bees across a landscape gradient |
| ELLIE MCCABE | Interactions between pollinators and herbivores mediated by fruit quality |
| MELODY SO | Plant pollinator networks in flowering strip restorations |
| KABEERA FOX | Influence of landscape on parasitoid communities attacking <i>Lygus</i> |
| MILES RENAULD | Effects of habitat restoration on body size distributions in a native bee |
| NOLAN AMON | Landscape effects on bee community phylogeny |
| ERIN KRICHILSKY | Factors influencing <i>Ascosphaera</i> prevalence in <i>Osmia cornifrons</i> |
| ALI BERGMANN | Effect of landscape and pesticides on <i>Osmia cornifrons</i> body composition |
| LAILA GHANI | Role of landscape in intraspecific plant trait variation |
| LEEAH RICHARDSON | Managed bees effects on wild pollinators of strawberry & tomato |
| OLIVIA MILLER | Comparing pollination efficiency of managed and wild bees |
| NATE FLICKER | Impact of <i>Cannabis sativa</i> expansion on crop pollinator networks |
| ARABELLE OSICKY | Landscape scale floral resources explain patterns in bee body size |

EXTENSION & OUTREACH

- 2018 **Speaker**, Hemp Industrial Research Field Day, Geneva NY
| **Presenter**, Pollinator Festival, Lansing NY
- 2017 **Speaker**, NY Fruit and Vegetable Expo, Syracuse NY
- 2016 **Panelist**, NYS Pollinator Protection Plan Meeting
| **Instructor**, NYS Pesticide Management Education Program
| **Leader**, Bug and Butterfly Walk, Finger Lakes Land Trust (also 2013, 14, 15 & 16)
| Outreach about insect diversity and importance.
- 2015 **Volunteer Coordinator**, Insectapalooza, Ithaca NY
| **Presenter**, Small Fruit Open House, Ithaca, NY
- 2014 **Volunteer**, New York State Fair, Syracuse, NY, (also 2013 & 2014)
| **Volunteer**, Empire Farm Days, Seneca Falls, NY (also 2012)
- 2013 **Co-organizer**, Entomology Station, Organic Field Day, Freeville, NY
| **4H STEM Outreach Videos**, 4H Scientifically Speaking
| <http://www.youtube.com/watch?v=B2JdRPKYyTc>
| **Workshop Leader**, 4H Career Explorations (also 2012)
| **Workshop Leader**, Expanding Your Horizons, Cornell University, (also 2012)
- 2012 **Panelist**, Girl Scouts Connect a Million Minds Program, April 19, 2012
| **Extension and Outreach Assistant**, Cornell Entomology Department
| Total of 750 hours across 35 venues reaching a total audience of 8,550
| **Naturalist Outreach Spring Coordinator**, Cornell Entomology Department
| Scheduled and coordinated talks for the Naturalist Outreach Speakers Bureau

PROFESSIONAL SERVICE

Ad hoc reviewer for: *Ecology Letters*, *Proceedings of the Royal Society B*, *Journal of Applied Ecology*, *Basic & Applied Ecology*, *Agriculture Ecosystems & the Environment*, *Journal of Economic Entomology*, *Environmental Entomology*, *Biological Control*, *Journal of Biomass & Bioenergy*

- 2017 **Co-organizer**, Finding common ground: Comparing pollinator and natural enemy community responses to land management practices, Program Symposium, ESA National Meeting, Denver, CO
- 2016 **Member**, Professional Development Committee, Cornell Entomology
| **Co-organizer**, Landscape simplification: effects on arthropods, ecosystem services and agricultural production, Section Symposium, ESA National Meeting, Minneapolis, MN
- 2015 **Leader**, Active Learning Workshop, Cornell University
| **Organizer**, Graduate Extension Workshop, Cornell University
- 2014 **Early Career Fellow**, Atkinson Center for a Sustainable Future, Jan 2014-Present
| **Member**, Insectapalooza Planning Committee, Cornell Entomology
| **Co-Chair** of Volunteer Organizing Committee 2012, 2013 & 2014
- 2013 **President**, Entomology Grad. Student Organization, Cornell Ento. 2013 – 2015
| **Grant Panel**, Sustainable Biodiversity Fund Grant Panel, Cornell University
| **Chair**, Department Symposium Planning Committee, Cornell, 2012 – 2014
- 2012 **Co-organizer**, Annual Research Symposium, Cornell Entomology, 2012-2014
| **Secretary**, Entomology Grad Student Organization, Cornell Entomology
| **Field Rep**, Graduate and Professional Student Assn., Cornell University
| **Member**, University Assembly Campus Welfare Committee, Cornell Ento. Aug 2012 – 2013

