

# EMILY D. YATES, GISP

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## CONTACT INFORMATION:

Dixon National Tallgrass Prairie Seed Bank, Division of Plant Science & Conservation

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## EDUCATION:

**GISP (Geographic Information System Professional) Certification**

June 2011

GIS Certification Institute, [www.gisci.org](http://www.gisci.org)

**Certificate of Graduate Study in Geographic Information Analysis,**

December 2010

Northern Illinois University, DeKalb, Illinois

**M.S., Geography,** August 2003

Southern Illinois University, Carbondale, Illinois

*Thesis:* Recruitment of three non-native invasive plants into forest fragments in southern Illinois.

**B.S., Biology,** May 1999

Drake University, Des Moines, Iowa

*Thesis:* An assessment of the efficacy of using GPS for biological monitoring of the effects of deer herbivory on forest vegetation.

## RESEARCH

### EXPERIENCE:

**Seed Bank Coordinator,** Dixon National Tallgrass Prairie Seed Bank & **Conservation GIS Lab Manager,** Chicago Botanic Garden, 1000 Lake Cook Road, Glencoe, IL 60022, May 2006 – present.

- Coordinate CBGs partnership with the national Seeds of Success (SOS) program and international Millennium Seed Bank Project (MSBP), through collection, documentation, processing, and seedbanking of approximately 1500 Midwestern US native plant species for long-term *ex-situ* conservation, including fieldwork, herbarium specimen collection, plant population assessment, use of GIS and GPS equipment and software, and data and website management.
- Manage a team of 20 seed collectors across 16 states, conduct trainings in seed collecting, seed ecology for seed collectors and volunteers, and interpret the project to the scientific community and general public.
- Develop relationships with federal, state, local and private land managers and obtain permits for seed collection from appropriate agencies. Plan and implement field trips for seed collection.

- Research on mapping and quantifying shifts in geographic ranges of rare plant species under climate change scenarios using GIS and species distribution modeling (i.e., Diva-GIS, MaxEnt, ESRI ArcGIS).
- Development of GIS mapping tools for targeted seed banking efforts, using spatial analysis for prioritizing seed collecting schemes to capture maximum genetic diversity of species across ecoregions. Creation of decision tools to aid in potential 'assisted migration' of plants under changing climate.

**Freelance Copyeditor/Proofreader**, October 2005 – present.

- Edited and wrote copy for scientific journals such as *Ambio*, *Weed Science*, *Rangelands Ecology and Management*, *Photochemistry and Photobiology*, and *Journal of Wildlife Management* through Allen Press, Inc., Lawrence, KS.
- Served as content advisor and fact-checker for a series of 4 children's books on seed biology for Editorial Directions, Inc., Chicago, IL.

**Research Associate**, Great Basin Institute, mail stop 99, University of Nevada, Reno, NV 89557 and USFS Humboldt-Toiyabe National Forest, Spring Mountains National Recreation Area, 4701 N Torrey Pines Dr., Las Vegas, NV 89130-2301, September 2005 - May 2006.

- Inventoried and monitored populations of federally-listed, threatened, rare and endangered, endemic plant species in support of a sensitive species management plan for the Spring Mountains National Recreation Area in southern Nevada within the Humboldt-Toiyabe National Forest.
- Collected and cleaned native and rare plant seed for future ecological restoration projects and storage in seed banks and nurseries in conjunction with the BLM Seeds of Success program.
- Conducted plant surveys in a variety of forest and rangeland habitats, identified plants to the species level using floras and keys, and navigated rough terrain under extreme weather conditions; located long-term monitoring plots with GPS and USGS Topographic quads.
- Researched and compiled information on native plant seed collection, cleaning, and germination requirements for use in future restoration projects in the Spring Mountains National Recreation Area.

**Research Specialist** (Araceae), Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166-0299, January 2004 – September 2005.

