

DEPARTMENT OF STATISTICS

ANNUAL REPORT 2006

Highlights

Last year I highlighted the fact that Ross Ihaka and Robert Gentleman's 1996 paper about the underpinnings of the statistical computing package, R, that they co-founded had become the most cited of all papers published in the international mathematical sciences literature over the last 10 years. The position strengthened during its 10th year closing with over 1850 citations. R has become one of the most influential pieces of work that this university has produced. It is very pleasing to be able to report that Ross Ihaka was promoted to Associate Professor in the 2006 round. Our Department is also exceedingly pleased to have gained its first female Associate Professors with Catherine Loader taking up her appointment at mid year and Marti Anderson also being promoted to Associate Professor in the 2006 round.

Alastair Scott has been further honoured this year. He won the 2006 Waksberg Award from the American Statistical Association and the Statistical Society of Canada for his work on survey sampling and gave invited addresses at 5 international conferences in 2006. Other significant addresses included Paul Murrell's keynote address at the 2006 UseR! conference in Vienna in June and and Chris Wild's plenary address at the 7th International Conference on the Teaching of Statistics in Brazil in July.

Alan Lee, Alastair Scott, and Chris Wild have won a Marsden Grant for "Model fitting with complex sampling structures". Marti Anderson was PI for approximately \$500,000 in new research contracts for ecosystems projects, predominantly estuary and near-shore monitoring for the Auckland Regional Council. Alan Lee obtained a \$115,000 contract from Statistics New Zealand for a project concerned with creating synthetic datasets to mimic confidential data sources. Chris Triggs and James Curran were co-authors of the paper that this year won the Forensic Science Society's PW Allen award, for best paper published in *Science and Justice* in 2005. The University's first Solander Fellowship has been awarded to Ilze Ziedins.

ASC/NZSA 2006, the joint biennial meeting of the Statistical Society of Australia and the New Zealand Statistical Association, was held at Sky City in Auckland on July 3 to 6 with David Scott as Chair of the Organising Committee and over 300 delegates from 31 countries.

Matt Regan's Faculty of Science Distinguished Teaching Award in 2006 maintained an unbroken record of teaching awards to the Department every year since 2002. Maxine Pfannkuch is leading the rewriting of the statistics strand of the New Zealand Years 1-13 mathematics curriculum and the statistics Teachers' Workshop Day, that we hold every November at the Tamaki Campus, was hugely successfully organised by Ross Parsonage and drew 180 secondary mathematics teachers, mainly from Auckland but also as far a field as Northland, Waikato, the Bay of Plenty and Hawkes Bay.

Background

The Department of Statistics is the largest in Australia and New Zealand. In 2006 there were approximately 40 full-time-equivalent academic staff, including 21-fte staff with contracts that involve research, and 5-fte general staff. The Department taught 928 equivalent full-time students (EFTS) in 2006. We have been fortunate in not only avoiding the contraction that has afflicted the Statistics discipline in other Australasian universities, but actually prospering. Our good health and growth has been largely due to gaining and retaining most of the service teaching of statistics within the University. The Department has a sizable presence at the Tamaki Campus. The accumulation over time of so many Statistics staff at Tamaki was dictated by space constraints in the City rather than student numbers or active research synergies at Tamaki. There is a great deal of travel by Tamaki staff members into the City to teach with subsequent impacts on the staff-productivity and Departmental cohesiveness.

I. DEVELOPMENTS IN TEACHING AND LEARNING

The highlight of the year was the winning by Matt Regan of a 2006 Dean of Science Teaching Excellence Award. One of these awards has gone to the Department of Statistics in each of the 3 years since their advent in 2004, a reflection of the very strong commitment to excellent teaching that pervades the entire Department. The award to Matt Regan is particularly gratifying since Matt has, for many years, been leading the stage 1 team that has won university and national awards but has not previously received any personal recognition (and did not seek it even now).

2006 saw the advent of STATS 326, a course in the analysis of time series data that is accessible to students from many disciplines. Also new was STATS 380 on statistical programming using R, this Department's most famous product. As part of degree restructuring the two halves of the popular STATS 340 course were expanded to form STATS 341 on the design and analysis of surveys and STATS 351 which deals with the design and analysis of experiments. Both of these courses are also accessible to students from many disciplines.

In semester 2 the Department started recording lectures and making them available via Cecil with about half of all undergraduate courses participating in this alternative delivery system. We first began experimenting with lecture recording/screen capture movie systems about seven years ago. The technology at that stage wasn't up to what we needed in terms of file size and ease of use by naïve users (complications around codec files and differences across computer platforms) so initially we only used them to make some little movies about how to use specific aspects of statistical software. This idea was systemised and rolled out on a large scale on our first course CD Rom for the start of 2002 which had 100 of these little movies on it. For recorded lectures we decided after much experimenting to use PowerPoint with sound file narrations. This produced an excellent product but it was inefficient because it was an off-line process (which also makes ongoing changes expensive) whereas lecture recording captures work that is being done anyway for a second purpose. This year we used two systems. We took part in the Arts Faculty/ITS iLecture trial (using a very expensive, storage-hungry system that only works in theatres with eLecturns). Most courses used the BBFlashback system found and trialed by Paul Bonnington in semester one. This is a much cheaper, more portable and altogether a superior system. It simply efficiently records what was happening on the PC screen with sound input so that it can be used by anyone with a laptop and a microphone wherever they are.

This has also been a good year in terms of recognition for our PhD students, in particular James Russell and Steven Miller. James had a paper in *Nature* last year called "Intercepting the first rat ashore" which was publicised all around the world about the swimming exploits of a rat he named Razza. His 2006 was surreal – beginning with being part of the university's welcome and entertainment of a Thai princess (Her Royal Highness Maha Chakri Sirindhorn) and ending with the children's book "The Amazing Adventures of Razza the Rat" by Witi Ihimaera and the subsequent play. In between he won 1st Prize from the Australasian Wildlife Management Society Conference for a Student Presentation on Wildlife Management and the "best publication by a new researcher" award at the NZ Ecology Society for other work, and a Slander Travel Grant to Sweden for 2007. Steven Miller won the NZSA prize, for best talk presented by a New Zealand student presented at the Australian Statistical Conference/New Zealand Statistical Association Conference 2006. There was a full-page article in the 'New Zealand Education Review', 11(35), September 8, 2006 on Stephen about his work on rats (Tim Langlois appears on the facing page, explaining his PhD work.). He was placed 3rd in the Faculty's Postgraduate Poster competition. He also gave an outstanding talk to the International Biometric Society Conference in Montreal in July.

Enrolment Patterns

Despite a drop in EFTS from 946 in 2005 to 928 in 2006 as a result of restructuring, Statistics became the 2nd largest Department in the Faculty of Science in EFTS terms (trailing only the School of Biological Sciences) following a drop off in enrolments in Computer Science. The numbers in courses in 2006 were very similar to 2005 except for an upsurge at Stage 1 level that was considerably larger than could be explained by the advent of General Education. With the reduced EFTS value of courses in 2006, however, similar numbers in courses translate into a reduction in EFTS of approximately 1/8. This is the size of, and explanation for, the reductions at Stages 2 and 3. International numbers continued to drop at Stage 1 where they now constitute only 14% of enrolments (down from around 25% for 2002-4) with reductions at Stage 2 and 3 being pipeline effects of changes in earlier years.

Note that the International/Domestic splits for 2003 and 2004 are based on August projections of end-of-year figures whereas 2005 and 2006 are actual year-end figures directly from nDeva.

