

Future Goals



The overall goal of CLEAR faculty and staff is to expand our programs and partners, in order to provide enhanced services to the communities and citizens of Connecticut. Our vision is for a Center that can provide these services in a reliable and sustainable manner.

Realizing our goal will require a more sustainable funding structure that relies less on externally-funded specific projects, which currently provide roughly 80% of the Center’s support (page 17). Much of the regular, ongoing research, training and outreach activities of CLEAR are not, in the long run, amenable to federal or state grant programs, which tend to focus on specific projects instead of ongoing services. Given the proven quality of CLEAR’s work, and its utility and value to the citizens and communities of Connecticut, we hope to attract a larger state investment in the Center.

There are many areas that CLEAR is hoping to enhance including:

- **On the UConn “home front,”** CLEAR hopes to involve more faculty from additional academic departments, as well as to increase the capacity of LERIS and to obtain institutional support for its maintenance and upgrade.
- **At the state level,** the Center hopes to expand its support of the state agencies charged with implementation of the Responsible Growth Initiative.
- **The research and technology side** of CLEAR intends to do more work with high resolution imagery, advanced landscape visualization techniques and modeling of future land use impacts.
- **On the outreach side,** we plan to expand our services to coastal communities, and to develop new programs in support of the state’s land trusts.
- **On the national level,** we hope to expand our work helping other states to adapt tools and methods developed by CLEAR.
- Finally, our hope is that our collaborative **international work** on measuring global urbanization will continue.

CLEAR Activities & Projects

The remainder of this Progress Report is comprised of lists: staff, funding sources, partners, awards, grants and publications. These lists are as comprehensive as we could make them, and cover the period from April 2002 through April 2007. They are intended to give an overall feel for the breadth and depth of the Center’s work. Those wishing specific information on a project, publication or other CLEAR effort should visit the website (clear.uconn.edu) or call the appropriate Center program contact, listed on pages 26 and 27.

Partners & Cooperators	16
Staff & Funding	17
Grant Funded Projects	
Research	18
Applications & Training Projects	18
Outreach Education Projects	19
Selected Awards	21
Publications	
Journal Articles	22
Magazine, Newsletter & Other Articles	23
Books	23
Abstracts & Proceedings	24
Recent Websites & Web Tools Developed	25
Major Outreach Publications	25



Partners & Cooperators

CLEAR works with a wide variety of agencies, organizations and individuals to bring our information and services to Connecticut communities. We are grateful to our colleagues in these organizations for their support, cooperation and assistance.

University of Connecticut Partners

- ◆ • Extension
- ◆ • Natural Resources Management and Engineering
- ◆ • Connecticut Sea Grant College Program
 - Geography
 - Plant Science/Landscape Architecture Program
 - Ecology and Evolutionary Biology
 - Marine Sciences
 - Transportation Technology Institute
 - Office of Environmental Policy

Other Academic Institutions (Connecticut)

- Wesleyan University
- Connecticut College
- Yale University
- University of New Haven

State Agencies and Organizations

- * • Department of Environmental Protection (CT DEP)
- * • Office of Policy and Management, Office of Responsible Growth
 - Department of Public Health
 - Department of Transportation

Federal Agencies

- * • National Aerospace and Space Administration (NASA)
- * • U.S. Department of Agriculture (USDA), Cooperative State Research, Education and Extension Service (CSREES)
 - USDA Natural Resources Conservation Service (NRCS)
- * • USDA Forest Service
- * • Environmental Protection Agency (EPA)
- * • National Oceanic and Atmospheric Administration (NOAA)
- * • The World Bank
- * • National Science Foundation (NSF)

Other Partners

- * • Long Island Sound Study National Estuary Program
- * • Connecticut Institute of Water Resources
 - Connecticut Homebuilder's Association
 - American Farmland Trust, Connecticut Chapter
 - Connecticut Farm Bureau
 - American Planning Association, Connecticut Chapter
 - Connecticut Association of Conservation and Inland Wetland Commissions
 - Connecticut Soil and Water Conservation Districts
 - Connecticut Bar Association
 - Connecticut Forest and Park Association
 - The Nature Conservancy, Connecticut Chapter
 - Institute for Advanced Education in Geospatial Science (IAEGS), University of Mississippi
- * • The Institute for the Application of Geospatial Technology (IAGT) at Cayuga Community College, Inc.
 - Regional planning organizations
- * • Quinnebaug-Shetucket National Heritage Corridor
 - Municipal partners from around Connecticut
 - Land trusts from throughout Connecticut
- * • Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET)
 - Massachusetts organizations and agencies involved with the GVI
 - Connecticut Urban Forest Council
 - Tree Wardens' Association of Connecticut
 - Williams College
 - New York University
 - University, state agency and other partners involved with the 30 state National NEMO Network programs