TEACHING EXPERIENCE

COURSES AS LEAD INSTRUCTOR

Statistics in Public Health Science, School of Veterinary Medicine, Cornell University, Ithaca, NY

- Developed and taught Fall 2018 for the Masters in Public Health curriculum. This course was designed to introduce graduate students to the essentials of statistics with a focus on methods relevant to epidemiology and on large public health datasets.

Advanced Statistical Methods, Department of Entomology, Cornell University, Ithaca, NY.

- Developed and taught Spring 2019 & Spring 2019 for the Entomology curriculum. Design for undergraduates completing the honors thesis and graduate students with data in hand. Covered topics beyond ANOVA and linear models including survival analysis, GLMER, GAMs, non-linear models, structural equation modeling, multivariate stats and machine learning algorithms.

Seminar in Pollinator Biology, Department of Entomology, Cornell University, Ithaca, NY.

- Weekly seminar course covering classic paper and current topics related to pollinator ecology, evolution, behavior, and conservation

OTHER TEACHING EXPERIENCE

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| 2018 | Spring | Guest Lecturer , Applied Statistics, Department of Entomology, Cornell University, Ithaca, NY. <ul style="list-style-type: none">• Delivered 1 week of lectures and labs while instructor was traveling |
| 2017 | Fall | Guest Lecturer , Agroecology, Department of Biology, Hobart William Smith College, Geneva, NY |
| 2016 | Fall | Course Development & Guest Lecturer , Field Biology, Natural Resources Department, Cornell University, Ithaca, NY. |
| 2015 | Full Year | Graduate Teaching Fellow , Center for Teaching Excellence, Cornell University, Ithaca, NY. <ul style="list-style-type: none">• Facilitate workshops on best practices on higher education teaching• Lead discussion groups for new and current TAs across the university• Facilitate training sessions for new and ESL TAs |
| | Fall | Course Development & Guest Lecturer , Field Biology, Natural Resources Department, Cornell University, Ithaca, NY. <ul style="list-style-type: none">• Developed a two week module on insects including a lecture and a series of four labs. |
| | Fall | Guest Lecturer , Agroecology, Department of Biology, Hobart William Smith College, Geneva, NY. |
| | Fall | Guest Lecturer , Insect Phylogeny and Evolution, Department of Entomology, Cornell University, Ithaca, NY. |
| | Fall | Guest Lecturer , Professional Development in Entomology, Department of Entomology, Cornell University, Ithaca, NY. |
| | Spring | Teaching Assistant , Applied Statistics, Department of Entomology, Cornell University, Ithaca, NY. <ul style="list-style-type: none">• Managed course logistics, graded and developed laboratory exercises in the statistical program R, supervised undergraduate TA, mentored students on class projects. |
| 2014 | Fall | Guest Lecturer , Agroecology, Department of Biology, Hobart William Smith College, Geneva, NY. |
| | Fall | Guest Lecturer , Professional Development in Entomology, Department of Entomology, Cornell University, Ithaca, NY. |
| | Fall | Teaching Assistant , Insect Biology, Department of Entomology, Cornell University, Ithaca, NY. <ul style="list-style-type: none">• Guided lab activities, developed practical exams, curated course insect collections. |
| 2013 | Fall | Guest Lecturer , Professional Development in Entomology, Department of Entomology, Cornell University, Ithaca, NY. |
| 2012 | 2012-2014 | Laboratory Instructor , Investigative Biology, Department of Biology, Cornell University, Ithaca, NY. <ul style="list-style-type: none">• Led two 3 hours lab sections a week, graded exams and papers. |