NEAL M. WILLIAMS – Curriculum Vitae

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EDUCATION:

University of Wisconsin, Madison, WI, USA	B.S.	1992	Botany and Zoology
Edinburgh University, Edinburgh, Scotland, UK	non degree	1990-1991	Botany, History and Philosophy of Science
State University of New York, Stony Brook, NY, USA	Ph.D.	1999	Ecology and Evolution

APPOINTMENTS:

2013- Associate Professor, Department of Entomology, University of California-Davis

2009-2013 Assistant Professor, Department of Entomology, University of California-Davis

2004-2009 Assistant Professor, Department of Biology, Bryn Mawr College

2001-2003 Postdoctoral Researcher, Department of Ecology and Evolutionary Biology, Princeton

ACADEMIC HONORS

Fellowships

2001-2003 D.H. Smith Conservation Research Postdoctoral Fellow, Princeton University, Princeton, NJ

1999-2000 I.W. Killam Foundation Postdoctoral Fellow, University of Calgary, Alberta, Canada.

Awards

2015-2020 Chancellor's Fellow, University of California, Davis

2013 Pacific Branch ESA, Team Research Award

2008 Lindback Award for Excellence in Teaching (Bryn Mawr College)

GRANTS RECEIVED (FEDERAL & STATE)

2016-2019 National Science Foundation DEB 1556885, *Exploring the role of dominant species in determining the biodiversity ecosystem function relationship across spatial scales.* (Williams Co-PI, R Winfree PI)

2015-2018 USDA-NRCS-Conservation Innovation Grant, *Supporting honey bees and native almond pollinators through improved forage.*

2014-2018 National Science Foundation DEB 1354022, *Collaborative Research: Effects of pulsed floral resources on pollinator population dynamics*. (Williams PI, E. Crone Co-PI)

2013-2016 USDA-NRCS-Conservation Innovation Grant, *Next steps in pollinator conservation: Operations and Maintenance, Organic Habitat Restoration, Expanding Seed Mix Choices, and Assessing Conservation Effectiveness.* (Williams Co-PI, Xerces Society PI)

2012-2017 USDA-AFRI Specialty Crop Research Initiative, *Integrating Native Bees into Sustainable Pollination Strategies for Specialty Crops.* (Williams Co-PI, R. Isaacs PI MSU)

2010-2013 California Department of Food and Agriculture, Specialty Crop Research, *Best management practices for hybrid onion seed production to improve crop sustainability in California*. (Co-PI with R. F. Long)

2010-2013 USDA-NRCS-Conservation Innovation Grant, *Development and Validation of Protocols for Assessing Functioning of Pollinator Habitat Plantings for Agricultural Settings*.

2010-2013 National Science Foundation DMS 1022639, *Evolutionary responses to limiting factors in heterogeneous environments*. (Co-PI with Schreiber and Rosenheim)

2010-2011 USDA SCRI-CAP Planning Grant, *Conserving native bees and valuing their services for sustainable specialty crop production.* (Co-PD with PD R. Isaacs)

2009-2012 National Science Foundation DEB 0918484, *Collaborative Research: Reassembling Pollinator Communities to Promote Pollination Function at the Landscape scale*. (Williams Co-PI, Kremen PI)

2009-2012 USDA AFRI 2009-02305, *Strategies for Promoting Reliable Crop Pollination by native bees*. (Co-PI with R. Winfree, Rutgers)

2007-2009 USDA-CSREES Sustainable Agriculture Research and Education, *Promoting Sustainable Crop Pollination by Wild Bees through Farmer Outreach and Education.*

2005-2008 National Science Foundation DEB 0516205, *Collaborative Research: Community disassembly and ecosystem function: pollination services across agro-natural landscapes.* (Co-PI with C. Kremen, Princeton)

2004-2010 National Center for Ecological Analysis and Synthesis (NCEAS), *Restoring an ecosystem service to degraded landscape: native bees and crop pollination*. (PI with C. Kremen, UC Berkeley)

2004-2007 National Science Foundation DEB 0418871, *Contributions of Specialist pollinators to generalist plants: when do specialists matter? (*Co-PI with R. L. Minckley T. H. Roulston)

PUBLICATIONS AND SUBMITTED MANUSCRIPTS

Journal Articles

. Genung, M. A., Fox, J., **Williams, N. M**., Kremen, C., Ascher, J. Gibbs, J. and R. Winfree. (submitted) Pollinator abundance, rather than species richness, drives the temporal variability of pollination services. Ecology Letters, June 10, 2016.

63. Ullmann, K.S., Meisner, M. H. and **N. M. Williams**. (2016) Impact of tillage on a ground nesting, crop-pollinating bee. Agriculture Ecosystems and Environment. (in press)

62. Parker, A.*, **Williams, N. M.**, J. D. Thomson. (2016) Specialist pollinators deplete pollen in the spring ephemeral wildflower *Claytonia virginica*. Evolution and Ecology. DOI:10.1002/ece3.2252

61. M'Gonigle, L. K., **Williams, N. M.**, Lonsdorf, E., and C. Kremen. (2016) A tool for selecting plants when restoring habitat for pollinators. Conservation Letters 1-7. DOI: 10.1111/conl.12261

60. Crone, E. E., and **N. M. Williams**. (2016) Bumble bee colony dynamics: quantifying the importance of land use and floral resources for colony growth and queen production. Ecology Letters. 19:460-468.

