

# Vincent A. Formica

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## PROFESSIONAL APPOINTMENTS

2024-*present* Chair of Biology Department, Swarthmore College  
2023 (spring) Interim Chair of Biology Department, Swarthmore College  
2018-*present* Associate Professor, Swarthmore College  
2012–2018 Assistant Professor, Swarthmore College  
2010–12 Post-doctoral Research Associate, University of Virginia  
2008–10 Visiting Associate Research Professor, University of Virginia  
2007–08 Visiting Assistant Professor, Swarthmore College  
2007 Faculty, Mountain Lake Biological Station  
2006–07 Visiting Assistant Professor, Gettysburg College

## EDUCATION

2001–06 Ph.D., Indiana State University, Life Science, Title: Spatial Dynamics of Alternative Reproductive Strategies (Elaina Tuttle, advisor)  
1997–01 B.A., St. Mary's College of Maryland, Major: Biology, Focus: Environmental Studies

## RESEARCH FUNDING

2014–19 NSF IOS 135503, "RUI: The Evolvability Of Social Networks," \$620,000 (Lead PI)  
2010–13 NSF IOS 1027251 "Phenotypic Selection Resulting From Social Interactions," \$450,000, (senior personnel; Edmund D. Brodie III, PI)  
2008–09 University of Virginia Centers and Labs Union Technology Grant, \$2000  
2002–06 Indiana State University Graduate School Research Grants, \$2470  
2002 Animal Behavior Society Research Grant, \$500

## PUBLICATIONS (\* Undergraduate collaborator, \*\* co-senior author)

Cook, Phoebe, Robin Costello, Edmund Brodie III\*\*, and **Vincent Formica\*\***. *In press*. Population age structure shapes selection on social behavior in a long-lived beetle. *Philosophical Transactions of the Royal Society B*.

- Fornof, Lillian, Clara A. Stahlmann Roeder, Edmund D. Brodie III\*\* & **Vincent A. Formica\*\***. 2024. The influence of resource patch condition and size on social interactions, reproductive behaviors, and oviposition in a fungivorous beetle. *Behavioral Ecology & Sociobiology*: 78, 80. <https://doi.org/10.1007/s00265-024-03494-z>
- Cook, Phoebe, Robin Costello, **Vincent Formica\*\***, and Edmund Brodie III\*\*. 2023. Individual and population age impact social behavior and network structure in a long-lived insect. *The American Naturalist*: 202:5, 667-680, <https://doi.org/10.1086/726063>
- Kamath, Ambika, Beans Velocci, Ashton Wesner, Nancy Chen, **Vincent Formica**, Banu Subramaniam, and Maria Rebolleda-Gómez. 2022. Nature, Data, and Power: How Hegemonies Shaped This Special Section. *American Naturalist*. 200:81–88.
- Mitchem, Lisa, **Vincent Formica**, Dana Homer\*, Rehnay Debray\*, & Edmund Brodie III. 2022. Females do not behave competitively during intrasexual interactions in the presence of a fungal resource in a mycophagous beetle species, *Bolitotherus cornutus*. *Ecology and Evolution*. 12:6, e8977. <https://doi.org/10.1002/ece3.8977>
- Costello, Robin , Phoebe Cook, **Vincent Formica**, Edmund Brodie III. 2022. Group and individual social network metrics are robust to changes in resource distribution in experimental populations of forked fungus beetles. *Journal of Animal Ecology*. 91:4, pg: 895-907. <https://doi.org/10.1111/1365-2656.13684>
- Cook, Phoebe, Olivia Baker\*, Robin Costello, **Vincent Formica**, and Edmund Brodie III. 2022. Group composition of individual personalities alters social network structure in experimental populations of forked fungus beetles. *Biology Letters*. doi: [10.1098/rsbl.2021.0509](https://doi.org/10.1098/rsbl.2021.0509)
- Brodie III, Edmund, Phoebe Cook, Robin Costello, **Vincent Formica**, 2022. Phenotypic Assortment Changes the Landscape of Selection. *Journal of Heredity*, Vol. 113, Issue 1, Pages 91–101, <https://doi.org/10.1093/jhered/esab062>

Vilella-Pacheco, Zoromar.\* , Lisa Mitchem, **Vincent Formica**, & Edmund Brodie III, 2021. Male competition reverses female preference for male chemical cues. *Ecology and Evolution*, 00:1–10

**Formica, Vincent**, Hannah Donald, Hannah Marti, Zhazira Irgebay\*, Edmund D. Brodie III. 2020. Social network position experiences more variable selection than weaponry in wild subpopulations of forked fungus beetles. *Journal of Animal Ecology*. 90:1, pg 168-182.