◆ **Principal CLEAR Partners**

* **Has provided funding for one or more CLEAR programs**

Staff & Funding



Staff

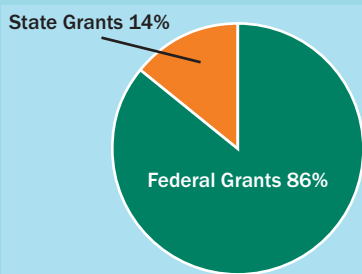
CLEAR faculty, situated primarily in the Natural Resources Management and Engineering Department and the Department of Extension, have garnered statewide, regional and national recognition for their work. In addition, they provide input and leadership to key state initiatives and programs like the Institute for Water Resources, the Landscape Stewardship Initiative (of CT DEP), the Responsible Growth Office (of OPM), the Long Island Sound Study Nonpoint Source and Watersheds Work Group, the Connecticut Urban Forest Council and the state Geospatial Information Systems Council. Nationally they provide input and leadership to professional associations such as the Society of American Foresters and the American Society for Photogrammetry and Remote Sensing (ASPRS).

As of April 2007, there are 15 faculty and 8 staff working entirely or primarily on CLEAR programs (table, below). Of these 23 people, 5 are tenured or tenure-track faculty supported by the University, accounting for about 22% of the CLEAR budget for the five-year period. CLEAR also currently supports one PhD candidate, five Masters students and one undergraduate student.

CLEAR Program	Tenured Faculty	Grant-supported Faculty/Staff	Total Faculty/Staff
LERIS (Lab for Earth Resource Information Systems)	1	3	4
Geospatial Technology Program (GTP)	0	2	2
NEMO (Nonpoint Education for Municipal Officials)	0.5	4	4.5
National NEMO Network	0.5	2	2.5
Land Use Planning	1	0.5	1.5
Green Valley Institute (GVI)	0.5	4.5	5
Extension Forestry	1.5	2	3.5
Totals	5	18	23

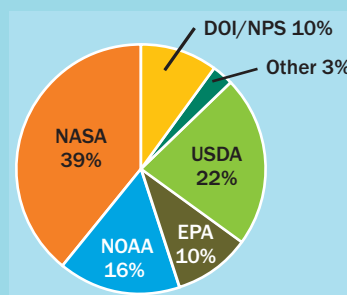
Funding

Extramural grants support about 78% of CLEAR faculty and staff and their endeavors. **Grants during 2002 - 2007 totaled about \$8 million**, with about 14% coming from state agencies and about 86% coming from federal agencies (diagram, below left). CLEAR federal grants come from a number of agencies; NASA and USDA were the largest grantors during this period (diagram, below right). Individual grants are listed in the following section.



Total Grant Support 2002 - 2007

State Grants \$1,078,000.
Federal Grants \$6,867,000.



Breakdown of Federal Grant Support

NASA \$2,688,000.
USDA \$1,532,000.
NOAA \$1,081,000.
EPA \$695,000.
DOI/NPS \$670,000.
Other \$201,000.



Grant Funded Projects

Research Projects

2007

- **Modeling of Reservoir Water Quality Impacts with Projected Land Use Change** (Dietz) South Central Connecticut Regional Water Authority, \$15,230

2006

- **Coupling of Spatially-distributed Nonpoint Source Pollution, Urban Growth, and Forest Fragmentation Models** (Civco) Storrs Agricultural Experiment Station, \$104,737
- **Incorporating NASA Applied Sciences Data in Local Government Decision Support: Enhancing Student Involvement and National Dissemination** (Civco, Arnold) NASA, \$744,000

2005

- **Coastal Riparian Buffer Analysis** (Wilson, Arnold, Rozum, Prisloe) EPA Region 1, Long Island Sound Study, \$90,611
- **Incorporating NASA Applied Sciences Data in Local Government Decision Support** (Civco, Arnold, Prisloe) NASA, \$1,868,797

