WESTERN SYDNEY
UNIVERSITY

Hawkesbury Institute
for the Environment

Hawkesbury Institute for the Environment

Researching the Impacts of
Environmental Change

Acknowledgement

Western Sydney University acknowledges the peoples of the Darug, Tharawal, Eora and Wiradjuri nations. We acknowledge that the teaching, learning and research undertaken across our campuses continues the teaching, learning and research that has occurred on these lands for tens of thousands of years.

Researchers

To contact scientists, please go to:
www.westernsydney.edu.au/hie/people/researchers

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About us

The Hawkesbury Institute for the Environment was established in 2011 as part of a bold strategy to dramatically increase the quality, visibility, and impact of Western Sydney University's research outputs.

The Institute's leadership team has developed a culture that supports research excellence and innovation through collaboration with colleagues at Western Sydney University, as well as nationally and internationally.

Our fundamental and applied research pushes the boundaries of knowledge, while providing innovative solutions for protecting the environment, preserving biodiversity, ensuring food security, and the sustainable use of natural resources.

The Institute's researchers are recognised internationally by peers as among the best in their field. The Institute's reputation is built on the outstanding record of publications in high impact journals, income generated from prestigious granting agencies such as the Australian Research Council, and indicators of prestige including Clarivate Highly Cited Researchers and elected Australian Academy of Science Fellows.

Interdisciplinary Approach to Research

Our researchers are working in interdisciplinary teams across three themes.

Soil Biology & Genomics

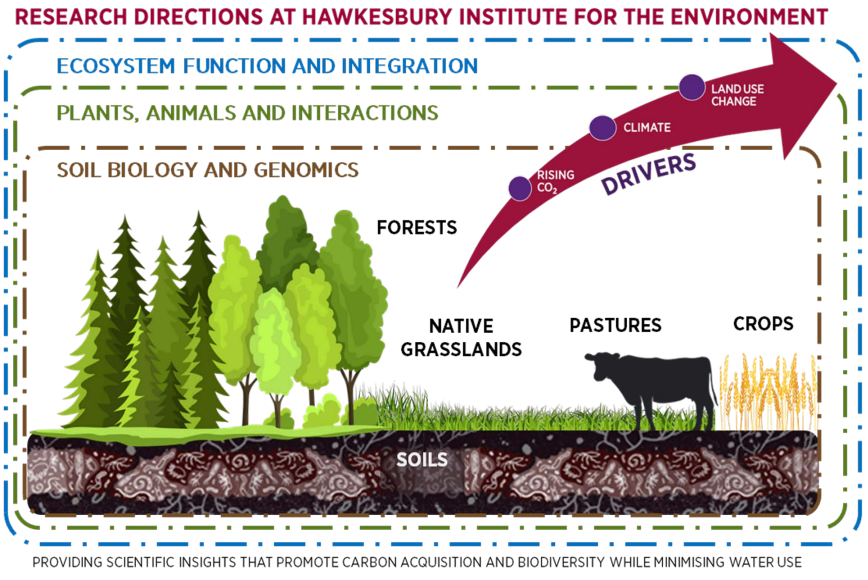
Researchers in our Soil Biology and Genomics theme are performing novel techniques such as genomics to identify the organisms present in soil, the functions they perform, and their underpinning the role in the provision of soil-based ecosystem services such as climate abatement. *The outcomes of this research ensures future food security and protection of the environment.*

Plants, Animals & Interactions

Researchers in our Plants, Animals and Interactions theme are utilising laboratory and field-based facilities to discover how these complex systems function from the genomic and biochemical through to organismal and ecosystem levels. *The outcomes of this research enable prediction and management of ecosystem functions and services across different types of landscapes, including natural woodlands, forest plantations and agricultural systems.*

Ecosystem Function & Integration

Researchers in our Ecosystem Function and Integration theme are undertaking a wide range of experimental platforms and approaches, as well as integrative modelling techniques, to determine how Australia's agricultural, and native, plant species, ecosystems and landscapes are responding to climate warming, rising atmospheric CO_2 concentrations, altered rainfall patterns and fire regimes, as well as land use and management. *The outcomes of this research advances our knowledge about the impacts of global change and environment, thereby providing critical science-based information to land managers and policy makers.*



Research Infrastructure

The Institute has an outstanding suite of field and laboratory-based facilities that provide capability for interdisciplinary teams to conduct cutting-edge research. Some of the facilities are internationally unique, generating excitement and visibility in the global research community. The facilities are managed by an experienced team of professional staff that has unparalleled skills in managing these facilities and providing support for researchers and students.

