

John J Couture
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GENERAL INFORMATION

Education

PhD (Entomology), 2011, University of Wisconsin-Madison

Advisor: Dr. Richard L. Lindroth

Dissertation title: “*Impacts of elevated carbon dioxide and ozone on community herbivory in a northern temperate forest*”

MS (Biological Sciences), 2005, Western Michigan University

Advisor: Dr. Stephen B. Malcolm

Thesis title: “*The effects of varying specialist herbivore density on the growth and chemical defense of a host plant: Aphis nerii and the cardenolides of Asclepias curassavica*”

BS (Biology), 2001, Western Michigan University

Academic Appointments

2016 – Present	Assistant Professor, Departments of Entomology and Forestry and Natural Resources, Purdue University
2014 – 2016	Assistant Research Faculty, Department of Forest and Wildlife Ecology, University of Wisconsin-Madison.
2012 – 2014	USDA Postdoctoral Fellow, Department of Forest and Wildlife Ecology, University of Wisconsin-Madison. Advisor: Dr. Philip A. Townsend
2011 - 2012	Postdoctoral Research Associate, Department of Forest and Wildlife Ecology, University of Wisconsin-Madison. Advisor: Dr. Philip A. Townsend

Awards & Honors

2019	Bravo Award recipient
2010	Villas Travel Grant, University of Wisconsin-Madison
2005	Hazel Wirick Award for Excellence in Plant Biology, Western Michigan University
2005	Departmental Teaching Effectiveness Award, Western Michigan University
2005	Graduate Student Travel Award, Western Michigan University
2004	Leo C. Vander Beek Award for Excellence in Plant Biology, Western Michigan University

2019 Significant Achievements

Successful thesis defense of MS student Marguerite Bolt. Secured two additional graduate students Taylor Nelson (MS, ENTM) and Sylvia Park (PhD, FNR). In 2019, was PI or Co-I on grant submission resulting in approximately \$1.675M in funding from USDA, Purdue AgSEED, and HTIRC. 2019 USDA CARE panel reviewer. Continued developing cross-departmental collaborations at Purdue in Agricultural and Biological Engineering, Agronomy, Biochemistry, and Botany and Plant Pathology. Continued developing cross-university collaborations with Clemson, North Carolina State University, Penn State University, St. Olaf College, William and Mary, University of Florida, and University of Wisconsin-Madison, including historically minority and underrepresented colleges, North Carolina A&T.

Publications:

Summary statistics

Total number of publications: 40 (8 in revision or review)

Publications 2016-current: 25 (8 in revision or review)

Sum of times cited: **491**

h-index: **14** (google scholar)

i10-index: **17** (google scholar)

Peer-Reviewed Publications (° corresponding author; ° undergraduate author; § graduate student author; P postdoctoral author)

40. Mohl EK, Noel KE, Nuzzo JW, Scanga SE, Garneau DE, Saunders PA, Phillippi A, McCall AC, Stack Whitney K, Gartner TB, Johnson MQ, Lor Z, Povilaitis SC, Lane-Getaz SJ, **Couture JJ** (*in review*)

Geographic variation in growth responses to damage of common milkweed. **American Journal of Botany**

39. Kula AAR, Hey MH§, **Couture JJ**, Townsend PA, Dalglish HJ (*in review*) Intraspecific competition and damage severity affect size, quality and induced structural and chemical defenses in the herbaceous perennial, *Asclepias syriaca*. **Plant Ecology**

38. De La Mater D§, **Couture JJ**, Puzey JR, Dalglesih HJ (*in review*) Effects of range-wide, intraspecific variation in functional traits on plant-herbivore interactions. **American Journal of Botany**

Impact factor =XX, # of times cited = 0

37. Wang ZP, Chuls A§, Geygan R, Ye Z, Zheng T, Singh A, **Couture JJ**, Cavender-Bares J, Kruger EL, Townsend PA (*in review*) A database of foliar functional trait maps across NEON domains in the eastern U.S. **New Phytologist**

Impact factor =XX, # of times cited = 0

36. Gold KM§, Townsend PA, Chuls A§, Hermann IP, **Couture JJ**, Larson ER, Gevens AJ (*in review*) Hyperspectral reflectance sensors for pre-symptomatic detection and differentiation of *Phytophthora infestans* and *Alternaria solani* in potato. **Frontiers in Plant Science**

Impact factor =XX, # of times cited = 0

35. Li ZP, Yang J, Shang B, Xu Y, **Couture JJ**, Yuan X, Kobayashi K, Feng Z (*in revision*) Effects of elevated tropospheric O₃, water deficiency and nitrogen addition on phytochemical composition in Poplar saplings. **Science of the Total Environment**

Impact factor =XX, # of times cited = 0

34 Cotrozzi LP, Peron R§, Tuinstra MR, Mickelbart MV, **Couture JJ**° (*in revision*) Spectroscopic determination of physiological and anatomical leaf traits related with water status in maize. **Plant Physiology**

Impact factor =XX, # of times cited = 0

33. Ricono A, Gustafson NW, Eichenberger E, Stahl K, Call H, **Couture JJ**, Puzey JR, Dalglish HJ (*in revision*) Fine-scale spatial structuring of genotypes and phenotypes in natural populations of *Asclepias syriaca*. **Perspectives in Plant Ecology, Evolution and Systematics**