2004

- **Coastal Area Land Cover Change Analysis** (Arnold, Wilson) CT DEP Office of Long Island Sound Programs, \$43,000
- **Application of Remote Sensing Technologies for the Delineation and Assessment of Coastal Marshes and their Constituent Species** (Civco, Hurd) EPA Region 1, Long Island Sound Study, \$179,159
- **The Urban Growth Management Initiative: Confronting the Expected Doubling the Size of Cities in the Developing Countries in the Next Thirty Years** (Angel, Sheppard, Civco) The World Bank, \$90,000 (UConn portion)
- **Causes and Consequences of Urban Expansion** (Sheppard, Angel, Civco) National Science Foundation, \$111,422 (UConn portion)

2003

- **Mapping and Monitoring Changes in Impervious Surfaces in the Long Island Sound Watershed** (Civco, Hurd, Arnold) EPA Region 1, Long Island Sound Study, \$102,884
- **Remote Sensing and GIS Analysis of Landscape Parcelization and Forest Fragmentation** (Civco, Hurd) Storrs Agricultural Experiment Station, \$127,794

Applications & Training Projects

2007

- **Developing a Water Allocation Database, Year Two** (Prisloe, Civco, Arnold) Connecticut Institute for Water Resources, \$25,050
- **Development of Connecticut Remote Sensing Workshop** (Prisloe) NASA/Institute for the Application of Geospatial Technology, \$5,000

2006

- **Ecological Landscape Types** (Prisloe, Barrett) USDA/U.S. Forest Service, \$40,000
- **Cooperative Decision Support Technologies for the Northeastern United States** (Prisloe) NASA/Institute for the Application of Geospatial Technology, \$10,000
- **Integrating Earth Observation Data into National Applications: RS and GIS for Government Applications** (Prisloe) NASA/Institute for the Applications of Geospatial Technology, \$20,000



- **Developing a Water Allocation Database** (Prisloe, Civco, Arnold) Connecticut Institute for Water Resources, \$25,050

2005

- **Agricultural Land Change in Middlesex County** (Prisloe, Resor) Middlesex County Community Fund, \$2,500
- **Niantic Watershed Project Support** (Prisloe, Rozum, Stocker) CT DEP/Office of Long Island Sound Programs, \$32,400 (UConn portion)

2004

- **Development of a High-resolution Satellite Image Database and Interpreted GIS Data to Support Connecticut Coastal Resource Management Programs** (Prisloe) NOAA Coastal Services Center, \$25,000 (plus \$300,000 in data acquisition)
- **Development of a Protocol to Classify and Map *Phragmites australis* in the Tidal Marshes of the Lower Connecticut River from Quickbird Multispectral Imagery.** NASA/Institute for the Application of Geospatial Technology, \$25,000

2003

- **NASA Support for an Earth Grant Geospatial Program** (Civco, Prisloe, Arnold) NASA Earth Science Enterprise, \$25,000

2002

- **NOAA Support for an Earth Grant Geospatial Program** (Prisloe, Civco, Arnold) NOAA/National Sea Grant Office, \$150,000
- **Development of Regionally Calibrated Land Cover Impervious Surface Coefficients** (Prisloe) Connecticut Institute for Water Resources, \$24,666

Outreach Education Projects

2007

- **Dissemination and Deployment of a Web-Based Tool to Support Natural Resource-Based Planning at the Local Level** (Dickson, Arnold) Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), \$216,574
- **NEMO: Catalyzing Community Action on Impaired Waters** (Rozum, Dietz) Connecticut Department of Environmental Protection, \$75,000

2006

- **Incorporating Forest Resource Issues into the NEMO Network** (Dickson, Arnold) USDA/CSREES, \$83,636
- **Green Valley Institute Support** (Broderick, Westa) DOI/National Park Service Quinebaug-Shetucket National Heritage Corridor, \$150,000
- **USDA Regional Water Quality Project: CT Support** (Jeffrey, Broderick) USDA/CSREES Water Quality Program, \$37,827
- **Expansion of Stormwater Quality Education** (Rozum, Dietz) CT DEP/SEP, \$45,000
- **A Regional Buildout Analysis: Approaches, Results and Implications** (Rozum, Wilson, Arnold) Connecticut Office of Policy and Management, \$56,000
- **Connecticut Highlands Study – Growth and Impact Analysis** (Worthley, Stocker) USDA Forest Service, \$38,565
- **Creating a Connecticut Land Use Academy** (Arnold, Rozum, Gibbons) Connecticut Office of Policy and Management, \$100,000
- **Coastal Community Development Program Support 2006** (Rozum, Arnold) Connecticut Sea Grant College Program, \$46,000



Outreach Education Projects Continued...

