

Support for Field-Based Undergraduate Research in the Earth and Environmental Sciences and Biology Courses at an Oregon Community College. Including Taphonomy¹!

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Abstract Summary

This project provides a short history of the field-based undergraduate research that has been ongoing for nearly two decades at Lane Community College, initiated by a group of biologists (Holmes et al. 2015). In partnership with the University of Oregon, the UCORE NSF-supported program expanded direct research experiences with Lane and other community colleges and UO faculty and students in the physical sciences (Livelybrooks 2012). And a recently-completed NSF Course-Based Research Experience project (#DUE 1505081) provided even greater reach into our programs, by greatly expanding research experiences for undergraduates in non-majors science courses, particularly in biology and the earth and environmental sciences (Ruscher et al. 2017).

From 2018 onward, the division has provided institutional support for maintenance of this research perspective and has increased the scope of its annual Science Undergraduate Research Day (SUGR) to other units on campus. We also hosted a K-12 watershed research conference for area high schools held simultaneously with our own student presentations. This would not have been possible without active engagement with our partners at the University of Oregon and in the Lane Education Service District. This work has expanded to create the first of its kind “body farm” west of the Rockies on our campus, where forensic science has been creating tremendous student and scientific interest.

Earth & Environmental Sciences Field-Based Research

- GLOBE Weather, Soil, and Hydrology Protocols
- GLOBE Carbon Cycle Protocol informs campus Climate Action Plan 2.0
- Monitoring of Russel Creek Watershed (coincident with campus)
- Student participation and design and deployment of solar energy, water conservation, bioswales
- Weather and climate studies
- Geological field explorations
- Climate Change Education

Biology Field-Based Research

- Native Plant Landscape Project, phenology
- National herbarium collaboration
- Oregon fungi
- Vertebrate zoology studies (turkey, bobcat, cougar, fox, black bear, beaver, skunk, beaver, birds of prey, songbirds)
- Ethnobotanical studies and plants of the Kalapuya people
- Science Division collaborating internally with Math/Engineering, Social Science (GIS, Anthropology, Criminal Justice), Flight Technology (UAS), Arts (UAS/Photography), Honors Program, Communications

Taphonomy Research

¹**Taphonomy defined** - Taphonomy is the study of the processes that affect animal and plant remains as they fossilize.



a) Cheyenne Collins b) Subject H3 gets a visitor c) Dr. Jeanne McLaughlin assisting with data collection (in any weather!)

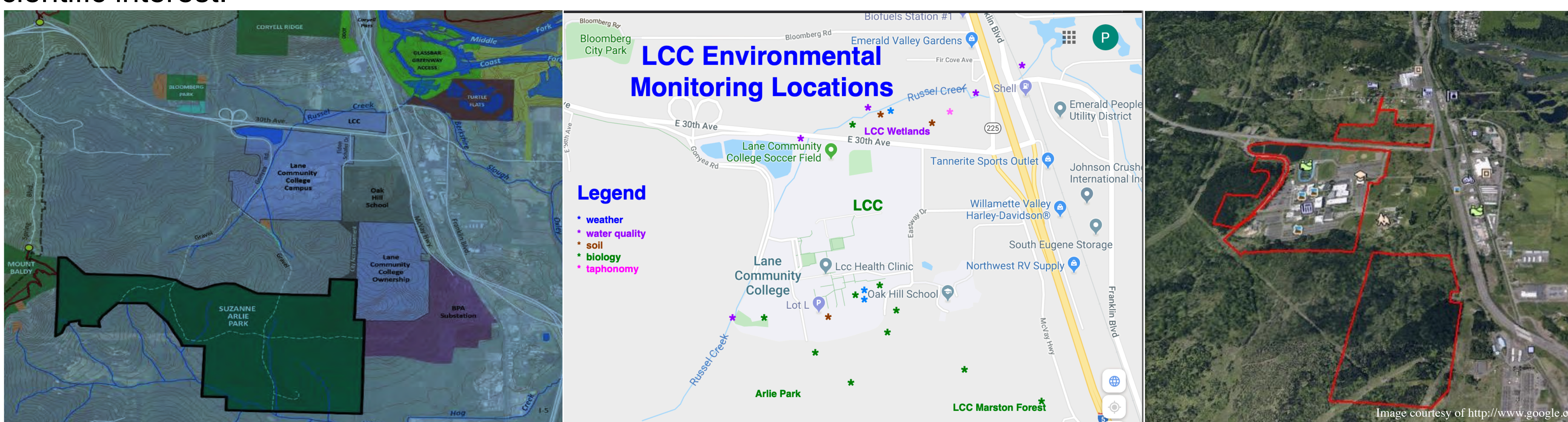
Facility in operation beginning January 2019, each academic quarter through 2019.



