

# Kenneth J. Bagstad

## Curriculum Vitae

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### Education

**Ph.D.** 2009, Natural Resources (Certificate in Ecological Economics), University of Vermont – Burlington, VT  
Dissertation: Ecological economic applications for urban and regional sustainability

**M.S.** 2002, Plant Biology (Concentration in Ecology), Arizona State University – Tempe, AZ  
Thesis: Herbaceous plants as bioindicators of groundwater decline for the San Pedro River, AZ

**B.A.** 1999, Botany & Environmental Studies, Zoology minor, Ohio Wesleyan University – Delaware, OH  
*summa cum laude*, Phi Beta Kappa

### Additional relevant coursework:

Introductory Macroeconomics; Introductory Microeconomics  
Public Finance; Intermediate Macroeconomics

City Colleges of Chicago, 2003  
Northeastern Illinois University, 2004

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### Employment and Research Experience

**Postdoctoral Associate – U.S. Geological Survey and University of Vermont** **2009 – present**

- Project economist for USGS-BLM Ecosystem Services Valuation Pilot
  - Led evaluation of alternative monetary and non-monetary valuation tools for bringing ecosystem services analysis into public land management
  - Coordinated activities with stakeholders from federal agencies and universities on valuation alternatives for the San Pedro River, Arizona
- Continued work on NSF-funded “Artificial Intelligence for Ecosystem services “ (ARIES) project to develop models of terrestrial and marine ecosystem service provision, use, and spatial flows

**Consulting Ecological Economist** **2006 – 2009**

- Developed value transfer study to summarize the economic value of ecosystem services in southern Ontario (Client: Ontario Ministry of Natural Resources/Spatial Informatics Group, LLC)
- Advisor to Utah Genuine Progress Indicator project, providing guidance on study design, data collection, and project review (Client: Utah Population and Environment Coalition)
- Conducted economic valuation of ecosystem goods and services provided by coastal Louisiana’s wetlands (Client: Earth Economics)
- Provided GIS and economic valuation support to value ecosystem goods and services provided within the Puget Sound watershed (Client: Earth Economics)
- Engaged the public and local decision makers to identify new funding mechanisms for restoring Puget Sound (Client: Earth Economics)

**Graduate Research Assistant – University of Vermont, Burlington, VT** **2005 – 2009**

- Developed models, managed GIS data, assisted in grant proposal development, and coordinated activity with partner organizations for ARIES project
  - Coordinated activities remotely with partners across the United States

- Balanced project development needs based on alternative demands of nonprofit, government, and corporate sector partners
- Conducted GIS-based ecosystem service valuation for Northwest Vermont, based on alternative urban growth scenarios
- As part of coursework on payments for ecosystem services, analyzed ecosystem services and policy alternatives to support ecological restoration of the Illinois River
- As part of coursework on land use planning and economics, evaluated new stormwater management alternatives for the City of Chicago Department of Planning and Development
- Researched economic, social, and environmental contributions to quality of life, calculating the Genuine Progress Indicator (GPI) at local and regional scales in Vermont and Ohio
- New England University Transportation Center Fellow, 2006-2007

**Environmental Scientist/Botanist – Montgomery Watson Harza, Chicago, IL** **2002 – 2005**

- Developed and implemented restoration and ecological management plans for native coastal, prairie, and savanna ecosystems across urban, suburban, and rural settings
- Served as project manager for wetland and ecological restoration projects, responsible for proposal development, budgeting, and implementation
- Conducted vegetation surveys, habitat assessments, and threatened and endangered species surveys
- Prepared environmental assessments and environmental impact statements in accordance with the National Environmental Policy Act (NEPA)
- As wetland scientist, completed wetland delineations and permit applications, developed mitigation designs, and conducted long-term ecological monitoring

**Graduate Research Assistant – Arizona State University, Tempe, AZ** **1999-2002**

- Conducted study of vegetation-hydrology relationships for herbaceous riparian plant communities of the San Pedro River, Arizona
- Set up study sites and sampling protocol
- Conducted seasonal vegetation sampling, collecting and identifying over 400 plant species
- Statistically analyzed data and prepared reports and publications
- Hydrologic, geomorphic, and soils investigations, including soil sampling and analysis, floodplain channel surveying, installation of piezometers, and groundwater monitoring
- Participant in ASU neotropical flora course, including two weeks of plant collection in lowland rainforests and montane cloud forests of Costa Rica; identified and prepared specimens for ASU and Costa Rican herbaria