2005

- **Green Valley Institute Support** (Broderick, Westa) DOI/National Park Service Quinebaug-Shetucket National Heritage Corridor, \$150,000
- **USDA Regional Water Quality Project: Connecticut Support** (Jeffrey, Broderick) USDA/CSREES Water Quality Program, \$34,628
- **State Urban Forest Volunteer Programs** (Ricard) USDA Forest Service, \$40,000
- **Highlands Study – Forest and Agriculture Analysis** (Worthley, Stocker) USDA Forest Service, \$23,127
- **Connecticut Highlands Study** (Worthley, Stocker) USDA Forest Service, \$74,510
- **Forest Land Enhancement Program Educational Component** (Worthley) USDA Forest Service, \$10,000
- **Forest Stewardship Program Coordinator** (Worthley) USDA Forest Service, \$28,000
- **NEMO Workshops and Web Tool** (Rozum, Dietz, Arnold) CT DEP Nonpoint Source Program, \$70,000
- **Creating an Educational CD on Jordan Cove** (Clausen, Rozum, Arnold, Dietz) CT DEP Nonpoint Source Program, \$36,000 (NEMO portion)

2004

- **Stormwater Quality Manual Training** (Rozum, Arnold) CT DEP Nonpoint Source Program, \$100,000
- **Coastal Community Development Program Support 2004-2005** (Arnold, Rozum) Connecticut Sea Grant College Program, \$100,000
- **Green Valley Institute Support** (Broderick, Westa) DOI/National Park Service Quinebaug-Shetucket National Heritage Corridor, \$150,000
- **USDA Regional Water Quality Project: Connecticut Support** (Jeffrey, Broderick) USDA/CSREES Water Quality Program, \$32,165
- **State Urban Forest Volunteer Programs** (Ricard) USDA Forest Service, \$44,000
- **Forest Stewardship Program Coordination** (Worthley) USDA Forest Service, \$42,000
- **Stewardship: Forestry Innovations Grant** (Worthley) USDA Forest Service, \$47,000

2003

- **NEMO Workshops: The Municipal Program** (Giannotti, Arnold) CT DEP Nonpoint Source Program, \$100,000
- **Green Valley Institute Support** (Broderick, Westa) DOI/National Park Service Quinebaug-Shetucket National Heritage Corridor, \$150,000
- **USDA Regional Water Quality Project: Connecticut Support** (Jeffrey, Broderick) USDA/CSREES Water Quality Program, \$30,325
- **State Urban Forest Volunteer Programs** (Ricard) USDA Forest Service, \$40,000
- **Coordination of Coastal NEMO Enhancement Grants** (Arnold, Rozum) NOAA/National Sea Grant College Program, \$50,000
- **National Facilitation of a Network of Land Use/Water Quality Projects** (Arnold, Dickson) USDA/CSREES, \$302,000
- **Communication Services for the National NEMO Network** (Dickson, Arnold) EPA Office of Water, \$192,659
- **Forest Land Enhancement Program Educational Component** (Worthley) USDA Forest Service, \$47,300
- **Watershed Forest Stewards Network** (Worthley) USDA Forest Service, \$42,000

2002

- **Watershed Media and Materials** (Worthley) Southern New England Forest Consortium, \$35,500



- **State Urban Forest Volunteer Programs** (Ricard) USDA Forest Service, \$14,000
- **National Facilitation of a Network of Land Use/Water Quality Projects** (Arnold) USDA/CSREES, \$180,000 (since 2002)
- **Coastal NEMO Enhancement Grants** (Monahan, Arnold) NOAA/National Sea Grant College Program, \$200,000
- **Open Space Planning as a Component of Smart Growth** (Giannotti, Arnold, Rozum, Gibbons) EPA/Smart Growth, \$80,000
- **Communication Services for the National NEMO Network** (Rozum, Arnold) EPA Office of Water, \$50,000
- **NEMO Network Leadership** (Rozum, Arnold) NOAA Sea Grant, \$50,000
- **An Integrated Outreach and Web Tool Approach to Coastal Habitat Protection** (Giannotti, Arnold) NOAA/Coastal Services Center, \$89,123
- **Coastal Community Development Program Support 2002-2003** (Arnold, Giannotti) Connecticut Sea Grant College Program, \$100,000
- **NEMO Municipal Program** (Arnold, Giannotti) CT DEP Nonpoint Source Program, \$100,000
- **Green Valley Institute Support** (Broderick, Westa) DOI/National Park Service Quinebaug-Shetucket National Heritage Corridor, \$70,000
- **USDA Regional Water Quality Project: Connecticut Support** (Jeffrey, Broderick) USDA/CSREES Water Quality Program, \$28,149