59. Rosenheim, J. A., **N. M. Williams**, S. J. Schreiber, and J. M. Rapp. (2016) Modest pollen limitation of lifetime seed production is in good agreement with modest uncertainty in whole-plant pollen receipt. American Naturalist. 187:397–404.

58. Koh, I., Lonsdorf, E.V., **Williams, N. M.**, Brittain, C.*, Isaacs, R., Gibbs, J., and T.H. Ricketts. (2015) Modeling the status, trends, and impacts of wild bee abundance in the United States. Proceedings of the National Academy of Sciences. 113:140-145.

57. Gillespie, S.*, R. Long, and **N. M. Williams**. (2015) Indirect effects of field management on pollination service and seed set in hybrid onion seed production. J Economic Entomology 108 (6):2511-2517.

56. Rosenheim, J. A., S. J. Schreiber, and **N. M. Williams**. (2015) Does an "oversupply" of ovules cause pollen limitation? New Phytologist 210:324-332.

55. Fründ, J.*, K.S. McCann and **N. M. Williams**. (2015) Sampling bias is a challenge for quantifying specialization and network structure: lessons from a quantitative niche model. Oikos 125:502-513.

54. **Williams, N. M**., Ward, K. L., Pope, N.*, Isaacs, R. Wilson, J., May, E. A., Ellis, J., Daniels, J., Pence, A., Ullmann, K. and J. Peters. (2015) Native wildflower plantings support wild bee abundance and diversity in agricultural landscapes across the United States Ecological Applications 25:2119-2131.

53. Kleijn, D., Scheper, J., R. Winfree, et al.. (2015) Delivery of crop pollination services is an insufficient argument for wild pollinator conservation. Nature Communications, 6:7414.

52. Bartomeus, I., Fründ, J. and **N. M. Williams**. (2015) Invasive plants as novel food resources, the pollinators' perspective. bioRxiv Cold Spring Harbor Labs Journal. 018952.

51. Forrest, J. R. K.*, Thorp, R. W., Kremen, C. and **N. M. Williams**. (2015). Contrasting patterns in species and functional-trait diversity of bees in an agricultural landscape, Journal of Applied Ecology 52: 706-715.

50. Winfree, R., J. W. Fox, **N. M. Williams**, J. R. Reilly, and D. P. Cariveau. (2015) Abundance of common species, not species richness, drives delivery of a real-world ecosystem service. Ecology Letters. doi: 10.1111/ele.12424.

49. Schreiber, S. J., J. A. Rosenheim, **Williams, N. M.** and L. D. Harder. (2015) Evolutionary and Ecological Consequences of multiscale variation in pollen receipt for seed production. The American Naturalist 185:E14–E29.

48. Wilkerson, M. L.*, Ward, K. L., **Williams, N. M.**, Ullmann, K. S.* and T. P Young. (2014) Diminishing returns from higher density restoration seedings suggest tradeoffs in pollinator seed mixes. Restoration Ecology 22:782-789.

47. Gillespie, S.*, Long, R., Seitz, N.* and N. M. Williams. (2014) Insecticide use in hybrid onion seed production affects pre- and post-pollination processes. Journal of Economic Entomology 107:29-37.

46. Winfree, R., **Williams, N. M.,** Dushoff, J. and C. Kremen. (2014) Species abundance, not diet breadth, drives the persistence of the most linked pollinators as plant-pollinator networks disassemble. American Naturalist.183:600-611.

45. Rosenheim, J., Schrieber, S. and **N. M. Williams.** (2014) Parental optimism versus parental pessimism in plants: how common should we expect pollen limitation to be? American Naturalist 184:75-90.

44. Garibaldi, L.A., Steffan-Dewenter, I., Winfree, R., Aizen, M.A., Bommarco, R., Cunningham, S.A., Kremen, C., Carvalheiro, L., Harder, L.D., Afik,O., Bartomeus, I., Benjamin, F., Boreux, V., Cariveau, D., Chacoff, N.P., Dudenhöffer, J.H., Freitas, B.M., Ghazoul, J., Greenleaf, S.A., Hipólito, J., Holzschuh, A., Howlett, B., Isaacs, R., Javorek, S.K., Kennedy, C.M., Krewenka, K., Krishnan, S., Mandelik,Y., Mayfield, M.M., Motzke, I., Munyuli, T., Nault, B. A., Otieno, M., Petersen, J., Pisanty, G., Potts, S.G., Rader, R., Ricketts, T.H., Rundlöf, M., Seymour, C.L., Schüepp, C., Szentgyörgyi, H., Taki, H., Tscharntke,T., Vergara, C.H., Viana, B. F., Wanger,T. C., Westphal, C., Williams, N., Klein, A.M. (2013) Wild Pollinators Enhance Fruit Set of Crops Regardless of Honey Bee Abundance. Science: 28 February 2013 / 10.1126/science.1230200.

43. Minckley, R.L., Roulston, T.H. and **N. M. Williams.** (2013) Resource assurance predicts specialist and generalist bee activity in drought. Proceedings of the Royal Society Series B 280 20122703 http://dx.doi.org/10.1098/rspb.2012.2703.

