CLEARSCAPES

A Newsletter of the Center for Land Use Education and Research at the University of Connecticut.

Teaching & Outreach

Connecting Towns and UConn Students: The Environment Corps

A UConn partnership led by CLEAR has received a $2.25 million grant from the National Science Foundation (NSF) to expand and study a new public engagement program.

The **Environment Corps** program focuses on using STEM (Science, Technology, Engineering and Math) skills to address important environmental issues like climate adaptation, brownfields remediation, and stormwater management at the municipal level. Environment Corps combines elements of classroom instruction, service learning and Extension's work with communities in a unique way that allows students to develop STEM skills and get "real world" experience, while communities receive help in responding to environmental mandates.

The "E-Corps" came out of a three-year pilot project originally funded by the UConn Provost's Office in 2016. That project developed the **Climate Corps** (which debuted in the fall of 2017), an undergraduate instructional effort focused on town-level impacts of, and responses to, climate change. The program consists of a class in the fall with a strong focus on local challenges and issues, followed by a "practicum" spring semester during which student teams are matched with towns to work on projects. Partnerships with the towns are built on the long-term relationships that have developed between local officials and Extension educators from CLEAR and the Connecticut Sea Grant program.

Climate Corps was a hit with both students and towns, and in 2018 spun off

CLEAR provides information, education and assistance to land use decision makers, in support of balancing growth and natural resource protection.

Water   Land & Climate   Mapping   STEM

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Tools & Technology

Connecticut's Changing Landscape Gets Update & Facelift

Connecticut's Changing Landscape (CCL), the long-running CLEAR project that uses Landsat satellite imagery to chart changes to the surface of Connecticut, has been updated and now covers seven dates that span the 30-year period 1985-2015.

The extensive CCL website has information on land cover for seven dates spanning 30 years, land change over the 30-year period, and the results of CLEAR's forest fragmentation model—all at both state and town levels. You can explore the results in several ways, including an interactive map and an interactive "numbers and charts" page where you can generate land cover change graphs for any town or group of towns of interest.

In addition, there is a companion site focused on the lower watershed of the Long Island Sound, using the same data but organized around watersheds. The LIS site also has the results of CLEAR's riparian (streamside) land cover analysis and the Impervious Surface Analysis Tool, which estimates watershed levels of impervious cover. Explore the Changing Landscape information and tools. ●
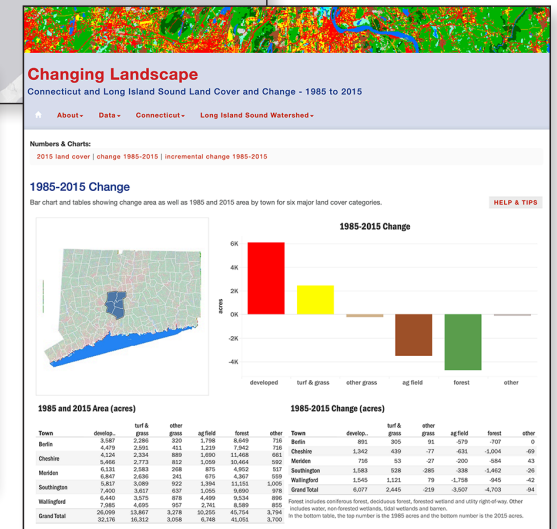
Visit: clear.uconn.edu/projects/landscape
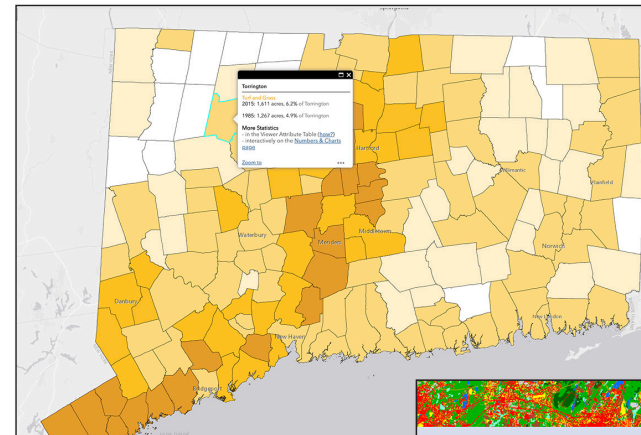
◄ Interactive viewer showing turf/grass per town.

