About the HERO Program
[ Human Environment Regional Observatory ]

The Human-Environment Regional Observatory (HERO) program is a unique undergraduate-graduate-faculty experience that engages in research on human-environment relationships in Massachusetts. HERO Fellows conduct hands-on research under the mentorship of Clark University faculty. The research conducted by HERO Fellows often leads to scholarly publications, presentations at academic conferences across the USA, and awards and honors. This eight-week curriculum is sponsored by Clark University O’Connor Fund.

Summer 2018 Program:
May 21st - July 13th

NOTE FROM THE HERO DIRECTORS
Welcome to the 19th year of the Human Environment Regional Observatory (HERO) program at Clark University!

The HERO program has been chiefly supported over the 19 years by an endowment from the late John O’Connor (’78). This year marks our second installment of the HERO Newsletter to communicate our achievements and research goals to our sponsors, collaborators, and alumni. The theme of HERO 2018-2019 is Greening the Gateway Cities where will extend our previous analysis of juvenile tree health and stewardship from Worcester to two Massachusetts Gateway Cities: Chicopee and Fall River. This tree inventory and stakeholder assessment builds on last year’s research conducted in Chelsea, Revere and Holyoke in collaboration with the Department of Conservation and Recreation. We are joined this year by six Clark undergraduate students from a variety of departments and programs.

We look forward to another challenging year of research in the Gateway Cities.

Sincerely,
Deborah Martin & John Rogan
Graduate School of Geography

[Click here for a link to the article]
HERO 2018-19

HERO 2018-19 COHORT
HERO 2018-19 cohort includes six undergraduate students, who will spend the summer and following academic year working with Professor John Rogan, Professor Deb Martin, and Graduate RAs Marc Healy and Nick Geron.

LAURA COHEN
Major: Geography & Sociology
“I want to work in the HERO program to gain valuable research experience while at the same time work on the fascinating issues surrounding the greening of cities, especially gateway ones like Worcester. I must look forward to the opportunity to implement the tools I have learned through classes about research methods in a hands on setting. I also look forward to working with my fellow students the program and the esteemed faculty.”

RACHEL CORCORAN-ADAMS
Major: International Development (focus on Geoinformatic Data Analysis, Urban Development) | Minor: Computer Science
“I want to work in the HERO program because its interdisciplinary approach to data collection allows for an in-depth research experience not many undergraduates get to have. I am excited to put my skills in remote sensing to use and conduct field work that leads to urban ecology policy reform, not to mention it will be my first summer living in Worcester!”

ELIZABETH LOHR
Major: Biology & Geography
“I want to be a part of the HERO program because it’s a great opportunity to gain experience and learn valuable skills, while still doing meaningful work. I am looking forward to doing field work and collaborating with a dynamic group of students and faculty.”

ROWAN MOODY
Major: Geography | Minor: Biology
“I applied to HERO for the opportunity to gain hands-on experience collecting data in the field and conducting GIS analysis in the field of urban ecology. I’m excited to be to develop new skills and delve into our research topic. Additionally, I’m looking forward to meeting my fellow student-researchers, as well as working with them throughout the summer and into the following year.”

ANDY PAGAN
Major: Geography | Minor: Environmental Science
“I wanted to take part in the HERO program because it provides students an opportunity to apply a wide range of skills in a research project that has real-world outcomes. I’m most excited to conduct field work, perform geospatial analysis, and make a new group of interesting friends.”

YEANNOT RUIZ
Major: Geography (specialization in GIS & Earth System Science)
“I look forward to being out in the field this summer through the HERO program and am excited to learn about different tree species. As an undergraduate, being able to do in-depth research is a rare and unique opportunity. I’m thankful to be part of this year HERO’s cohort.”

WHY BE A HERO?
HERO Fellows analyze the causes and consequences of global environmental changes at local scales in faculty led research projects. Each Fellow is paired with a Clark faculty mentor and other researchers on the HERO team. Fellows will learn how to use various research methods such as GIS, remote sensing, geostatistical modeling, interviews and focus groups.

The HERO Program offers:
• Unique hands on research experience working with graduate students and faculty
• Opportunities for publications, presentations, honors, and awards
• Stipend for 8 weeks of research, plus academic credit
• Funding for attendance to present research at Association of American Geographers (AAG) annual scholarly meetings
HERO 2017-18

HERO 2017-18 includes Eli Baldwin, Meyru Bhanti, Hannah Conrey, Joe Mogel, Gemma Wilkens, and Miles Weule Chandler. Also pictured: Benjamin Breger and Sonny Kramer (UMass Amherst) who collaborated with us over the summer.

In 2017, HERO focused on Greening the Gateway Cities, with extended previous analysis of juvenile tree health and stewardship from Worcester to three Massachusetts Gateway Cities: Chelsea, Revere and Holyoke. This cohort continued their research throughout 2017-18 and presented at the AAG Annual Meeting in New Orleans, LA.