42. Golet, G. H., Brown, D. L., Carlson M., Gardali, T., Henderson, A., Holl, K. D., Howell, C. A., Holyoak, M., Hunt, J. W., Kondolf, G. M., Larsen, E. W., Luster, R. A., McClain, C., Nelson C., Paine, S., Rainey, W., Rubin, Z., Shilling, F., Silveira, J.G., Swagerty, H., **Williams, N. M**. , and Wood, D. M. (2013) Successes, failures and suggested future directions for ecosystem restoration of the middle Sacramento River, California. San Francisco Estuaries and Watershed Science 11(3):1-29.

41. Cariveau, D., **Williams, N. M.,** Benjamin, F., and R. Winfree. (2013) Response diversity to land use occurs but does not consistently stabilize ecosystem services provided by native pollinators. Ecology Letters 16:903-911.

40. Kennedy, C. M.*, Lonsdorf, E., Neel, M. C., **Williams, N. M**., Ricketts, T. H. et al. (2013) A global quantitative synthesis of local and landscape effects on native bee pollinators in agroecosystems. Ecology Letters doi: 10.1111/ele.12082.

39. **Williams, N. M.** and R. Winfree. (2013) Pollinator visitation but not landscape urbanization drives native plant pollination. Biological Conservation 160:10-18.

38. Brittain, C.A.*, **Williams, N.M**., Kremen, C. and A.-M. Klein. (2013) Synergistic effects of non-*Apis* bees and honey bees pollinating California almond. Proceedings of the Royal Society Series B 280-1754.

37. Schleuning, M., Fruend, J., Klein, A-M., Abrahamczyk, S., Alarcón, R., Albrecht, M., Andersson, G.K.S, Bazarian, S., Böhning-Gaese, K. Bommarco, R., Dalsgaard, B., Dehling, D.M., Gotlieb, A., Hagen, M., Hickler, T., Holzschuh, A., Kaiser-Bunbury, C.N., Kreft, H., Morris, R.J., Sandel, B., Sutherland, W.J., Svenning, J.-C., Tscharntke, T., Watts, S., Weiner, C.N., Werner, M., **Williams, N.M.**, Winqvist, C., Dormann, C.F., and N. Bluethgen. (2012) Specialization of mutualistic interaction networks decreases towards tropical latitudes. In press Current Biology, http://dx.doi.org/10.1016/j.cub.2012.08.015

36. Klein, A.M., Brittain, C., Hendrix, S.D., Thorp, R. **Williams, N.M**. and C. Kremen. (2012) Wild pollination services to California almond rely on semi-natural habitat. J. Applied Ecology 49:723-732.

35. **Williams, N.M.** Regetz, J.*, and C. Kremen. (2012) Landscape-scale resources promote colony growth but not reproductive performance of bumble bees. Ecology 93:1049-1058.

34. Tomich, T. P, Brodt, S., Ferris, H., Galt, R., Horwath, W.R., Kebreab, E., Leveau, J.H.J., Liptzin, D. Lubell, M., Merel, P., Michelmore, R., Rosenstock, T., Scow, K., Six, J., **Williams, N.M.** and Yang, L. (2011) Agroecology: A Review from a Global-Change Perspective. Annual Review of Environment and Resources 36: 193-222.

33. **Williams, N.M.,** Cariveau, D., Winfree, R., and C. Kremen. (2011) Bees in disturbed habitats use, but do not prefer, alien plants. Basic and Applied Ecology 12:332-341.

32. **Williams, N.M.** (2011) Restoration of Nontarget Species: Bee Communities and Pollination Function in Riparian Forests. Restoration Ecology 19:450–459.

31. Ullmann, K.*, and **N. Williams**. (2010) Bringing native bees and forbs back to agricultural landscapes. Grasslands 20:10-11.

30. **Williams, N.M.,** Crone, E.E., Roulston, T.H., Minckley, R.L., Packer, L., S. G. Potts. (2010) Ecological and life history traits predict bee species responses to environmental disturbances. Biological Conservation. 143: 2280-2291.

29. Richards, S. A, **Williams, N.M.** and L. D. Harder. (2009) Variation in Pollination: Causes and Consequences for Plant Reproduction. American Naturalist 174:382-398.

28. Lonsdorf, E., Kremen, C., Ricketts, T., Winfree, R., **Williams, N. M.** and S. A. Greenleaf. (2009) Modeling pollination services across agricultural landscapes. Annals of Botany 103: 1589-1600.

27. Golet, G.H., Gardali, T., Hunt, J.W., Koenig, D.A. and **N. M. Williams**. (2011) Temporal and Taxonomic variability in response of fauna to riparian restoration. Restoration Ecology 19:126–135.

26. Golet, G.H., Gardali, T., Howell, C. A., Hunt, J. Luster, R.A., Rainey, W., Roberts, M.D., Silveira, J., Swagerty, H. and **Williams, N**. (2008) Wildlife Response to Riparian Restoration on the Sacramento River. San Francisco Estuaries and Watershed Science 6:1-26.

25. Winfree, R., **Williams, N.M.**, Gaines, H., Ascher, J. and C. Kremen (2008) Wild pollinators provide the majority of crop visitation across land use gradients in New Jersey and Pennsylvania. J. Applied Ecology 45:793-802.

