

Review of operations

Research

AUQA noted USC's "focused and coordinated effort to build its research activities...", citing clear examples of research linked to regional priorities. Australian Universities Quality Agency report



Goal: to concentrate the University's research effort and achieve national and international distinction in ways that advance University priorities

Mobilise research capacity and infrastructure around regional engagement and sustainability issues

Research Futures

Two research groups were established in 2007.

The Genecology-Genetics, Ecology, Genomics and Physiology Group facilitates group studies and interactions in these disciplines.

Current studies focus on:

- sustainable production systems in aquaculture, forestry and horticulture;
- reproductive biology and physiology of plants and animals;
- commercially important traits in aquaculture, forestry and horticulture;
- conservation management, species or ecosystem recovery and restoration; and
- management of native species in altered environments.

The Regional Sustainability Research Group focuses on sustainable communities, sustainable environments, and related institutions. The Group will address real, on-the-ground concerns of society and the environment via studies of sustainability and regional engagement—

e.g. matters such as sustainability science, resilience, adaptive capacity, social learning, social and human capital, and regional development theory as applied to:

- coastal management;
- climate change;
- water management;
- natural and cultural heritage;
- innovation;
- adaptive growth; and
- community wellbeing (recognised as significant at local through to international scales).

Research and Research Training Plan

The Research Management Committee is reviewing the current Plan (2005–2007) and a new Plan will be developed early in 2008 for the period 2008–2010.

Research

Coast Research Database

The USC research repository Coast Research Database <<http://research.usc.edu.au>> was launched by Professor Rod Simpson at the USC Research Conference in November 2007.

The Coast Research Database provides an open access showcase of the University's scholarly research output. It makes the research output of the University accessible to local, national and international communities. This will maximise impact for individual USC researchers and highlight the overall research profile of the University.

Coast Research Database currently exposes 1,400 citations of USC research. These include: journal articles, conference papers, theses, book chapters, and reports. These citation data were drawn from 2002–2006 Office of Research reported Higher Education Research Data Collection (HERDC) data, selected academic full publication lists from CVs, and staff webpage publication lists. The database also includes 11 fulltext records of eJBEST journal articles and theses. Work is being undertaken to negotiate copyright permissions with publishers to allow further fulltext document exposure via the database.

Coast Research Database is linked from the University homepage and Office of Research and Library webpages. Technical work is underway to open up the database to search-engine harvesting in the first quarter of 2008 to enable fulltext searching of the database from search engines such as Google. This will rapidly increase usage statistics and increase exposure and impact of USC research.

Collaborative work between the Library and the Office of Research continues to plan for Coast Research Database integration into Office of Research reporting and publication management, particularly in relation to the annual HERD Collection.

University Research Conference

Members of the public joined with USC staff and students for a day of discovery at the second annual University Research Conference in November.

The program included:

- a keynote address by Adjunct Professor John Mendoza, former CEO of the Mental Health Council of Australia and the Australian Sports Drug Agency;

- concurrent morning presentations on research related to nursing, sport and health, business and the arts; and
- afternoon sessions focused on regional sustainability and biomedical research.

Conference participants also celebrated:

- the launch of the Coast Research Database, which will showcase University research by preserving and disseminating material online through the USC website and major search engines like Google; and
- a presentation by Dr Alison Shapcott, Senior Lecturer in Vegetation and Plant Ecology and recipient of the 2007 Vice-Chancellor's Medal for Outstanding University Researcher. Dr Shapcott's work on the genetics and ecology of rainforest and rare plant species has implications for the wellbeing of rainforests worldwide.

Conference papers included the following.

- Preliminary findings for a study aimed at maintaining recreational beaches as functional ecosystems suggest that damage from 4WD vehicle use, dune destruction and overcrowding could threaten regional recreational assets and, in turn, the regional economies. The collaborative project involves Noosa and Redlands Shires, and regional natural resource management bodies.
- *Nutrition support for elite athletes: lessons learned from the 2006 Commonwealth Games* showed how athletes competing at elite levels benefited from comprehensive nutrition support services available in the athletes' village.
- A communications study found that a partial junk food television advertising ban in the UK may adversely affect Australian producers of children's programs. Traditionally they have sourced up to 80 percent of production budgets from UK partners.
- A world-first randomised, controlled trial of Clinical Supervision (CS) for mental health nurses yielded preliminary financial modelling that provided new insights about the material implications of implementing CS. The study is funded by the Queensland Treasury through the Golden Casket Foundation, and relates to recruitment and retention of high quality mental health nurses.

