

## Curriculum Vitae

**Jeremie Benjamin Fant, Ph.D.**, Chicago Botanic Gardens, 1000 Lake Cook Road, Glencoe, IL 60022

### Professional Preparation

Ph.D. Genetics, The University of Cambridge, UK, 2000; The conservation and maintenance of genetic diversity, both in situ and ex-situ.

B.Ag.Sc. (Hons) in Horticultural Sciences, 1994; University of Adelaide, Australia.

### Appointments

#### Current

Conservation Scientist, Molecular Ecology Chicago Botanic Gardens, Glencoe, IL.

Adjunct Assistant Professor of Biology, Northwestern University, Evanston, IL.

Illinois Endangered Species Board Member

IUCN SSC Conservation Genetics Specialist Group Member

Member of Institutional Biosafety Committee at DePaul.

#### Previous

2001-2002 Post Doctorate, Advisor; Jeff Conner Dept of Plant Biology, Kellogg Biological Station, Michigan State University. "Identifying quantitative traits loci, using AFLP and SSR, which are important in the floral biology of Wild Radish (*Raphanus Raphanistrum*)."

2000-2001 Sequencing Facility, Dept of Genetics, University of Cambridge.

1999-2000 Post Doctorate, Advisor Sean Mayes, University of Cambridge, Dept of Genetics. "Constructing of a genetic map of Oil Palm, using AFLP markers, to identify quantitative traits for oil production."

1994-1995 Scholefield Robinson Horticultural Professional Consultancy Services Pty. Ltd.

### Publications (± = Postdoc, + = PhD Student, \*\* = MA Student, \* = Undergraduate Student, # = Citizen Scientist)

Ellwanger, C.F.\*\*, L. Steger, R.Wells \*, C. Pollack, **J.B.Fant** (accepted) Anthropogenic fragmentation increases risk of genetic decline in the threatened orchid *Platanthera leucophaea*. *Ecology and Evolution*.

Foster, J.A\*\*, S.K. Walsh+, K. Havens, A.T. Kramer, **J.B. Fant** (submitted) Supporting long-term ex situ collection sustainability for an exceptional species extinct in the wild using a pedigree-based population management approach

Lewis, E.M\*\*, **J.B.Fant**, M J Moore, K.A. Skogen (submitted) Hawkmoth and bee pollinators have distinct impacts on pollen dispersal at the landscape but not local scales in two species of *Oenothera* (Onagraceae), *Annals of Botany*.

Cooper B.J\*\*, M. J. Moore, N.A. Douglas, W.L. Wagner, M.G. Johnson, R.P. Overson, A.J. McDonnell, R.A. Levin, R.A. Raguso, **J.B. Fant**, K.A. Skogen, N.J. Wickett (2021) Target enrichment and extensive population sampling help untangle the recent, rapid radiation of *Oenothera* sect. *Calylophus* *Systematic Botany*, in press

Gavin-Smyth, N., Kramer, A. T., Urbina-Casanova, R., Vitt, P., & Fant, J. B. (2021). Genetic rescue reduces mate limitation in a threatened, clonal, and self-incompatible plant species. *Restoration Ecology*, 1–9. <https://doi.org/10.1111/rec.13458>

Griffith, M. P., Cartwright, F., Dosmann, M., Fant, J. B., Freid, E., Havens, K., Jestrow, B., Kramer, A. T., Magellan, T. M., Meerow, A. W., Meyer, A., Sanchez, V., Santiago-Valentín, E., Spence, E., Sutasche-Sustache, J. A., Francisco-Ortega, J., & Hoban, S. (2021). Ex Situ Conservation of Large and Small Plant Populations Illustrates Limitations of Common Conservation Metrics. *International Journal of Plant Sciences*, 182(4). <https://doi.org/10.1086/713446>

Kucera, K.F.\*\*, **J.B. Fant**, S. Jensen, M. Landeen, E. Orr\*, A.T. Kramer (2021) Genetic variation and structure change when producing and using mixed-source seed lots for restoration. *Restoration Ecology*, e13521

Patsis, A\*, Overson, R. P., Skogen, K. A., Wickett, N. J., Johnson, M. G., Wagner, W. L., Raguso, R. A., **Fant, J. B.**, & Levin, R. A. (2021). Elucidating the Evolutionary History of *Oenothera* Sect. *Pachylophus* (Onagraceae): A Phylogenomic Approach. *Systematic Botany*, in press(3), 799–811.

<https://doi.org/10.1600/036364421X16312067913471>

Spence, E. S., Fant, J. B., Gailing, O., Griffith, M. P., Havens, K., Hipp, A. L., Kadav, P., Kramer, A., Thompson, P., Toppila, R., Westwood, M., Wood, J.+, Zumwalde, B. A., & Hoban, S. (2021). Comparing Genetic Diversity in Three Threatened Oaks. 1–18.