Research Areas:
- Eli Baldwin: Strategies for Juvenile Tree Stewardship on Multi-family Residential Properties in Chelsea and Holyoke, Massachusetts
- Meyru Bhanti: Does the distribution of juvenile tree planting impact local air temperature? A calibrated microclimate simulation in Holyoke Massachussetts
- Hannah Conrey: The Impact of Juvenile and Mature Trees on Air Temperature-Fluxes: Employing ENVI-met in the city of Chelsea, Massachusetts
- Joe Mogel: Assessment of Factors Influencing Juvenile Street Tree Health in Mass Gateway Cities
- Gemma Wilkens: A Hedonic Measure of the Effect of Tree Canopy Cover on Real Home Price
- Miles Weule Chandler: Developing a Planting Priority Index for the Greening the Gateway Cities Program in Fitchburg, Massachusetts

ELM PARK ECOSYSTEM BENEFITS

HERO RA and second-year PhD student Nick Geron shares a bit about his experience researching the ecosystem benefits for Elm Park in Worcester, MA this past semester.

“I conducted an analysis of the ecosystem benefits for Elm Park for Landscape Ecology with GISDE student Dan Lasilla. We worked with the Worcester Tree Initiative (WTI) who had been notified by residents of street tree removal without any replanting. The Elm Park neighborhood has a much denser population than Worcester on average with lower median income and less educational attainment. The results of our analysis found that while there were large ecosystem benefits from street trees in Elm Park, the benefits were concentrated on select trees and dependent on very old, large trees. We calculated the ecosystem benefits for tree planting impact local populations. The current neighborhood tree canopy cover according to i-Tree was created by the US Forest Service to help cities manage their urban forests. First, we took a street tree census in which we collected DBH, leaf and bark health, sidewalk damage, tree species, and land use. These metrics were input into i-Trees as well as i-Tree design (a predictive model using the same set of parameters). Total benefits in Elm Park were $1,652, the majority of which were energy benefits from reductions in heating and cooling in the winter and summer respectively. We focused our tree planting on two streets, Somerset Street and Home Street. The cost benefit analysis shows how total benefits from new street trees will exceed total costs after 15-20 years.”

To view past and upcoming Stakeholder Summit presentations, visit clarku.edu/departments/HERO

STAKEHOLDER SUMMIT

The HERO students measured and assessed the condition of trees planted along city streets and in residential yards in Chelsea, they have also interviewed residents. On July 11, they presented their findings to a select group of researchers from the WPI DCR and U.S. Department of Agriculture with a video of the presentations. The DCR will use the students’ data to modify their tree planting programs in other gateway cities. In their survey of 1,188 trees in the three cities, students found that 6% percent overall had survived. Cherry plum, eastern redbud, crabapple, white oak and honey locust fared well; black gum, tulip trees, dawn redwood, cherry plum and eastern redbud did not. The HERO program allows undergraduates to apply what they’ve learned in the classroom and developed in research journals to an initiative that could affect the health of thousands of trees—and people.

Clark Research Matters article, written by Mer edith King.

HERO FACULTY & STAFF

John Rogan, Ph.D.
Professor of Geography
HERO Director/Co-PI

Deborah Martin, Ph.D.
Director, Graduate School of Geography
Assoc. Director of HERO Co-PI

Rachel Levitt
Program Assistant
Graduate School of Geography
HERO Administrative Assistant

Marc Herro
B.A., Geography, University of Utah, USA. Research Interests: Remote Sensing, Land Use/Cover Change, GIS.

Nick Geron

Pamela Dunkle
Operations and Budget Manager
Georgina Perkins Marsh Institute
HERO Budget Manager

Graduate Researchers

Meet our HERO Graduate Research Assistants. This year we have two Geographical doctoral students/candidates who will work closely with our undergraduate HERO fellows.
Some exciting news from two HERO alumni: Ryan Frazier (HERO 2004-2005) just accepted a tenure-track faculty position at the University of British Columbia in the Department of Forestry. Ryan will be joining Trevor Jones (HERO 2004-2005) who is also a tenure-track faculty member in the same department at the same university. Congratulations to both! Click here to read about the Department of Forestry at UBC.

Over the past 19 years, the HERO program has seen numerous cohorts of excellent undergraduate students from Clark and from outside universities and colleges around the country. Since the beginning, the program has hosted approximately 112 students, with this year’s cohort bringing the total to 118! Here are some of the schools our past HERO students have come from for the summer program hosted at Clark:

- Appalachian State
- Arizona State University
- Bard College of Simon’s Rock
- Barnard College
- Bloomsburg University of Pennsylvania
- Carthage College
- Clark University
- College of the Holy Cross
- Eastern Illinois University
- Ginnell College
- Humboldt State University
- James Madison
- Kenyon College
- Metropolitan State College of Denver
- Middlebury College
- Mississippi State
- New Mexico State University
- Rensselear Polytechnic Institute
- Southern Connecticut State University
- Stanford University
- Trinity College (TX)
- University of Wisconsin-Platteville
- University of California Davis
- University of California Santa Cruz
- University of California Los Angeles
- University of Florida
- University of Arizona
- University of Chicago
- University of Massachusetts Amherst
- University of Puerto Rico
- University of Texas Austin
- University of Vermont
- Wellesley College
- Wesleyan University
- Whittier College (CA)
- Worcester Polytechnic Institute

For more information about our HERO alumni, visit us online at clarku.edu/departments/HERO/people/alumni.