

SDG 15 Life on Land

Overview

UQ supports the conservation, restoration and sustainable use of terrestrial ecosystems through a whole-of-institution approach that integrates research, education, community engagement and operational practice.

Research at UQ advances ecological monitoring, threatened species recovery, habitat restoration and conservation policy. UQ's research stations and the UQ-hosted Terrestrial Ecosystem Research Network (TERN) lead efforts to improve biodiversity outcomes through long-term ecosystem monitoring, restoration science and innovative technologies for species detection and environmental management.

UQ offers diverse education outreach and public engagement opportunities that build awareness and capacity among students, communities and industry, from lectures and seminars to field-based learning and collaborative projects. These initiatives promote sustainable land use across sectors such as agriculture, tourism and forestry, while fostering inclusive partnerships with local communities, Aboriginal and Torres Strait Islander groups and conservation stakeholders.

UQ's operational commitments are reflected in its policies and the Design Standards, which guide the sustainable management and development of the University's campuses and associated lands. Local biodiversity is embedded in planning and development processes through environmental management plans, native revegetation, pest control and habitat enhancement activities.

Progress made in 2025 towards SDG 15 is reported here with reference to the following domains and enablers from UQ's Strategic Plan 2022-2025:

- learning and student experience
- research and innovation
- enriching our communities
- our global profile
- our people.

Related SDGs

- SDG 1 No poverty
- SDG 2 Zero hunger
- SDG 6 Clean water and sanitation
- SDG 12 Responsible consumption and production
- SDG 13 Climate action
- SDG 14 Life below water.

Learning and student experience

UQ aspires to create positive global impact by equipping a new generation of sustainability leaders with both specialised and multidisciplinary skills in environmental sustainability.

Curriculum

UQ offers rich and varied educational experiences in fields that support progress towards SDG 15. In 2025, these include:

- Bachelor of Science with majors or minors in Coastal and Ocean Science, Earth Science, Ecology and Conservation Biology, Environmental Science, Geographical Science, Marine Biology, Sustainable Agriculture and Zoology.
- Bachelor of Environmental Management (Honours), which enables students to develop and manage solutions to address global environmental challenges including in environmental science, ecology, conservation and sustainability. Courses include Biodiversity and the Environment (BIOL1030), Environment and Society (GEOS1100), Foundations of Sustainable Development (ENVM2100) and Regulatory Frameworks for Environmental Management and Planning (ENV3103).
- Bachelor of Wildlife Science, which focuses on whole animal biology, biodiversity, ecology and conservation of native and exotic amphibians, reptiles, birds and mammals, equipping students with the scientific knowledge and animal handling skills to implement wildlife management programs for captive and free-ranging wildlife.
- Bachelor of Agricultural Science, which includes the scientific, technological, managerial, economic and social principles of agriculture to improve food security and environmental sustainability.
- Master of Business with a specialisation in Organisational Sustainability that includes courses on how businesses can create positive environmental and social impacts while also remaining financially sustainable, such as Corporate Sustainability (TIMS7317), Carbon and Energy Management (ENVM7524), Decision Making and Reporting for Sustainability (MGTS7309), Social Entrepreneurship in Practice (TIMS7329) and Strategies for Sustainable Systems Transition (TIMS7328).

Students benefit by complementing their class and laboratory-based learning with real world experiences at UQ's research stations at Heron Island and Moreton Bay. In 2025, the stations continued to offer education resources, programs and opportunities. UQ undergraduate and postgraduate students spent more than 4,500 learning days at the stations and non-UQ tertiary students spent over 1,200 learning days at the stations. Combined, the sites hosted over 1,900 students from non-tertiary institutions such as high schools, alongside more than 350 international visitors. The Hidden Vale Research Station also supported student learning throughout 2025.

In addition, UQ offers United Nations Tourism (UN Tourism) accredited bachelor's, master's and doctoral level programs, promoting responsible, sustainable and universally accessible tourism. This accreditation ensures high-quality benchmarks for programs like the UQ Business School's Master of Tourism, Hotel and Event Management that includes a course on Tourism in Developing Economies (TOUR7053) and the Bachelor of Tourism, Hospitality and Event Management that includes a core course on Sustainability in

Tourism, Hospitality and Events, examining the potential positive and negative impacts of tourism, hospitality and events on communities, economies and the environment, and providing students with strategies to manage these based on the principles of sustainable development.

Research and innovation

Through a commitment to conducting discovery research and collaborating with partners, UQ seeks not only to create new knowledge but share it in ways that enrich and sustain the natural environment.