## Teaching Experience

**Public communication for general and scientific audiences** **2000-present**

- Presented or co-authored over a dozen papers and posters for professional conferences
- Delivered talks about ecosystem services to the general public in Illinois, Vermont, and Washington State

**Instructor – University of Vermont, Burlington, VT** **2010**

- Lead instructor for a course on probabilistic modeling of ecosystem services
- Coordinated student work to develop new ecosystem services modules for the ARIES system, including participation by external public, private, and non-profit sector partners

**Guest Instructor – Oberlin College, Oberlin OH** **2008**

- Guest lectured for 3 weeks on ecological economics, measuring social well-being, and use of the Genuine Progress Indicator
- Coordinated student projects to estimate trends in environmental indicators for Northeast Ohio

**Discussion Section Facilitator – University of Vermont, Burlington, VT** **2006**

- Led discussion section for freshman course, “Race and Culture in Natural Resources”
- Selected weekly readings and facilitated discussion on race and cultural issues in the environmental field

**Instructor – University of Vermont, Burlington, VT**

**2006**

- Co-taught, with another PhD student, a course in Environmental Problem Analysis
- Developed and delivered course material and advised student groups in developing projects to integrate natural science and socioeconomic aspects of varied environmental issues

**Teaching Assistant – Arizona State University, Tempe, AZ**

**2000-2001**

- Taught laboratory sections for non-majors botany and introductory biology for majors courses
- Recognized by ASU admissions for excellence in teaching

**Publications**

Villa, F., M. Ceroni, S. Krivov, J. Farley, G. Johnson, and K.J. Bagstad. In preparation. The ARIES approach to ecosystem service assessment and valuation. Target journal: Ecology and Society.

Bagstad, K.J., G.W. Johnson, F. Villa, S. Krivov, and M. Ceroni. In preparation. From ecosystems to people: Characterizing and mapping the beneficiaries of ecosystem services. Target journal: Ecological Economics.

Bagstad, K.J. and R. Shammin. In preparation. The Genuine Progress Indicator as a measure of regional economic welfare: A case study for Northeast Ohio. Target journal: Journal of the American Planning Association.

Johnson, G.W., F. Villa, K.J. Bagstad, and R. Snapp. In review. Service Path Attribution Networks (SPANs): Spatially quantifying the flow of ecosystem services from landscapes to people. Submitted to: Springer-Verlag Notes in Computer Science.

Bagstad, K.J., A.R. Troy, and S. Liu. In review. Context matters: Applying ecological and socioeconomic criteria to improve ecosystem services value transfer. Submitted to: Environmental Monitoring and Assessment.

Daniels, A.E., Esposito, V., Bagstad, K.J., Moulaert, A., Manuel Rodriguez, C., and Segura-Bonilla, O. Under revision. A decade of PES: Building on Costa Rica’s model and applying lessons learned. Accepted for publication in: Ecological Economics.

Stromberg, J.C., K.J. Bagstad, and E. Makings. 2009. Floristic Diversity. In: Ecology and conservation of the San Pedro River. J.C. Stromberg and B. Tellman, eds. University of Arizona Press: Tucson.

Bagstad, K.J. and M. Ceroni. 2008. The Genuine Progress Indicator: A new measure of economic development for the Northern Forest. Adirondack Journal of Environmental Studies 15 (1): 21-29.

Bagstad, K.J. and M. Ceroni. 2007. Opportunities and challenges in applying the GPI/ISEW at local scales. International Journal of Environment, Workplace, and Employment 3 (2): 132-153.

Bagstad, K.J., K. Stapleton, and J.R. D’Agostino. 2007. Taxes, subsidies, and insurance as drivers of United States coastal development. Ecological Economics 63: 285-298.

Bagstad, K.J., S.J. Lite, and J.C. Stromberg. 2006. Vegetation and hydro-geomorphology of riparian patch types of a dryland river. Western North American Naturalist 66: 23-44.

Bagstad, K.J. 2006. Valuing ecosystem services in the Chicago region. Chicago Wilderness Journal 4 (2): 18-26.

Stromberg, J.C., K.J. Bagstad, E. Makings, S.J. Lite, and J. Leenhouts. 2005. Effect of decline in stream flow duration on channel vegetation of a semi-arid region river (San Pedro River, Arizona). River Research & Application 21 (8): 925-938.