Impact factor =XX, # of times cited = 0

32. Gongora-Canul C, Salgado JD, Singh D, Cruz AP, Cotrozzi L, **Couture JJ**, Cruppe G, Rivadeneira MG, Valent B, Todd B, Poland J, Cruz CD (2019) Temporal dynamics of wheat blast and agreement

between remotely sensed data measurements and visual estimations of wheat spike blast (W_sB) under field conditions. **Phytopathology** *accepted*
Impact factor =3.3, # of times cited = 0

31. Cotrozzi L^P, Couture JJ^c (2019) Hyperspectral assessment of plant responses to multi-stress environments: prospects for managing protected agrosystems. **Plants, People, Planet** *accepted*
Impact factor =NA, # of times cited = 0

30. Campos Medina VA^g, Cotrozzi L^P, Stewart JJ, Couture JJ (2019) Hyperspectral characterization of Hessian Fly infestation on wheat functional trait responses. **PlosONE** 14: e0219431
<https://doi.org/10.1371/journal.pone.0219431>
Impact factor =2.8, # of times cited = 0

29. Struckman S^g, Couture JJ, LaMar MD, Dalglish HJ (2019) The demographic effects of functional traits: An integral projection model approach reveals population-level consequences of reproduction-defense tradeoffs. **Ecology Letters** 22:1396-1406.
Impact factor =8.7, # of times cited = 0

28. Wang Z^P, Townsend PA, Schweiger AK^P, Couture JJ, Singh A, Hobbie SE, Cavender-Bares, J (2019) Foliar functional traits across three years in a prairie grassland. **Remote Sensing of Environment** 221:405-416.
Impact factor =6.5, # of times cited = 3

27. Rotter MC^g, Couture JJ, Rothwell EM, Garcia J^u, Holeski LM (2018) Plant resistance traits across the herbivore diet breadth spectrum: A test in the model plant *Mimulus guttatus*. **Evolutionary Ecology Research** 19:423-440.
Impact factor =0.7, # of times cited = 5

26. Couture JJ^c, Singh A, Charkowski AO, Groves RL, Gray SM, Bethke PC, Townsend PA (2018) Integrating spectroscopy with potato disease management. **Plant Disease** 102: 2233-2240.
Impact factor =3.0, # of times cited = 0

25. Blood BL^g, Paschen MA, Klingeman WE, Hadžiabdić Đ, Couture JJ, Ginzel MD (2018) Behavioral responses of *Pityophthorus juglandis* (Coleoptera: Curculionidae: Scolytinae) to volatiles of black walnut and *Geosmithia morbida*, the causal agent of Thousand Cankers Disease. **Environmental Entomology** 47:412-421.
Impact factor =1.6, # of times cited = 1

24. Cotrozzi L^P, Townsend PA, Pellegrini E, Nalia C, Couture JJ^{00c} (2018) Reflectance spectroscopy: a novel approach to better understand and monitor the impact of air pollution on Mediterranean plants. **Environmental Science and Pollution Research**. 25:8249-8267.
*Impact factor =2.8, # of times cited = 3 **Invited Review*

23. Cotrozzi L^P, Couture JJ^c, Cavender-Bares J, Kingdon CC, Fallon B, Pilz G, Pellegrini E, Nali C, Townsend PA (2017) Using foliar spectral properties to assess the effects of drought on plant water potential. **Tree Physiology** 37:1582-1591.
Impact factor = 3.6, # of times cited = 4

22. Rubert-Nason KF^P, Couture JJ, Gryzmala EA^u, Townsend PA, Lindroth RL (2017) Vernal freeze damage and genetic variability alter tree growth, chemistry, and insect interactions. **Plant, Cell, and Environment** 40:2743-2753.

Impact factor = 6.2, # of times cited = 5

21. Couture JJ^c, Meehan TD, Rubert-Nason KF^p, Lindroth RL (2017) Effects of elevated carbon dioxide and ozone on foliar quality of trembling aspen (*Populus tremuloides*) and paper birch (*Betula papyrifera*). **Journal of Chemical Ecology 43:26-38.**

Impact factor = 3.2, # of times cited = 6

20. Yuan M^u, Couture JJ, Townsend PA, Ruark MD, Bland WL (2016) Spectroscopic determination of leaf nitrogen and mass per area in sweet corn and snap bean. **Agronomy Journal 8.**

Impact factor = 1.9, # of times cited = 5

19. Couture JJ^c, Singh A^p, Rubert-Nason KF^p, Serbin SP, Lindroth RL, Townsend PA (2016) Spectroscopic determination of ecologically relevant plant secondary metabolites. **Methods in Ecology and Evolution 7:1402-1412.**

Impact factor = 6.3, # of times cited = 18

18. Couture JJ^c, Mason CJ^g, Habeck CW, Lindroth RL (2016) Behavioral and morphological responses of an insect herbivore to low diet quality are inhibited by plant chemical defenses. **Arthropod-Plant Interactions 10:341-349.**

Impact factor = 1.5, # of times cited = 7

17. Cavender-Bares J, Meireles JEP^p, Couture JJ, Kaproth M^g, Singh A^p, Kingdon CC, Center A^u, Zuniga E, Pilz G, Townsend PA (2016) Associations of leaf spectra with genotypic and phylogenetic variation in oaks: prospects for remote detection of biodiversity. **Journal of Remote Sensing 221.**