TOTAL Efts										
Level	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1	352	347	365	310	371	421	418	527	516	546
2	201	205	210	184	161	187	222	248	242	212
3	94	106	101	106	102	97	116	112	119	103
Grad	29	30	47	48	42	53	66	61	69	67
Total	679	690	723	649	675	759	823	947	946	928

PERCENT INTERNATIONAL Efts										
Level	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1				8%	16%	25%	24%	24%	19%	14%
2				7%	10%	17%	27%	30%	26%	20%
3				5%	5%	9%	16%	26%	30%	27%
Grad				10%	9%	11%	18%	15%	19%	18%
Of Total				7%	13%	20%	23%	25%	22%	17%

INTERNATIONAL Efts										
Level	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1				24	59	103	99	124	98	75
2				13	16	31	59	75	62	42
3				5	5	9	19	29	36	27
Grad				5	4	6	12	9	13	12
Total				47	85	149	190	236	209	156

DOMESTIC Efts										
Level	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1				286	312	318	322	403	418	471
2				171	144	157	164	173	180	170
3				101	96	88	97	83	83	76
Grad				44	38	47	55	52	56	55
Total				602	591	610	638	711	737	772

II. OTHER STUDENT MATTERS

Staff-Student Liaison Committee

Joss Cumming continued her successful running of this committee in 2006. Four meetings were held with good participation from staff and students. The atmosphere at all of these meetings was extremely positive and they have been very valuable as a means of identifying problems students encounter so that they can be solved, and increasing staff understanding of student attitudes and concerns.

Scholarships and Prizes

Senior Scholarship in Statistics: Natalie Wilma Rolfe

Annual Prizes in Statistics: Hye Sun Kwon

Statistics New Zealand Prize: Emma Hui Ying

NZ Aluminium Smelters Prize: Jia Eunice Oh Si

Senior Prizes: Barnett, Elizabeth Jane
Chang, Lily Yu
Chen, Nanxi

Chen, Lu
Dresden, Sarah
Gearing, Nicola Claire
Hannaford, Oliver Desmond
Igic, Branislav
Kemp, Stephanie Michelle
King, Ariana Te Aorangi
Leman, Gemma Leigh
Leung, William Wai-Shing
Liu, Jing
Ming, Yue
Or, Chun Wang
Smith, Justin Craig
Sun, Zhengyang
Woo, Natalie Hin On
Yip, Erica Wai Chee (Erica)
Yuan, Jing
Yuan, Johnson

Summer Studentships

Faculty of Science Summer Scholarships were offered to the following:

Chen Nanxi	Comparison of dietary intakes of Samoans, Tongans, Niueans, and Cook Islanders with Europeans
Cheng Ting	Multilocus analysis for whole genome association data
Fiolitakis Anthea	A new object system for the R data analysis system
Gray Nick	Pricing options under Jump-Diffusion processes - Theory and Computation
Liu David	Estimating stopover duration for the Southern Right Whale
Liu Jing	Dirichlet Process Prior for flexible curve fitting
McArdle Brendan	"L" - A New Statistical Computing Language/Environment
Tan Emma	Comparison of Complex Pedigrees
Yuan Johnson	Analysis of non-regular fold-over fractional factorial designs
Zhang Tao	Programming for Empirical Bayes Estimation of change points
Zhang Yu	The effect of incorporating sampling variation in population substructure estimates into likelihood ratio calculations

III. EQUAL OPPORTUNITIES

We are very conscious of EEO issues in appointments and promotions processes. We make every attempt to accommodate the needs of those with heavy family responsibilities. Dr Wiremu Solomon represents the Department on the Faculty of Science EO Committee and Dr Marti Anderson is Departmental liaison with Women in Science and Engineering.

Maori and Pasifika Staff

We have 3 FTE Maori teaching staff in the Department. Dr Ross Ihaka, world renowned as the co-originator of the R system, was promoted to Associate Professor in the 2006 round. Dr Wiremu Solomon is a Lecturer who has a joint appointment with Mathematics, Rachel Cunliffe is a Senior Tutor and Susan Wingfield is a half-time Tutor working in the Maori/ Pasifika Rooms. Also staffing the Maori/ Pasifika Rooms are Senior Tutors, Garry Nathan and Viliami Latu (of Tongan origin) who have joint appointments with Mathematics. We also have a 20% FTE Maori Research Fellow.

Staff Gender Equity

Of the 29 equivalent full time positions at lecturer/senior tutor level or above, women comprise 10.4 FTEs, or approximately 35%, up from 25% in 2005. 2006 saw our first two female Associate Professors with Catherine Loader taking up her appointment mid-year and Marti Anderson being promoted to Associate Professor in the 2006 round. Currently 4 women are above the SL bar.

EEdO

Enrolment levels for Maori students were essentially unchanged in 2006 from 2005 though Pacific enrolments showed a 19% increase.

Wiremu Solomon had primary EEdO responsibilities for the Department.

The Department does not have any significant problems with gender equity among students. We are at gender parity at all levels except PhD where a third of students are female.

The student population is approximately 50% Asian and the Department does have large numbers of students for whom English is not their first language. The narrated lecture CDs for the Stats 10x and the Stats 20x courses were in part a response to this problem. At Stage 2 we continue to teach structured forms of writing about the messages in data, partly to overcome language difficulties, but more importantly to help students organise their thoughts. The composition of our complement of student-tutors and demonstrators now largely reflects the diverse set of ethnic and language backgrounds of the students they are helping.

The Department continues to cooperate with the Student Learning Centre to provide foundation and supplementary workshops for students who are under prepared for first-year study. Excellent coordination was ensured by the appointment by SLC in 2005 of Leila Boyle, who had previously taught on the Stage 1 team.

Special efforts being made to help Maori and Pasifika students are described in the next section.

IV. TREATY OF WAITANGI

Dr Ross Ihaka serves on the Science Maori Responsiveness Committee and Susan Wingfield serves on the Maori and Pasifika in Science Committee.

Over recent years, the Department has worked in partnership with the Department of Mathematics as originators of the Tuakana (peer mentoring) Programme concept that has now been adopted quite widely across the university. This and targeted tutorials and workshops at first-year level run through our Maori and Pasifika rooms continue to be our main focus in this area. The Maori and Pasifika operations of the two Departments work together so seamlessly that they are almost a single operation. The distinctions are even more blurred by the fact that many of the staff involved hold or have held joint appointments. There are 2 moderately large study rooms for Maori and Pasifika students. Several computers and facilities to facilitate social networking are provided. The rooms are adjacent to the offices of the Maori and Pasifika Tutors. Students are contacted personally by phone and invited to participate. Despite these efforts and the demonstrated benefits of participation, however, there are problems in raising levels of regular participation by Maori and Pasifika students high enough to have a significant impact on problems such as lower pass rates.

We have continued with a slight adaptation of the successful Mathematics Department concept of Aldis Scholarships and given 5 scholarships to students who had just completed high school and enrolled in STATS 108 at Summer School. These scholarships also give a sharp focus to school visits.

V. RESEARCH PUBLICATIONS, CREATIVE WORKS AND OTHER RESEARCH OUTPUTS

The Department has 21 staff with research expectations in their contracts.

Highlights

Alastair Scott has won the 2006 Waksberg Award from the American Statistical Association and the Statistical Society of Canada, for his work on survey sampling. Alastair's paper "The Analysis of Population-based Case Control Studies" was presented as the 2006 Waksberg Lecture at the 23rd International Methodology Symposium on 3rd November, and appeared in the December issue of *Survey Methodology*. This capped off a year which included invited papers at the 2006 (North American) Joint Statistical Meetings, and Statistical Methods in Epidemiology: Conference in Honor of Norman Breslow, both in Seattle in August, the 9th International Vilnius Conference on Probability Theory and Mathematical Statistics in June, and the Statistical Society of Australia/NZSA joint meetings in July.