24. Vazquez, D. P, Melian, C. J., Williams, N.M., Bluthgen, N., Krasnov, B. R. and R. Poulin. (2007) Species abundance and asymmetric interaction strength in ecological networks. Oikos 1120-1127.

23. Winfree, R., **Williams, N. M.,** Dushoff, J., and C. Kremen. (2007) Native bees provide insurance against ongoing honey bee losses. Ecology Letters 10:1105-1113.

22. **Williams, N.M.** (2007) Restoration of native bee pollinators within the Sacramento River System (California) Ecological Restoration 25: 67-68.

21. **Williams, N.M.** and C. Kremen. (2007) Persistence of bees in fragmented landscapes: *Osmia lignaria* in agro-natural mosaics Ecological Applications 17: 910-921.

20. Elliott, S. E., Irwin, R. E., Adler, L.S. and **Williams, N.M.** (2007) Nectar Alkaloids do not affect offspring performance of a native solitary bee, *Osmia lignaria* (Megachilidae). Ecol. Entomol. 33: 298-304

19. Greenleaf, S.A., **Williams, N.M**., Winfree, R., Kremen, C. (2007) Bee foraging ranges and their relationship to body size. Oecologia 153:589-596.

18. Kremen C., **Williams, N. M.**, et al. (2007) Pollination and other ecosystem services produced by mobile organisms: a conceptual framework for the effects of land use change. Ecology Letters 10:299-314.

17. Kim, J.*, **Williams, N.** and C. Kremen. (2006) Effects of cultivation and proximity to natural habitat on ground-nesting native bees in California sunflower fields. J. Kansas Entomol. Soc. 79:309-320.

16. Cane, J H., Minckley, R.L., Roulston, T.H., and **N. M. Williams**. (2006) Multiple responses of a desert bee guild (Hymenoptera: Apiformes) to urban habitat fragmentation. Ecological Applications 16: 632-644.

15. Larsen, T., **Williams, N.M**. and C. Kremen. (2005) Extinction order and altered community structure rapidly disrupt ecosystem functioning. Ecology Letters 8: 538-547.

14. Winfree, R., Dushoff, J., Budny, R., **Williams, N. M.** and C. Kremen. (2005) Testing simple indices of habitat proximity. American Naturalist 165: 707-717.

13. Kremen, C. **Williams, N. M**., Bugg, R. L., Fay, J. P., Thorp, R. W. (2004) The area requirements of an ecosystem service, crop pollination by native bee communities in California. Ecology Letters 7:1109-1119.

12. Kremen, C., R.L. Bugg, N. Nicola, S.A. Smith, R.W. Thorp, and **N. M. Williams** (2003) Native bees, native plants and crop pollination in California. *Fremontia* 31(1).

11. **Williams N. M. (**2003) Use of novel pollen species by specialist and generalist solitary bees (Hymenoptera Megachilidae). *Oecologia* 134: 228-237.

10. **Williams N. M.** and V. J. Tepedino. (2002) Consistent mixing of near and distant resources in foraging bouts by the solitary mason bee *Osmia lignaria. Behav Ecol* 14(1): 141-149

9. Kremen, C., **Williams, N. M.** and R. W. Thorp. (2002) Crop pollination from native bees at risk from agricultural intensification. *Proc. Nat. Acad. Sci.* 99: 16812-16816

8. **Williams, N. M.**, Minckley, R. L. and F. Silveira. (2001) Demonstrating faunal changes in the face of natural variation in bees: the importance of baseline data. *Cons. Ecology* 5(1): 7. [online] URL: http://www.consecol.org/vol5/iss1/art7.

7. **Williams, N. M.** and Goodell, K. (2000) The association of nesting material and mandible shape in *Osmia* (Hymenoptera: Megachilidae): a morphometric analysis. *Annals Entomol. Soc. Amer*. 93(2):318-325.

6. Chittka, L., **Williams, N. M.**, Rassmussen, H.* and J. D. Thomson. (1999) Navigation without vision: bumblebee orientation in complete darkness. *Proc. R. Soc. Lond. B*. 226: 45-50.

5. **Williams, N. M.** and Thomson, J. D. (1998) Trapline foraging by bumble bees III. Temporal patterns of visitation and foraging success at single plants. *Behav. Ecology* 9 (6): 612-621.

4. **Williams, N. M.** and K. Goodell. (1996) Review of: Jones, G. D. et al. Pollen of the Southeastern United States: with Emphasis on Melissopalynology and Entomopalynology. AASP Contribution Series, Number 30. *Quarterly Review of Biology*, 71: 279-280.

3. Waser, N. M., Chittka, L., Price, M. V., **Williams, N. M.**, Ollerton, J. (1996) Generalization in pollination systems and why it matters. *Ecology* 77(4): 1043-1060.

2. Jeanne, R. L. and **N. M. Williams**. (1992) Age polyethism and defense in a tropical social wasp. *J. Insect Behav.* 5(2): 211-227.

1. Lindsay, S., **Williams, N.** and A. F. Dyer. (1992) Wet storage of fern spores: unconventional but far more effective! Fern Horticulture: past, present, and future perspectives. 285-294.