State of the Region Conference

The Sunshine Coast is experiencing rapid growth due to burgeoning tourism and leisure opportunities; increasing populations; and associated expansion of housing, services, business and industry.

Research contributes significantly to discussion and planning for the region's future; and presentations by USC academics thus proved integral to the third annual State of the Region Conference (page 38). Examples include the following.

- Research sponsored by Munro Thompson Lawyers indicated a likely 250 percent increase by 2022 in the number of residents aged 65 and over. This compared with an anticipated State average increase of 150 percent and suggested an immediate need to prepare for future needs of seniors, for example housing, transport, safety and health.
- A study of local skills shortages, sponsored by CADET Training and Employment, found that poor interpersonal skills (e.g. in customer service) strained businesses almost as much as shortfalls in technical skills. Known shortages in construction trades, aged care and hospitality meant employers had to reinvent recruitment and retention strategies to eliminate the burden of a mobile workforce.

Clever Networks

The Maroochy Clever Networks Project (page 43) will boost research capacity by enabling the University to gain more leverage from the Australian University Super Computing Network. USC contributed \$600,000 to the \$6.3 million optical fibre and wireless network.

Research

Enhance research quality and impact

Moves to facilitate quality research and achieve significant outcomes included:

- establishment of designated research groups (page 32) with performance measured against national averages for external grants and refereed publications;
- development of strategic research partnerships with other universities, State and Federal Government departments and the private sector;
- recruitment of experienced researchers at professorial level to lead research in key strategic areas;
- internal research grants for early career researchers;
- additional PhD scholarships supporting postgraduate research;
- support for postgraduate researchers via the Graduate Centre (page 36); and
- participation in the Maroochy Clever Networks Project (page 43).

Increase research income and output

Research income

Research income reported in 2007 increased by 40 percent, while research publications reported increased by more than one-third.

Research income included the first payment of a substantial grant from Fisheries Research and Development Corporation with Paspaley Pearling Company Pty Ltd, providing \$1.5 million over five years for genetics research.

This builds on an extremely productive collaborative research relationship between USC researchers, led by Professor Abigail Elizur and Dr Lesley Brooker, and Paspaley.

Research output

The University's research activities and outcomes are described throughout this report. They represent individual and collaborative efforts to generate new knowledge and strengthen the research profile of a university opened just 11 years ago.

USC research serves regional and national interests. It also reflects a growing international focus in line with the University's Internationalisation Policy.

Some projects answer multiple needs. For example, this year a State Government-funded project developed strategies for delivering culturally-relevant online resources to the non-government sector, within culturally and linguistically diverse groups. Centre for Multicultural and Community Development researchers received \$127,000 to complete Queensland's first-known major study into how migrant communities access information on the Internet. The data will facilitate provision of better, more appropriate information to migrant communities.

Year	Research performance			Performance-based funding			
	Research income \$	HDR enrolments (EFTSL)	HDR completions	Research publications (weighted)	Institutional Grants Scheme \$	Research Training Scheme \$	Research Infrastructure Block Grant \$
1998	100,857	13.13	0	37.64			
1999	184,504	18.50	1	40.63			
2000	319,289	22.50	2	50.04			
2001	415,885	27.50	1	38.39	111,080	192,000	481
2002	582,020	33.50	4	72.28	119,186	305,954	3,997
2003	699,056	43.50	3	62.19	128,019	434,959	5,092
2004	757,969	45.50	6	60.76	137,834	566,925	41,880
2005	731,364	49.25	5	88.27	185,415	695,971	72,389
2006	1,023,803	48.88	9	119.36	207,478	673,735	61,116
2007		75.88	13		240,710	652,849	50,629
2008					272,887	632,611	34,825

Please note: research performance on the left-hand side of the table determines, by formulae, the performance-based funding outcomes on the right-hand side of the table, with a two-year lag.