▼ Interactive numbers and charts page showing land cover change in a selected group of towns.
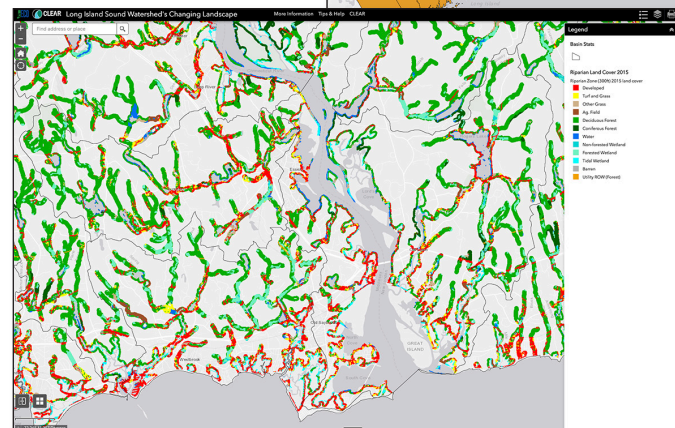
▲ LIS Watershed viewer showing riparian land cover for lower CT River area.

Two New CT ECO Map Viewers Focus on Coastal & Marine Issues

The CT ECO website is a CT DEEP/CLEAR partnership that houses statewide natural resource geographic information, data and maps including aerial imagery and elevation. Much of the geospatial information on CT ECO is accessible via map viewers, which group selected data layers and allow users to view and explore the maps interactively.

In the past 6 months CLEAR's Geospatial Educator Emily Wilson has created two new map viewers, both relating the results of recent CT DEEP projects focused on Long Island Sound or its coast. In the **Long Island Sound Blue Plan Viewer**, you can explore the many data layers that went into the creation of the LIS Blue Plan, a legislatively-mandated marine spatial plan for Long Island Sound to help the state effectively manage the Sound's public trust waters. The name of the **Sea Level Rise Effects on Roads and Marshes viewer** pretty much says it all. Visit the viewer to see the results of the SLAMM NOAA model that estimates the impact of future sea level on coastal roads and marshes. ●

Visit: cteco.uconn.edu/viewers

▲ Sea Level Rise Effects on Roads & Marshes

◄ Long Island Sound Blue Plan Viewer

Program Updates

NEMO Program Takes on a Trio of New Projects

CLEAR's Water Program, also known as "Ye Olde NEMO Team," has taken on a number of new stormwater related projects—three to be precise. Details will no doubt be forthcoming in future issues.

▶ **Pilot Certification Program for LID and Green Stormwater Practices**

NEMO is teaming up with The Nature Conservancy Connecticut Chapter to explore a pilot certification program for installers of Low Impact Development/ Green Stormwater Infrastructure practices. With the MS4 permit accelerating the rate of GSI adoption throughout the state, there's a need to help ensure the success of new installations by providing training to engineering and landscape professionals entering the business. This project is being funded by the Long Island Sound Stewardship Fund, a project of the Long Island Sound Funders Collaborative.

▶ **Nitrogen Pollution Reduction BMPs**

NEMO is working with the Center for Watershed Protection on a nonpoint source pollution tracking project for the Long Island Sound Study and the New England Interstate Water Pollution Control Commission (NEWIPCC). The project seeks to leverage the experience of long running efforts in the Chesapeake Bay watershed to develop a methodology and plan for estimating the effect of best management practices in reducing nitrogen pollution to Long Island Sound.