Book Chapters

5. Isaacs, R., Blaauw, B., **Williams, N.**, Kwapong, P., Lee-Mader, E. Vaughan, M. (2015) Farm-tailored measures to sustain and enhance pollination services. *in* Pollination Services to Agriculture: Sustaining and Enhancing Key Ecosystem Service, Routledge ed.

4. Lonsdorf, E., T.H. Ricketts, C. Kremen, R. Winfree, S. Greenleaf, & **N.M. Williams**. (2011) Crop Pollination Services. *in* Natural Capital: Theory and Practice of Mapping Ecosystem Services. P. Kareiva, et al., Eds. Oxford University Press: Oxford.

3. Ricketts, T., **Williams, N. M.** and M. M. Mayfield. (2006) Connectivity and ecosystem services: crop pollination in agricultural landscapes *In* Connectivity Conservation. Crooks and Muttulingam, Eds. Cambridge University Press.

2. Harder, L. D., **Williams, N. M.,** Jordan, C. Y, Nelson, W. (2001) The effects of floral design and display on pollinator economics and pollen dispersal. pp.297-317 In: *Cognitive Ecology of Pollination*, Chittka, L. & Thomson, J. D. (eds.) Cambridge University Press, Cambridge.

1. **Williams, N. M.** and Thomson, J. D. (2001) Pollinator quality in native bees and honey bees: comparing pollen removal and deposition on *Phacelia tanacetifolia*. In: Whence the pollinators of the future, Strickler and Cane (eds) *Symp. Proceed. Entomol. Soc. Amer.*

Limited Distribution

L3. Ward, K., Cariveau, D., May, E., Roswell, M., Vaughan, M., **Williams, N. M.**, Winfree, R., Isaacs, R., and K. Gill. (2014) Streamlined Bee Monitoring Protocol for Assessing Pollinator Habitat. Xerces Society for Conservation Biology, 1-16.

L2. **Williams N.M.** and Ward, K.I. (2012) Development of wildflower mixes to promote native pollinators in agriculture. Proceedings of the 2012 California Plant and Soils Conference pp.115-119.

L1. McGlynn, E., Winfree, R. and **N. M. Williams**. How to increase native bee pollination on your farm in several simple steps (For Pennsylvania and New Jersey Farmers). Native Bee Benefits, (May 2009) 1-8.

* indicates mentoring role as undergraduate, graduate, or postdoc

INVITED TALKS (LAST 5 YEARS - ONLY LEAD AUTHOR)

2016 Pollinator responses to anthropogenic land use change *University of California, San Diego, Dept. of Ecology and Evolution*. February 25

Supporting bees for a sustainable future. *Eco-Farm Conference,* Asilomar CA, January 20

2015 Working with Growers to enhance crop pollination using wildflower plantings: Decision tools to inform pollinator plantings in agricultural lands. *Symposium Integrating Ecological and Social Science to Support Synergies and Applied Solutions in Agroecosystems, Entomological Society of America Meeting.* Minneapolis MN, November 18

Designing habitat to support pollinators and pollination service: from algorithms to implementation *Pennsylvania State University, Dept. of Plant Sciences* November 5

Enhancing Forage to Support Bees. *University of California*, *UC Bee Symposium, Keeping Bees Healthy*. May 7

Enhancing Forage for Bees. *California Department of Food and Agriculture Pollinator Meeting*, Sacramento, CA June 3

2014 Selection and testing of plant species for pollinator habitat. *Entomological Society of America Meeting.* Portland OR November 12

Strategies for sustainable pollination for almonds. *Australian Almond Conference*, Adelaide, Australia (Research Keynote) October 30

Decision frameworks for designing bee forage habitat. *USDA Honey Bee Forage and Nutrition Summit*, Arlington VA, October 20

Native bee responses to anthropogenic land use change. *Michigan State University Dept. of Entomology*. April 17

California Department of Food and Agriculture, Integrated Pollination strategies: managed and wild bees for a sustainable future. *California Department of Food and Agriculture Board*. March 2014

Pollinator responses to anthropogenic land use change. *Florida State University, Dept. of Biology.* January 23

Restoration / enhancement of native bee communities in agricultural landscapes. *Florida State University Ecology Colloquium* January 24

Responses of pollinator communities to riparian restoration "Botany for a Changing World Symposium." *Northern California Botanists Annual Meeting.* Chico, CA, January 14

2013 Integrated Crop Pollination. *California State Beekeepers Conference* (Research Keynote) Tahoe, CA November 20

Bee forage and sustainable pollination for almonds, Forage Symposium, *California Almond Conference*. Sacramento, CA (November 2013)

Integrated Pollination Strategies: Managed and Wild Bees for a Sustainable Future. *INIA Agricultural Research Institute*. La Cruz, Chile October 28

Sustainable pollination strategies for specialty crops. *UC Cooperative Extension Pollinator Workshop*, Woodland CA October 10

Responses of Pollinator Communities to Riparian Restoration, "Symposium-Ecological and taxonomic perspectives for native bees responding to habitat restoration" *Society for Ecological Restoration 2013 World Conference*, Madison, WI October 8

Selecting plant materials for pollinator restoration plantings. *Entomological Society of America, Pacific Branch*. South Lake Tahoe, NV April 9