Lite, S.J., K.J. Bagstad, and J.C. Stromberg. 2005. Riparian plant richness and abundance across gradients of water stress and flood disturbance, San Pedro River, Arizona, USA. *Journal of Arid Environments* 63 (4): 785-813.

Bagstad, K.J., J.C. Stromberg, and S.J. Lite. 2005. Response of herbaceous riparian plant functional groups to flooding of the San Pedro River, Arizona. *Wetlands* 25 (1): 210-223.

Roberts, B.R., H.F. Decker, K.J. Bagstad, and K.A. Peterson. 2001. Bio-solid residues as soilless media for growing wildflower sod. *HortTechnology* 11(2): 194-199.

Bagstad, K.J. and D.M. Johnson. 1999. Taxonomy of *Xylopia barbata* (Annonaceae) and related species from the Amazon/Orinoco region. *Contributions of the University of Michigan Herbarium* 22:21-29.

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## Reports

Troy, A. and K.J. Bagstad. 2009. Estimating ecosystem services in Southern Ontario. Report prepared by Spatial Informatics Group for the Ontario Ministry of Natural Resources.

Batker, D., de la Torre, I., Costanza, R., Swedeen, P., Day, J., Boumans, R., and Bagstad, K.J. 2008. Gaining ground: Wetlands hurricanes and the economy: The value of restoring the Mississippi Delta. *Earth Economics: Tacoma, WA*.

Batker, D., Swedeen, P., Costanza, R., de la Torre, I., Boumans, R., and Bagstad, K.J. 2008. A new view of the Puget Sound economy: The economic value of nature's services in the Puget Sound Basin. *Earth Economics: Tacoma, WA*.

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## Presentations

Bagstad, K.J. "Climate change and ecosystem services in western deserts: Quantifying scarce public goods for improved management." Invited speaker, Natural Resource Needs Related to Climate Change in the Great Basin & Mojave Desert: Research, Adaptation, Mitigation, Las Vegas, NV, April 2010.

Bagstad, K.J., F. Villa, M. Ceroni, G. Johnson, D. Batker, R. Boumans, and L. Kaufman. "Practical assessment and valuation of ecosystem services with ARIES and MIMES." National Council for Science and The Environment Conference: The New Green Economy, Washington, DC, January 2010.

Bagstad, K.J. "Climate change, ecological thresholds, and economic impacts: Integrating climate science and economics." Illinois Economics Association Annual Meeting, Chicago, IL, October 2009.

Villa, F., Ceroni, M., Bagstad, K.J., Johnson, G., and Krivov, S. ARIES (Artificial Intelligence for Ecosystem Services): A new tool for ecosystem services assessment, planning, and valuation. 11<sup>th</sup> Annual BIOECON Conference on Economic Instruments to Enhance the Conservation and Sustainable Use of Biodiversity, Venice, Italy, September 2009.

Bagstad, K.J. and G.W. Johnson. "Linking spatial data and ecological knowledge to map ecosystem services provision, use, and benefit flows." U.S. Society for Ecological Economics Biennial Conference, Washington, DC, June 2009.

Bagstad, K.J. and R. Shammin. "The Genuine Progress Indicator as a measure of regional economic welfare: A case study for Northeast Ohio." U.S. Society for Ecological Economics Biennial Conference, Washington, DC, June 2009.

Batker, D., J. Pittman, K.J. Bagstad, R. Boumans, and P. Swedeen. "A new view of the Puget Sound economy." U.S. Society for Ecological Economics Biennial Conference, Washington, DC, June 2009.

Bagstad, K.J. "Beyond GDP: The Genuine Progress Indicator as a measure of regional well-being." Invited seminar, Michigan State University Department of Community, Agriculture, Recreation, and Resource Studies, East Lansing, MI, February 2009.

Bagstad, K.J. "Economics and the environment: Opportunities for conservation finance and constituency building." 3<sup>rd</sup> biennial Chicago Wilderness Wild Things Conference, Chicago, IL, February 2009.

Bagstad, K.J., A. Troy, and B. Voigt. "Contextualizing ecosystem services in the present and future urban environment: A Chittenden County, Vermont case study." ACES: A Conference on Ecosystem Services, Naples, FL, December 2008.