Selected Awards

2006

- **Outstanding Achievement Award (National)**, Renewable Natural Resources Foundation (to NEMO Program for Putting Communities in Charge publication)
- **Public Outreach and Engagement Award**, University of Connecticut (to NEMO Program)

2005

- **Environmental Leadership Award**, University of Connecticut (to CLEAR)
- **Public Education Award (National)**, American Planning Association (to GVI)
- **Bronze Award, website (National)**, Association of Natural Resource Extension Professionals (to CLEAR for *Connecticut's Changing Landscape*)
- **Extension 2005 Award of Excellence**, University of Connecticut College of Agriculture and Natural Resources (to Robert Ricard)

2004

- **Frederick Law Olmstead Award**, Connecticut Chapter of the American Society of Landscape Architects (to GVI)
- **Award of Excellence**, Northeast Extension Directors (to Robert Ricard).

2003

- **Elected Fellow**, American Society for Photogrammetry and Remote Sensing (Dan Civco)
- **James W. Toumey Outstanding Service Award**, New England Society of American Foresters (to Robert Ricard)
- **Best Scientific Paper in Geographic Information Systems (National)**, American Society for Photogrammetry and Remote Sensing (Civco, Hurd, Wilson, Arnold, Prisloe)
- **Teaching Award of Merit**, North American Colleges of Teachers of Agriculture (to Dan Civco)

2002

- **Elected Fellow**, Society of American Foresters (to Robert Ricard)



Publications

Journal Articles

- Dietz, M.E. and Clausen, J.C. 2006. **Saturation to Improve Pollutant Retention in a Rain Garden.** *Environmental Science and Technology*. Vol. 40 (4): 1335-1340.
- Konijnendijk, C.C., R.M. Ricard, A. Kenney and T.B. Randrup. 2006. **Defining Urban Forestry - A Comparative Perspective of North America and Europe.** *Urban Forestry and Urban Greening*. 4: 93-103.
- Song, M., D.L. Civco and J.D. Hurd. 2005. **A Competitive Pixel-object Approach for Land Cover Classification.** *International Journal of Remote Sensing*: 26(22): 4981-4997.
- Dietz, M.E., and J.C. Clausen. 2005. **A Field Evaluation of Rain Garden Flow and Pollutant Treatment.** *Water, Air and Soil Pollution*. Vol. 167(1-4): 123-138.
- Ricard, R.M. 2005. **Tree Warden Education: Voluntary Certification versus Regulation.** *Northern Journal of Applied Forestry*. 22(4): 248-253.
- Ricard, R.M. 2005. **The Meskwaka Tree Project: Ten Years of Community Forestry Volunteer Development.** *Journal of Extension*. 43(6): 1-4.
- Ricard, R.M. 2005. **Shade Trees and Tree Wardens: Revising the History of Urban Forestry.** *Journal of Forestry* 103(5): 230-233.
- Rozum, J., E. H. Wilson and C. Arnold. 2005. **Strengthening Integration of Land Use Research and Outreach Through Innovative Web Technology.** *Journal of Extension* 43(5): <http://www.joe.org/joe/2005october/iw1.shtml>
- Dietz, M.E., Clausen, J.C. and K.K. Filchak. 2004. **Education and Changes in Residential Nonpoint Source Pollution.** *Environmental Management*. Vol. 34(5): 684-690.
- Ricard, R.M. 2004. **Connecticut Tree Wardens and Voluntary Certification.** *City Trees: Journal of the Society of Municipal Arborists*. 40(4): 6-7.
- Song, M. and D.L. Civco. 2004. **Road Extraction Using SVM and Image Segmentation.** *Photogrammetric Engineering and Remote Sensing*. 70(11).
- Tyson, C. B., T. Worthley and K. Danley. 2004. **Layering Natural Resource and Human Resource Data for Planning Watershed Conservation Strategies.** *Society and Natural Resources*, February 2004, vol. 17, no. 2.
- Wilson, E.H., J. D. Hurd, D.L. Civco, S. Prisloe and C. Arnold. 2003. **Development of a Geospatial Model to Quantify, Describe and Map Urban Growth.** *Special Issue of Remote Sensing of Environment Remote Sensing to Urban Planning and Urban Ecology*. 86(3):275-285.
- Sader, S.A., M. Bertrand and E.H. Wilson. 2003. **Satellite Change Detection of Forest Harvest Patterns on an Industrial Forest Landscape.** *Forest Science*. 49(3): 341-353.
- Civco, D.L., J.D. Hurd, E.H. Wilson, C.L. Arnold and S. Prisloe. 2002. **Quantifying and Describing Urbanizing Landscapes in the Northeast United States.** *Photogrammetric Engineering and Remote Sensing*. 68(10): 1083-1090.
- Dietz, M.E., Clausen, J.C., Filchak, K.K. and G. Warner. 2002. **Impacts of Extension Education on Improving Residential Stormwater Quality: Monitoring Results.** *Journal of Extension*. Vol. 40(6).
- Wilson, E.H. and S.A. Sader. 2002. **Detection of Forest Harvest Type Using Multiple Dates of LandsatTM imagery.** *Remote Sensing of Environment*. 80: 385-396.
- Merwin, D.A., R.G. Cromley and D.L. Civco. 2002. **Artificial Neural Networks as a Method of Spatial Interpolation for Digital Elevation Models.** *Cartography and Geographic Information Science*. 29(2).