Impact factor = 3.3, # of times cited = 24

16. Holeski LM, McKenzie SC^g, Kruger EL, Couture JJ, Rubert-Nason KF^p, Lindroth RL (2016) Phytochemical traits underlie genotypic variation in susceptibility of quaking aspen (*Populus tremuloides*) to browsing by a keystone forest ungulate. **Journal of Ecology 104:850-863.**

Impact factor = 6.2, # of times cited = 5

15. Rubert-Nason KF^p, Couture JJ, Major IT, Constable CP, Lindroth RL (2015) Influence of genotype, environments and gypsy moth herbivory on local and systemic chemical defenses in trembling aspen (*Populus tremuloides*). **Journal of Chemical Ecology 41:651-661**

Impact factor = 3.2, # of times cited = 17

14. Couture JJ^c, Serbin SP, Townsend PA (2015) Elevated temperature and periodic water stress alter growth and quality of common milkweed (*Asclepias syriaca*) and monarch (*Danaus plexippus*) larval performance. **Arthropod-Plant Interactions 9:149-161.**

Impact factor = 1.5, # of times cited = 18

13. Couture JJ^c, Meehan TD, Kruger EL, Lindroth RL (2015). Insect herbivory alters impact of atmospheric change on northern temperate forests. **Nature Plants 15016.**

Impact factor = 10.3, # of times cited = 22

12. Hillstrom ML^g, Couture JJ, Lindroth RL (2014) Elevated carbon dioxide and ozone have weak, idiosyncratic effects on herbivorous forest insect abundance, species richness, and community composition. **Insect Conservation and Diversity 7:553-562.**

Impact factor = 2.4, # of times cited = 10

- 11. Meehan TD, Couture JJ, Bennett AE, Lindroth RL (2014) Herbivore-mediated material fluxes in a northern deciduous forest under elevated carbon dioxide and ozone concentrations. *New Phytologist* 204:397-407.
Impact factor = 7.7, # of times cited = 14**
- 10. Mason CJ[§], Couture JJ, Raffa KF (2014) Bacteria degrade plant defense chemicals and reduce their adverse effects on insect herbivores. *Oecologia* 175:901-910.
Impact factor = 2.9, # of times cited = 50**
- 9. Couture JJ[§], Lindroth RL (2014) Atmospheric change alters frass quality of forest canopy herbivores. *Arthropod-Plant Interactions* 8:33-47.
Impact factor = 1.5, # of times cited = 8**
- 8. Couture JJ[§], Holeski LM[¶], Lindroth RL (2014) Impacts of long-term exposure to elevated CO₂ and O₃ on aspen foliar chemistry across multiple developmental stages. *Plant, Cell, and Environment* 37:758-765.
Impact factor = 6.2, # of times cited = 20**
- 7. Holeski LM, Zinkgraf MS, Couture JJ, Whitham TG, Lindroth RL (2013) Transgenerational effects of herbivory in a group of a long-lived tree species: maternal damage reduces offspring allocation to resistance traits, but not growth. *Journal of Ecology* 101:1062-1073.
Impact factor = 6.2, # of times cited = 14**
- 6. Couture JJ[§], Serbin SP, Townsend PA (2013) Spectroscopic sensitivity of real-time, rapidly induced phytochemical change in response to damage. *New Phytologist* 198:311-319.
Impact factor = 7.7, # of times cited = 21**
- 5. Rubert-Nason KF, Holeski L, Couture JJ, Gusse A, Undersander DJ, Lindroth RL (2013) Rapid phytochemical analysis of birch (*Betula*) and poplar (*Populus*) foliage by near infrared reflectance spectroscopy. *Analytical and Bioanalytical Chemistry* 405:1333-1344.
Impact factor = 3.6, # of times cited = 16**
- 4. Couture JJ[§], Lindroth RL (2012) Atmospheric change alters performance of an invasive forest insect. *Global Change Biology* 18:3543-3557.
Impact factor = 8.4, # of times cited = 24, *Faculty of 1000 recommended**
- 3. Couture JJ[§], Meehan TD, Lindroth RL (2012) Atmospheric change alters foliar quality of host trees and performance of multiple outbreak herbivores. *Oecologia* 168:863-876.
Impact factor = 2.9, # of times cited = 37**
- 2. Couture JJ[§], Servi JS^u, Lindroth RL (2010) Increased nitrogen availability influences predator-prey interactions by altering host-plant quality. *Chemoecology* 20:277-284.
Impact factor = 1.9, # of times cited = 42**

Book Chapters

- 1. Couture JJ[§], Lindroth RL (2013) Impacts of atmospheric change on forest-arthropod interactions. In: *Climate Change, Air Pollution and Global Challenges: Understanding and Solutions from Forest Research* (Matyssek R, Clarke N, Cudlin P, Mikkelsen J-P, Weiser G, Paoletti E eds.), pp 227-248. Elsevier, Netherlands
of times cited = 14**

Grants and Funding

Summary statistics: 2016-current

Type of Funding	Total Amount Awarded as PI or Co-PI	Amount to Couture as PI or Co-PI
Competitive (internal)	\$871,259	\$871,259
Competitive (external)	\$2,580,178	\$566,418
TOTAL	\$3,451,437	\$1,437,677

CURRENT GRANTS: Amount awarded not split to Co-PI amount if total award is not greater than \$50,000 per year.