Shammin, R.M.D. and K.J. Bagstad. "Teaching sustainability: Engaging students in developing local sustainability indicators." Association for the Advancement of Sustainability in Higher Education biennial conference, Raleigh, NC, November 2008.

Bagstad, K.J., A. Troy, and S. Liu. "Context matters: Applying ecological and socioeconomic criteria for improved ecosystem services value transfer." Association of American Geographers Annual Meeting, Boston, MA, April 2008.

Bagstad, K.J. "Ecosystem services: Introduction and policy for Vermont." Vermont Natural Resources Council, Randolph, VT, November 2007.

Bagstad, K.J. "Monetary (and non-monetary) valuation of ecosystem services." Using ecosystem service valuation to restore and protect Puget Sound: A workshop on the economics of restoration, Gig Harbor, WA, June 2007.

Bagstad, K.J. "Conservation economics for the Chicago region." 2<sup>nd</sup> biennial Chicago Wilderness Wild Things Conference, Chicago, IL, March 2007.

Swedeen, P., D. Batker, I. de la Torre, J. Day, R. Costanza, R. Boumans, and K.J. Bagstad. "The value of hurricane protection functions and other ecosystem services in coastal Louisiana: A post-Katrina analysis." International Society for Ecological Economics Biennial Conference, Delhi, India, December 2006.

Bagstad, K.J. "Desertification: An ecological economic perspective." Peking University 1<sup>st</sup> Students International Environmental Forum, Beijing, China, June 2006.

Bagstad, K.J. "Economic approaches to conservation in the Chicago region." U.S. Society for Ecological Economics Biennial Conference, Tacoma, WA, July 2005.

Lite, S.J., K.J. Bagstad, and J.C. Stromberg. "Riparian plant richness across lateral and longitudinal gradients of water stress and flood disturbance, San Pedro River, Arizona, USA". Association of American Geographers Annual Meeting, Denver, CO, April 2005.

Bagstad, K.J., M.R. Wagstaff, V.M. Jurca, J. Bornstein, and M. Van Haften. "Dunes, Wetlands, Prairies, People: Urban Habitat Restoration along Chicago's Lakefront". Biennial National Conference on Coastal and Estuarine Habitat Restoration, Seattle, WA, September 2004.

Katz, G.L., J.C. Stromberg, S.J. Lite, M.W. Denslow, and K.J. Bagstad. "Riparian ecosystem restoration, lower San Pedro River, Arizona, USA". Association of American Geographers Annual Meeting, Philadelphia, PA, March 2004.

Lite, S.J., J.C. Stromberg, and K.J. Bagstad. "Plant species diversity and richness patterns across water availability and flood intensity gradients along the San Pedro River, Arizona". Arizona Riparian Council Annual Meeting, Pinetop, AZ, April 2003.

Bagstad, K.J. and J.C. Stromberg. "Herbaceous plants as bioindicators of groundwater decline for the San Pedro River, Arizona". Ecological Society of America Annual Meeting, Tucson, AZ, August 2002.

Dixon, M., J.C. Stromberg, K.J. Bagstad, and S.J. Lite. "Projecting the influence of climate change on riparian vegetation along the Upper San Pedro River". Annual Conference on Research and Resource Management in the Southwestern Deserts, Tucson, AZ, May 2002.

Bagstad, K.J. and J.C. Stromberg. "Controls of plant species diversity in a desert riparian ecosystem". Ecological Society of America Annual Meeting, Madison, WI, August 2001.

Stromberg, J.C., K.J. Bagstad, and S.J. Lite. "Vegetation communities of the San Pedro: Relationships with stream flows and groundwater". Arizona Native Plant Society Annual Meeting, Sierra Vista, AZ, October 2000.

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### **Professional Affiliations, Service, and Awards**

Journal reviewer: Ecological Economics, Environment and Planning A, Environmental Management, Journal of Environmental Management

International Society for Ecological Economics: Member, 2006-present

Award for PhD research and scholarship excellence, Rubenstein School of Environment & Natural Resources, 2009

University of Vermont Environmental Forum: Graduate student representative, 2005-2008

Chicago Wilderness Social and Natural Sciences Research Agenda, Contributor, 2005-2007

Arizona State University Graduates in Earth and Life Sciences: Program committee, 2000-2002

ASU Plant Biology Graduate Student Association: President 2000-2001, Secretary 2001-2002

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