Wenzell, K. E.+, McDonnell, A. J., Wickett, N. J., Fant, J. B., & Skogen, K. A. (2021). Incomplete reproductive

- isolation and low genetic differentiation despite floral divergence across varying geographic scales in *Castilleja*. *American Journal of Botany*, 108(7), 1–19. <https://doi.org/10.1002/ajb2.1700>
- Hoban, S, T. Callicrate, J. Clark, J., S. Deans, M. Dosmann, J. Fant, O. Gailing, K. Havens, A.Hipp, P. Kadav, A. Kramer, M. Lobell, T. Magellan, A. Meyer, M. Pooler, E.Spense, P. Thompson, R. Toppila, S. Walsh, M. Westwood, J. Wood, P. Griffith (2020) Taxonomic similarity does not predict necessary sample size for ex situ conservation: a comparison among five genera *Proceedings. Biological Sciences*, 287(1926), 20200102. <https://doi.org/10.1098/rspb.2020.0102>
- Griffith, M. P., Clase, T., Toribio, P., Jimenez, Y. E. P. F., Gratacos, X., Sanchez, V., Meerow, A., Meyer, A., Kramer, A., Fant, J., Havens, K., Magellan, T.M., Dosmann, M., Hoban, S. M. (2020). Can a Botanical Garden Metacollection better conserve wild plant diversity? A cas study comparing polled collections with an ideal sampling model. *International Journal of Plant Sciences*, 181(5). <https://doi.org/10.1086/707729>
- St. Clair, A. B. \*\*, Dunwiddie, P. W., Fant, J. B., Kaye, T. N., & Kramer, A. T. (2020). Mixing source populations increases genetic diversity of restored rare plant populations. *Restoration Ecology*, 1–11. <https://doi.org/10.1111/rec.13131>
- Wood, J. \*\*, J.D. Ballou, T. Callicrate, J.B. Fant, M.P. Griffith, A.T. Kramer, R.C. Lacy, A. Meyer, S. Sullivan, K. Traylor-Holzer, S.K. Walsh, and K. Havens. (2020) Testing the Zoo Model: Developing an Ex Situ Conservation Infrastructure for Threatened Exceptional Plant Species in Botanic Gardens. *Conservation Biology*, Volume 34, No. 6, 1416–1425 <https://doi.org/10.1111/cobi.13503>
- Fant, J. B., Fluckes, M \*\*, James, E. \*, Noble, H., & Wood, J. \*\* (2019). Characterization of microsatellite loci in *Brighamia insignis* and transferability to other genera in the Hawai’ian lobelioid group. 7(11), 1–6. <https://doi.org/10.1002/aps3.11303>
- Griffith, M. P., Beckman, E., Callicrate, T., Clark, J., Clase, T., Deans, S+, ... Wood, J. \*\* (2019). TOWARD THE METACOLLECTION: Safeguarding plant diversity and coordinating conservation collections. *Botanic Gardens Conservation International - US. San Marino, US.*
- Kim, E. S.+, Zaya, D. N., Fant, J. B., & Ashley, M. V. (2019). Reproductive trade-offs maintain bract color polymorphism in Scarlet Indian paintbrush (*Castilleja coccinea*). *PLoS One*, 11–14. <https://doi.org/10.13012/B2IDB-0852856>
- Ksiazek-Mikenas, K.+, Fant, J. B., & Skogen, K. A. (2019). Pollinator-Mediated Gene Flow Connects Green Roof Populations Across the Urban Matrix: A Paternity Analysis of the Self-Compatible Forb *Penstemon hirsutus*. *Frontiers in Ecology and Evolution*, 7(August), 299. <https://doi.org/10.3389/fevo.2019.00299>
- Skogen, K. A., Overson, R.± P., Hilpman, E. T. \*, & Fant, J. B. (2019). Hawkmoth pollination facilitates long-distance pollen dispersal and reduces isolation across a gradient of land-use. *Annals of the Missouri Botanical Garden/Missouri Botanic Garden*, 104(Fall), 495–511. <https://doi.org/10.3417/2019475>
- Flower, C.E., J.B. Fant, S. Hoban, K.S. Knight, L. Steger, E. Aubihl, M.A. Gonzalez-Meler, S. Forry, A. Hille, and A.A. Royo (2018) Optimizing Conservation Strategies for a Threatened Tree Species: In Situ Conservation of White Ash (*Fraxinus Americana* L.) Genetic Diversity through Insecticide Treatment. *Forests* 9 (4) 202-
- Widener, L.\*\*, & J.B. Fant (2018) Genetic differentiation and diversity of two sympatric subspecies of *Castilleja affinis*; a comparison between the endangered serpentine endemic (spp. *neglecta*) and its widespread congener (ssp. *affinis*) *Conserv Genet* 19 (2) 365-381
- White, A\*\*, J.B. Fant, K. Havens, M. Skinner, and AT. Kramer (2018) Restoring species diversity: assessing capacity in the US native plant industry. *Restoration Ecology* Vol. 26, No. 4, pp. 605–611
- Hunt, V.M.+, J.B. Fant, L. Steger, P.E. Hartzog+, E.V. Lonsdorf, S.K. Jacobi and D.J. Larkin (2017) PhragNet: crowdsourcing to investigate ecology and management of invasive *Phragmites australis* (common reed) in North America. *Wetlands Ecol Management* 25 (5): 607-618
- Rhodes, Matthew K.\*\*, Jeremie B. Fant, Krissa A. Skogen (2017) Pollinator identity and spatial isolation influence multiple paternity in an annual plant. *Molecular Ecology* 26 (16) 4296–4308
- Vander Stelt, Erin\*\*, Jeremie B. Fant, Susanne Masi and Daniel J. Larkin (2017) Assessing habitat requirements and genetic status of a rare ephemeral wetland plant species, *Isoetes butleri* Engelm. *Aquatic Botany* 138; Pages 74-81
- Fant, J.B. , K. Havens, A.T. Kramer, S.K. Walsh, T. Callicrate, R.C. Lacy, M. Maunder, A. Hird Meyer, and P.P. Smith (2016) What to do when we can’t bank on seeds: What botanic gardens can learn from the zoo community about conserving plants in living collections *American Journal of Botany* 103 (9) 1541-1543
- Fant J.B., Price, A.\*\* and D. Larkin (2016) The influence of habitat disturbance on genetic structure and reproductive strategies within stands of native and non-native *Phragmites australis* (common reed)" *Diversity and Distributions*. 22 (12) Pages 1301–1313.