Research

Foster regional, national and international research collaborations

Research partnerships

Executives from USC and Queensland's Department of Primary Industries and Fisheries (QDPI&F) met to consider recommendations in a USC-prepared 2007 report on collaborative research opportunities. Discussions will continue in 2008 on ways to implement the recommendations.

USC continued to work collaboratively with the State Department of Tourism, Regional Development and Industry (formerly the Department of State Development, Trade and Innovation) to build productive and effective relationships with public and private organisations in the region.

USC's involvement in the Australian Seafood Cooperative Research Centre (Seafood CRC), which was funded by the Federal Government in 2007, will provide opportunities for USC's continued collaborative research (e.g. a study of Southern bluefin tuna maturation and sexing) with national industry leader Clean Seas Tuna.

Diverse collaborations this year saw USC researchers develop partnerships with overseas researchers and institutions. Examples (page 47) include:

- a tourism study with Washington State University, USA;
- ant studies with the University of Wyoming, USA;
- a mollusc aquaculture collaborative project between USC, University of the Philippines and Southeast Asian Fisheries Development Centre—Aquaculture Department;
- sports science work with Leuven University, Belgium; and
- various exercise physiology projects at home and abroad with German Sport University.

Other activities involved:

- a Noosa North Shore beach impact study on the response of the beach invertebrates to recreational vehicle traffic by monitoring spatial difference in assemblage structure over time;

- a project complementary to the Noosa North Shore study identifying ecological risks to Burnett Mary Sandy Foreshores to assess pressures from recreational activities;
- a pilot study to determine the landholder weed awareness key barriers to effective weed management requested by a key natural resource management agency, which will enable such organisations to effectively support weed management practices in urban, peri-urban and rural South East Queensland; and
- a collaborative project with a University of Queensland researcher to retrieve and analyse the history of the Brisbane Exhibition and use this history to reflect more broadly on Queensland's and Australia's cultural and social history—the project will contribute to established and emerging specialisations within Australian history.



Horse flu... USC Immunologist Dr Fiona Burnell (left), pictured with Sunshine Coast horse owner Marie Farrelly and her daughter Emma, is leading a team of USC biomedical scientists in a research project that could help contain outbreaks of the disease around the world. The research team is working with the University of Iowa on the project, which will run for two years and involve 600 people (page 47).

Increase the number of higher degree enrolments and the comprehensiveness of research training

Postgraduate numbers

Postgraduate higher degree by research enrolments continued to increase, with 100 enrolments in 2007, up substantially from 71 in 2006. These enrolments included 22 new doctoral and 12 new masters by research candidates.

The total Higher Degree by Research (HDR) Equivalent Full Time Student Load (EFTSL) grew from 48.88 in 2006 to 75.88 in 2007. HDR completions numbered 13 in 2007 compared with nine in 2006 and five in 2005.

Research training

Research training (beyond supervision) activities included the following.

- *Orientation to University Research* workshops introduced higher degree by research (HDR) students to topics such as research frameworks, methodologies and theoretical perspectives. They also honed skills for improving supervisory relationships, literature reviews and presentation of research findings.
- Pilot *Foundations of University Research* workshops introduced early career researchers to the context for research (nationally and locally), approaches to research, research theory and practice, and communicating research.
- The pilot *Graduate Centre Research Essentials* program offered five sessions for HDR students. These covered time management, project management, academic writing skills, database searching, citation tracking, copyright obligations and data management for researchers.
- The pilot HDR *Graduate Centre Lunchbox Seminar Series* provided a forum for students to present and discuss their research with peer audiences.
- Staff and students attended training sessions on using SPSS and NVivo data analysis software.

Review of operations

Research

Initiatives to promote postgraduate programs and increase enrolments included:

- provision of 10 PhD scholarships, several including industry contributions, in addition to funding provided by DEST for the Australian Postgraduate Awards; and
- new degree programs.