Alan Lee, Alastair Scott, and Chris Wild have won a Marsden Grant for "Model fitting with complex sampling structures". Marti Anderson was PI for approximately \$500,000 in new research contracts for ecosystems projects, predominantly estuary and near-shore monitoring for the Auckland Regional Council. Alan Lee obtained a \$115,000 contract from Statistics New Zealand for a project concerned with creating synthetic datasets to mimic confidential data sources. Russell Millar won funding from the University Research Fellowships Fund to complete his book "Applied Likelihood Methods: With examples in R and SAS". In 2006 the Slander Programme was set up by several universities in Scandinavia, New Zealand and Australia, to coordinate their research activities. The first Slander Fellowship has been awarded to Ilze Ziedins, to enable her to spend two months at Lund University collaborating with researchers there. James Russell, finishing his PhD research on the modelling of rat colonizing, has been awarded a Slander Travel Grant for the same purposes.

ASC/NZSA 2006, the joint biennial meeting of the Statistical Society of Australia and the New Zealand Statistical Association, was held at Sky City in Auckland on July 3 to 6 with David Scott as Chair of the Organising Committee and a great deal of Departmental involvement in the organisation. The event was a success, attended by over 300 delegates from 31 countries. Departmentally organised satellite workshops included separate workshops on R Programming (33 registrants), R graphics (41 registrants) and the bioinformatics system Bioconductor (15 registrants) going under the collective banner "RFest", and the Introduction to Distance Sampling and Stochastic Processes Workshop (12 registrants).

Other significant invited papers included Paul Murrell's keynote address at the 2006 User! conference in Vienna in June and Chris Wild's plenary address at the 7th International Conference on the Teaching of Statistics in Brazil in July at which Rachel Cunliffe and Maxine Pfannkuch also had invited papers. In August, Catherine Loader gave an invited address at the 2006 Joint Statistical Meetings in Seattle. Marti Anderson, Sharon Browning, James Curran, Rachel Fewster and Catherine Loader were others giving invited addresses at ASC/NZSA 2006.

Chris Triggs and James Curran were co-authors of the paper that this year won the Forensic Science Society's PW Allen award, for best paper published in *Science and Justice* in 2005: T. Hicks, F. Schutz, J.M. Curran and C.M. Triggs (2005). "A model for estimating the number of glass fragments transferred when breaking a pane: experiments with firearms and hammer", *Science and Justice*, 45(2), 65-74. A story was carried on the 10th of November in the 'Dominion Post'. Patricia Metcalf was author or co-author of 60% of the articles in 17th November issue of the 'Journal of the New Zealand Medical Association', 17 November 2006, Vol 119 No 1245, and her work was the subject of the Editorial. She also had several other articles published in this same month.

In the 2005 Annual Report I highlighted the burgeoning success of the R project founded by Ross Ihaka and (then Department member) Robert Gentleman. Their 1996 paper introducing R is the most cited of all papers published in the mathematical sciences over the last 10 years (1850 citations) by a substantial margin. This Department is a very significant producer of other leading-edge statistical software (in addition to R). There were new releases in 2005 of Catherine Loader's Locfit software, Thomas Yee's VGAM software has its official release on CRAN and Marti Anderson signed a software agreement with UK company 'PRIMER-e' for commercialisation of her multivariate methods software as part of 'PRIMER'.

General

Research in the Department is notable for the interactions with other departments and research groups. There are strong connections with the School of Population Health, the School of Medicine, the Department of Engineering Science, the Department of Sociology, ESR, the Forest Research Institute, Crop and Food Research,

HortResearch, the Department of Mathematics, the School of Biological Science, the Department of Computer Science, and the School of Geography and Environmental Science. Typical links include shared research grants, shared supervision of postgraduate students, and the writing of joint papers.

Members of the Department are working in the areas of statistical computing, statistical ecology, medical statistics, statistical genetics, Bayesian statistics, applied probability and stochastic operations research, sample surveys, experimental design, forensic science, and statistics education.

A major ongoing strength is the statistical computing software R. The R statistical system has not only become widely used internationally for its comprehensive built-in capabilities for data analysis, but it is also now the usual platform of choice whenever researchers are programming innovative statistical solutions. R was initially developed by the Department's Ross Ihaka and Robert Gentleman in 1992. Since 1997 it has become a burgeoning international collaboration involving most of the world's foremost specialists in statistical computing including the Department's Paul Murrell. R is included in all major distributions of the Linux software.

PUBLICATIONS

Book - Chapter

EZZATI, M., VANDER HOORN, S., LOPEZ, A. D., DANAEI, G., RODGERS, A., MATHERS, C.D., MURRAY, C.J.L. 'Comparative quantification of mortality and burden of disease attributable to selected risk factors.', In:Lopez AD, Mathers CD, Ezzati M, Jamison D, Murray CJL.(ed.), *Global Burden of Disease and Risk Factors.*, New York, Oxford University Press, p.241-268, 2006

IRWIN, K.C., WOODWARD, J.C. 'Advancing Pasifika Students' Mathematical Thinking', In:F. Ell, J. Higgins, K. C Irwin,G. Thomas, T. Trinick, J. Young-Loveridge(ed.), *Findings from the New Zealand Numeracy Development Projects 2005.*, Wellington, Ministry of Education, p.80-90, 2006

SCOTT, A.J., WILD, C.J. 'Calculating efficient semiparametric estimators for a broad class of missing-data problems', In:E. P. Liski, J. Isotalo, J. Niemelä, S. Puntanen, and G. P. H. Styan(ed.), *Festschrift for Tarmo Pukkila on his 60th Birthday.*, Tampere, Finland, Dept. of Mathematics, Statistics and Philosophy, University of Tampere, p.301-314, 2006

Conference Contribution - Abstract

BIBBY, C.M., ROBINSON, E.M., WALDIE, K.E., THOMPSON, J.M.D., WILD, C.J., MITCHELL, E.A. 'Determinants of ADHD Symptoms in School Aged Children: Findings from the Auckland Birthweight Collaborative Study', *Centre for Longitudinal Studies Conference on International Child Cohort Studies, Oxford University, UK, 12-14/09/05*, 2006, p.-

GROOM, K., POPPE, K.K., NORTH, R.A., MCCOWAN, L.M.E. 'Relationship between preeclampsia and small for gestational age pregnancies in nulliparous pregnancies', *Annual NZ college of Obstetrics and gynaecology scientific meeting.*, Bay of Islands NZ, September, 2006, p.-

Conference Contribution - Oral Presentation

ANDERSON, M.J. 'Nonlinear canonical models of principal coordinates in multivariate ecological studies', *Australian Statistical Conference/ New Zealand Statistical Association Conference, Auckland, New Zealand, 3-7 July*, 2006

BIBBY, C.M., ROBINSON, E.M., WALDIE, K.E., THOMPSON, J.M.D., WILD, C.J., BECROFT, D.M.O., MITCHELL, E.A. 'Factors related to symptoms of ADHD in school age children; Findings from the Auckland Birthweight Collaborative Study.', *58th Annual Scientific Meeting of the Paediatric Society of New Zealand.*, Nelson, November 1-3, 2006

BROWNING, B.L. 'Design and analysis of genetic association studies', *The International Conference on Nutrigenomics & Gut Health, Auckland, New Zealand, 30 April - 3 May*, 2006,
<http://www.nutrigenomics.org.nz/index/page/190>

BROWNING, B.L., PETERMANN, I., HUEBNER, C., DEMMERS, P., MCCULLOCH, A., GEARRY, R.B., BARCLAY, M.L., SHELLING, A.N., FERGUSON, L.R. 'Association of DLG5 polymorphisms with inflammatory bowel disease in the New Zealand Caucasian population.', *Medical Sciences Congress 2006, Rotorua, New Zealand, 28 November - 1 December*, 2006