- Lewis E.M.<sup>++</sup>, Fant J.B., Moore M.J., Hastings A.P., Larson E.L., Agrawal A.A., Skogen K.A. (2016) Microsatellites for *Oenothera gayleana* and *O. hartwegii* subsp. *filifolia* (Onagraceae), and their utility in section Calylophus. *Appl Plant Sci.* Feb 9;4(2)
- Skogen, K. A., T. Jogesh, E. T. Hilpman\*, S. L. Todd\*, M. K. Rhodes\*, S. Still, and J. B. Fant. (2016) Land-use change has no detectable effect on reproduction in a disturbance-adapted plant pollinated by long-distance dispersing hawkmoths. *American Journal of Botany.* 103:1950-1963
- Williams, E.W.<sup>‡</sup>, R. Cheung\*, C. Siegel\*, M. Howard, J. Fant, K. Havens (2016) Persistence of the gypsophile *Lepidospartum burgessii* (Asteraceae) through clonal growth and limited gene flow. *Conservation Genetics*; 17 (5) pp 1201–1211
- Barak, R. S.<sup>++</sup>, J. B. Fant, A. T. Kramer, and K. A. Skogen. (2015). Assessing the value of potential “native winners” for restoration of cheatgrass-invaded habitat. *Western North American Naturalist* 75(1) 58-69.
- Basey A.<sup>++</sup>, J.B Fant, A.T. Kramer (2015) Producing native plant materials for restoration: ten rules to collect and maintain genetic diversity. *Native Plants Journal* 16:37-53.
- Havens K., P. Vitt, S. Still, A.T. Kramer, J.B. Fant, and K. Schatz (2015) Seed Sourcing for restoration in an era of climate change. *Natural Areas Journal* 35(1) 122-133
- Kim, E.S.<sup>++</sup>, D.N. Zaya<sup>+</sup>, J.B. Fant and M.V. Ashley (2015) Genetic factors accelerate demographic decline in rare *Asclepias* species. *Conservation Genetics* 16(2) 359-369
- Kramer A.T., D Larkin and J.B. Fant, (2015) Assessing potential seed transfer zones for five forb species from the Great Basin floristic region, U.S.A.. *Natural Areas Journal* 35(1) 174-188
- Stahlin B<sup>++</sup>. & J.B. Fant (2015) Climate change impacts on seedling establishment for a threatened endemic thistle. *The American Midland Naturalist* 173(1):47-60. 2015
- Wilson A.W., N.J. Wickett, P. Grabowski, J.B. Fant, J. Borevitz and G.M. Mueller (2015) Examining the efficacy of a genotyping-by-sequencing technique for population genetic analysis of the mushroom *Laccaria bicolor* with either a reference genome or simple de-novo analysis. *Mycologia* 107 (1) 217-226
- Fant, J.B., K. Havens, J.M. Keller<sup>#</sup>, A. Radosavljevic<sup>+</sup> and E.D. Yates and K. Havens (2014) The influence of contemporary and historic landscape features on the genetic structure of the sand dune endemic, *Cirsium pitcheri* (Asteraceae). *Heredity* 112, 519–530
- Herman B, S Packard, Cathy Pollack, G. Houseal, S. Sinn, C. O’Leary, J. Fant, A.D. Lewis, S. Wagenius, D. Gustafson, K. Hufford, Bob Allison, K. Shaw, S. Haines and C. Daniels (2014). Decisions... Decisions... How to Source Plant Material for Native Plant Restoration Projects. *Ecological Restoration* 32 (3) 236-238.
- Ksiazek, K.<sup>+</sup>, J. Fant and K. Skogen (2014) Native forbs produce high quality seeds on Chicago green roofs. *Journal of Living Architecture* 2:e2.
- Overholt, W. A., M. P. Sowinski, D. C. Schmitz, J. Schardt, V. Hunt, D. J. Larkin, and J. B. Fant. 2014. Early detection and rapid response to an exotic *Phragmites* population in Florida. *Aquatics* 36:5-7.
- Price, A.<sup>++</sup>, J.B. Fant and D. Larkin (2014) Ecology of native vs. exotic *Phragmites australis* (common reed) in Chicago-area wetlands. *Wetlands* 34 (2) 369-377
- Rhodes<sup>++</sup>, M., J.B. Fant and K.A. Skogen (2014) Local topography shapes fine-scale spatial genetic structure in the Arkansas Valley evening primrose, *Oenothera harringtonii* (Onagraceae) *Journal of Heredity* 105(6):806-15
- Fant, J.B., A.T. Kramer, E. Sirkin<sup>#</sup> and K. Havens (2013) Genetics of reintroduced populations of the narrowly endemic thistle, *Cirsium pitcheri* (Asteraceae). *Botany* 91 (5) 301-308)
- Fant J.B., H. Weinberg-Wolf\*, D.C Tank, K.A. Skogen, (2013) Characterization of 12 microsatellite markers in *Castilleja sessiliflora* and transferability to other *Castilleja* species. *American Journal of Botany Applications in Plant Sciences.* 1(6):1200564.
- Ksiazek, K.<sup>++</sup>, J. B. Fant and K. Skogen. (2012) An assessment of pollen limitation on Chicago green roofs. *Landscape and Urban Planning.* 107 (4) 401-408
- Skogen, K., E. Hilpman, S. Todd, and J. B. Fant. (2012) Microsatellite primers in *Oenothera harringtonii* (Onagraceae), an annual endemic to the shortgrass prairie of Colorado. *American Journal of Botany Primer Notes and Protocols in the Plant Sciences*;99(8):e313-6
- Fant, J.B. (2011) Book Review: *Plant Microevolution and Conservation in Human-Influenced Ecosystems*. *The Quarterly Review of Biology* 86(2) pg 146
- Kramer, A.T.<sup>+</sup>, J.B. Fant and M. Ashley (2011) Influences of landscape and pollinators on population genetic structure: Examples from three *Penstemon* (Plantaginaceae) species in the Great Basin. *American Journal of Botany* 98(1): 109–121.
- Ksiazek, K.<sup>++</sup>, J. Fant and K. Skogen. 2011. An assessment of pollination services on Chicago green roofs. In *Proceedings of the CitiesAlive! Ninth Annual Green Roof and Wall Conference*. Philadelphia, PA, 2011. Toronto: Green Roofs for Healthy Cities.
- Ribbens E., B.A Anderson.<sup>++</sup>, and J. Fant (2011) *Opuntia fragilis* (Nuttall) Haworth in Illinois: Pad Dynamics