Agency: USDA OREI

Title: *A comprehensive assessment of industrial hemp as a potential crop for organic farmers*

Duration of funding: 2020-2023

Total amount of award: \$977,083 (PI Dr. Kevin Gibson)

Role: Co-PI

Amount awarded as Co-PI: \$229,515

Agency: Hardwood Tree Improvement and Regeneration Center

Title: *Characterizing abiotic and biotic tree stress using hyperspectral information*

Duration of funding: 2019-2022

Total amount of award: \$149,137

Role: PI

Amount awarded to Purdue as PI or Co-PI: 149,137

Agency: Purdue EVRP Laboratory and Core Facility Program

Title: *Acquisition and instillation of a shortwave infrared (SWIR) imaging system*

Duration of funding: 2019

Total amount of award: \$348,450

Role: PI

Amount awarded to Purdue as PI or Co-PI: 348,450

Agency: Hardwood Tree Improvement and Regeneration Center

Title: *Productivity-diversity relationships in hardwood plantations*

Duration of funding: 2019-2022

Total amount of award: \$150,000

Role: Co-PI

Amount awarded to Purdue as PI or Co-PI: \$150,298

Agency: Purdue AgSeed Award

Title: *Utilizing hyperspectral information for multi-stress detection in turfgrass management*

Duration of funding: 2019-2020

Total amount of award: \$50,000

Role: Co-PI

Amount awarded to Purdue as PI or Co-PI: \$50,000

Agency: USDA NSF EAGER – Biotechnology and Plant Breeding
Title: *Utilizing high throughput phenotyping approaches to advance plant breeding*
Duration of funding: 2018-2020
Total amount of award: \$300,000
Role: PI
Amount awarded to Purdue as PI or Co-PI: \$300,000

Agency: The American Chestnut Foundation
Title: *Below ground competition of American chestnut*
Duration of funding: 2019
Total amount of award: \$9,951
Role: Co-PI
Amount awarded to Purdue as PI or Co-PI: \$9,951

Agency: Purdue AgSeed Award
Title: *A new methodology and approach for in vivo detection of cannabinoid levels in Cannabis using reflectance spectroscopy*
Duration of funding: 2018-2020
Total amount of award: \$74,698
Role: PI
Amount awarded to Purdue as PI or Co-PI: \$74,698

Agency: Purdue AgSeed Award
Title: *Improving the management of Indiana's mixed hardwood forest by characterizing the relationship between productivity and species diversity*
Duration of funding: 2018-2019
Total amount of award: \$49,388
Role: Co-PI
Amount awarded to Purdue as PI or Co-PI: \$49,388

Agency: NSF Macrosystems Biology-Early NEON Science Award
Title: *Foliar traits and terrestrial ecosystem variability across NEON domains*
Duration of funding: 2016-2021
Total amount of award: \$1,273,144
Role: Co-PI
Amount awarded to Purdue as PI or Co-PI: \$36,903

PENDING GRANTS

Agency: NSF DEB Ecosystem Science Cluster
Title: *Collaborative Proposal: Arthropod and phytochemical responses to Hurricane Maria*
Duration of funding: 2020-2025
Total amount of award: \$1,182,451(Collaborative proposal, PI Dr. Timothy Schowalter, LSU)
Role: Co-PI
Amount awarded to Purdue as PI or Co-PI: \$

EXPIRED GRANTS

Agency: Mary Rice Fund, Purdue University
Title: *Collaborative Research: Competition, coexistence and community structure: identifying the mechanisms that structure Indiana forests.*
Duration of funding: 2017-2018
Total amount of award: \$6,000

Role: Co-PI

Amount awarded to Purdue as PI or Co-PI: \$6,000

Agency: Purdue Climate Change Research Center

Title: *Utilizing reflectance spectroscopy to assess plant responses to biotic and abiotic stress*

Duration of funding: 2017-2018

Total amount of award: \$6,000

Role: PI

Amount awarded to Purdue as PI or Co-PI: \$6,000

Agency: Purdue Diversity Transformation Award

Title: *The PuNCH (Purdue, North Carolina A&T Hemp) Initiative*

Duration of funding: 2018-2019

Total amount of award: \$7,000

Role: Co-PI

Amount awarded to Purdue as PI or Co-PI: \$7,000

Agency: Purdue Center for Plant Biology

Title: *Towards multivariate QTL-mapping of key functional traits in the soybean NAM population*

Duration of funding: 2018-2019

Total amount of award: \$49,945

Role: Co-PI

Amount awarded to Purdue as PI or Co-PI: \$49,945

Agency: Indiana Corn Marketing Council

Title: *Monitoring insect resistance to transgenic corn: applying high-throughput phenotyping to improve early detection methods*

Duration of funding: 2018-2019

Total amount of award: \$49,813

Role: PI

Amount awarded to Purdue as PI or Co-PI: \$49,813

Involvement in Graduate/Undergraduate Training

*** Denotes mentoring activity**

Current Graduate Student Advisees*

Major Advisor

Raquel Peron, PhD, PuLSE and Entomology

Thesis project: Hyperspectral phenotyping plant stress

Thesis title: TBD

Taylor Nelson, MS, Entomology

Thesis project: Canopy processes in a managed, mixed-species forest

Thesis title: TBD

Slyvia (Minjee) Park, PhD, FNR

Thesis project: Hyperspectral characterization of forest health

Thesis title: TBD

Graduate Student Committees:

Christie Shee, PhD Entomology (major advisor: Kaplan)

Thorsten Hansen, PhD Entomology (major advisor: Enders)

Geoffrey Williams, PhD Forestry and Natural Resources, (major advisor: Ginzel)

Rachel Hiles, MS Botany and Plant Pathology (major advisor: Iyer-Pascuzzi)

Previous graduate students:

Marguerite Bolt, MS 2019 Entomology (Major advisor)

Veronica Campos-Medina, PhD 2017 Entomology, Purdue University (Advisor: Stewart)

Alexander Brito MS 2016, Entomology, UW-Madison (Advisor: Townsend)

Ryan Sword, MS 2015, Forest and Wildlife Ecology, UW-Madison (Advisor: Townsend)

Undergraduate mentoring experience at Purdue University

18 students since 2016 from ABE, BIO, ENTM, EEE, and FNR

Undergraduate mentoring experience at UW-Madison

>30 since 2008, 17 from URM groups in science

Research Presentations

Invited Departmental Seminar

- 2019 School of Integrative Biology, University of Illinois Urbana-Champaign. Using hyperspectral information for understanding plant stress. **JJ Couture**
- 2018 Department of Biological Sciences, Western Michigan University, Kalamazoo, MI. Integrating spectroscopy with plant ecology. **JJ Couture**
- 2017 Department of Plant Pathology, University of Wisconsin-Madison, Madison, WI. Utilizing spectroscopy to identify plant stress. **JJ Couture**
- 2015 Department of Botany, Trinity College, Dublin, Ireland. Chemical variation, spectroscopy, and plant ecology. **JJ Couture**

Invited Presentations

- 2019 American Geophysical Union. A database of foliar functional trait maps over NEON domain. Z Wang, A Chuls, R Geygan, Z Ye, T Zheng, A Singh, **J Couture**, J Cavender-Bares, EL Kruger, PA Townsend.
- 2019 Entomological Society of America North Central Branch Meeting, Cincinnati, OH. Utilizing spectroscopy for food security. Peron R, Cotrozzi R, Tunistra M, Micklebart M, Mohammadi M, Russel B, Stuart J, Campos-Medina V, **Couture J.**
- 2019 Entomological Society of America North Central Branch Meeting, Cincinnati, OH. Influence of agronomic management practices on hemp insect interactions. Bolt M, Beckerman J, **Couture J.**
- 2018 Entomological Society of America Joint Annual Meeting, Vancouver, B.C., Canada. Integrating hyperspectral data into hemp management. **Couture J**, Bolt M, Beckerman J
- 2018 Entomological Society of America Joint Annual Meeting, Vancouver, B.C., Canada. Impact of agronomic management decisions on industrial hemp foliar quality and insect performance. Bolt M, Beckerman **J**, **Couture J**
- 2018 Ecological Society of America, New Orleans, LA. Hyperspectral detection of plant chemical defenses and responses to herbivory. **J Couture**
- 2017 Entomological Society of America, Denver, CO. Influence of genetics and management on hemp-arthropod interactions. M Bolt, J Beckerman, **J Couture**
- 2017 Entomological Society of America, Denver, CO. Influence of variety and management on chemically mediated hemp-pest interactions. **J Couture**, M Bolt, J Beckerman