Organized and assisted with daily management in all aspects of research projects in Araceae; expedited plant identifications using synoptic and dichotomous keys; managed electronic Araceae plant files, field books, computerized records of living plant collections, nomenclatural databases, specimen Type files, and exsiccatae records in the MBG Tropicos<sup>3</sup> database system; collected data on morphology of vegetative and reproductive plant structures as well as phenology of flowering and fruiting behavior; wrote detailed plant descriptions using dried herbarium specimens, live plants, and pickled inflorescence collections; edited scientific reports and grant proposals; prepared monographs and floristic treatments of tropical plants, utilized botanical literature, gathered bibliographic and electronic data.

- Collaborated on research, editing, and preparation for publication of floristic revisions of the genera *Dieffenbachia* and *Dracontium* (Araceae) comprising 200 pages of published text [Annals of the Missouri Botanical Garden vol. 91(4)] and 30 species new to science—responsible for copyediting, figure & appendices creation, GIS species distribution maps and general research activities.
- Prepared a backlog of unpublished work resulting in 32 publications and 120 new species of Araceae from Central and South America since January 2004. Collaborated with researchers from various institutions to complete publication of new species for inclusion in large scale floristic works, such as the Flora of Ecuador project, Flora Mesoamericana project, and Flora of the Río Cenepa region, Amazonas, Perú.
- Created and edited a quarterly newsletter for the International Aroid Society distributed to 450 members worldwide; editorial assistant for 2 volumes of *Aroideana*, the journal of the International Aroid Society (IAS), vol. 27 (2004) and vol. 28 (2005).

**Field Researcher**, U.S. Fish & Wildlife Service, Grasshopper Ecosystem Study, National Bison Range, Moise, Montana in conjunction with the Department of Biological Sciences, University of Notre Dame, South Bend, IN, August 2003 – October 2003.

Served as part of a 5-person field crew in a long-term (since 1981) experimental project funded by the USDA on the National Bison Range, investigating endemic grasshoppers from a population, community, and ecosystem approach. This study employed several experimental mesocosms, explored the abiotic and biotic factors controlling grasshopper populations, intraspecific competition among grasshopper species as well as interspecific relationships with other herbivores, predation on grasshoppers, and the role of grasshoppers in nitrogen cycling in a prairie ecosystem.

- Identified grasshoppers and grassland vegetation to species with dichotomous keys at 24 field sites; censused hopper diversity and site vegetation characteristics.
- Maintained experimental plots and cages; measured above ground biomass, soil moisture, litter decomposition rates, soil cores, primary production, and soil nitrogen availability with resin bags.
- Contributed to a positive group dynamic while working in adverse weather and rough terrain; completed project objectives before specified date, allowing time for preliminary analysis of data collected.

**Editorial Assistant**, International Water Resources Association (IWRA), Southern Illinois University, Carbondale, IL, August 2001 – August 2003

- Managed correspondence, manuscript reviews and minor copyediting for *Water International*, an international, peer-reviewed, scientific water resources journal.
- Coordinated distribution and assisted in writing *Update*, the international water resource information newsletter produced by IWRA.

**Educational Museum Curator Assistant**, Des Moines Botanical Center, Des Moines, IA 50311  
October 1997 – May 1998

*Project title:* Hirsch/Ladany Bonsai Collection Reassessment and Cataloging.

- Cataloged specimens and generated a visual database including history and fact sheets with specimen care instructions.
- Produced 6 zip disks of digital photos to be used by the Botanical Center for plant specimen identification, labeling for public presentation, and specimen documentation in collaboration with the Iowa Bonsai Association.
- Researched, edited, and illustrated a new interpretive brochure for the garden Bonsai collection in cooperation with the Iowa Bonsai Association.
- Created photo labels and installed in Bonsai display.

## **PUBLICATIONS:**

Fant, J.B., K. Havens, J.M. Keller, A. Radosavljevic & **E.D. Yates**. Glacial gene flow, biogeography, and genetics of the narrow-endemic, *Cirsium pitcheri*. *American Journal of Botany*, submitted.

Croat, T. B., **E. D. Yates** & A. Swart. 2010. Araceae. In: R. Vásquez Martínez, R. R. Gonzáles & H. van der Werff (eds.), *Flora del Río Cenepa, Amazonas, Perú, Volume 1*. Missouri Botanical Garden Press, St. Louis, MO.