- and Sexual Reproduction *Haseltonia*, 16(1):67-78. 2011.
- Tonietto R<sup>+</sup>, J. Fant, J Ascher, K. Ellis\* and D Larkin (2011) A comparison of bee communities of Chicago green roofs, parks and prairies. *Landscape and Urban Planning* 103: 102– 108
- Fant, J.B., A. Banai<sup>+</sup>, K. Havens and P. Vitt (2010) Morphological and molecular evidence of hybridization between the federally threatened *Lespedeza leptostachya* Englem. and its co-occurring congener *Lespedeza capitata* Michx. *Conservation Genetics* 11 (6) 2195-2205
- Maschinski J., E. Sirkin<sup>#</sup> and J.B. Fant (2010) Using Genetic and Morphological Analysis to distinguish endangered taxa from their hybrids with the cultivated exotic pest plant *Lantana strigocamara* (syn: *Lantana camara*) *Conservation Genetics* 11 (5) 1607-1621
- Fant, J.B., R.M.Holmstrom<sup>+</sup>, E. Sirkin<sup>#</sup>, J.R. Etterson, and S. Masi (2008) Genetic structure of threatened native populations and propagules used for restoration, in a clonal species, *Ammophila breviligulata* (American beachgrass). *Restoration Ecology* 16 (4) pp. 594-603.
- Fant, J.B., S. Masi, J.M. Keller<sup>#</sup>, and R. Mann (2007) Investigating the reproductive health of Hill's thistle's (*Cirsium hillii*) populations in the Chicago Region. *Chicago Wilderness Journal: Volume 5, Number 1, March 2007*
- Kramer, A.T.<sup>+</sup> and J.B. Fant. (2007) Isolation and characterization of microsatellite loci in *Penstemon rostriflorus* (Plantaginaceae) and cross species amplification. *Molecular Ecology Notes* 7 (6), 998–1001.
- Fant, J.B., E. Kamau, and C.D. Preston (2005) Chloroplast evidence for the hybrid origin of *Potamogeton x fluitans*. *Aquatic Botany* 83 (2) 154-160
- Fant J.B. and C.D. Preston (2004) Genetic structure and morphological variation of British populations of the hybrid *Potamogeton x salicifolius* Wolfg. *Bot. J. of the Lin. Soc* 144 (1): 99-112
- Fant, J.B., E. Kamau and C.D. Preston (2003) Chloroplast evidence for the hybrid origin of *Potamogeton x sudermanicus* Hagstr. *Aquatic Botany* 75 (4): 351-356
- Fant, J.B., C.D. Preston and J.A.Barrett (2001) Isozyme evidence of the hybrid origin of *Potamogeton x sudermanicus* as resulting from the cross between *P.berchtoldii* and *P.acutifolius*. *Aquatic Botany* 71(3): 199-208
- Fant, J.B., C.D. Preston and J.A.Barrett (2001) Allozyme evidence of the parental origin and possible fertility of the hybrid *Potamogeton x fluitans*. *Plant Systematics and Evolution* 229 (1-2): 45-57