2012 The assembly of pollinator communities and pollination interactions in targeted and non-targeted restoration. Symposium "Biological basis for pollinator habitat manipulations: Population regulation and plant restoration", *4th International EcoSummit*. Columbus, OH, USA Oct 1

Selecting plant materials for pollinator restoration plantings. Pollination & Land Rehabilitation Workshop CANPOLIN, Columbus, OH Sept 29

Promoting native pollinators in California Agriculture. Native Pollinators in Agriculture Field Day, Irvine Great Park, Irvine, CA Sept 11

Integrated Pollination for specialty crops. UC Cooperative Extension Pollination Workshop. Woodland, CA February 21

Bee life history and resource distributions determine population and community responses to agricultural landscape change. Symposium "Conservation and Sustainable Use of Pollinators: towards Global Assessments." Kyushu University, Japan January 28

Pollinator responses to anthropogenic land use change. Dartmouth College, Hanover, NH Feb 13

Development of wildflower mixes to promote native pollinators in agriculture. *2012 California Plant and Soil Conference Visalia*, CA 8 February

2011 Quantifying the links between pollinator biodiversity, pollination and landscape change. Symposium "Biodiversity, Global Change and Insect-Mediated Ecosystem Services." *Annual Meeting of the Entomological Society of America.* Reno, NV 9 November

What benefit can wild insects bring to almond pollination? *Orchard Bee Association Conference* Modesto, CA 6 December

Life history, resources complementarity and the sensitivity of pollinators to land use change. (Invited opening talk) Symposium "Drivers of Pollinator Loss in Europe"). *European Ecology Federation Conference*. Ávila, Spain 25 September.

Species traits and the sensitivity of bees to environmental change. Symposium "Conservation Issues in Pollination" *10th International ICPBR Symposium of Pollination*. Cholula, Mexico 29 June

Native bee responses to anthropogenic land use change. Symposium "Pollinator Biodiversity and Pollination Services" *Annual Meeting of the Canadian Society for Ecology and Evolution*. Banff, AB, Canada 14 May

Resource complementarity and spatial correlation influence bee communities in mosaic landscapes European Union *STEP Meeting*, Novi Sad, Serbia 26 March

PUBLIC TALKS/LECTURES

2016 Integrated crop pollination for almond *Almond Grower Field Day*, Lost Hills CA March 10

Native pollinators for orchard landscapes *UC Pomology Working Group*, Davis CA March 17

Designing habitat to support pollinators and pollination service *Marin County Beekeepers,* San Anselmo, CA January 5

2015 Designing habitat to promote sustainable crop pollination, *Down Festival*, Full Belly Farm, Rumsey CA Oct 4

Enhancing Forage for Bees *Sacramento Area Beekeepers,* Sacramento, CA July 2015

Integrated crop pollination and hedgerow design. *Xerces-UC Field day,* Williams, CA June 8

Integrated Pollination strategies: managed and wild bees for a sustainable future. *UC IPM Conference*, UC Davis April 10

2014 Forage and Integrated Almond Pollination. *California Almond Conference*, December 12

Wildflowers to support bees for almond pollination. *California Almond Conference*, December 12

Fungicide application timing and other strategies for sustainable pollination for almonds *Almond Board of Australia, Grower Workshop*, Renmark, SA, Australia November 3

Native bees and almond pollination in California's Central Valley, *Colusa County UC Cooperative Extension Workshop*. October 8

Bees and the challenges of a sustainable pollination for the future. *Davis Rotary*, Davis CA. June 24

Integrated Pollination: strategies for a sustainable future. *San Mateo Beekeepers Guild*, June 5

Habitat enhancement to support bees: agricultural to urban research. *California Center for Urban Horticulture,* UC Davis March

2013 Integrated Pollination Strategies: Managed and Wild Bees for a Sustainable Future, *Robert Mondavi Institute*, UC Davis, Fall

Integrated questions of pollination in almonds, *California Almond Conference,* Modesto CA November

Bees and sustainable pollination, Almonds and Beyond, *Almond Roundtable*, Lodi, CA

Sustainable pollination strategies for specialty crops*, UC Cooperative Extension Pollination* Woodland, CA

Pollination and sustainable food systems: Current trends and opportunities for the future. *Culinary Institute of America,* Rutherford, CA

Promoting honeybees and wild bees for sustainable pollination, *Daughters of the American Revolution*, UC Davis May

2012 Promoting native pollinators in California Agriculture. *Native Pollinators in Agriculture Field Day*, Irvine Great Park, Irvine, CA Fall

Promoting Native Bees for Gardens, Farms & Native Plants*. Davis Botanical Society*, CA May 10

The importance of pollinator and strategies for conservation. *Pollinator Gardening Workshop*, California Center for Urban Horticulture, Davis, CA April 28

2011 Native Bees and Bee Plants UC Davis Arboretum. Davis, CA, Dec 3

Attracting and Maintaining Native Bees for Garden Pollination. *California Master Gardeners Conference*, Santa Rosa, CA June 3

PRESENTED PAPERS AND POSTERS (LAST 5-YEARS)

Williams, N. M. Budery, A., Epperly, M., Tahara, K., Thorp, R. W. 2016. *International Conference on Pollinator Biology, Health and Policy*. Pennsylvania State University, PA