Vitt, P., K. Havens, A. T. Kramer, D. Sollenberger & **E. Yates**. 2010. Assisted Migration of Plants: Changes in Latitudes, Changes in Attitudes. *Biological Conservation* 143(1):18-27.

**Yates, E.D.** 2009. The Dixon National Tallgrass Prairie Seed Bank: Ex-situ Conservation of Native Plant Species. *Missouri Prairie Journal* 30(1):22-27.

Croat, T. B., D. C. Bay & **E. D. Yates**. 2008. New species of *Philodendron* (Araceae) from Bajo Calima, Colombia. *Novon* 18(4): 429-452.

Croat, T. B., J. Whitehill & **E. D. Yates**. 2007. A new subsection of *Anthurium* section *Calomystrum* and five new species from Colombia and Ecuador. *Aroideana* 30

Croat, T. B., D. Bay & **E. D. Yates**. 2007. New species of *Stenospermation* and *Xanthosoma* (Araceae) from Bajo Calima, Valle Department, Colombia. *Novon* 17(3): 298-305.

Croat, T. B., D. Bay & **E. D. Yates**. 2006. New Taxa of *Anthurium* (Araceae) from the Bajo Calima Region (Valle, Chocó), Colombia and Ecuador. *Novon* 16(1):25-50.

Croat, T. B., A. Swart, & **E. D. Yates**. 2005. New species of Araceae from the Río Cenepa region, Amazonas Department, Perú. *Rodriguezia* 56(88):65-126.

Croat, T. B., **E. D. Yates** & D. Hayworth. 2005. New taxa of *Anthurium* and *Philodendron* (Araceae) from western Amazonia. *Willdenowia* 35(2):345-358.

**Yates, E. D.** & K. E. Kordecki. 2005. *Pistia stratiotes* L. (Araceae) – Ubiquitous Aroid Invader. *International Aroid Society Newsletter* 27(3):12-15.

**Yates, E. D.**, editor. 2005. *International Aroid Society Newsletter*. Vol. 27 (issues 1,2,3,4).

**Yates, E. D.** 2005. Recent Aroid Literature. *International Aroid Society Newsletter* 27(2):11-14.

**Yates, E. D.**, D. F. Levia, and C. L. Williams. 2004. Recruitment of three non-native invasive plants into a fragmented forest in southern Illinois. *Forest Ecology and Management* 190:119-130.

**Yates, E. D.**, T. R. Rosburg, and K. R. Swanson. 1998. An Assessment of the Efficacy of Using GPS for Biological Monitoring of the Effects of Deer Herbivory on Forest Vegetation. *Proceedings of the Eighth Annual Iowa Space Grant Conference*, University of Iowa, Iowa City, Iowa, October 30, 1998.

### Selected Reports

**Yates, E.** 2010. Investigator's Annual Report (IAR) for the National Tallgrass Prairie Seed Bank Project, Pictured Rocks National Lakeshore, U.S. National Park Service, Study #: PIRO-00145, Permit #: PIRO-2008-SCI-0008.

**Yates, E.** 2010. Investigator's Annual Report (IAR) for the National Tallgrass Prairie Seed Bank Project, Sleeping Bear Dunes National Lakeshore, U.S. National Park Service, Study #: SLBE-00073, Permit #: SLBE-2008-SCI-0007.

**Yates, E.** 2010. Seed collection for the Dixon National Tallgrass Prairie Seed Bank Project. Annual Permit Report to the Illinois Department of Natural Resources.

**Yates, E.** 2010. Dixon National Tallgrass Prairie Seed Bank. Annual report to the national Seeds of Success Program, December 2010.

**Yates, E.** 2009. Investigator's Annual Report (IAR) for the National Tallgrass Prairie Seed Bank Project, Pictured Rocks National Lakeshore, U.S. National Park Service, Study #: PIRO-00145, Permit #: PIRO-2008-SCI-0008.

**Yates, E.** 2009. Investigator's Annual Report (IAR) for the National Tallgrass Prairie Seed Bank Project, Sleeping Bear Dunes National Lakeshore, U.S. National Park Service, Study #: SLBE-00073, Permit #: SLBE-2008-SCI-0007.