### Invited Presentations

- American Zoological Association Annual Conference (2021) Successes and New Directions in Ex situ Population Management, examples from Plant world.
- Lincoln Park Zoo Seminar Series (2021) Adapting the Zoo model for Plants: TREES project (Tools and Resources for Endangered and Exceptional Species) cooperative management of threatened plant species across botanic garden collections)
- San Diego, Zoo Seminar Series, 2021 *Brighamia insignis* ex situ collection plan and updates,
- Cactaceae: Phylogenetics, Evolution and Conservation in the genomic era (2021) Mini-virtual symposium. Conservation and management of threatened species in ex situ collections
- National Tropical Botanical Garden Seminars (2017) What botanic gardens can learn from the zoo community about conserving plants in living collections
- Presenter at a Conservation Horticulture Workshop (2017) at University of Minnesota, tasked with helping the EEB Department develop a new core course for their undergraduate students.
- Life Sciences Seminars- Purdue Northwest (2016) "Importance of incorporating genetics into restoration decisions making; and when to rebelling against the rules might be the best solution"
- Rare Plants Re-introduction Training Workshop - Sanghyowon Botanical Garden, Republic of Korea (17-20 October, 2016). Hosted by Korea National Arboretum (KNA) & IUCN SSC Korean Plant Specialist Group (KPSG)
- ICCB Workshop – Integrating Conservation Genetics into policy practical issues, Q&A and Consensus building (2015); (Organized Gernot Segelbacher and Sean Hoban)
- Wabash College (2014) – Seminar series." Genetic Primer for seed selection; examples from Great Basin" & "Genetics and Restoration of *Cirsium pitcheri*"
- SER Symposium - Genetic Diversity and Restoration Seed Sourcing: Status of the Science (2013) Genetic Consideration for restoration of rare species Lessons learnt from *Cirsium pitcheri* and *Asclepias lanuginosa* reintroductions
- BSA Symposium - Transplantations and relocation of species at risk: learning from the past to plan for the future (2012) Post-glacial migration, biogeography and genetics of a narrow endemic thistle, *Cirsium*

*pitcheri* (Asteraceae) : Consequences for restorations  
 Plant Material Sources for Ecological Restoration Conference - U. S. Army Corps of Engineers (2012) Genetic consideration for restoration of Rare Species.  
 Lake Forest College Biology Department Fall seminar series (2011) Glacial migration, biogeography and conservation of a narrow endemic thistle, *Cirsium pitcheri*  
 Western Forestry Genetics (2011) Restoration genetics and the genetic, demographic and community factors that influence restoration success.  
 Trinity International University (2010): Landscape, gene-flow & genetic history: their influence on population genetic structure. Examples from *Penstemon* and *Cirsium*.  
 University of Chicago (2010): Landscape, gene-flow & genetic history: their influence on population genetic structure. Examples from *Penstemon* and *Cirsium*.  
 10<sup>th</sup> Biennial Conference of Research on the Colorado Plateau, Flagstaff, AZ (2009): "The role of reproductive ecology and conservation genetics of plant species on ecosystem restoration"  
 University of Madison Botany Colloquium (2008): Local Adaptation, Gene Flow and Inbreeding in *Cirsium pitcheri* and consequences for Restorations  
 Field Museum A. Watson Armour Seminar Series (2008): Genetics and Restoration of a locally Extirpated Species (*Cirsium pitcheri*): Or is Wisconsin really better than Indiana?  
 Lake Forest College Biology Department Fall seminar series (2007): "Penstemon pollinators and local adaptation"  
 Associated Colleges of the Chicago Area Biology Seminar series "Biogeography" (2007): "Biogeographic variation in pollinator-plant interactions, a *Penstemon* case study".  
 ICEP Colloquium, Northwestern PBC (2007): "Floral syndromes within *Penstemon* species: Intraspecific variation in flower shape and pollinator community"

## Grants & Sub Contracts

### Current

- Co-PI with Abby Meyer (BCGI), Seana Walsh (NTBG) and Andrea Kramer (CBG) National Geographic ( NGS-57037C-19) Saving the remaining genetic diversity of species that are "extinct in the wild" : resurrecting *Brighamia insignis* (\$35,000)
- Co-PI: with Kay Havens 2019-2022; Improving ex situ plant conservation: Extending zoo pedigree management approaches to rare, exceptional plant species in botanic gardens. Institute of Museum and Library Services- \$731,000
- Co\_PI with Nyree Zerega 2019; Workshop to Enhance Collaboration Between US and Indonesia in Biodiversity and Conservation Research Award Number:1911849 (\$64,965)
- Co\_PI with K. Skogen 2020. National Fish and Wildlife Foundation: Exploring the impacts of oil and gas development on pollination and reproduction of the rare Tharp's bluestar, *Amsonia tharpii*. (\$62,942)