Land management and conservation

In 2025, UQ research addressed the conservation and sustainable management of terrestrial ecosystems including agricultural land, contributing to multiple SDG 15 targets through:

- continuing a broad program of research by the ARC Centre of Excellence for Plant Success in Nature and Agriculture, led by its purpose to develop innovative tools and strategies to future-proof crops and native plant species. A 2025 highlight was large-scale experimental and modelling research conducted by Centre researchers to help crops survive in harsher and more variable environments. As part of this research, PhD candidate Shunichiro Tomura developed a computational tool called Ensemble AnalySis with Interpretable Genomic Prediction (EasiGP). EasiGP uses machine learning and AI to enhance predictions by combining traditional parametric prediction models, machine learning models and quantitative genetics. EasiGP is already being used to make new genomic discoveries utilising available crop breeding data resources.
- another major 2025 study undertaken at the ARC Centre of Excellence for Plant Success in Nature and Agriculture, led by Dr Maddie James, which explored how Eucalyptus species adapt to water-limited environments across Australia by studying parallel evolution in multiple species pairs from contrasting wet-dry habitats and examining both phenotypic traits and genomic patterns that facilitate adaptation to aridity. The research helped identify mechanisms of plant adaptation and whether evolution follows predictable genomic and phenotypic paths. Ultimately, identifying key drought genes will provide insights into how plants respond to environmental challenges with applications for ecological management and agricultural improvement.
- hosting a series of pre-congress workshops, training courses and forums from 14 to 15 June 2025 at the St Lucia campus as part of 'The International Congress for Conservation Biology (ICCB)', which is a global forum for addressing conservation challenges and for presenting new research in conservation science and practice, where the workshops addressed a variety of topics on sustainable land use and conservation, including:
  - improving conservation project planning and monitoring with Conservation Standards theories of change
  - connecting 'Landscapes: A Decision Support System' for modelling population connectivity and the effect of conservation and development scenarios

  - planning for successful marine and coastal restoration by learning how to develop restoration suitability models to aid in planning and site selection
  - identifying key biodiversity areas to harness a global tool for local conservation action
  - delivering hands-on training in genomic analyses for biodiversity conservation
  - using spaceborne and ground-based measurements of night lights for conservation planning.
- hosting and organising the World Conference on Timber Engineering (WCTE 2025) with pride by UQ and the ARC Advance Timber Hub, which was held from 22 to 26 June 2025 at the Brisbane Convention & Exhibition Centre. The principal theme of the conference was 'Advancing Timber for the Future Built Environment', reflecting the ARC Advance Timber Hub's overarching goal to develop the resources, enablers and drivers to advance sustainable timber, as a natural resource and the material of choice, leading towards a net zero future for Australia's built environment. The conference involved multiple presentations on sustainable use of land and forestry for timber production, such as 'Forest Product Demand and Supply in a Bioeconomy Transition: The Possible role of Timber for Climate Change Mitigation'.

Preserving ecosystems' biodiversity

Many of UQ's research projects and initiatives to advance SDG 15 in 2025 focused on taking urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity, and protect and prevent the extinction of threatened species through:

- the Terrestrial Ecosystem Research Network (TERN), led by UQ and funded by the National Research Infrastructure Strategy, which directly supported the advancement of SDG 15 by conducting ecosystem monitoring and collaborative data gathering. TERN delivers research infrastructure, open-access data services and tools to a wide range of stakeholders, including researchers, government and NGOs. TERN's resources are essential to Australia's environmental monitoring capabilities, especially around terrestrial and coastal ecosystem observations and predictions, and the production of customised local government area reports. In particular, the Threatened Species Index (TSX) delivers crucial species population intelligence at national, state and regional levels, which enables conservation progress monitoring, informs targeted interventions and also contributes to international data collection.
- the delivery of the first comprehensive baseline of island biodiversity and threats across Australia's 9,300 islands by researchers from UQ's School of the Environment. By compiling the first databases of koalas, frogs and freshwater fish species alongside a 20-year fire mapping study, the research fills vital knowledge gaps regarding these critical biodiversity refuges. Published in *Diversity and Distributions* and companion journals in 2025, the work analysed the environmental factors shaping species presence and highlighted that island ecosystems are heavily threatened by frequent, intense fires, human impacts and climate change. This integrated open-access data identified vulnerable, understudied and disease-free refuge islands, providing a foundation for managers, researchers and local communities to prioritise surveys, guide restoration and coordinate targeted conservation planning to safeguard at-risk island wildlife under climate and land-use pressures.