- BROWNING, S.R. 'Efficient multilocus association mapping using clustered haplotypes', *2nd New Zealand Molecular Mapping Workshop, Palmerston North, 9-10 October, 2006*
- BROWNING, S.R. 'Multilocus Genetic Association Testing Using Variable Length Markov Chains', *Australian Statistical Conference / New Zealand Statistical Association Conference, Auckland, 3-6 July, 2006*
- BROWNING, S.R. 'Whole-genome multilocus association mapping using localized haplotype clusters', *International Genetic Epidemiology Society 15th Annual Meeting, St. Petersburg Beach, FL, USA, November 15-17, 2006*
- CURRAN, J.M. 'The effect of uncertainty in the number of contributors to DNA stain', *The Australian Statistical Conference/ New Zealand Statistical Association Conference, Auckland, 3-6 July, 2006*
- FORD, R.B., ANDERSON, M.J. 'Beach monitoring: can we detect anthropogenic impacts over time?', *Sandy Beaches Symposium, Vigo, Spain, October 9-13, 2006*
- HAN, D.Y., THOMPSON, J.M.D., CLARK, P.M., WILD, C.J., MITCHELL, E.A. 'Determinants of physical activity in seven year old children.', *58th Annual Scientific Meeting of the Paediatric Society of New Zealand., Nelson, November 1-3, 2006*
- LOADER, C.R. 'Inference in Perturbation Models: Tube Methods and Small Sample Corrections', *Joint NZ Stat. Association, Statistical Society of Australia Meeting, Auckland, July 3-6, 2006*
- LOADER, C.R. 'Inference in Perturbation Models: Tube methods and small-sample corrections.', *New Zealand Statistical Association, Stat. Soc of Australia joint meeting., Auckland, July 3-6, 2006*
- MILLAR, R.B. 'Local influence in Bayesian models.', *Joint NZ and Australia Statistical Conference, Auckland, July, 2006*
- MURRELL, P.R. 'Fonts in Plots', *ASC/NZSA 2006, Auckland, New Zealand, 3 - 6 July, 2006*, <http://www.statsnz2006.com/>
- MURRELL, P.R. 'Importing Graphics', *The Joint Statistical Meetings 2006, Seattle, USA, August 6 - 10, 2006*, <http://www.amstat.org/meetings/jsm/2006/index.cfm>
- MURRELL, P.R. 'Splines, Curves, and Importing Graphics', *user! 2006 The R User Conference 2006, Vienna, Austria, 2006-06-15 to 2006-06-17, 2006*, <http://www.r-project.org/user-2006/>
- ROEVER, C., CHRISTENSEN, N. L., MEYER, R. 'Bayesian parameter estimation techniques for binary inspiral events in three or more interferometers', *ILIAS Gravity Wave Meeting, Florence, Italy, April 12, 2006, 2006*
- ROEVER, C., MEYER, R., CLARK, J., CHRISTENSEN, N. L., HENDRY, M., UMSTAETTER, R., WOAN, G. 'Inference on inspiral signals using LISA MLDC data', *11th Gravitational Wave Data Analysis Workshop, Potsdam, Germany, Dec 18-21, 2006*
- ROEVER, C., MEYER, R., GUIDI, G.M., VICERE, A., CHRISTENSEN, N. L. 'Coherent Bayesian inference on binary inspiral signals', *11th Gravitational Wave Data Analysis Workshop, Potsdam, Germany, Dec 18-21, 2006*
- SCOTT, A.J. 'Population-based case-control studies. The Waksberg Lecture.', *The 23rd International Methodology Symposium: Methodological Issues In Measuring Population Health, Gatineau, Quebec, Canada, 1-3 November, 2006*
- SCOTT, A.J., WILD, C.J. 'Fitting models to data from two-phase studies (Invited)', *Australian Statistical Conference/New Zealand Statistical Association Joint Meetings 2006, Auckland, 3-6 July, 2006*
- SCOTT, A.J., WILD, C.J. 'Fitting regression models with multi-phase samples(Invited)', *The 9th International Vilnius Conference on Probability Theory and Mathematical Statistics, Vilnius, Lithuania, 28 June, 2006*
- SCOTT, A.J., WILD, C.J. 'Statistical methods for case-control and related sampling designs (Invited)', *Conference on Statistical Methods in Epidemiology and Observational Studies In Honor of Norman E. Breslow,*

Seattle, Washington, 4 August, 2006

SCOTT, A.J., WILD, C.J., JIANG, Y. 'The Design and Analysis of Two-Phase Response-Dependent Samples (Invited)', *Joint Statistical Meetings, SEattle, Washington, 6-10 August, 2006*

TRIGGS, C.M., LEE, A.C., ANDERSON, J.A. 'A Bayesian Model for Field Experiments with Repeated Ordinal Outcomes', *Australasian GenStat/StatGen Conference, Port Victor, Australia, 3-6 December, 2006*

UMSTAETTER, R., MEYER, R., CHRISTENSEN, N. L. 'Bayesian parameter estimation techniques for LISA', *Journées LISA-France, Meudon, Paris, March, 2006*

VECCHIO, A., STROEER, A., CLARK, J., CHRISTENSEN, N. L., HENDRY, M., MESSENGER, C., MEYER, R., PITKIN, M., ROEVER, C., TOHER, J., UMSTAETTER, R., VEITCH, J., WOAN, G. 'Bayesian inference on galactic binary systems using MLDC data sets', *11th Gravitational Wave Data Analysis Workshop, Potsdam, Germany, Dec 18-21, 2006*

YEE, T.W. 'Constrained Additive Ordination', *Australian Statistical Conference/New Zealand Statistical Conference 2006, Auckland, 3-6 July, 2006*

Conference Contribution - Conference Paper

CUI, T., FOX, C., NICHOLLS, G., O'SULLIVAN, M.J. 'Bayesian Inference for Geothermal Model Calibration', *New Zealand Geothermal Workshop, Auckland, 15th November, 2006*

MCCABE-DANSTED, J.C., PRITCHARD, G., SLINKO, A.M. 'Approximability of Dodgson's Rule', *VIII International Meeting of the Society for Social Choice and Welfare, Istanbul, July 13-17, 2006*, https://gemini.econ.umd.edu/cgi-bin/conference/conference.cgi?action=login&db_name=IIMSCC

Conference Contribution - Poster

ARMSTRONG, C.J., BUNZECK, N., HAMM, J.P., KIRK, I.J. 'The Neural Substrates of Recognition memory.', *8th Annual fMRI Experience., University of Melbourne. Australia., 27-30 June, 2006*

BROWNING, B.L., BROWNING, S.R. 'Powerful and efficient whole genome haplotypic analysis using Beagle', *Annual meeting of the American Society of Human Genetics, New Orleans, 9-13 October, 2006*

GRAINGER, P.A., BUTTS, C., DOMMELS, Y., ROWEN, D., ROY, N.C., BROWNING, B.L., COPP, B.R., LOVE, D.R., FERGUSON, L.R. 'Biomarkers of gut inflammation: Urine NMR', *The International Conference on Nutrigenomics & Gut Health, Auckland, New Zealand, 30 April to 3 May, 2006*, <http://www.nutrigenomics.org.nz/index/page/190>

GRAINGER, P.A., BUTTS, C.E., ROWAN, D., HELSBY, N.A., BROWNING, B.L., WALKER, M.F., COPP, B.R., LOVE, D.R., FERGUSON, L.R. 'Biomarkers of gut inflammation: Urine nmr', *The international conference on nutrigenomics and gut health, Auckland, NZ, April 30th - 3rd May, 2006*