### Previous

- Co-PI with Norman Wickett (PI) 2018-2021: REU Site: Plant Biology & Conservation Research Experiences Undergraduates - From Genes to Ecosystems(\$330,997)
- Co-PI with Krissa Skogen (PI) and Norman Wickett 2014-2018. Landscapes of Linalool: Scent-Mediated Diversification of Flowers and Moths across Western North America. NSF funded Dimensions in Biodiversity (\$1,459,000)
- PI: USDA-FS funding for Population genetics of forest trees (\$10,000)
- PI: Eppley Foundation. Harnessing the power of genomics to inform conservation and support restoration of a critically endangered Hawaiian plant (\$25,000).
- Co-PI with Kay Havens and Andrea Kramer (CBG), Alan Meerow (USDA), Tracy Magellan & Patrick Griffith, (MBC), John Clark (CPC) Taylor Callicrate and Bob Lacy (CZS), David Lorence and Seana Walsh (NTBG), Michael Dosmann (Arnold Arboretum), Abby Hird Meyer (BCGI) and Sean Hoban and Murphy Westwood (Morton) (2016-2019). Safeguarding our Plant Collections, will adapt DNA data and zoo methods to help conserve plant collections. IMLS (\$439,070)
- PI with Andrea Kramer (Co-PI) 2015-2017: REU Site: Plant Biology & Conservation Research Experiences Undergraduates - From Genes to Ecosystems(\$330,997)
- PI, 2015-2016: Genetic assessment of management and restoration practices of the federally threatened Prairie Orchid. USFWS (\$20,390)
- Co-PI with Larkin 2012-2014: REU Site: Plant Biology & Conservation Research Experiences Undergraduates - From Genes to Ecosystems(\$513,997)

- Co-PI with Haven and Williams 2013–2014. Characterization of self-incompatibility in *Lepidospartum burgessii*, a narrow Endemic from New Mexico. National Fish and Wildlife Foundation. (\$40,000)
- Co-PI with Kramer, Larkin, and Skogen 2012–2014. Learning from native ‘winners’ in degraded sites on the Colorado Plateau. Bureau of Land Management ().
- Co-PI with Larkin and Lonsdorf 2012-2013: A cooperative-learning network for adaptive management of Phragmites-invaded coastal habitats. The Illinois-Indiana Sea Grant proposal (\$40,000)
- Co-PI with Havens, Skogen, Vitt and Wagenius: Acquisition of a seed x-ray machine. NSF-MRI (DBI-1125997) \$136,597
- Co-PI with Zaya (UIC): 2011-2013 “Investigating the role of genetic diversity and pollination biology as potential causes for reproductive failure in *Asclepias lanuginosa* Proposal to Illinois Endangered Species Protection Board (\$7,000)
- Co-PI with Haven 2011–2012. Characterization of *Lepidospartum burgessii* genetic diversity. Bureau of Land Management. \$25,000
- Co-PI with Havens, Vitt, Bowles and Bell: Integrating Long Term Demographic Data and Repeated Genetic Sampling for Viability Analysis of Natural and Restored Populations of Pitcher’s Thistle(2005-2010) NSF LTREB: (\$300,000)
- Co-PI with Larkin, Skogen and Yates: Testing restoration effectiveness under a changing climate (2010) National Fish and Wildlife Foundation – Native Plant Conservation Initiative: (\$45,000)
- Co-PI with Larkin: Ecological genetics of *Phragmites australis* invasion in southern Lake Michigan coastal habitats (Seed) TheIllinois-Indiana Sea Grant proposal (\$10,000)
- Co-PI with Vitt, Havens, Larkin and Skogen: NSF- MRI: Acquisition of Conservation Geographic Information Systems (GIS) Instrumentation (\$363,547)
- Co-PI with Andrea Kramer and Havens. *Genetic diversity in seed collections* (\$20,000). Use of genetic analyses to compare bulked common garden samples against wild collection sites, with the aim of guiding seed production practices to maximize genetic diversity. (2005 – 2007) Bureau of Land Management (\$20,000)
- Co-PI with Kramer: Development of species-specific markers for 18 threatened or endangered *Eriogonum* and *Penstemon* species (2005-2006) National Fish and Wildlife Funded grant: (\$15,000).
- Co-PI with Havens, Vitt, Wagenius and Ault: NSF MRI:Acquisition of a Seed Biology Laboratory (2006) (\$284,066)
- Co-PI with Havens and Kramer: Investigating effect of cheatgrass on pollinator communities (2006). Center for Invasive Plant Management (\$5,000)
- Map genetic diversity of *Cirsium hillii* in the Chicago region to determine the contribution of inbreeding depression to poor reproductive success (2005-2006). Chicago Wilderness grant (\$15,000)
- Potential hybridization between rare endemic and Invasive species of Lantana. (2005-2006) Fairchild Tropical Botanic Garden (\$12,000)

## Teaching & Workshops

### Teaching

- 2009-Present Co-taught – Reproductive Biology and Genetics, Field and Lab Methods in Plant Biology and Conservation (PBC 450), Master Students Northwestern University
- 2011-Present Co-taught – Conservation Genetics **Bio 332/PBC 430**), Undergraduate and Master Students Northwestern University
- 2010 Plant Interactions with their Biotic Environment (BIOL SCI 333/PBC 410), Undergraduate and Master Students Northwestern University
- 2008 Molecular Ecology (PBC 425) , Master Students Northwestern University
- 2000-2001 Population and Plant Genetics, final year undergraduates; University of Cambridge.
- 2001- Population Genetics, 3<sup>rd</sup> year student, University of Leeds.
- 1996-2001 Bridge classes for Quantitative Biology, 1<sup>st</sup> year Students, University of Cambridge
- 1886-2001 Elementary Biology for Biologist courses, 1<sup>st</sup> year Students, University of Cambridge
- 1997-2000 Bridge classes for the Organisms courses, 1<sup>st</sup> year Students, University of Cambridge