Williams, N. M. and Fründ, J. 2014. Agricultural land use modifies plant-pollinator interaction networks. *Annual Meeting of the Ecological Society of America*, Sacramento, CA

Fründ, J., Kevin S McCann, K. S. and **Williams, N. M.** 2014. Quantitative specialization measures in interaction networks and whether they can predict functional consequences across diversity levels. *Annual Meeting of the Ecological Society of America*, Sacramento, CA

Ullmann, K., Meisner, M. **Williams, N. M.** 2014. Effects of tillage on a ground-nesting, crop-pollinating bee. *Annual Meeting of the Ecological Society of America*, Sacramento, CA

Koh, I. Lonsdorf, E. Ricketts, T. H., **Williams, N. M.**, Isaacs, R. 2014. Spatial and temporal changes of native bee habitat quality within the United States. *North American Congress for Conservation Biology*, Missoula, MT.

Williams, N. M., Ward, K. L., Isaacs, R., May, E., Mason, K., Wilson, J., Daniels, J. C., Ellis, J. D., Pence, J. A., Peters, J., Overmyer, J. 2013. Operation Pollinator: Evaluation of flowering plant mixes for

supporting pollinator biodiversity in agricultural systems. *International Conference on Pollinator Biology, Health and Policy*. Pennsylvania State University, PA

Isaacs, R., Gibbs, J., **Williams, N. M.**, Pitts-Singer, T., Vaughan, M., Garbach, K., Rickett, T. H.. 2013. The Integrated Crop Pollination Project: supporting pollination in U.S. specialty crop. *International Conference on Pollinator Biology, Health and Policy*. Pennsylvania State University, PA

Cariveau, D. P., **Williams, N. M.**, Ward, K., Roswell, M. Isaacs, R., May, E. and Winfree, R. 2013. How to assess pollinator restorations efficiently. *International Conference on Pollinator Biology, Health and Policy*. Pennsylvania State University, PA

Williams, N. M. and Isaacs, R. Operation Pollinator: Evaluation of flowering plant mixes for supporting pollinator biodiversity in agricultural systems International Conference on Pollinator Biology, Health and Policy, Pennsylvania State University, PA

Ward, K., Brittain, C. A. and Williams, N. M. 2013. How to build it so they come – identifying key floral resources and designing effective seed mixes for pollinator habitat in agricultural landscapes of California

Ward, K. I., Brittain, C.A., Rowe, L.M., and **Williams, N.M**. 2013. Wildflowers for honey bees: identifying native plants that support honey bees in agricultural landscapes of California. St Louis MO.

Jaret C. Daniels, James D. Ellis and J. Akers Pence, University of Florida; Jeff Peters, Syngenta Crop Protection; Neal Williams and Kimiora Ward, Rufus Isaacs, Julianna Tuell, Emily May and Keith Mason, Michigan State University; Don Wagge. 2012. Operation Pollinator: Evaluation of flowering plant mixes for attracting insect pollinators in agricultural systems *Annual Meeting of the Entomological Society of America.*

Williams, N. M. Lonsdorf, E. and Forrest, J. 2012 Life history and resource distribution determine bee sensitivity to land use change. *Annual Meeting of the Ecological Society of America*, Portland OR

Rosenheim, J.A. **Williams, N.M**. & Schreiber, S.J. 2011. Pollen limitation: how common should we expect it to be? *Annual Meeting of the Entomological Society of America,* Reno, NV

Gillespie, S., Long, R.F. & **Williams, N.M.** 2011. Honey bee (*Apis mellifera*) pollination affects onion seed set in California Central Valley. *Annual Meeting of the Entomological Society of America,* Reno, NV

Winfree, R. Kremen, C. & **Williams N.M**. 2011. Pollinator biodiversity and pollination services: a multiyear study. *Annual Meeting of the Entomological Society of America,* Reno, NV

Williams, N.M., Kennedy, C., Lonsdorf, E. & Kremen C. 2011. Modeling pollinators across agricultural land-scapes.*10th International Symposium of Pollination,* Cholula, Mexico

Ullmann, K.# & **N.M. Williams**. 2011. Population persistence in dynamic landscapes: The role of spatiotemporal connectivity. *Annual Meeting of the Ecological Society of America,* Austin TX

Winfree, R., Kremen, C., Dushoff, J. & **N.M. Williams.** 2011.Pollinator community disassembly across land use gradients. *Annual Meeting of the Ecological Society of America,* Austin TX

Williams, N.M., Winfree, R. & Kremen, C. 2010. Landscape Change does not drive disassembly of pollinator communities or pollination of spring wildflowers. *Annual Meeting of the Ecological Society of America*, Pittsburgh, PA (poster session)

Winfree, R. **Williams, N.M.** 2010. Pollinator community change along human disturbance gradients. *Botanical Society of America Annual Meeting,* Providence, RI

Chittka, L. & **Williams, N. M.** 1996. Orientation of bumble bees without vision: foraging in total darkness. *Annual Meeting, Animal Behavior Society*, Flagstaff, AZ

Williams, N.M. & Thomson, J.D. 1995. Flocking in bumble bees: periodic foraging at focal *Penstemon strictus* plants. *Annual Meeting, Ecological Society of America,* Snowbird, UT