HUEBNER, C., PETERMANN, I., BROWNING, B.L., SHELLING, A.N., PHILPOTT, M., FERGUSON, L.R. 'Different genotyping approaches for investigating the four allelic variant G2677/T/A/C in the MDR1 gene', *The International Conference on Nutrigenomics & Gut Health, Takapuna, Auckland, New Zealand, 30 April-3 May, 2006*

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Oral Presentation

ANDERSON, M.J. 'Long Bay Marine Monitoring Programme: 1999 - 2005', *Invited Seminar, Auckland Regional Council, Auckland, New Zealand*, 31-03-2006

ANDERSON, M.J. 'Multivariate methods for multi-species data', *Invited speaker, Quantitative Seminar, College of Ocean and Fishery Science, University of Washington, Seattle, USA*, 13-10-2006

BROWNING, S.R. 'Multilocus genetic association testing using localized haplotype clustering', *Department of Statistics Seminar, The University of Chicago*, 11-08-2006

BROWNING, S.R. 'Multilocus genetic association testing using variable-length Markov chains', *Bioinformatics Seminar, Walter and Eliza Hall Institute, Melbourne, Australia*, 29-08-2006

CURRAN, J.M. 'Some issues surrounding the interpretation of Low Copy Number (LCN) DNA evidence', *Department of Mathematics and Statistics, University of Otago*, 19-10-2006

LOADER, C.R., PILLA, R.S. 'Model Complexity and High Dimensional Mixtures', *Joint Statistical Meetings, Seattle*, 08-07-2006

YEE, T.W. 'A Framework for Regression', *Seminar, Victoria University*, 29-09-2006

YEE, T.W. 'A Framework for Regression', *Seminar, Waikato University*, 18-09-2006

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ANDERSON, J., JERAM, M., GENET, R., BREAM, F., TRIGGS, C.M. 'Alternatives to chemical sprout suppressants - cultivar dormancy and cool storage ability', *Confidential Report No. 1734, Crop & Food Research Ltd*, 2006, 1-12

ANDERSON, M.J., HEWITT, J.E., FORD, R.B., THRUSH, S.F. 'Regional models of benthic ecosystem health: predicting pollution gradients from biological data', *Technical Report by Auckland UniServices*, Auckland Regional Council, 2006, 1-96

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UMSTAETTER, R., MEYER, R., CHRISTENSEN, N. L. 'Setting upper limits from LIGO on the strength of periodic gravitational waves using Bayesian model comparison', *Technical Report*, 2006, 1-25

OTHER MATTERS RELATED TO RESEARCH ACTIVITIES

MSc by thesis completed

SMITH, Adam	Coastal Evaluation of the Marine Environment Classification
WOODWARD, Joanne	Statistical thinking as modelled by two Year 10 teachers when teaching informal inference using box plots

PhD completed

DONOVAN, Carl	Splines in constrained ordination analysis of ecological data
LANGLOIS, Tim	Influence of reef-associated predators on adjacent soft-sediment communities
PAWLEY, Matt	Systematic sampling in ecology
UMSTAETTER, Richard	Bayesian strategies for gravitational radiation data analysis

List of New and Unreported Research Grants

Grantee	Amount	Title	Sponsor
M.J. Anderson and R.B. Ford	\$321,100	Monitoring of Okura and other estuaries in the Auckland region	Auckland Regional Council (Contract Research)
M.J. Anderson	\$29,800	Fish biodiversity survey at Great Barrier Island	Department of Conservation (Contract Research)
M.J. Anderson and R.B. Ford	\$132,810	Monitoring of 2 branches of Whitford estuary	Auckland Regional Council (Contract Research)
Sharon Browning	\$20,000	Statistical Mapping of susceptibility genes for complex diseases using novel multilocus methods	UARC
James Curran	\$60,000	Forensic Statistics	The Forensic Science Service, UK (Contract Research)
Rachel Fewster, Steven Miller	\$2,000	Graduate Research Fund	UARC
Rachel Fewster, James Russell	\$1,200	Graduate Research Fund	UARC
Alan Lee	\$115,000	Dataset generation: creating synthetic datasets to mimic confidential data sources	Statistics New Zealand
Alan Lee, Alastair Scott, Chris Wild	\$596,000	Model fitting with complex sampling structures	Marsden Fund
Ilze Ziedins	\$10,000	Solander Fellowship	University of Auckland

Student Research

PhD Students

AFIMEIMOUNGA, Heti	Modelling and optimal control of queueing networks
DONOVAN, Carl	Non linear multivariate methods in ecology
GENTILES, Dudley	Cardiovascular risk factors in Maori people
JIA, Yilin	Quantitative models for ecological data
LANGLOIS, Tim	Effects of marine reserves and proximity of rocky reefs on soft sediment macro invertebrates
LAW, Derek	New methodologies for three dimensional representations of statistical data
LEADER, Debbie	Multivariate analysis of bioinformatic data
LEE, Arier	Random effect models for ordinal data
MADON, Bénédicte	Population size estimation by combining both genotype and photo identification data.
MILLER, Steven	Stochastic modelling of a rat invasions among islands in the New Zealand archipelago
PAWLEY, Matt	Geostatistical methods in ecological sampling
REILLY, James	Imputation and data fusion
ROEVER, Christian	Bayesian strategies for astrophysical data analysis
RUSSELL, James	Invasion ecology of rats on NZ islands
SAUNDERS, Justine	Modelling the multivariate response of kelp holdfast fauna to environmental change
SHAH, Forum	Design and Analysis of Complex Two-level Experiments
SONG, Qui (Sarah)	Development of data mining techniques for microarray data
STEWART, Wayne	Bayesian modeling of fisheries
SU, Ji Zi	Internet traffic: analysis, modeling and control.
SUNBORN-MACDONALD, Gerhard	Cardiovascular disease risk factors in Pacific people
TRAN, Thomas	The Hyperbolic Distribution and its applications
TSO, Jennifer	The Relationship between Stroke Occurrence and Solar, Planetary, and Interplanetary Parameters
UMSTAETTER, Richard	Bayesian strategies for astrophysical data analysis
WALKER, Lyndon	Modelling social change in New Zealand: social simulation applied to a census "test bed"
WILCOCK, Jennifer	Analysis and design of two-stage case-control studies
XUE, Ailin	Factors influencing change in weight over seven years

MSc Thesis

SMITH, Adam	Coastal Evaluation of the Marine Environment Classification
WOODWARD, Joanne	Statistical thinking as modelled by two Year 10 teachers when teaching informal inference using box plots

Postdoctoral Fellow

Dr Sam Ferreira	A stochastic modelling framework for metapopulation dynamics with conservation applications.
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Medium-term Visitors to the Department

Dr Hamzah Arof	University of Malaya Malaysia 1 January - 31 December 2006
Dr Gerald Cheang	Nanyang Technological Uni., Singapore, 6 - 29 June 2006
Dr Mark Holmes	Eurandom, The Netherlands 22 Dec 2006 - 19 Jan 2007
Dr Rene Holst	Danish Institute of Fisheries Research
Dr Karen Vines	Open University, UK, 1 January - 31 July 2006
Prof. Bruce Weir	University of Washington