- an evaluation of the Threatened Species Program (TSP) undertaken by the Institute for Social Science Research (ISSR) over the period 2022 to 2025, in collaboration with the Queensland Department of Environment, Tourism, Science and Innovation. The program aims to manage and conserve threatened species in Queensland. The evaluation worked towards ensuring the program's success and effectiveness by developing an understanding of how the TSP interacts with its stakeholders, how their varied contributions are incorporated and how outcomes and learnings are translated into future action.
- the publication of findings by Faculty of Science researchers from a study that shows that despite Queensland expanding its national parks, the state continues to lose native vegetation at some of the highest rates in Australia, placing many ecosystems and species at severe risk. By mapping where clearing has occurred versus where protection has been increased, the researchers revealed a major mismatch: new parks are often created in already well-protected regions, while biodiversity-rich but heavily cleared areas continue to be bulldozed. This 'conservation balance sheet' approach identifies zones where urgent protection and restoration are needed to prevent further biodiversity collapse, such as the Brigalow Belt. The authors argue that halting clearing, restoring degraded habitats and targeting protection to the most threatened ecosystems are essential steps for reversing biodiversity loss. Their work provides a framework for more effective conservation planning that prioritises real ecological outcomes over politically convenient park expansions.

Enriching our communities

UQ seeks to enrich communities in Queensland and around the word. In SDG 15, UQ achieves this through unique sites and research stations, working in collaboration with Aboriginal and Torres Strait Islander people to conserve and maintain important natural ecosystems and habitats and share this knowledge with the public and local communities through outreach and education initiatives. On UQ campuses, planning and development processes and other infrastructure developments aim to ensure minimal impacts to the local environment.

UQ sites and research stations

UQ's campuses and research stations host some of the most naturally biodiverse ecosystems. Guided by the UQ Sustainability Strategy 2021-2025, the University recognises the important and valuable contributions that Aboriginal and Torres Strait Islander people have made to caring for these lands and the responsibility that UQ has to protect, maintain and conserve these natural ecosystems and to enhance their biodiversity in coexistence with the community. Through various conservation initiatives, UQ contributes broadly to SDG 15 by ensuring the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, as well as taking urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and protect and prevent the extinction of threatened species, including through:

- the St Lucia Lakes, which are home to numerous native species of flora and fauna. As part of the UQ Lake and Amphitheatre project, the main lake was redesigned to support a healthy and self-sustaining ecosystem. The lake's aquatic and terrestrial

environments were beginning to flourish, and flora and fauna were repopulating, with more than 8,000 trees, palms, shrubs and thousands of wetland plants in and around the lake creating a range of habitats.

- the Hidden Vale Research Station (HVRS), which continued its mission throughout 2025 to develop solutions to globally significant challenges facing our natural environment by better understanding the factors contributing to native wildlife survival and reproduction, and by implementing effective environmental conservation interventions. The Station conducts research under 4 broad themes: biodiversity monitoring, threat abatement, species conservation and restoration. Long term projects include:
  - the Biodiversity Monitoring, which aims to monitor faunal species presence and distribution and track trends over time, providing essential ongoing feedback on the effects of restoration efforts.
  - Interactions between Fre Regimes and Invasive Plants, which uses fire to reduce weed biomass and promote native plant biodiversity. This is helping inform researchers and managers on how best to manage the HVRS, particularly in relation to threatened species.
  - Forest Thinning for Ecosystem Restoration, which tests whether combining restoration thinning with the augmentation of ground structures, such as leaves and logs, accelerates tree growth and optimises habitat complexity to benefit animal biodiversity.
- the Moreton Bay Research Station, which enables researchers, high school groups and tertiary students from all over the world to access the estuarine, freshwater and terrestrial environments that comprise Moreton Bay, its islands and the Coral Sea. The station also contributes to SDGs for education in the wider community, with dedicated outreach educational activities and research projects that partner with the Aboriginal and Torres Strait Islander community, the Quandamooka people. In 2025, UQ students spent more than 4,500 learning days at the stations, while non-UQ tertiary students visited the stations for over 1,200 learning days. Combined, the sites hosted over 1,900 students from non-tertiary institutions such as high schools, alongside more than 350 international visitors.
- the Heron Island Research Station, which is a world-class marine station that provides immediate reef access and extensive facilities such as research laboratories, aquariums and teaching spaces for coral reef research and education on the Great Barrier Reef. The station is regularly visited by UQ students, including both undergraduate students and postgraduate students, as well as those from other institutions. Heron Island Research Station also provides SDG 15 education for the wider community, with outreach activities such as the alumni tour where participants learn from marine scientists about the biodiversity of the reef and its current challenges and had the opportunity to swim, snorkel and reef walk with the local marine life. In 2025, the station hosted 8 Traditional Custodians from the Bailai, Gooreng Gooreng, Gurang and Taribelang Bunda Elders Council from 25 to 28 July. They were joined by a range of staff from UQ's Faculty of Science, Heron Island Resort, the Australian Institute of Marine Science (AIMS) and University of Sydney One Tree Island Research Station. Over 4 days, these groups workshopped cultural