Magazine, Newsletter & Other Articles

- Dietz, M.E. 2006. March/April. **Rain Gardens - a Low Tech Solution to Pollution.** *UConn Home & Garden News*.
- Ricard, R.M. 2005. **How to Know When to Let a Tree Go.** *Connecticut Woodlands*. 70(1): 27.
- Arnold, C.L. and E. Wilson. 2004. **Local Decision, National Consequences: Meaningful Remote Sensing Tools, Education are Keys to Effective Decision Making.** *Earth Imaging Journal*, Nov/Dec issue, 2004. Pp. 12-17.
- Arnold, C.L. 2004. **Considering Stormwater Management.** *Planning Commissioners Journal*. Number 54: 14-16.
- Ricard, R.M. 2004. **Goodbye, Chlorophyll. Hello, Bright Colors.** *Connecticut Woodlands*. 69(3): 24.
- Ricard, R.M. 2004. **The Underground World of Tree Roots.** *Connecticut Woodlands*. 69(2): 30.
- Ricard, R.M. 2004. **The Not-So-Simple Act of Planting a Tree.** *Connecticut Woodlands*. 68(4): 24-25.
- Ricard, R.M. 2003. **Tree Wardens Balance Conservation and Safety.** *Connecticut Woodlands*. 68(2): 30-31.
- Rozum, J. 2003. **U-3 Conference Marks Growth of NEMO Network.** *Nonpoint Source News Notes*, Published by EPA Office of Water. Issue #72.
- Giannotti, L.A. and C. L. Arnold. 2002. **Changing Land Use Decision Making One Town at a Time: The NEMO Project at the Ten Year Mark.** *NWQEP Notes: the North Carolina State University Water Quality Group Newsletter*, May 2002, Number 105.
- Rozum, J. 2002. **A National Network Instigates "Smart Growth" through Best Educational Practices.** *Nonpoint Source News Notes*, Published by EPA Office of Water.
- Lei, Y., E.H. Wilson, J. Bolton, D. Civco and S. Prisloe. **Internet Mapping Helps Local Communities.** *Earth Observation Magazine*. July 2002.
- Worthley, T. 2006. **Wooden Ships: A Forest/Coastal Link.** *Connecticut Woodlands*. 71(2).
- Worthley, T. 2006. **Reading History in Tree Rings.** *Connecticut Woodlands*. 71(2).
- Worthley, T. 2005. **Are Gypsy Moths making a Comeback?** *Connecticut Woodlands*. 70(3).
- Worthley, T. 2005. **A USDA Forest Service Study of the Highlands Region of Connecticut.** *Connecticut Woodlands*. 70(3).
- Worthley, T. 2005. **Venturing Off the Trail - For Once.** *Connecticut Woodlands*. 70(2).
- Worthley, T. 2004. **Our Fragmented Forest Resources, the case for managing what's left.** *Connecticut Woodlands*. 69(4).
- Worthley, T. 2004. **This Is Nuts!** *Connecticut Woodlands*. 69(1).
- Worthley, T. 2003. **Ice, A Weighty Problem.** *Connecticut Woodlands*. 68(1).
- Worthley, T. 2003. **Even-aged? It's All How You Look At It...** *Connecticut Woodlands*. 67(4).