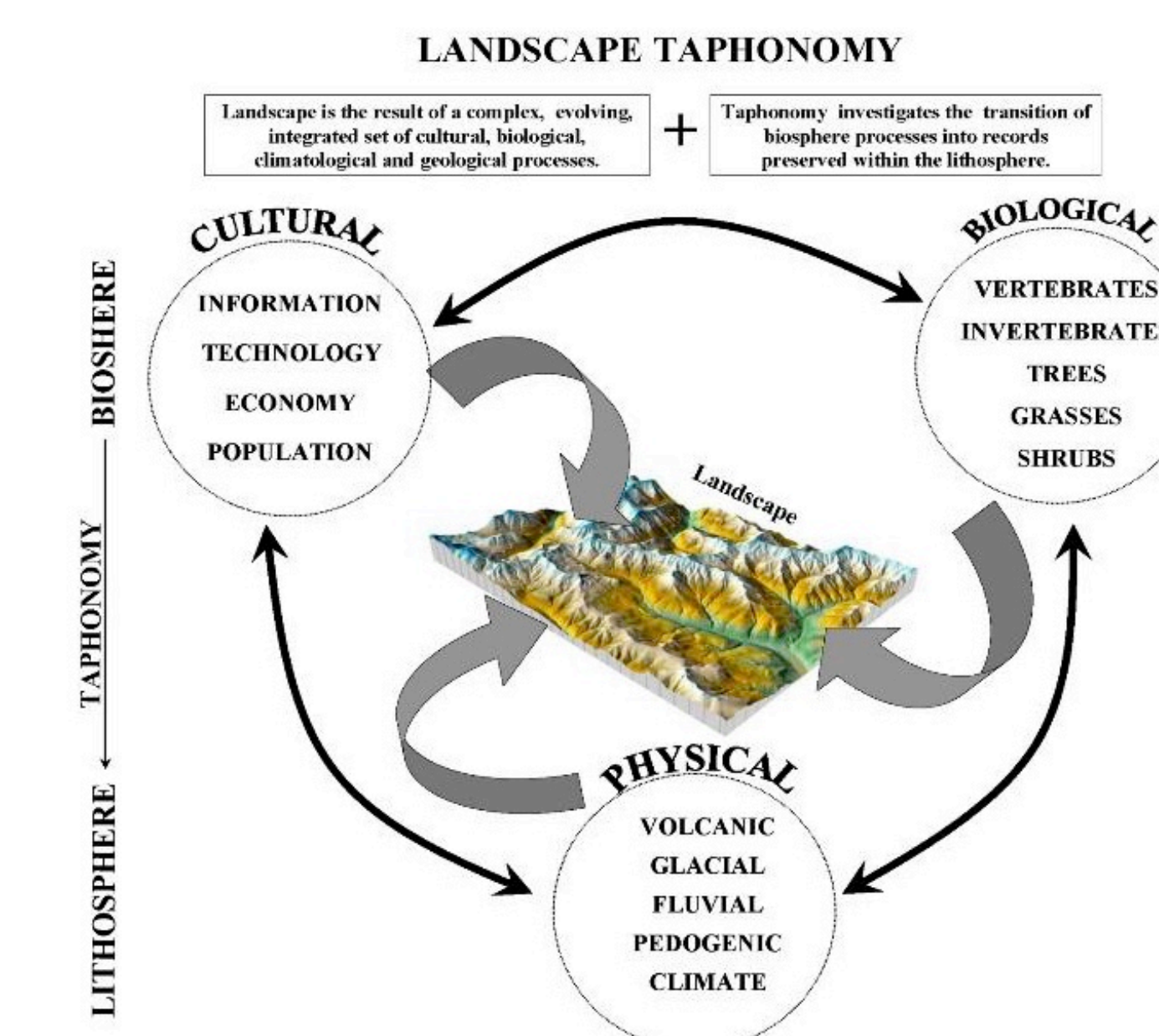
Weather Studies! 27 Feb 2019 LCC 22" snow event (33 hr); campus tornado in 2015

Intensive Collaboration with our partners and our science team's commitment is what makes it all work!

- Internships for students with local, state, federal agencies and non-profits, private companies engaged in biological / environmental work
- Local watershed councils in Upper Willamette Basin
- University of Oregon Undergraduate Research program
- Lane Education Service District / Lane STEM Hub / 16 school districts
- Enhanced efforts to broaden Career Technical Education (CTE) within secondary schools – development of career pathways that may not necessarily lead to a 4-yr degree



Left: Suzanne Arlie Park (City of Eugene) and LCC. Center: Overview of LCC campus) with monitoring sites for biosphere, atmosphere, pedosphere, hydrosphere and taphonomy indicated. Right: Campus properties in southeast Eugene, including wetlands property north of campus and Jay Marston Forest SE of campus.



References appear on a separate sheet for this poster. This work has been sponsored in part by a grant from the National Science Foundation, Grant DUE# 1505081