**Yates, E.** 2009. Dixon National Tallgrass Prairie Seed Bank. Annual report to national Seeds of Success Program, December 2009.

**Yates, E.** 2008. Investigator's Annual Report (IAR) for the National Tallgrass Prairie Seed Bank Project, Pictured Rocks National Lakeshore, U.S. National Park Service, Study #: PIRO-00145, Permit #: PIRO-2008-SCI-0008.

**Yates, E.** 2008. Dixon National Tallgrass Prairie Seed Bank. Annual report to national Seeds of Success Program, December 2008.

Vitt, P. and **E. Yates**. 2008. Assessing Range Shifts of Rare Grassland Species in Response to Climate Change. National Geographic Conservation Grant Report.

Havens, K., P. Vitt, **E. Yates**. 2008. National Tallgrass Prairie Project. Report to the Henry Luce Foundation, May 2008.

Havens, K., P. Vitt, B. Allen and **E. D. Yates**. 2007. Seeds of Success. Annual report to Millennium Seed Bank, Kew.

Havens, K., P. Vitt, B. Allen and **E. D. Yates**. 2006. Seeds of Success. Annual report to Millennium Seed Bank, Kew.

Havens, K., P. Vitt, B. Allen and **E. D. Yates**. 2006. Seeds of Success. Annual report to National Fish and Wildlife Foundation.

Rosburg, T., **E. D. Yates**, K. Swanson. 1998. An assessment of the efficacy of using GPS for biological monitoring of the effects of deer herbivory on forest vegetation. Final report to the Iowa Space Grant Consortium, Iowa State University, Ames, IA, December 15, 1998.

#### Collaborative Grants:

Acquisition of Seed Biology Equipment at Chicago Botanic Garden. National Science Foundation, Major Research and Instrumentation (MRI) Grant, (Senior Personnel)

Acquisition of a Conservation Geographic Information System (GIS) Laboratory. National Science Foundation, Major Research and Instrumentation (MRI) Grant. DBI 0922995. \$363,547. August 1, 2009 – July 31, 2012. (Senior Personnel)

BLM Wyoming Seed Collection Project, National Seeds of Success Program. Bureau of Land Management. Havens, K., P. Vitt, E. Yates, D. Sollenberger. Grant No. L10AC20218. \$80,000. July 1, 2010 – June 30, 2015

Testing restoration effectiveness under a changing climate. National Fish and Wildlife Foundation, Native Plant Conservation Initiative. \$49,937. May 1, 2010 – April 30, 2011, extended to September 30, 2011. (Senior Personnel)

Engaging Communities - Native Seed Farm Project. Institute for Museum and Library Services (IMLS), Museums for America (MFA), G8003-401, \$150,000. August 1, 2010 – July 31, 2013. (Senior Personnel)

**PRESENTATIONS &  
CONFERENCES:**

**Yates, E. D., J. B. Fant, K. Havens, J. M. Keller, and A. Radosavljevic.** 2011. GIS network analysis & circuit theory investigate geneflow in the narrow endemic thistle, *Cirsium pitcheri*. Illinois GIS Association Fall Conference, October 18-19, 2011, Naperville, IL.

**Yates, E. D., S. Masi, G. Hitzroth.** 2011. Exploratory and GIS-based spatial analysis of rare plant species in the Chicago Region. Association of American Geographers (AAG) annual meeting, April 12-16, 2011, Seattle, WA.

**Yates, E. D.** 2010. Exploratory and GIS-based spatial analysis of rare plant species in the Chicago Region, Plants of Concern Program Advisory Group meeting, Chicago Botanic Garden, December 8, 2010.

**Yates, E. D.** 2010. Assisted migration of plants: Changes in latitudes, changes in attitudes. Janet Meakin Poor symposium, June 11, 2010, Chicago Botanic Garden, Glencoe, IL.

**Yates, E. D.** 2010. Assisted migration of plants: Changes in latitudes, changes in attitudes. Association of American Geographers (AAG) annual meeting, April 14-18, 2010, Washington D.C.