Invited Conference Papers and Workshops

Marti Anderson	Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland Auckland Regional Council, 31 March 2006
Andrew Balemi	Invited Workshop to Statistics New Zealand on Lies, Damn Lies and Statistics, Wellington, November 2006
Sharon Browning	Invited speaker, Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland
Rachel Cunliffe	7 th International Conference on the Teaching of Statistics, Salvador Bahia, Brazil, 4-7 July 2006
James Curran	Invited speaker, Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland
Rachel Fewster	Invited speaker, Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland Invited participant (all expenses paid): Workshop on Uncertainty in Ecological Analysis, Columbus, Ohio, April 2006 Invited speaker, Introduction to Distance Sampling Workshop, Auckland, June 2006 Invited speaker, Inaugural meeting of the Guardians of the Bay of Islands community group, May 2006. Invited speaker to hapu of Ngati Kuta and Patukeha ki Te Rawhiti at a hui held at the Te Rawhiti Marae to debate the proposed restoration scheme for the islands in the Te Rawhiti Inlet, August 2006
Catherine Loader	Invited speaker at (North American) Joint Statistical Meetings, 7-10 August, Seattle Invited speaker at Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland
Russell Millar	Invited visitor (all expenses paid) to the Conservation Technology Unit, of New South Wales Fisheries, Coffs Harbour, joint with Southern Cross University and University of New England, Nov 2006 Invited participant (all expenses paid) 5-day Workshop on Bayesian stock assessment modelling at the Dept of Fisheries and Oceans, St John's, Newfoundland, Canada, May 2006 Invited participant (all expenses paid) 2-day Workshop on Bayesian modelling at NIWA, Auckland, May 2006
Paul Murrell	Keynote speaker at UseR! 2006, 15-17 June, Vienna, Austria Discussion panellist at UseR! 2006, 15-17 June, Vienna, Austria
Alastair Scott	2006 Waksberg Lecture, 23rd International Methodology Symposium, 1-3 November, 2006, Gatineau, Quebec, Canada Invited speaker at (North American) Joint Statistical Meetings, 7-10 August, Seattle Invited speaker at Statistical Methods in Epidemiology: Conference in Honor of Norman Breslow, 4 August, Seattle, USA Invited speaker at 9th International Vilnius Conference on Probability Theory and Mathematical Statistics, June 25-30, Vilnius, Lithuania Invited speaker at Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland
Chris Wild	Plenary Speaker, 7 th Int. Conf. on the Teaching of Statistics, 4-7 July 2006, , Salvador Bahia, Brazil

Seminars

- 2/02/2006 Jochen Mundinger (Cambridge University)
Reputation system modelling
- 16/02/2006 Dr Colin Fox (Dept of Mathematics)
A Conjugate Direction Sampler for Gaussian Random Fields -or- My Mega-huge Gaussian sampler
- 2/03/2006 Dr David Johnson (Loughborough University, UK)
Teaching Statistics with Microsoft Excel
- 16/03/2006 Dr Michael Lauren (Defence Technology Agency, NZ)
Agents of Chaos
- 23/03/2006 Karen Baker (University of Melbourne)
The Mathematics and Statistics Learning Centre at the University of Melbourne: Its evolution, work and life
- 30/03/2006 Richard Penny (Statistics New Zealand)
Statistics New Zealand and the Official Statistics System - Data Collection and Access
- 11/05/2006 Dr Geoffrey Pritchard (Dept of Statistics)
Optimal offering in electricity markets
- 18/05/2006 Dr Bhramar Mukherjee (University of Florida)
Bayesian Analysis of Case-Control Data: An Application to Studies of Gene-Environment Interaction
- 25/05/2006 Dr Karen Vines (The Open University, UK)
Simple principal components and beyond
- 8/06/2006 Dr Sam Ferreira (Dept of Statistics)
To cull or not to cull African elephants: Is that the question?
- 15/06/2006 Dr Gerald H. L. Cheang (Nanyang Technological University, Singapore)
American and European Style Exchange Options under Jump-Diffusion
- 21/06/2006 Adam Smith (Dept of Statistics/DoC)
Relating the Marine Environment Classification to Patterns in Coastal Reef Fish Communities
- 27/07/2006 Dr Lyn Hunt (University of Waikato)
Multiple Choice versus Free Response Questions for Assessment in Introductory Statistics Papers
- 10/08/2006 Dr David Bryant (Dept of Mathematics)
Algebraic Statistics and Computational Phylogenetics
- 24/08/2006 Dr Yong Wang (Dept of Statistics)
Extending the Fisher scoring and Gauss-Newton methods for complex statistical optimisation problems
- 4/09/2006 Professor Jon Wellner (University of Washington)
Estimation and Testing with Interval-Censored Data
- 21/09/2006 Mat Pawley (Dept of Statistics)
Using variography to estimate a spatial systematic sample standard error
- 22/09/2006 Dr Lara Jamison (MRC Biostatistics Unit, Cambridge University)
Analysing clinical trial data with missing observations at baseline and at outcome
- 19/10/2006 Professor Denis Mollison (Heriot-Watt University, Edinburgh)
Small worlds and giant epidemics
- 5/10/2006 Dr James Curran (Dept of Statistics)
The effect of uncertainty in the number of contributors to DNA stains
- 2/11/2006 Dr Arden Miller (Dept of Statistics)
Using Supersaturated Designs for Screening Applications

16/11/2006 Tim Langlois (Leigh Marine Laboratory)
Estimating the effect of fishing on snapper populations: an example from Great Barrier Island

23/11/2006 Hadley Wickham (Iowa State University)
ggplot: An implementation of the grammar of graphics

14/12/2006 Richard W. Katz (Inst for Study of Society & Environment and National Center for Atmospheric Research, USA)
Hidden and Not-So-Hidden Markov Models: Implications for Environmental Data Analysis

12/12/2006 Prof. Di Cook (Iowa State University)
An EDA of my CDs

VI. STAFF LEAVE AND CONFERENCES

Marti Anderson	Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland
Sharon Browning	Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland 2nd NZ Molecular Mapping Workshop, Palmerston North, 9-10 October 2006 Genetic Analysis Workshop 15, St Petersburg Beach, FL, USA, Nov. 12-15, 2006 International Genetic Epidemiology Society 15th Annual Meeting, St Petersburg Beach, FL, USA, November 15-17, 2006
Joss Cumming	7 th International Conference on the Teaching of Statistics, 4-7 July 2006, Salvador Bahia, Brazil
Rachel Cunliffe	7 th International Conference on the Teaching of Statistics, Salvador Bahia, Brazil, 4-7 July 2006
James Curran	Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland; UK Forensic Sciences Service, 17 November – 5 December
Rachel Fewster	Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland Australasian Wildlife Management Society Conference, Auckland, 4-7 December 2006
Michael Forster	7 th International Conference on the Teaching of Statistics, 4-7 July 2006, Salvador Bahia, Brazil
Ross Ihaka	Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland
Alan Lee	Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland
Catherine Loader	(North American) Joint Statistical Meetings, 7-10 August, Seattle, USA Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland
Brian McArdle	Sabbatical leave Semester 1, 2006
Patricia Metcalf	Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland 2nd International Health and Wellbeing Conference, 11-14 November 2006, Auckland “Obesity, Food and Policy: New Solutions?” 16 November, 2006, Auckland

Renate Meyer	Parental Leave
Russell Millar	Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland
Arden Miller	Parental Leave, 15 May- 14 July
Christine Miller	7 th International Conference on the Teaching of Statistics, 4-7 July 2006, Salvador Bahia, Brazil
Paul Murrell	(North American) Joint Statistical Meetings, 7-10 August, Seattle, USA UseR! 2006, 15-17 June, Vienna, Austria Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland
Maxine Pfannkuch	7 th Int. Conf. on the Teaching of Statistics, Salvador Bahia, Brazil, 4-7 July 2006
Matt Regan	7 th International Conference on the Teaching of Statistics, Salvador Bahia, Brazil, 4-7 July 2006
Alastair Scott	9th International Vilnius Conference on Probability Theory and Mathematical Statistics, June 25-30, Vilnius, Lithuania Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland Statistical Methods in Epidemiology: Conference in Honor of Norman Breslow, 4 August 2006, Seattle, USA (North American) Joint Statistical Meetings, 7-10 August 2006, Seattle, USA 23rd International Methodology Symposium, 1-3 November, 2006, Gatineau, Quebec, Canada
David Scott	Sabbatical leave Semester 2, 2006 Mathematics in Industry Study Group, 31 January – 3 February 2006, Auckland; Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland
Chris Triggs	International Biometric Conference, 16 -21 July 2006, Montreal, Canada Australasian GenStat/StatGen Conference, 3-6 December 2006, Port Victor, Australia
Chris Wild	7 th Int. Conf. on the Teaching of Statistics, Salvador Bahia, Brazil, 4-7 July 2006 International Biometric Conference, 16-21 July 2006, Montreal, Canada
Yong Yang	Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland
Thomas Yee	Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland
Ilze Ziedins	Joint Australian Statistical Conference/ New Zealand Statistical Association Conference, 3-7 July 2006, Auckland

VII. COMMUNITY SERVICES

Most service by the Department is in formal roles listed under subheadings below. The following is not covered in that way.