Mitchem, Lisa, Reena Debray\*, **Vincent Formica**, Edmund D. Brodie III. 2019. Contest interactions and outcomes: relative body size and aggression independently predict contest status. *Animal Behaviour*. 157, 43-49

Grunst, Andrea, Melissa Grunst, **Vincent Formica**, Marisa Korody, Adam Betuel, Margarida Barcelo-Serra, Sarah Ford\*, Rusty Gonser, & Elaina Tuttle. 2018. Morph-specific patterns of reproductive senescence: connections to discrete reproductive strategies. *American Naturalist*, 191: 744-755

Grunst, Melissa, Andrea Grunst, **Vincent Formica**, Rusty Gonser, & Elaina Tuttle. 2018. Multiple signaling functions of song in a polymorphic species with alternative reproductive strategies. *Ecology and Evolution*, 8: 1369-1383

**Formica, Vincent**, Corlett Wood, Phoebe Cook\*, & Edmund Brodie III. 2017. Consistency of animal social networks after disturbance. *Behavioral Ecology*. 28 (1): 85-93  
[Selected by Faculty of 1000, Ecology]

**Formica, Vincent**, Hannah Donald-Cannon, & Ian Perkins-Taylor\*. 2016. Consistent patterns of male mate preference in the laboratory and field. *Behavioral Ecology & Sociobiology*. 70: 1805-1802

**Formica Vincent** & Amanda Chan\*. 2015. No effect of host species on phenoloxidase activity in a mycophagous beetle. *PLOS One* 10(10): e0141167

Wood, Corlett, Hannah Donald\*, **Vincent Formica**, & Edmund Brodie III. 2013. Surprisingly little population genetic structure in a fungus-associated beetle despite its exploitation of multiple hosts. *Ecology and Evolution*, 3: 1484-1494.

- Benowitz\*, Kyle, Edmund Brodie III, & **Vincent Formica**. 2012. Morphological correlates of a combat performance trait in the forked fungus beetle, *Bolitotherus cornutus*. *PLOS One* 7: e42738.
- Donald\*, Hannah, Corlett Wood, Kyle Benowitz\*, Rebecca Johnson\*, Edmund Brodie III, & **Vincent Formica**. 2012. Nondestructive sampling of insect DNA from defensive secretion. *Molecular Ecology Resources*, 12: 856-860.
- Formica, Vincent**, Whitney Larsen\*, Corlett Wood, Malcolm Augat, Rebecca Butterfield\*, Helen Hougen,\* & Edmund Brodie III. 2012. Fitness consequences of social network position in a wild population of forked fungus beetles (*Bolitotherus cornutus*). *Journal of Evolutionary Biology*, 25: 130-137.
- Formica, Vincent**, Joel McGlothlin, Corlett Wood, Malcolm Augat\*, Rebecca Butterfield\*, Mollie Barnard\*, & Edmund Brodie III. 2011. Phenotypic assortment mediates the effect of social selection in a wild beetle population. *Evolution*, 65: 2771-2781.
- Formica, Vincent**, Malcolm Augat\*, Molly Barnard\*, Rebecca Butterfield \*, Corlett Wood, & Edmund Brodie III. 2010. Using home range estimates to construct social networks for species with indirect behavioral interactions. *Behavioral Ecology & Sociobiology*, 64: 1199-1208.
- Formica, Vincent** & Elaina Tuttle. 2009. Examining the social landscapes of alternative reproductive strategies. *Journal of Evolutionary Biology*, 22: 2395-2408.
- Holliday, Alison Walker\*, Edmund Brodie III, & **Vincent Formica**. 2009. Differences in defensive volatiles in the forked fungus beetle, *Bolitotherus cornutus*, living on two species of fungus. *Journal of Chemical Ecology*, 35: 1302-1308.
- Tuttle, Elaina, Ryan Jensen, **Vincent Formica**, & Rusty Gonser. 2006. Using remote sensing image texture to study habitat use patterns: A case study using the polymorphic white-throated sparrow (*Zonotrichia albicollis*). *Global Ecology and Biogeography*, 15: 349-357.
- Formica, Vincent**, Rusty Gonser, Scott Ramsay, & Elaina Tuttle. 2004. Spatial dynamics of alternative reproductive strategies: The role of neighbors. *Ecology*, 85: 1125-1136. [Selected by Faculty of 1000]

## DIVERSITY, EQUITY, AND INCLUSION SERVICE

- 2022-present IDEA Award Committee for the Evolution Tri-Society. I helped choose and support this award for scientists who make Evolutionary biology a more inclusive and just world.
- 2019-2022 Diversity Council for American Society of Naturalists. I helped organize DEI events at the annual national conferences including a symposium entitled Confronting the Legacy of Eugenics in EEB. As part of the council I also helped organize several initiatives to make our field more inclusive and diverse.
- 2020-2022 Co-Editor of an interdisciplinary special section of the journal The American Society of Naturalists entitled "[Nature, Data, and Power: How Hegemonies Shape Biological Knowledge](#)"
- 2019-2022 Advisory Committee for the Evolution Tri-Society Code-of Ethics. I helped craft and lobbied for a [code of ethics](#) that was ultimately adopted by the three American evolution societies.