- 2017 European Association for Potato Research Triennial Conference, Versailles, France. Evaluation of hyperspectral reflectance for estimating dry matter and sugar concentration in a processing potato population. C Frederick, **J Couture**, P Bethke
- 2017 American Phytopathological Society, San Antonio, TX. Developing the capacity of reflectance spectroscopy for early late blight detection in potato. K Morey-Gold, **JJ Couture**, PA Townsend, AJ Gevens
- 2017 Ecological Society of America, Portland, OR. Consequences of atmospheric change for forest canopy insects: damage, deposition, and constraints on decarbonization. RL Lindroth, **JJ Couture**, TD Meehan, Kruger EL
- 2017 Gordon Research Conference: Plant-Herbivore Interactions, Ventura, CA. Utilizing hyperspectral remote sensing to integrate landscape and chemical ecology to understand the influence of trophic-level interactions on ecosystem functioning. **JJ Couture**, A Singh, A Brito, CC Kingdon, SP Serbin, PA Townsend
- 2017 Purdue Plant Science Symposium, West Lafayette, IN. Hyperspectral detection of plant stress responses. **JJ Couture**
- 2016 Ecological Society of America National Meeting, Fort Lauderdale, FL. Beyond phenotyping: linking genetics to imaging spectroscopy to understand ecosystem function. A Singh **JJ Couture**, PA Townsend. In: Airborne Remote Sensing for 21st Century Ecology
- 2016 Ecological Society of America National Meeting, Fort Lauderdale, FL. Relationships among the diversity of plant phenolic compounds and foliar optical properties. **JJ Couture**, RL Lindroth, PA Townsend. In: Linking remotely sensed optical diversity to plant functional, genetic, and phylogenetic diversity.
- 2015 Entomological Society of America National Meeting, Minneapolis, MN. Utilizing spectroscopy in milkweed ecology to advance monarch conservation. In: Monarch Conservation in North America: Challenges and Opportunities. **JJ Couture**, PA Townsend
- 2015 Ecological Society of America National Meeting, Baltimore, MD. Relative influences of landscape-level drivers on insect-mediated forest processes. In: Hyperspectral Remote Sensing Data Supports 21st Century Ecological Theory. **JJ Couture**, A Singh, A Brito, C Kingdon, SP Serbin, PA Townsend
- 2015 NASA Carbon Cycle and Ecosystems Joint Science Workshop, Washington, DC. Remote sensing and *in situ* measurements of ecosystem functioning. P Townsend, J Gamon, C Kingdon, A Singh, S Serbin, **J Couture**, E Kruger
- 2014 International Society of Chemical Ecology, Urbana, IL. Plant insect interactions in a carbonated/ozonated world. RL Lindroth, ML Hillstrom, **JJ Couture**, TD Meehan, EL Kruger
- 2013 Annual Gypsy Moth Review, Evanston, IL. Atmospheric change alters gypsy moth performance. **JJ Couture**
- 2013 Gordon Research Conference on Plant-Herbivore Interactions, Ventura, CA. Foliar bacteria help structure gypsy moth midgut bacterial communities and interact with phenolic glycosides to affect insect performance. C Mason, **J Couture**, P Townsend, K Raffa
- 2010 Gordon Research Conference: Plant-Herbivore Interactions. Galveston, TX. Impact of atmospheric change on foliar quality and community-level herbivory in a northern temperate forest. **JJ Couture**, TD Meehan, RL Lindroth
- 2009 Department of Energy, BER, Investigator Meeting, Washington D.C. Atmospheric change influences insect-mediated ecosystem processes at Aspen-FACE. **JJ Couture**, TD Meehan, ML Hillstrom, RL Lindroth
- 2009 17th Plant Biology Symposium: "Plant-Soil Interactions in Future Climates", Penn State University, University Park, PA. Consequences of atmospheric change for plant-insect interactions in forest ecosystems. Lindroth RL, ML Hillstrom, **JJ Couture**, TD Meehan, EB Mondor

Scholarly Presentations

- 2019 ESA – HD David De La Matter & Nikki
- 2019 XXV IUFRO World Congress Productivity-diversity relationships in mixed hardwood plantations M Montague, K Blackstone, L Cotrozzi, N Ibarluzea, E LaRue, T Nelson, F Wagner, **J Couture**, B Hardiman, G McNickle, D Jacobs.
2019 Society of American Foresters, Louisville, KY. Productivity-diversity relationships in mixed hardwood plantations. M Montague, K Blackstone, L Cotrozzi, N Ibarluzea, E LaRue, T Nelson, F Wagner, **J Couture**, B Hardiman, G McNickle, D Jacobs.
- 2019 Entomological Society of America Annual Meeting, St. Louis, MO. Impact of tree biodiversity on insect-mediated canopy processes. T Nelson, L Cotrozzi, G McNickle, B Hardiman, D Jacobs, **J Couture**
- 2019 Entomological Society of America Annual Meeting, St. Louis, MO. Hyperspectral reflectance can pre-symptomatically detect cucumber beetle vectored bacterial wilt (*Erwinia tracheiphila*) infection. E Tronson, L Ingwell, **J Couture**, I Kaplan
- 2019 Entomological Society of America Annual Meeting, St. Louis, MO. Aphid species specializing on milkweed have distinct symbiont communities. L Enders, T Hansen, K Birchler, **J Couture**, E French
- 2019 Ecological Society of America Annual Meeting, Louisville, KY. The effects of herbivory by the longhorned milkweed beetle (*Tetraopes tetrophthalmus*) on asexual and sexual reproduction of common milkweed (*Asclepias syriaca*). N Gustafson, **J Couture**, H Dalglish
- 2019 Entomological Society of America North Central Branch Meeting, Cincinnati, OH. Impact of tree biodiversity on canopy damage rates. T Nelson, L Cotrozzi, G McNickle, B Hardiman, D Jacobs, **J Couture**
- 2018 American Seed Trade Association, Washington, DC. Hyperspectral detection of traits related to crop plant physiology and stress responses. R Peron, L Cotrozzi, L Enders, M Micklebart, B Russel, M Mohamadi, **J Couture**
- 2018 Entomological Society of America North Central Branch Meeting, Madison, WI. Hyperspectral detection of traits related to crop plant physiology and stress responses. R Peron, L Cotrozzi, L Enders, M Micklebart, **J Couture**
- 2018 Entomological Society of America North Central Branch Meeting, Madison, WI. Influence of variety and management on chemically mediated hemp-pest interactions. M Bolt, J Beckerman, **J Couture**
- 2018 Ohio Valley Entomological Association, Indianapolis, IN. Influence of cultivar and management on chemically mediated hemp-pest interactions M Bolt, J Beckerman, **J Couture**
- 2017 Ecological Society of America, Portland, OR. Inherent and plastic differences in traits shape how neighbors affect the growth of young trees. LJ Williams, A Stefanski, **JJ Couture**, Améztegui A, J Cavender-Bares, Messier C, Paquette A, Reich PB, Townsend PA
- 2017 Ecological Society of America, Portland, OR. Biogeographic variation in common milkweed (*Asclepias syriaca*) functional and defensive traits, and their effect on monarch (*Danaus plexippus*) fitness. DS De La Mater III, **JJ Couture**, Puzey JR, Dalglish HJ
- 2017 Ecological Society of America, Portland, OR. Recruiting participants for a distributed research and education project investigating local adaptation in common milkweed, *Asclepias syriaca*. EK Molh, J Beston, S Brauner, **JJ Couture**, M Koomen, A Kula, AC McCall, JN Styrsky
- 2017 European Association for Potato Research Triennial Conference, Versailles, France. Evaluation of hyperspectral reflectance for estimating dry matter and sugar concentration in a processing potato population. C Frederick, **J Couture**, P Bethke
- 2017 Entomological Society of America, NCB, Indianapolis, IN. Spectral phenotyping of Hessian fly-wheat interactions. V Campos-Median, S Amatya, J Jin, JJ Stewart, **JJ Couture**
- 2017 American Phytopathological Society, San Antonio, TX. Developing the capacity of reflectance spectroscopy for early late blight detection in potato. K Morey-Gold, **JJ Couture**, PA Townsend, AJ Gevens