For a long time we have put considerable effort into promoting teaching and learning in secondary schools. This year we concentrated on curriculum development, assessment review, and teacher workshops. In terms of its potential for beneficial long term impact on New Zealand, the work on development of the Years 1-13 statistics strand of the new mathematics curriculum is probably the most important service work done by the Department. The emphasis is on retargeting the statistics strand to concentrate on the skills (mainly thinking skills) that will be most useful in a pervasively technological environment and so that it takes advantage of the pedagogical

advances that recent research and new technology permit. This work is being led by Maxine Pfannkuch. Her official role has been as a member of the Ministry of Education's Mathematics Curriculum Reference Group as the representative of the New Zealand Statistical Association Education Committee but she has been functioning as the lead writer for the statistics strand. She has facilitated, with Departmental help and support, a large number of video conferences linking an Auckland group, the Education Committee of the New Zealand Statistical Association and other key thinkers including leading teachers, during which consensus curriculum development has been taking place. During 2006 Matt Regan, Chris Wild, Ilze Ziedins and Rachel Fewster had substantial involvement. Our work on assessment review, mainly of NCEA standards, was led by Matt Regan.

The statistics Teachers' Workshop Day, that we hold every November at the Tamaki Campus, was hugely successful this year. It drew 180 secondary mathematics teachers, mainly from Auckland but also as far afield as Northland, Waikato, the Bay of Plenty and Hawkes Bay. The event was organised by Ross Parsonage with help from the Auckland Mathematics Association's secretary and important contributions by Sharon Walker, Maxine Pfannkuch, Matt Regan, Rachel Fewster, and Rachel Cunliffe. As a new departure, Matt Regan took a workshop combining materials from our 2004/5 Teachers' Day workshops on tour in February (Palmerston North, Wellington, and Dunedin) delivering all of the presentations himself. It was well received and is an exercise well worth repeating.

In 2005 members of the Department continued to offer statistical consulting services to members of the University and the wider community. This year also saw this Department starting to become seriously involved in short courses as part of an expanded conception of "teaching", a means of relationship building, and because of its potential for future revenue streams. Short courses were given to the Social Sciences Network, NZ Customs, Statistics NZ and NIWA and most of these look as if they will be ongoing. Many scoping and planning discussions were held with Statistics NZ about the statistical upskilling of the public service with a view to improving evidence-based policy formation and decision making. Stephanie Budgett has also been giving monthly "tutorials" at North Shore Hospital. Marti Anderson and Rachel Fewster's research work on the coastal environment has also led to involvement in huis and with community groups.

There has been some interesting involvement with the media this year. Russell Millar appeared on TV1 at the time of an unusually large Lotto draw ("Big Wednesday"). On 12 November Russell gave an excellent interview to Eva Radich about more serious aspects of probability theory on National Radio's Sunday Morning in a programme prompted by Jeffrey Rosenthal's recent book, *Struck by Lightning - the Curious World of Probabilities*. Andrew Balemi appeared on TV3 News in May in another "rare event" story.

Editorial, Professional Society Officers, and Conference Organisation

Marti Anderson

Editorial Board, *Ecology Letters*.

Editorial Board, *Australian & New Zealand Journal of Statistics*

Organising Committee for Joint Australian Statistical Conference/ New Zealand Statistical Association

Conference, 3-7 July 2006, Auckland

Chair of 3 invited sessions at Joint Australian Statistical Conference/ New Zealand Statistical Association Conference

James Curran

Associate Editor, *Science and Justice*

Associate Editor, *Australian & New Zealand Journal of Statistics*

Rachel Fewster

Associate Editor for *Biometrics*

Associate Editor for *Journal of Agricultural, Biological, and Environmental Statistics*

Ross Ihaka

Associate Editor, *Journal of Statistical Software*

Co-president, The R Foundation for Statistical Computing

Organising Committee for 5th Directions in Statistical Computing Conference, Auckland 2007

Alan Lee

Associate Editor, *Australian & New Zealand Journal of Statistics*

Brian McArdle

Editorial Board for the *New Zealand Journal of Marine and Freshwater Research*.

Patricia Metcalf

UoA 2006 HRC Round Panel Review member, September 2006 Statistical advisor
for Biomedical portfolio
Counties-Manukau District Health Board Pacific Diabetes Modelling Project Committee

Renate Meyer

Marsden Fund Mathematical and Information Sciences Panel
Programme Committee of the International Society for Bayesian Analysis Conference, Hamilton Island Australia
2008

Russell Millar

Associate Editor for *Biometrics*
Editorial Board, *Canadian Journal of Fisheries and Aquatics Sciences*

Arden Miller

Associate Editor, *Australian & New Zealand Journal of Statistics*.

Paul Murrell

Editor-in-Chief of *R News*, journal of the R Project for Statistical Computing
Associate Editor, *Computational Statistics*
Associate Editor, *Journal of Statistical Software*
Chair, Statistical Graphics Section of American Statistical Association
Organised Data Expo competition for (North American) Joint Statistical Meetings 2006, Seattle, August.
Organisor Statistical computing session for ASC/NZSA 2006
Chair of Organising Committee for 5th Directions in Statistical Computing Conference, Auckland 2007

Maxine Pfannkuch

Associate Editor, *Statistics Education Research Journal*
Guest Editor for special issue of the *Statistics Education Research Journal*
International Research Forum on Statistical Reasoning, Thinking, and Literacy Advisory Committee
International Program Committee for the 2008 International Commission on Mathematics Instruction study
IASE National Correspondent for New Zealand
International Programme Committee for 7th International Conference on the Teaching of Statistics, Brazil 2006
Topic Convenor for 7th International Conference on the Teaching of Statistics, Brazil 2006
New Zealand Statistical Association Education Committee

David Scott

Chair of the Organising Committee for Australian Statistical Conference and New Zealand Statistical
Association 2006
Organising Committee for 5th Directions in Statistical Computing Conference, Auckland 2007

Chris Triggs

Associate Editor, *Biometrics*

Chris Wild

Past-President of the International Association for Statistics Education (IASE)
Council Member, International Statistical Institute
Associate Editor, *International Statistical Review*
Chair of the Search Committee for Director of the International Statistical Literacy Project, 2006
Advisory Committee, International Statistical Literacy Project
Review Committee for Statistics, University of Newcastle, February 2006
ISI56 IASS (International Association for Survey Sampling) Programme Committee for Lisbon 2007
ISI 56 Programme Co-ordinating Committee for Lisbon 2007
IASE Programme Committee for ISI 57 in Durban 2009
Site Editor, International Association for Statistics Education

Thomas Yee

Associate-Editor, *Computational Statistics*
Session Organiser, Asian Regional Section of the International Association for Statistical Computing (IASC), a
Section of the International Statistical Institute (ISI), at its 5th Conference in Hong Kong, 16-17 December,
2005.
Scientific Programme Committee for International Association for Statistical Computing for ISI 56 Portugal
2007