awareness training and knowledge sharing, yarning around the table and out on the reef with the aim to work closer together learn from Indigenous culture, learn from the reef and island and learn from each other.

Campus operations, policy and planning

In addition to its sites and research stations, UQ also ensures that it makes progress towards SDG target 15 by integrating ecosystem and biodiversity values into local planning and development processes. The Environment and Sustainability Policy 2021-2026 commits UQ to environmentally responsible and sustainable practices across all of its operations, including to protect and, where feasible, enhance the natural environment. In addition, UQ's planning and development processes are governed by the UQ Design Standards, which articulate that sustainability initiatives are to be embedded holistically into all projects through good design, protecting and, where possible, enhancing biodiversity, and preservation of heritage, cultural and natural assets.

Outreach and community engagement

In 2025, UQ facilitated a number of free events and educational opportunities for the local community to learn more about the importance of protecting and restoring terrestrial ecosystems, sustainably managing the terrestrial environment and halting land degradation and biodiversity loss, including:

- BrisScience, UQ's free public lecture series that makes science accessible to all, which presented 2 events in 2025 focused on land-based ecosystems:
  - 'Despots of the Bird World' on 2 June, exploring how the native honeyeater could be among the most important threats to our woodland bird communities. Professor Martine Maron examined the world of noisy miners and how their unusual social structure allows them to dominate vast areas of habitat, reshaping entire bird communities. The event looked at how humans have helped these birds disrupt ecosystems by dramatically transforming our landscapes, and how we can reduce their impacts and let the small birds back in.
  - 'How IVF could help save wildlife' on 4 August, looking at how reproductive technologies like IVF could be adapted to become a powerful tool for wildlife conservation, protecting animals at risk of extinction and preserving biodiversity for future generations.
- the UQ Community Garden, which supports outreach and community engagement by hosting inclusive workshops at the St Lucia and Gatton campuses that are open to all local community members. These activities create opportunities for community connection, knowledge sharing, and participation in sustainable gardening practices beyond the university.
- the Experience Ecology program, hosted by the School of the Environment during 2025, which enabled year 11 biology students to gain field experience relevant to Unit 3 of senior biology. Students gained hands-on experience calculating species diversity, classifying an ecosystem, learning ecological surveying techniques, writing effective research questions and learning basic data processing and analysis. In 2025, the program was delivered to 4,083 Year 11 biology students from 98 schools.

Our global profile

UQ undertakes world-leading research and innovation that contributes to international sustainability, with a vision of piloting and deploying sustainable solutions to global challenges.

How we achieved this

- In March 2025, Professor Hugh Possingham and Dr Emily Massingham's research team from UQ's Centre for Biodiversity and Conservation Science ran a workshop at The German Centre for Integrative Biodiversity Research (iDiv), which focused on participatory structured decision-making (SDM) as a pathway to more equitable and effective outcomes in human-wildlife conflict, especially in the context of Africa's great apes. SDM workshops can provide stakeholders with a platform to define their objectives and potential actions, assess trade-offs and design coexistence interventions that balance ecological protection with community needs. The team then started working to transform these findings into real-world solutions via the creation of best practice guidance, training resources and an online tool for practitioners. A research paper was drafted on using participatory SDM to improve human-wildlife conflict conservation planning, and data gathered from 100 great ape conservation projects across Africa to understand approaches to address human-great ape conflict, and how communities are or aren't being involved in decisions around this.
- In 2025, UQ researchers continued to engage with communities on Christmas Island for the collaborative project 'Strengthening Sustainability of the Indian Ocean Territories Marine Parks and Local Economy Through Collaborative World-Class Ecotourism', which was funded by Parks Australia in partnership with Ecotourism Australia and the Christmas Island Tourism Association. The project focuses on sustainable management of land for tourism and aims to provide direction for sustainable tourism on Christmas Island by investigating the local community's preferences and attitudes towards tourism development on this remote island, where 63 per cent of land is National Park and mining is being phased out. Dr Noreen Breakey returned to the island in May 2025 to ensure the findings and recommendations of the research were presented to the tourism sector, local government stakeholders and importantly to the local community at a public event held by Christmas Island National Park. To progress sustainable development policies based on the priorities and needs of local people, the recommendations were presented to the Federal Department for Infrastructure, Transport and Regional Development (DITRDCSA) and Parks Australia, the peak bodies responsible for sustainability both inside and outside the protected areas. Providing further community engagement, the project outcomes, including the reporting to government of the Christmas Islanders' tourism vision, were published in *The Islander* community newsletter, with all 3 pages provided in English, Chinese and Malay to reflect the multicultural nature of the island's communities.
- The Preventing Zoonotic Disease Emergence One Health in Action in the Pacific (PREZODE OHANA) represents a landmark Pacific program led by UQ's School of Veterinary Science. Funded by the French Embassy in Australia through the Pacific Fund, this initiative bridges science and policy to mitigate zoonotic disease emergence, strengthen biosecurity surveillance and safeguard interconnected human,