### Workshops

- 2018-Present Population Genetics Reading Group, Master Students Northwestern University
- 2019-Present) Bioinformatics Working group, Undergraduate and Master Students Northwestern University



## Advising and Mentorship

### Post-Doctorate (4)

Evelyn Williams (PhD 2012, UW-Madison)	2011-2014
Rick Overson (PhD 2011, Arizona State University)	2014- 2017
Tania Jogesh (PhD 2014, University of Illinois, Champaign Urbana)	2014- 2018
Zoe Diaz-Martin (PhD 2020, Tulane University, New Orleans)	2020- presentGr

### Graduate Students

#### PhD (4)

- Current; Fernando Rocha Vento (PhD Co-advised with L.Egerton-Warburton) & Rafael Urbina Cassanova (PhD)
- 2020; Anita Cisternas Fuentes (PhD); Katherine Wenzell (PhD Co-advised with K.Skogen)

#### Masters (20)

- 2008; Alona Banai (MA Co-advised with P.Vitt)
- 2009; Rebecca Tonietto (MA); & Benjamin Staehlin (MA)
- 2011; Kelly Ksiazek (MA)
- 2013; Anna Braun (MA)
- 2014; Laney Widener (MA)
- 2015; Adrienne Basey (MA Co-advised with A.Kramer)
- 2016; Claire Ellwanger (MA); & Abigail White (MA Co-advised with A.Kramer)
- 2017; Chris Woolridge (MA Co-advised with A.Kramer)
- 2018; Jordan Wood (MA Co-advised with K.Havens) & Nora Gavin-Smyth (MA Co-advised with P.Vitt)
- 2019; Drake Mullett (MA)& Kristopher Bonefort Flores (MA)
- 2020; Matt Wang (MA)
- Current; Andrew Davies (MA Co-advised with K.Skogen), Brendan Connolley (MA Co-advised with P.CaraDonna), Jeremy Foster (MA), Olivia Murrell (MA Co-advised with Z.Diaz-Martin) & Reed Berkendorf (MA)

#### Committee member (29)

- 2008; Andrea Kramer (UIC)
- 2009; Tracy Misiewicz (NU) & Rachel Olson (NU)
- 2011; Emily Booth (NU) & Melissa Gray (NU)
- 2012; Becky Barak (NU), Joshua Drizin (NU), Amy Price (NU), Ricardo Rivera (NU) & David Zaya (UIC)
- 2013; Alicia Foxx (NU) & Matt Rhodes (NU)
- 2014; Erin Vander Stelt (NU) & Maria Wang (NU)
- 2015; Magdalena Eshleman (NU), Emily Lewis (NU) & Theresa Melhem (NU)
- 2017; Kelly Ksiazek (NU), Jacob Zelden (NU)
- 2018; Lauren Audi (NU)
- 2019; Jessamine Finch (NU), Eun Sun Kim (UIC) & Taran Litchenberger (NU)
- 2020; Emma Leavens (NU)& Bing Li (NU)
- Current; Seana Walsh (Copenhagen), Nora Gavin-Smyth (NU) & Susan Deans (NU)

#### Undergraduates (77)

- 2004; Charlie Flowers (LakeForest) & Keith Hartley (LakeForest)
- 2005; Jillian Clark (HowardU.), Rebecca Tonietto (Kalamazoo) & Sohier Dane (NorthwesternU.)
- 2006; Laura Cronin (JohnCarrollU.)
- 2008; Elina Dilmukhametova (LakeForest),& Noah Sokol (U.Guelph)
- 2009; Adewale Adeoba (Loyola), Cory Querubin (Lake Forest) & Sahar Haghghat (Monmouth)
- 2010; David Ford (Loyola), Grace Schlafly (LakeForest) & Joslyn Mink (UW, Madison)
- 2011; Shayla Hobbs (UIUC)
- 2012; Evan Eifler (UW, Madison), Febin Varughese (NEIU) & Jesse Lundgren (Carthage)
- 2013; Alexander Shaffer (NorthwesternU.)
- 2013; Charles Flowe (Trinity Int), Claire Milsted (Carleton), Clément Kouyoumdjian (U.RenneFrance), Hannah Weinberg-Wolf (John Hopkins), Hosin West (U.NewHaven), James Medina (Oberlin),, Micha Rosenbaum (IllinoisStateU.), & Samantha Knopp (TrinityInt)
- 2014; Andrea Gruver (GustavusAdolphus), Deisi Williamson (DePaulU.), Jeremy Sutherland (UIUC), Monica Cesinger (Amherst), Oscar Herrera (NEIU), Robin Picaud (U.RenneFrance),

Rosalba Herrera (Loyola)