## INVITED TALKS

- 2022 University of Georgia
- 2019 Université du Québec À Montréal
- 2018 Harvard University
- 2017 Rutgers University
- 2015 Villanova University
- 2015 St. Mary's College of Maryland
- 2014 University of Pennsylvania
- 2013 Texas Tech University
- 2013 Swarthmore College (Sigma Xi Speaker)
- 2013 Indiana State University (Darwin Day Speaker)
- 2011 University of Virginia
- 2011 Swarthmore College
- 2010 Mountain Lake Biological Station
- 2010 Bucknell University
- 2010 Rhodes College
- 2010 Canisius College
- 2007 Swarthmore College
- 2007 Mountain Lake Biological Station
- 2006 Florida Southern College
- 2006 Gettysburg College
- 2005 DePauw University

## PROFESSIONAL SERVICE

Panelist for the National Science Foundation, DEB, Evolution Cluster, 2022

Associate editor for Ecology and Evolution 2012-2018

Reviewer for MITACS Accelerate program 2018, 2020

Panelist for the National Science Foundation, IOS, Animal Behavior 2020

Ad-hoc reviewer for IOS-Animal Behavior, the National Science Foundation

Ad-hoc reviewer for DEB-Evolutionary Processes, the National Science Foundation

**Reviewer for the Journals:**

Animal Behavior

Evolution

The American Naturalist

Functional Ecology

Behavioral Ecology

Journal of Evolutionary Biology

Behavioral Ecology and Sociobiology

Molecular Ecology Resources

Ecology and Evolution

PLOS One

Ecology Letters

Proceedings of the Royal Society B

## TEACHING EXPERIENCE

2012-present **Swarthmore College**

Honors Seminar: Evolution of Animal Societies

Evolution with laboratory

Population and Organismal Biology with laboratory

Biology Scholars Program Attachment

Honors Seminar: Molecular Ecology and Evolution

ENVS Student Led Research Project: Science and Culture of  
Beekeeping

2008–10 **University of Virginia**

Experimental and Investigative Evolution

Molecular Ecology and Evolution

2007–08 **Swarthmore College**

Evolution with laboratory

Population and Organismal Biology with laboratory

Honors Seminar: Molecular Ecology and Evolution

2007 **Mountain Lake Biological Station**

Ecological Applications of GIS

2006–07 **Gettysburg College**

Introduction to Ecology and Evolution with laboratory (for majors)

Introduction to Molecules, Genes and Cells (for non-majors)

## SWARTHMORE COLLEGE COMMITTEE SERVICE

2022-2023	Cooper Fund Committe
2020	Ad hoc committee on Curriculum Continuity during COVID
2020-2022	Elected to the Committee of Faculty Procedures (COFP)
2020-2021	Chair of the Departmental Tenure Track Search Committee
2017–19	Elected to The Council on Educational Policy (CEP)
2016–19	Secretary of the Swarthmore Chapter of Sigma Xi
2018-present	Manger of Endowed Field Funds Swarthmore Biology Department
2016	Crum Woods Stewardship Committee
2014–15	Pre-Professional Advisory Committee College Judiciary Committee
2013–14	College Judiciary Committee Department Rep for HHMI External Funding Departmental Tenure Track Search Committee

## SWARTHMORE COLLEGE COMMUNITY INVOLVEMENT

## Lectures and Public Panels:

2024-2025	Arborlight – a collaboration with projection artist, Meredith Liech merging science with art on Swarthmore campus. Funded through the Cooper Fund
2017	“The Evolution of Social Networks” – lecture to the faculty of the College
2015	“Romance, Love, and Attraction” – Public Panel and Discussion for student run group, Peripeteia
2014	Teaching, Research, Governance and Work-Life Balance at Swarthmore
2013	Critical Examinations of "Community" Faculty Panel – part of Swarthmore College’s Institute for the Liberal Arts
2013	“Looking glass or Jabberwocky? Explorations into animal social networks” –presentation at Swarthmore Sigma Xi Strawberry Festival
2013	“What is important in the discipline: Biology” – presentation to the faculty
2013	“Knowledge Begins in Wonder” – presentation to Swarthmore Parents Council
2012–13	“The Righteous Mind” – Participated a multi-semester discussion of Jonathan Haidt’s recent book; part of Swarthmore College’s Institute for the Liberal Arts