- 2016 International Congress of Entomology, Orlando, FL. Impacts of elevated atmospheric CO₂ and O₃ on canopy defoliation in a northern temperate forest system. RL Lindroth, **JJ Couture**, TD Meehan, Kruger EL
- 2016 Ecological Society of America, Fort Lauderdale, FL. Sustained effects of vernal freeze damage on aspen growth, phenology, and chemical defense. KF Rubert-Nason, **JJ Couture**, RL Lindroth
- 2015 American Geophysical Union, San Francisco, CA. Phylogenetic Distribution of Leaf Spectra and Optically Derived Functional Traits in the American Oaks. J Cavender-Bares, JE Meireles, **JJ Couture**, M Kaproth, PA Townsend
- 2015 American Geophysical Union, San Francisco, CA. Mapping variation in vegetation functioning with hyperspectral imagery. PA Townsend, **JJ Couture**, EL Kruger, SP Serbin, A Singh
- 2015 ASA-CSSA-SSSA Annual Meeting, Minneapolis, MN. Estimation of specific leaf area and nitrogen concentration in sweet corn and snap bean using narrowband reflectance spectroscopy and partial least square regression. M Yuan, **JJ Couture**, MD Ruark, PA Townsend, WL Bland
- 2015 American Geophysical Union, San Francisco, CA. Phylogenetic distribution of leaf spectra and optically derived functional traits in the American oaks. JM Cavender-Barres, JE Meireles, **Couture JJ**, PA Townsend
- 2015 Ecological Society of America National Meeting, Baltimore, MD. Effects of vernal freeze damage on aspen growth and colonization by aphids. KF Rubert-Nason, **JJ Couture**, Gryzmala E, RL Lindroth
- 2015 Ecological Society of America National Meeting, Baltimore, MD. Effects of density and herbivory on leaf traits of common milkweed (*Asclepias syriaca*). A Kula, MH Hey, **JJ Couture**, P Montalvo, HJ Dalglish
- 2015 Ecological Society of America National Meeting, Baltimore, MD. Consequences of plant density and natural versus simulated herbivory for common milkweed. MH Hey, **JJ Couture**, HJ Dalglish
- 2015 Ecological Society of America Mid-Atlantic Chapter Annual Meeting, Elizabethtown, PA . Consequences of plant density and natural versus simulated herbivory for common milkweed. MH Hey, **JJ Couture**, HJ Dalglish
- 2014 Ecological Society of America National Meeting, Sacramento, CA. Quantifying the variability of ecosystem functional traits and plant metabolism with field and imaging spectroscopy. SP Serbin, A Singh, CC Kingdon, **JJ Couture**, EL Kruger, BE McNeil, PA Townsend
- 2014 International Society of Chemical Ecology, Urbana, IL. Gypsy moth (*Lymantria dispar*) herbivory affects the spatial distribution of induced phytochemical defenses in trembling aspen (*Populus tremuloides*). KF Rubert-Nason, **JJ Couture**, RL Lindroth
- 2013 American Geophysical Union, San Francisco, CA. Spectral data captures important variability between and among species and functional types. PA Townsend, SP Serbin, CC Kingdon, A Singh, **JJ Couture**, MD Madritch, J Gamon
- 2013 Ecological Society of America National Meeting, Minneapolis, MN. Relationships among remotely sensed canopy chemistry and herbivorous insect dynamics in urban forests. RM Sword, **JJ Couture**, PA Townsend
- 2013 Gordon Research Conference on Plant-Herbivore Interactions, Ventura, CA. Genetic variation among *Mimulus guttatus* populations in resistance to generalist and specialist herbivores. L Holeski, **J Couture**, R Lindroth
- 2012 ForestSAT, Portland, OR. Detection of genetic diversity in aspen forests using AVIRIS and Landsat imagery. C Kingdon, M Madritch, **J Couture**, K Mock, R Lindroth, A Singh, P Townsend
- 2012 ForestSAT, Portland, OR. *Characterization of forest ecosystem functioning using imaging spectroscopy and thermal IR imagery*. SP Serbin, A Singh, **JJ Couture**, C Kingdon, EL Kruger, PA Townsend