- 2015; Adam Rork (MaryvilleU.), Dionna Bidny (UIC), Erica Rocha (DominicanU.), Evan Levy (Colorado), Jenniffer PaniaguaDelgado (UPuertoRico), Lindsey Bechen (Amherst), Luis Anzures (NorthwesternU.), Patricio Ansaldi (UCSB), Rachel Wells (Hendrix), Rebecca Nelson (HighSchool)
- 2016; Deidre Keating (Cal State), Elvia Angelica Muñoz (HumboldtStateU.), Filza Ali (LoyolaU.Chicago), Kristen Manion (U.Kansa), Lisa Cheung (Carleton), Nana Britwum (CornellU.), Victoria Luizzi (Amherst)
- 2017; Corina Godoy (HumboldtStateU.), Elizabeth Donaldson (U.ofNorthwestern-St.Paul), Evana James (UIUC), Justyn Carrasco (IllinoisStateU.), Marina Malone (UIUC)
- 2018; Christina Shehata (NorthwesternU.), Genesis Perez (InterAmericanU.ofPuertoRico), Iris Moore (Purdue), Jordan Craven (Hanover), Justin Winiecki (UIC), Mereida Fluckes (UIUC), Olivia Seweryn (IowaStateU.), Saralinda Willner (Oakton)
- 2019; Jacqueline Vargas (UIUC), Juan Angulo (U.Georgia), Juan Gonzalez (VirgPolytech), Zoe Barr (CornellU.)
- 2020; Zhang Johnathan (NU.)
- 2021; Angelique Acevedo (CornellU.), David Zimmerman (UIUC), Johnathan Zhang (NorthwesternU.), Luis Gonzalez (HumboldtStateU.), Ruby (Griffin) Barron (U.Mich), Woodworth Emily (Community)

### **High School (19)**

Marlene Arellano (College First), Nicole Baylon (St Martin de Porres High School), Octavio Brindis (St. Martin de Porres High School), Allison Buiser (College First), Katherine Chaisson (Stevenson high School), Kevin Cheung (Stevenson High School), Katherine Chiass (Stevenson HS), Martitza Crespo (College First), Robert Harris (College First), Jazmine Hernandez (College First), Oscar Herrera (College First), Laura Kochlefl (New Trier High School), Alice Liu (Stevenson High School), Rebecca Nelson (Stevenson High School), Lea Michelle Nowack (Stevenson High School), Jocelyn Ramirez (College First), Nikita Saladi (New Trier High School), Hope Schneider (Stevenson High School), Christine Zhao (Stevenson High School),

## **Professional Services**

### **Associate Editor**

*Conservation Genetics.*

*International Journal of Plant Sciences*

### **Board Member**

Illinois Endangered Species Board Member – State of Illinois

IUCN SSC Conservation Genetics Specialist Group Member

Institutional Biosafety Committee member - *DePaul University*

### **Professional Affiliations**

*Botanical Society of America, Ecological Society of America, America Society of Botanical Illustrators.*

### **Manuscript reviewer**

*American Journal of Botany, Annales Botanici Fennici, Annals of Botany, Applied Vegetation Science, Aquatic Botany, Biological Conservation, Botanical Bulletin of Academia Sinica, Folia Geobotanica, Heredity, International Journal of Plant Science, Molecular Ecology, Plos-one, Plant Systematics and Evolution, Preslia, Restoration Ecology, Telopea,*

### **NSF Panelist: Informal Science Education**

### **Proposal Reviewer**

National Science Foundation reviewer for *Population and Evolutionary Processes*

### **Policy reviewer**

Recovery criteria for endangered plants (CPC)

Ecotype literature review (CPC)

## **Collaborators and other affiliations**

### Collaborators within the past 48 months

Mary Ashley (UIC), Alona Banai (Loyola University), Tim Bell (Chicago State University), Justin Borevitz (Univ. of Chicago), Marlin Bowles (Morton Arboretum), Diane Byers (Illinois State University) Jeffrey Conner (Michigan State University), Julie Etterson (University of Minnesota, Duluth), Pam Geddes (NIU), Alden Griffith (Wellesley College), Patrick Griffith (Montgomery Botanical Center), Kay Havens (Chicago Botanic Garden), Chrystal Ho Pao (Trinity Int Uni), Sean Hoban (Morton), Tom Kaye (Institute of Applied Ecology), Kathleen Kay (University of California Santa Cruz), Andrea Kramer (BGCI), Tiffany Knight (Washington University in St Louis), Daniel Larkin (Chicago Botanic Garden), Joyce Maschinski (Fairchild Tropical Botanic Gardens), Greg Mueller (Chicago Botanic Garden), Peggy Olwell (BLM), Rob Raguso (Cornell Uni), Eric Ribbens (WIU), Krissa Skogen (Chicago Botanic Garden) David Tank (U.Idaho), Pati Vitt (Chicago Botanic Garden), Stuart Wagenius (Chicago Botanic Garden), Seana Walsh (NTBG).

### **Graduate Advisor**

John Barrett (U. of Cambridge)  
Christopher Preston (Centre of Ecology and Hydrology)

### **Post-Doc Advisor**

Sean Mayes (U. of Nottingham)  
Jeff Conner (Mich State Uni)