animal and ecosystem health across the Pacific. Conducted in partnership with 7 Pacific Nations and the Pacific Community (SPC), 2025 outputs include the co-construction of a regional One Health Impact Framework tailored to local needs and priorities.

- Engineering Pseudomonads for sustainable production of oleochemicals (BioOlé) project aims to develop a sustainable microbial platform for producing functionalised fatty acids from sugar industry by-products as eco-friendly alternatives to petroleum and palm oil, given that palm oil production is one of the leading global drivers of tropical deforestation, peatland destruction and critical biodiversity loss on land with direct impact on species like orangutans. By creating a sustainable microbial platform that replaces palm oil, the project addresses SDG 15 by promoting the implementation of sustainable management of all types of forests, halting deforestation and restoring degraded forests. Using the host strain Pseudomonas taiwanensis VLB120, the project focuses on producing ω-amino and ω-carboxy fatty acids with industrial applications in polyamides, cosmetics, surfactants and lubricants. By leveraging low-cost, land-based agriculture by-products like molasses instead of requiring new, BioOlé offers an economically viable and environmentally sustainable solution for chemical industries. The collaboration combines expertise in fatty acid metabolism engineering and bioprocess engineering to establish efficient production methods, benefiting Queensland's agro-industrial sector and Germany's chemical industries. This bio-based product and process represents a major development in converting renewable biological resources, technologies, by-products or wastes into value-added products, including bio-inspired materials, chemicals, products and services. Ultimately, the project provides a land-saving, deforestation-free bioeconomy solution that protects critical land ecosystems from agricultural expansion.
- In 2025, the Australia Awards short course on 'Climate-smart Agriculture for Healthy and Sustainable Food Production' was by UQ researchers from UQ's School of Agriculture and Food Sustainability. The course aimed to introduce policymakers and policy advocates to climate-smart agricultural practices and innovations that support the sustainability of Indonesia's agriculture and food production systems. It addressed the challenges posed by climate change while strengthening approaches to managing on-farm natural resources and capital, and explored links between climate-smart agriculture, nutrition outcomes and broader community health, including improved access to affordable and diverse food. The course objectives were identified through consultation with the Australian Embassy in Jakarta and key Indonesian stakeholders, which focused on benchmarking and best practice in food production and food security, increasing agricultural productivity, analysing nutrition outcomes, promoting inclusive climate-smart agriculture practices and strengthening professional and institutional networks with Australian counterparts. The learning objectives were further refined during the pre-course workshop to align with participants' individual learning goals. The course engaged 25 participants from early to mid-level positions across Indonesia's private sector and central, local and national government institutions. Participants were required to complete Award Projects, either individually or in small groups, to apply course learning directly to their professional contexts. The project included discussions, workshops, field observations and participatory learning activities with farmers in Bukit Terak Village. By involving the Australian Embassy in Jakarta, Indonesian stakeholders, Indonesian government and private sector

participants and the Australian organisations including Australian Centre for International Agricultural Research, CSIRO, the Mulloon Institute ‘Home Farm’, Malgowie Farm and the Queensland Animal Science Precinct, the course also facilitated ongoing networks through mentoring webinars, alumni engagement and participant-led Award Projects implemented in Indonesian institutional and community contexts.

Our people

In 2025, UQ received 39 Clarivate Analytics Highly Cited Researchers (HCR) awards. Several of these researchers contribute towards areas that are core to SDG 15, such as forest conservation, biodiversity monitoring and sustainable agriculture. These researchers are Professor Richard Fuller, Professor Hugh Possingham, Professor James Watson and Professor Peter Mumby.