- 2011 Entomological Society of America National Meeting, Reno, NV. Atmospheric change alters insect-mediated ecosystem processes in a northern temperate forest. **JJ Couture**, TD Meehan, RL Lindroth
- 2010 Ecological Society of America, National Meeting, Pittsburgh, PA. Consequences of atmospheric change for plant-insect interactions in forest ecosystems. ML Hillstrom, **JJ Couture**, TD Meehan, RL Lindroth
- 2008 XXIII International Congress of Entomology, Durban, South Africa. Dynamics and impact of chemical defense expression in a plant-aphid-coccinellid interaction. SB Malcolm, **JJ Couture**, B Blaauw
- 2008 Ecological Society of America National Meeting, Milwaukee, WI. Impact of atmospheric change on community herbivory in a northern temperate forest. **JJ Couture**, TD Meehan, RL Lindroth
- 2005 Midwest Ecology and Evolution Conference, University of Southern Illinois, Carbondale, IL. Herbivore density influences a plant defense response: implications across multiple trophic levels. **JJ Couture**, SB Malcolm
- 2005 Entomological Society of America, North Central Branch, Purdue University, West Lafayette, IN. Effect of specialist herbivore density on chemical defense and growth of a milkweed: *Aphis nerii* and the cardenolides of *Asclepias curassavica*. **JJ Couture** and SB Malcolm

Outreach Presentations and Publications

- 2019 Purdue University, Turf Field Day, William H Daniel Turfgrass Research and Diagnostic Center: Remote monitoring of turfgrass stress **JJ Couture**, D Richmond
- 2017 Purdue University, Hemp Field Day, Meigs Farm, TPAC
- 2017 University of Wisconsin Extension Potato Growers Expo, Stevens Point, WI. From leaves to canopies: Using spectroscopy for monitoring of potatoes. P Townsend, **J Couture**, C Kingdon, A Jablonski, I Hermann, P Bethke, A Charkowski, A Gevens R Groves, S Jansky, F Navarro
- 2017 Indiana Horticultural Congress, Indianapolis, IN. Hyperspectral detection of plant stress and quality. **JJ Couture**
- 2016 University of Wisconsin Extension Potato Growers Expo, Stevens Point, WI. Spectroscopic determination of potato variety and PVY infection. **J Couture**, A Singh, A Charkowski, R Groves, F Navarro, P Townsend
- 2015 University of Wisconsin Extension Potato Growers Expo, Stevens Point, WI. Novel applications of spectroscopy in agriculture. **JJ Couture**, PA Townsend

Evidence of National and International Contributions and Service

- 2019 USDA CARE panel reviewer
- 2018 NSF Macrosystems and Early NEON Science panel reviewer
- 2018 EPA ISA Ozone Science panel reviewer

Journal Reviews

Reviewer: Arthropod-Plant Interactions, Biology Letters, Chemoecology, Ecological Applications, Ecology, Entomologia Experimentalis et Applicata, Environmental Entomology, Environmental Pollution, Ecological Entomology, Forest Ecology and Management. Insect Science, Journal of Innovative Optical Health Services, Journal of Plant Ecology, Journal of Photogrammetry and Remote Sensing, Journal of Thermal Biology, Plant Methods, Plant and Soil, Remote Sensing of Environment, Tree Physiology

Organized Symposia

- 2016 Ecological Society of America National Meeting, Fort Lauderdale, FL. **Co-organizer**, Session title: Linking remotely sensed optical diversity to plant functional, genetic, and phylogenetic diversity

International Collaborations

- Wrote external letter of support for approval of dissertation by Lorenzo Cotrozzi, University of Pisa, Italy
- Continued research collaboration with University of Pisa on using hyperspectral data for monitoring tree stress (HTIRC funded)
- Published invited review with European colleagues:
Cotrozi L, Townsend PA, Pellegrini E, Nalia C, **Couture JJ** (2018) Reflectance spectroscopy: a novel approach to better understand and monitor the impact of air pollution on Mediterranean plants. **Environmental Science and Pollution Research.**

Service:

College Contributions

2020 AgSeed Reviewer – Forestry/Entomology Panel
2019 Data Science and Digital Agriculture Steering Committee
2018-current PuLSE Admission Committee - Integrative Plant Science Training Group
2017 Horizon Student Support Services Faculty Mentor
2017 AgSEED reviewer – Plant Genetics panel
2018 AGRY search committee

Departmental Contributions

ENTM

2018-19 Horticultural Entomologist Search Committee
2018 Social Media Focus group
2017-current Leadership Development Certificate Program faculty representative
2019-current Teaching and Curriculum Committee
2019-current Safety Committee

FNR

2018 Digital Forestry focus group
2018 HTIRC Forest Remote Monitoring focus group
2017 Judge for Forestry and Natural Resources student poster competition

Youth education

2009-2016 UW Insect Ambassadors, youth education (K-12) education about insects and the roles they play in the environment.

2017-current Tippecanoe Co., youth education (K-12) education about insects and the roles they play in the environment.

Workshops

2015 Ecological Spectral Information System (EcoSIS), University of Wisconsin-Madison, Madison, WI

Professional Affiliations/Memberships

Entomological Society of America, Hardwood Tree Improvement and Regeneration Center, Purdue Center Plant Biology, Purdue Climate Change Research Center