Postgraduate research

- *Knowledge to practice: sustainability behaviour change and adoption of the green bag*—environmental management PhD study of social factors contributing to use of environmentally-friendly green bags instead of plastic bags (Tristan Claridge, School of Science and Education, Faculty of Science, Health and Education)
- *Improving operator support and selection processes*—business PhD study of dragline operations (Graham Lumley, School of Management, Faculty of Business)
- *Motion Analysis using Microtechnology*—a health study tracking the movement profile of patients, including stroke patients (James Lee, School of Health and Sport Sciences, Faculty of Science, Health and Education)
- *International Marriages*—a study examining the experience of the "immigrant" spouse in the new country (Atsushi Takeda, School of Social Sciences, Faculty of Arts and Social Sciences)
- *The lived experience of citizenship amongst exempted Aboriginal people in regional Queensland, with a focus on the South Burnett region*—a study of the diaries of a woman who was considered "white" (Judith Wickes, School of Social Sciences, Faculty of Arts and Social Sciences)

Graduate Centre

The former Council Room in Building B was refitted as a Graduate Centre for use by higher degree by research students not accommodated in faculty space. Building J premises formerly used by these students will, as originally planned, become part of extensions to the Library. The strategy answers a Research Management Committee recommendation following a review requested by the Research Degrees Committee.

The new Centre provides working spaces in accordance with the University's statement of entitlements for higher degree by research students. It also includes printing and collating facilities, soft furnishings, a kitchenette and outside seating.

It will be the venue for research training programs on topics such as research design, literature review, project management, research methodologies and publishing. Bachelor Honours students will be encouraged to attend these programs, and they will eventually be available via e-learning to improve flexibility and access for students who are not usually on campus.

Focus on innovation and its implementation with relevance to regional circumstances

USC enhanced ties with Queensland's DPI&F via joint appointment of Dr Stephen Trueman, a researcher whose activities include leadership of a collaborative project involving USC, Pine Rivers Shire Council and DPI&F. The researchers are investigating the development of food and habitat trees suitable for koalas in an urban environment.

With a project titled *Systems approach to regional climate change adaptation strategies in metropolises*, Associate Professor Tim Smith continues to work with colleagues at CSIRO. The aim of the project is to develop and trial a method for a systems approach to regional climate change adaptation strategies in large urban areas.



Rugby research... PhD candidate Keane Wheeler's research aims to enhance the performance of rugby union athletes, with an examination of training and agility. The project will present a clear pattern of the biomechanics of agility in rugby union, and this could help improve an athlete's running technique, speed and effectiveness.

New postgraduate research programs in 2007...

- Master of Climate Change Adaptation by Research
- Master of Environmental Change Management by Research
- Master of Integrated Coastal Zone Management by Research
- Master of Social Work
- Master of Wetlands Management by Research

Research

Key performance indicators

Increased publications per academic staff member

Year	Research publications (weighted)	per FTE*
2000	50.04	0.77
2001	38.39	0.52
2002	72.28	0.98
2003	62.19	0.73
2004	60.76	0.70
2005	88.27	0.95
2006 [#]	119.36	1.12

* Full-time equivalent academic staff member.

[#] Reported in 2007.

Increased research income per academic staff member

Year	Research income \$	per FTE* \$
2000	319,289	4,912
2001	415,885	5,620
2002	582,020	7,865
2003	699,056	8,224
2004	757,969	8,712
2005	731,364	7,864
2006 [#]	1,023,803	9,568

* Full-time equivalent academic staff member.

[#] Reported in 2007.

Increased number of completing higher degree by research students

Year	HDR completion
1998	0
1999	1
2000	2
2001	1
2002	4
2003	3
2004	6
2005	5
2006	9
2007	13

Increased proportion of timely higher degree by research completions

All higher degree by research study was completed on time.

Increased number of research projects with a regional partner or client; a national partner or client; or an international partner or client

USC identified 50 new and ongoing research and consultancy projects in 2007 with regional partners. Improved research management software planned for implementation during 2008 will facilitate comparative analysis in future years.

Year-on-year trend data from the Higher Education Research Data Collection returns are summarised below. Data for 2007 will be available in mid-2008.

Trend data—international, national and regional partner/client

	2003	2004	2005	2006
International partner or client	-	-	4	3
National partner or client	3	4	6	14
Regional partner or client	10	17	26	28

The year 2008

- An updated Research and Research Training Plan will ensure relevance and guide progress for the period 2008-2010.
- The Maroochy Clever Networks Project will boost research capacity by increasing leverage from the Australian University Super Computing Network.
- Improved research management software will facilitate comparative analysis of projects involving regional partners.
- Postgraduate enrolments, activities, outputs and completions will continue to increase.