**Yates, E. D., D. Sollenberger & P. Vitt.** 2008. Seeds of Success National Tallgrass Prairie Seed Bank Project at the Chicago Botanic Garden. The 21<sup>st</sup> North American Prairie Conference, August 4-8, 2008, Winona State University, Winona, MN.

Sollenberger, D., **E. D. Yates** & P. Vitt. 2008. The Seeds of Success National Tallgrass Prairie Seed Bank Project: development of target species lists for restoration. The 21<sup>st</sup> North American Prairie Conference, August 4-8, 2008, Winona State University, Winona, MN.

**Yates, E. D.** & P.Vitt. 2008. Modeling Potential Distributions of Rare Grassland Plant Species: Quantifying Geographic Range Shifts in Response to Climate Change. Association of American Geographers (AAG) annual meeting, April 15-19, 2008, Boston, MA.

Kornfeind, J., **E. D. Yates** & P. Vitt. 2007. Assessing Range Shifts of Rare Grassland Species in Response to Climate Change. Botanical Society of America (BSA) annual meeting, July 7-11, 2007, Chicago, IL.

**Yates, E. D., E. Allen & P. Vitt.** 2007. The Millennium Seed Bank Project at the Chicago Botanic Garden: ex-situ conservation of native prairie plant species. Association of American Geographers (AAG) annual meeting, April 17-21, 2007, San Francisco, CA.

**Yates, E. D.** 2003. Invasive plant species and forest fragmentation in southern Illinois. 99th Annual meeting of the Association of American Geographers (AAG), New Orleans, LA, March 5-8, 2003.

Rosburg, T. R. & **E. D. Yates.** 1999. An Assessment of the Accuracy of GPS for Biological Monitoring. Published abstract in program of the 111<sup>th</sup> session of the Iowa Academy of Science, Iowa State University, Ames, IA, April 23-24, 1999.

**AWARDS &  
PROFESSIONAL SOCIETIES:**

- David G. Arey Memorial Endowment Fund Award for master's theses displaying creative thinking in natural resources and environmental problem solving, \$500 Award, 2004
- Xi Sigma Pi member, 2000
- Pioneer-Hybrid International Scholarship, 1999
- NASA Space Grant Undergraduate Fellow, 1998
- Beta Beta Beta, 1998
- Drake scholarship, 1995

Illinois Native Plant Society  
Association of American Geographers  
Illinois GIS Association  
Society for Conservation GIS  
URISA, The Association for GIS Professionals

**PROFESSIONAL  
DEVELOPMENT:**

- CartoPac Field Solutions, CartoPac Studio & Field Data Collection training course, August 2-4, 2010
- Exploring Spatial Statistics in GIS Workshop, Center for Statistical Consultation & Research, University of Michigan, Ann Arbor, October 27, 2009
- Chicago Wilderness Midwest Ecological Prescription Burn Crew Member Training, September 11-12, 2006
- Center for Plant Conservation, Applied Plant Conservation Workshop, Denver Botanic Garden (and US Botanical Garden) – June 6-16, 2006
- Seeds of Success Training Course – “Seed Collection for Restoration and Conservation” Chicago Botanic Garden – May 21-22, 2006
- Crew member on the USFWS / AZ Fishery Resources Office, Native Fish Monitoring team, Little Colorado River, Grand Canyon, Flagstaff, AZ, March 28-April 7, 2006. Pit-tagging, setting hoop nets, data collection, and processing endangered humpback chub, native bluehead sucker, and flannelmouth sucker as part of a long-term mark-recapture population study.
- Seed Collection for Restoration and Conservation, Seeds of Success, 1730-06 training course, Bureau of Land Management (BLM), Spring 2006
- National Environmental Policy Act (NEPA), Forest Plan Implementation Course 1900-1, US Forest Service, January 23-27, 2006
- “Writing about Nature, Outdoor Travel, and the Environment” online nature writing e-course instructed by Wendee Holtcamp. December 2005 – January 2006
- USFS FAUNA database training – Winter/Spring 2006
- GIS Solutions Expo, Hyatt Regency Hotel, Henderson, NV, October 18, 2005
- PADI SCUBA certification - open water diver, August 1996 - present