Books

- Ricard, R.M. and G.D. Dreyer, eds. 2005. **Greening Connecticut Cities and Towns: Managing Public Trees and Community Forests.** University of Connecticut Cooperative Extension System. 265 pp.



Abstracts & Proceedings

- Chabaeva, A., J.D. Hurd and D.L. Civco. 2007. **Quantitative Assessment of the Accuracy of Spatial Estimation of Impervious Cover.** Proc. 2007 ASPRS Annual Convention, Tampa, FL. 11 p.
- Parent, J., D.L. Civco and J.D. Hurd. 2007. **Simulating Future Forest Fragmentation in a Connecticut Region Undergoing Suburbanization.** Proc. 2007 ASPRS Annual Convention, Tampa, FL. 12 p.
- Angel, S., J.P. Parent and D.L. Civco. 2007. **Urban Sprawl Metrics: an Analysis of Global Urban Expansion Using GIS.** Proc. 2007 ASPRS Annual Convention, Tampa, FL. 12 p.
- Parent, J., J.D. Hurd and D.L. Civco. 2007. **Simulating Future Forest Fragmentation in Northeastern United States.** Proc. 2007 ESRI User Group Conference, San Diego, CA.
- Parent, J., D.L. Civco and S. Angel. **An Analysis of Global Urban Sprawl.** Proc. 2007 ESRI User Group Conference, San Diego, CA.
- Civco, D.L., A. Chabaeva and J. Hurd. 2006. **A Comparison of Approaches to Impervious Surface Characterization.** Proc. IGARSS 2006, Denver, CO. 4 p.
- Civco, D.L., J.D. Hurd, S. Prisloe, E. Wilson and M. Gilmore. 2006. **Characterization of Coastal Wetland Systems Using Multiple Remote Sensing Data Types and Analytical Techniques.** Proc. IGARSS 2006, Denver, CO. 4 p.
- Hurd, J.D., D.L. Civco, M.S. Gilmore, S. Prisloe and E. Wilson. 2006. **Tidal Wetland Classification from LandsatTM Imagery Using an Integrated Pixel-based and Object-based Classification Approach.** Proc. 2006 ASPRS Conference, Prospecting for Geospatial Information, Reno, NV.
- Civco, D.L., A.A. Chabaeva, S. Angel and S. Sheppard. 2005. **The Urban Growth Management Initiative: Confronting the Expected Doubling of the Size of Cities in the Developing Countries in the Next Thirty Years - Methods and Preliminary Results.** Proc. 2005 ASPRS Annual Convention, Baltimore, MD 14 p.
- Hurd, J.D., D.L. Civco, M.S. Gilmore, S. Prisloe and E.H. Wilson. 2005. **Coastal Marsh Characterization Using Satellite Remote Sensing and *in situ* Radiometry Data: Preliminary Results.** Proc. 2005 ASPRS Annual Convention, Baltimore, MD 12 p.
- Konijnendijk, C.C., T.B. Randrup, A. Kenney and R.M. Ricard. 2005. **Urban Forestry Terminology in Europe and North America: Towards Harmonization.** Proc. of the International Union of Forest Research Organizations World Congress, Technical Session 039, Brisbane, Australia, August 8-13, 2005.
- Chabaeva, A., D.L. Civco and S. Prisloe. 2004. **Development of a Population Density and Land Use Based Regression Model to Calculate the Amount of Imperviousness.** Proc. 2004 ASPRS Annual Convention, Denver, CO. 9 p.
- Dietz, M.E. and J.C. Clausen. **A Field-based Evaluation of Rain Garden Flow and Pollutant Capture.** 2004. Proc. of Low Impact Development: Putting the LID on Stormwater Management, College Park, MD.
- Holdt, B.M., D.L. Civco and J.D. Hurd. 2004. **Forest Fragmentation Due to Land Parcelization and Subdivision: a Remote Sensing and GIS Analysis.** Proc. 2004 ASPRS Annual Convention, Denver, CO. 7 p.
- Hurd, J.D. and D.L. Civco. 2004. **Temporal Characterization of Impervious Surfaces for the State of Connecticut.** Proc. 2004 ASPRS Annual Convention, Denver, CO. 12 p.
- Wilson, E.H., J. Rozum and C. Arnold. 2004. **Connecticut NEMO: Multi-faceted Geospatial Support for Local Land Use Decision Makers.** Proc. 2004 ASPRS Conference, Images to Decision: Remote Sensing Foundations for GIS Applications, Kansas City, MO 10pp.
- Hurd, J.D., D.L. Civco, E.H. Wilson, S. Prisloe and C. Arnold. 2003. **Temporal Characterization of Connecticut's Landscape: Methods, Results and Applications.** Proc. 2003 ASPRS Annual Convention, Anchorage, AK. 12 p.