## Student Development

2017	“March for Science” Organized buses for students, faculty, and staff to attend the march in Washington D.C.
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- 2016 “Participation in the classroom” Workshop for first generation students run by the dean’s office
- 2014 “Participation in the classroom” Workshop for first generation students run by the dean’s office
- 2014 The Science and Culture of Beekeeping – Faculty of record for student-organized environmental studies research project; 18 students enrolled
- 2014 Conducted large-scale statistical analysis of BIOL 01 and BIOL 02 grades for HHMI sponsored development of the BIOL SP program.
- 2012–13 Served on two Biochemistry Course Major Theses: Elizabeth Williams and Travis Mattingly

## INDEPENDENT RESEARCH STUDENTS MENTORED

\* NSF REU Student, † research credit or directed reading credit

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|------|--|------|---|
| 2023 | Suhyun Kim †<br>Meless Badume<br>Caleb Scott-Joseph †<br>Kwelayla Thomas                     |      | Sophie Nasrallah †<br>Mika Menga<br>Lillian Price   |
|      | Sarah Adebiyi  | 2017 | Saadiq Garba<br>Alexis Davis<br>Julia Barbano<br>Elizabeth Wainright<br>Lillian Fornof<br>Marianne Lotter-Jones † |
| 2022 | Suhyun Kim †<br>Lillian-Katherine Randolph †<br>Caleb Scott-Joseph †<br>Yifan Huang          |      | Zhazira Irgebay †<br>David Tiant  |
| 2021 | John Kim †<br>Julie Xu   |      | Marianne Lotter-Jones<br>Soumba Traore<br>Robert Hwang<br>Reena Debray*<br>Zhazira Irgebay †                      |
| 2020 | John Kim †<br>Sophia Schlenz<br>Sarah Gilman<br>Julie Xu<br>Bailey Jones<br>Jorge Lopez-Nava | 2016 | Hazel Galloway<br>Desta Pulley<br>Adam Kapilow<br>Shelby Daniel-Wayman †  |
| 2019 | John Kim †<br>Vitor dos Anjos †<br>Daria Syskine †<br>Victoria Overbeck<br>Chelsea Semper    | 2015 | Rudolfo Pérez †<br>Amanda Chan †<br>Harris Hoke<br>Ian Grant<br>Hazel Galloway                                    |
| 2018 | Dana Homer †<br>Hana Gutow<br>Cedric Lary  |      |   |



	Angela Menna		Hannah Donald
	Jonas Oppenheimert	2010	Molly Siegel*
2013	Phoebe Cook* †		Ashley Troth*
	Stephanie Carrera * †	2009	Whitney Larsen*
	Laura Katz		Helen Hougen
	Rudolfo Pérez		David Montgomery*
	Amanda Chan		Amy Heilman
	Rachel Crane †	2008	Malcolm Augat
	Patrick Monari †		Eileen Butterfield*
	Yvonne Socolar †		Mollie Barnard
	Ray Watson †	2007	Whitney Nekobat
	Ian Perkins-Taylor †		Jennifer Richardson*
2012	Stephanie Carrera †	2006	Shaun Viechweg
	Ray Watson †		Katie Greenfield †
	Rebecca Johnson	2005	Tiffany Ko
	Kyle Benowitz	2004	Marisa Korody
2011	Nelson Milano*	2002	Lyndsey Foster
	Rebecca Johnson*		Kathryn Adank
	Eric Wice*		Erin Wilman
	Ian Perkins-Taylor*	2001	Anthony Clemons
	Kyle Benowitz		

#### OTHER PROFESSIONAL EXPERIENCE & OUTREACH

2014–18	Science For Kids Workshop Leader – developed and led a workshop for evolution of insects for middle school children
2014–15	Philadelphia Zoo Crew Field Trip Mentor
2014	Field Trip Research Mentor, Ecological Society of America SEEDS program
2013	Mentor for Workshop and Writing Retreat to Increase the Productivity of Biology Faculty, a workshop for early career URM faculty and post-docs.
2009	Field Trip Research Mentor, Ecological Society of America SEEDS program
2006–07	Faculty Mentor, Biosphere Biology Club at Gettysburg College
2003	Science Olympiad Coach, Sullivan Jr. High, 2003 regional champions
2002–06	Workshop Leader, Indiana Junior Science and Humanities Symposium
1999–01	GIS Analyst, Natural Capital Group, Center For Environmental Studies at the Chesapeake Biological Laboratories, University of Maryland