▶ **Small Watersheds Assessments**

Last but not least, the team will be working on another Long Island Sound Study funded project, in partnership with the LISS, the Connecticut Department of Energy and Environmental Protection, and Footprints in the Water LLC. This project will make use of both existing (30m resolution) and brand new (1m resolution!!) land cover data to characterize small watersheds across the state in terms of the condition of their forests and riparian areas, and the implications of these land cover metrics for nitrogen loadings to the Sound. ●

New Tools and Support for the General Stormwater (MS4) Permit

CLEAR's NEMO Program continues to provide technical and educational support to the municipalities and other entities responding to the General Stormwater ("MS4") Permit, which was revised in 2017. In addition to helping individual communities and institutions understand and respond to the permit on a daily basis, we've overhauled the MS4 website and added to our ever-expanding trove of MS4 support tools & trainings. Some new resources added in 2019 include:

1. An **interactive online version of the CT Stormwater Quality Manual**. It's now easier to access, locate, and search for various sections of the manual including design specifications and the LID appendix.

2. **Webinars** were held on the tasks required under year 3 of the permit, stormwater utilities, and local efforts to meet the 2% impervious cover disconnect goal.

3. A statewide **workshop on Water Quality Monitoring**.

To access any of these resources, including recordings of past webinars and presentations from past workshops, visit our MS4 Online Guide: **nemo.uconn.edu/ms4**. ●

Connecting Towns & UConn Students: The Environment Corps continued...

a second STEM offering, this one focusing on brownfields (contaminated sites) redevelopment. The **Brownfields Corps**, taught by the Civil and Environmental Engineering Department, debuted in the fall of 2018. With the NSF funding, there will now be a third "Corps," the **Stormwater Corps**, which will debut in the Spring 2020 semester and will help towns deal with the many requirements of the state's newly strengthened general stormwater permit and other municipal stormwater issues.

The NSF-funded project involves expansion and coordination of the three programs, but also has a major focus on studying the impact of the E-Corps approach on students, faculty, participating towns, and the UConn community. The local, real-world focus of the E-Corps model is getting an enthusiastic response from students. Fall classes are filled to capacity for the Climate and Brownfields Corps. One former student wrote:

> "Climate Corps had a huge influence on me, and for a while I wasn't super excited about the sorts of jobs I'd be qualified to do...but having this experience opened so many doors and exposed me to so many different things I could do. I'm really excited to start my new job because I've been able to combine a career with something I find super interesting."

The E-Corps project is built on an extensive partnership at UConn. It includes faculty from four schools and colleges in five departments: Natural Resources and the Environment, Extension, Geography, Civil and Environmental Engineering, and Educational Curriculum and Instruction. In addition, the project involves four university centers, all three environmental major programs, and the Office of the Provost.

Towns interested in proposing a local challenge for a group of students to work on can email **clear@uconn.edu**. ●

CLEAR Adds New Affiliated Faculty

Centers and Institutes at UConn have the ability to add affiliate faculty to their rosters. The criteria vary but basically, a faculty member becomes affiliated with a center by mutual arrangement, and in recognition of partnerships formed during the course of collaborative projects or programs. CLEAR is pleased to announce that we added six new affiliated faculty over the summer. The induction ceremony featured the traditional Feats of Strength and Airing of Grievances, but the winners of those events will be undisclosed in order to prevent internecine jealousy. Seriously, we love working with these folks and are gratified that they have agreed to have us list them as affiliates. ●

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And This Past Summer's Lucky Student Intern Was...

Gregory Desautels, a rising senior from the Department of Natural Resources and the Environment. Greg set something of an unofficial record by working on virtually every CLEAR project on the list (or almost). His work included an update of the UConn Green Stormwater Infrastructure Virtual Tour, improvements to the CT Aquaculture Mapping Atlas, formatting a new downloadable geodatabase schema based on CT DOT's stormwater mapping approach, and helping us learn to fly our new drone! He liked working with CLEAR so much (and we with him) that he is now working on a green roof research project with NEMO Co-Director, Mike Dietz. ●

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