Graduate Advisee, * Undergraduate Advisee

TEACHING EXPERIENCE

Courses Taught

Graduate

2016 Structure and Function in Bi-partite Networks

2015 Sustainable Agriculture Practice

2014 Professional Writing Seminar

2014 Global Change and Pollination

2010 Pollination Ecology

Undergraduate

2015 & 16 Pollination Biology

2011 -14 Ecology, Evolution and Behavior ABI 50B, University of California, Davis (annually)

2010-16 Introduction to Sustainable Agriculture, PLS 15 University of California, Davis (annually)

2008 & 09 Biology of Plants, Department of Biology, Bryn Mawr College

2007 Biodiversity and Conservation, Department of Biology, Bryn Mawr College

2006 Insect Pollinators and Pollination Ecology, Graduate Course BeeNOVA Helsinki University

2005 & 06 Experimental Design and Statistics, Department of Biology, Bryn Mawr College

2005-09 Introductory Biology II, Department of Biology, Bryn Mawr College

2005 The Ecology and Evolution of Plant-Insect Interactions, Department of Biology, Bryn Mawr College

2004-09 General Ecology w/ laboratory, Department of Biology Bryn Mawr College

2004 & 06 Effects of landscape change on populations and ecological processes, Department of Biology Bryn Mawr College

2002 Biostatistics, Junior-level course, Introductory Statistics Department of Ecology and Evolutionary Biology, Princeton University

Mentoring (last 5 years)

Postdoctoral Scholars

Rosemary Malfi
Ola Lundin
Josh Rapp
Claire Brittain
Sandra Gillespie
Jessica Forrest

Graduate Students

PhD: Katharina Ullmann (2015), Jennifer VanWyk (UC-Davis Fall 2016), Leslie Saul (UC Davis Summer 2016), Rei Scampavia (UC Davis) Ross Brennen, John Mola (UC Davis), Maureen Page (UC Davis), Clara Stuligross (UC Davis)

Hannah Gains (U Wisc 2013), Alison Parker (U Toronto 2014)
MSc: Ryder Diaz (UC Davis 2013), Felix Klaus (2014-2016 Univ. of Gottingen)

Undergraduate Students

2015- Jessica Drost Bumble nutrition and foraging (Animal Biology, 2017), Sonja Glasser Bumble demography and response to resource availability (Entomology, 2016).
2014-2015 Kevin Tahara (Honors Program in insect Science) Non-thesis- Soil nesting bees and habitat restoration
2011 - 2015 Alexi Haack, Thesis research, Resource Dynamics and Bee Life History (Animal Biology, '13)
2012 - Gabriella Portola, Thesis research (Animal Biology, '13)
2011 - David Marias, non-Thesis Research ('14)
2010 -11 Mira Perekh, Sarah Bolm non-Thesis Research (UC Davis)

PROFESSIONAL SERVICE

2016 Co-organizer 3rd International Conference on Pollinator Biology, Health and Policy, July 18-21, Penn State University

2016 Co-organizer Bee Health Symposium, May 7 2016, Honey and Pollination Center, University of California, Davis

2015 Co-organizer Bee Health Symposium, May 9, 2015, Honey and Pollination Center, University of California, Davis

2013 Co-organizer 2nd International Conference on Pollinator Biology, Health and Policy, Aug 14-17, Penn State University

2012 NSF DEB Community and Population Ecology Panel Member

2009 NSF DEB Adhoc Reviewer

2008-14 Associate-Editor Plant-Arthropod Interactions, Springer.

2014- Subject editor, Ecology, Ecological Society of America.

2007 NSF- DEB Ecology Panel Member

2006 WWF Katherine Fuller Fellowship Referee Fall 2006-Winter 2007)

2005 Smith Conservation Fellowship Referee (Fall 2005)

2005 NSF Ad hoc reviewer for DEB Ecology (Fall 2005)

2005 NSF DEB: Ecology and Ecosystems Panel Member- DIGGS

2003- Advisor for Xerces Society

2002 Ecological Society of America Co-organized Workshop "Increasing the relevance of conservation research during graduate training."

Journal Reviewer

Ag Ecosystems and Environment, American Naturalist, Animal Behaviour, Apidology, Basic and Applied Ecology, Behavioral Ecology, Biological Conservation, Ecology, Ecology Letters, Ecological Applications, Ecological Entomology, Functional Ecology, J. Applied Ecology, J. of Ecology, J. Insect Conservation, New Phytologist, Oecologia, Oikos, Plant-Arthropod Interactions

Committee service - UC Davis

University

2015-2016 Graduate Council Courses Committee
2013-pres. Chair, Graduate Group in Ecology, Agroecology AOE

College

2015-pres. Co-Director, Robert Mondavi Institute, Honey and Pollination Center

2009-2010 CAES College Planning Committee, ASI Russell Ranch Executive Committee
2010-2014 Executive Committee, Russell Ranch

Department
2009-2016 Graduate Exam committee (2014-16, Chair), Entomology Graduate Admission Committee (2010-12, 2014-16), Entomology Bee Biology Facility (2009-10 & 15, Chair, 2011-14 Co-Chair, 2014-16 Chair), Entomology Seminar Committee (2009-10, Chair)

PROFESSIONAL SOCIETIES

Ecological Society of America
Entomological Society of America
Society for Conservation Biology