EucFACE

EucFACE is the world's only Free Air CO_2 Enrichment (FACE) experiment in a mature native forest on phosphorus-depleted soil. EucFACE provides a unique opportunity to investigate how rapidly rising atmospheric CO_2 concentrations influence forest ecosystems including their soils, plants, and animals.

Whole Tree Chambers

Whole Tree Chambers provide fully enclosed, controlled environments for trees up to nine metres tall. In these twelve chambers, researchers can manipulate the environment around a tree including air temperature, soil moisture, irrigation, CO_2 levels and humidity to investigate the integrated effects of altered environments on tree physiology and test models of forest response to environmental change.

National Vegetable Protected Cropping Centre

The National Vegetable Protected Cropping Centre is based around the stunning, 1800sq. m. glasshouse facility, designed with the world's very best glasshouse infrastructure and controller systems, to house research, education and training opportunities in modern protected cropping horticulture. It is a collaborative partnership between Western Sydney University, Hort Innovation, industry and our research partners to advance Australia's horticultural capabilities.

Hawkesbury Forest Experiment

The Hawkesbury Forest Experiment includes stands of different tree species providing an opportunity to investigate the way in which forest and woodland species respond to climatic variability, water, nutrient limitations, and disentangle genetic and environment effects on forest tree growth in the long-term. The outcomes of this research provide critical knowledge for land management and water catchments.

Hawkesbury Urban Forest Experiment

The Hawkesbury Urban Forest Experiment is a state-of-the-art research facility and demonstration site designed to test the growth and performance of 48 diverse native and exotic tree species from a wide range of climate-origins. The study will unravel the role of water limitations on the performance of different trees used in urban plantings and inform selection of climate-ready trees for use in urban contexts.

The Cumberland Plain (TERN) Supersite

The Cumberland Plain (TERN) Supersite is home to a monitoring system that tracks biodiversity and quantifies the exchanges of water, carbon and energy between the ecosystem and the atmosphere. EucFACE, and Cumberland Plain flux tower and core hectare sampling area, comprise the (TERN) supersite. The Terrestrial Ecosystem Research Network is a federally funded national research infrastructure to address the complex environmental problems affecting ecosystems and landscapes of Australia.

PACE (Pastures and Climate Extremes)

PACE (Pastures and Climate Extremes) includes six large poly tunnels equipped with irrigation, warming and sensor infrastructure to enable multi-factor studies of the impacts of environmental extremes on pasture species productivity and forage quality, soil carbon stocks and trace gas emissions.




Greenhouses & Insectary Complex

Greenhouses & Insectary Complex complements the large-scale field-based facilities by providing precise climate control, including temperature, CO_2 and light control for plants and insects.

DRI-GRASS

DRI-GRASS (Drought and Root Herbivore Impacts on GRASSlands) investigates how drought and variable rainfall influence carbon and nutrient cycling, biodiversity and root herbivory in a grassland ecosystem.

NutNet (Nutrient Network) & DroughtNet

NutNet (Nutrient Network) is a cooperative experiment consisting of 78 sites dominated by herbaceous plants and distributed around the globe. The experiment aims to understand the impact of fertilization and alteration of plant-consumer interactions on herbaceous-plant dominated ecosystems. The facility works in parallel with DroughtNet advancing our understanding of terrestrial ecosystem sensitivity to drought by bringing together a range of terrestrial ecosystems.

PC-2 Compliant Laboratories

PC2-Compliant Laboratories enable researchers to access the latest technology including controlled growth rooms and chambers to manipulate light, temperature, humidity and day length cycles; a range of analytical instruments including elemental analysers, chemical analysers, GC, GC-MS, HPLC, Uv-Vis and NIR spectrophotometry; and state of the art molecular biology instrumentation including capillary electrophoresis sequencing.

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We invite researchers and investors to explore future opportunities to work with the **Hawkesbury Institute for the Environment**.

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