- Ricard, R.M. 2003. **Increasing Tree Warden Education and Skills Through Voluntary Certification in Connecticut.** Proc. of the International Union of Forest Research Organizations, Extension Working Party Symposium, Troutdale, Oregon, September 28 to October 3, 2003.
- Civco, D., J. Hurd, E. Wilson, M. Song and Z. Zhang. 2002. **A Comparison of Land Use and Land Cover Change Detection Methods.** Proc. 2002 ASPRS Annual Convention, April 22-26, Washington D.C. CD ROM.
- Hurd, J.D., E.H. Wilson and D.L. Civco. 2002. **A Forest Fragmentation Index to Quantify the Rate of Forest Change.** Proc. 2002 ASPRS Annual Convention, Washington D.C. CD-ROM.
- Ruiz, J., M. C. Fandino, T. H. Meyer, D.L. Civco and I. M. Ortega. 2002. **Long Term Dry Tropical Forest Succession Assessed Through Remote Sensing in Providencia Island, Colombia.** Proc. Of the X Symposium of Latin American Specialists in Remote Sensing and GIS (SELPER), Cochabamba, Bolivia, November 10-15.
- Song, M. and D.L. Civco. 2002. **A Knowledge-based Approach for Reducing Cloud and Shadow.** Proc. 2002 ASPRS Annual Convention, Washington, D.C. 7 p.
- Wilson, E.H., J.D. Hurd and D.L. Civco. 2002. **Development of a Model to Quantify and Map Urban Growth.** Proc. 2002 ASPRS Annual Convention, Washington D.C. CD ROM.



Recent Websites & Web Tools Developed

2007

- **Community Resource Inventory Online** (part of NEMO site) - nemo.uconn.edu/tools/cri
- **Connecticut LiDAR-based Digital Elevation Data** (Beta) - clear.uconn.edu/data/ct_dem/ct_dem.htm
- **Connecticut Land Use Academy** - clear.uconn.edu/lua.htm
- **Planning for Stormwater** - nemo.uconn.edu/tools/stormwater/

2006

- **Low Impact Development Database** (part of NEMO site) - clear.uconn.edu/tools/lid
- **Regional Impervious Surfaces** - clear.uconn.edu/projects/imperviouslis/project.htm
- **Coastal Area Land Cover Analysis** - clear.uconn.edu/projects/landscape/analysis/calcap.htm
- **High Resolution Aerial Imagery** - clear.uconn.edu/imagery.html

2004

- **Connecticut's Changing Landscape** - clear.uconn.edu/ccl.htm

Major Outreach Publications

- Dietz, M.E., K. Filchak and S. Schadt 2006. **Rain Gardens: A Design Guide for Homeowners in Connecticut.** University of Connecticut Cooperative Extension System.
- Dickson, D. and C. Arnold. 2005. **Charting a Course for Better Land Use: National NEMO Network Progress Report.** Published by the Center for Land use Education and Research, University of Connecticut. Publication #050830.1
- Rozum, J. and C. Arnold. 2004. **Putting Communities in Charge.** Published by the Center for Land use Education and Research, University of Connecticut. Publication #041215.1
- Rozum, J. and C. Arnold. 2003. **The National NEMO Network 2003 Progress Report.** Published by the Center for Land use Education and Research, University of Connecticut. Publication #030212.1