Organising Committee for 5th Directions in Statistical Computing Conference, Auckland 2007

Ilze Ziedins

Associate Editor, *Stochastic Models*

Associate Editor, *Australian & New Zealand Journal of Statistics*

Organiser and Chair, invited session Stochastic Processes, Joint Australian Statistical Conference/NZ Statistical Association Conference, Auckland, July 2006

Organiser, Stochastic Processes satellite workshop, ASC/NZSA Conference

In addition, the following staff reported serving as referees for the indicated publications (incomplete list):

Marti Anderson	Aquatic Living Resources, Marine Ecology Progress Series, Journal of Animal Ecology, Basic and Applied Ecology, Diversity and Distributions, Ecography, Marine Environmental Research, Computational Statistics and Data Analysis + Granting Agency: Natural Environment Research Council (NERC) Research Grant
Sharon Browing	Journal of the American Statistical Association, Genetics, Bioinformatics, American Journal of Human Genetics, Journal of Heredity
James Curran	Forensic Science International
Rachel Fewster	Communications in Statistics: Simulation and Computation; Journal of Field Ornithology; Journal of Applied Ecology; Wildlife Research
Catherine Loader	Signal Processing, Book proposals for: Chapman & Hall; Springer
Patricia Metcalf	Diabetes Care, International Journal of Obesity, Health Research Council of New Zealand
Renate Meyer:	Biometrics, Computational Statistics and Data Analysis, Physical Review E, Royal Society - Proceedings B
Russell Millar:	Ecology, Ecology Letters, Fisheries Research, J. Agricultural and Biological Statistics, and Journal of Ecology
Arden Miller:	Natural Sciences and Engineering Research Council of Canada
Maxine Pfannkuch.	Educational Studies in Mathematics Education Journal; Statistics Education Research Journal; Canadian Journal of Science, Mathematics, and Technology Education ; Mathematics Education Research Group Australasia; 7th International Conference on Teaching Statistics Proceedings
Geoff Pritchard:	The Energy Journal, Social Choice and Welfare, Stochastic Models
Alastair Scott:	Biometrika, Biometrics, Journal of the Royal Statistical Society, Series B, Journal of Statistical Planning and Inference, Survey Methodology, Statistics in Medicine, American Journal of Epidemiology, Natural Sciences and Engineering Research Council of Canada
David Scott:	Metrika
Chris Triggs:	Journal of the Royal Statistical Society, Series B, Biological Sciences
Yong Wang	Australian & New Zealand Journal of Statistics, Computational Statistics and Data Analysis
Thomas Yee:	Journal of the Royal Statistical Society C, Sinica, Journal of Statistical Planning and Inference, Scandinavian Journal of Statistics, and Journal of Ecology
Ilze Ziedins:	Journal of Applied Probability

VIII. OTHER MATTERS

Staffing changes

Mik Black departed for Otago in May. He continues to work on several Auckland grants with Allen Rodrigo and others.

Catherine Loader arrived on the 22nd of June to take up an Associate Professorship from Case Western Reserve University and before that Bell Labs. A kiwi with a Stanford PhD, her specialties are nonparametric regression, function estimation, longitudinal data analysis, statistical computing and extreme value theory. Her recent scientific collaborations have been with particle physicists and biologists, and in network monitoring and software reliability. Viliami Latu from our Tuakana group left at the end of the year to become Head of Mathematics at De La Salle College.

In 2006, promotions were obtained by Marti Anderson, Stephanie Budgett, Joss Cumming, Mike Forster, Ross Ihaka, David Smith, Ilze Ziedins. Brian McArdle and David Scott undertook successful Research and Study Leaves and Brian McArdle is midway through a full-year sabbatical.

Administration

Many people contributed to the smooth running of the Department in 2006. Special thanks are due to all our administrative and computer staff. The following staff provided valuable service to the Department in specific areas:

- HoD Chris Wild
- Department Manager Sharon Walker
- Tamaki Head Russell Millar
- Director of Consulting Service Alan Lee

Committee Chairs

- Academic Ilze Ziedins
- Consulting Alan Lee
- Graduate David Scott/Brian McArdle
- IT Ross Ihaka
- Library Ilze Ziedins
- Research Marti Anderson
- Staff-Student Joss Cumming
- Student life Rachel Fewster
- Teaching Development Ross Parsonage

Year-level coordination

- Young Scholars Matt Regan (Year 13 enrolees)
- Stage 1 Matt Regan
- Stage 2 Mike Forster
- Stage 3 Chris Triggs

Postgraduate

- Graduate Officers
 - Masters & Hons David Scott/Brian McArdle
 - PGDipSci Mike Forster
 - PhD Thomas Yee
- Graduate Advocate Rachel Fewster
- Scholarships Thomas Yee

Operations Research Programme Ilze Ziedins

Research Group Leaders

- Bayesian Statistics Renate Meyer
- Statistical Ecology and Bioinformatics Marti Anderson
- Industrial Statistics Arden Miller
- Medical Statistics Patricia Metcalf

- Operations Research & Stochastic Processes Ilze Ziedins
- Statistical Computing Ross Ihaka
- Statistics Education Matt Regan

Other

- Maori and Pasifika Wiremu Solomon, Susan Wingfield
- Timetables (undergrad & grad) Christine Miller
- Library Geoffrey Pritchard (City) and Thomas Yee (Tamaki)
- Seminars James Curran
- Open Day Coordinator Sharon Walker
- Undergraduate Enrolment Christine Miller
- Undergraduate Advice David Smith and Christine Miller
- 10x and 20x Administrator David Smith
- Tutor Coordinator David Smith
- Demonstrators and Markers David Smith
- Computer Lab Liaison David Smith
- Student Learning Centre Liaison David Smith
- Processing Equivalence Forms David Smith
- CECIL Liaison Christine Miller/Matt Regan
- Coordinator BTech (IM) Arden Miller
- International Students Yong Wang

Departmental Representative or Service on Faculty Committees

- Fac. Science Academic Ilze Ziedins
- Fac. Science IT Managers Werner Schmidt
- Fac. Science IT Academic Paul Murrell
- Fac. Science EO Wiremu Solomon
- Fac. Science Maori Responsiveness Ross Ihaka
- Fac. Science Maori and Pacifika in Sci Susan Wingfield
- Fac. Science Library Geoffrey Pritchard
- Fac. Science Postgraduate David Scott/Brian McArdle
- Fac. Science Staffing Marti Anderson, Alan Lee
- Faculty of Bus. And Econ. Chris Wild
- Faculty of Arts Geoffrey Pritchard
- Faculty of Arts BUGS Maxine Pfannkuch
- Faculty of Engineering Arden Millar
- Fac. Sci. Postgrad. Stud-Staff Consult Com Rachel Fewster

Marsden Fund Mirror Panels: Rachel Fewster, Marti Anderson, Russell Millar
Women in Science and Engineering Marti Anderson
Liaison with Auckland Mathematical Association Matt Regan

Additionally:

Rachel Cunliffe served on the UoA Teaching and Learning Technologies Committee as the Science Faculty Representative. Alastair Scott served as a member of the Parliamentary Advisory Committee on Official Statistics, a member of the FRST Post-doctoral Reference Group and on the Executive of the Centre for Health Services Research and Policy. Chris Triggs served as Associate Dean of Science (Planning and Research) and on the Board of Studies for Forensic Science. Chris Wild chaired the Research Administration Functions Review Committee, and served on the Administration Review Committee, the Board of Studies for General Education, the Academic Heads Advisory Group where he was HeadsUp Programme Leader and led or contributed to a number of workshops for Heads and Future Heads, and reviewed statistics at the University of Newcastle. Ilze Ziedins served as Senate representative for Aegrotats and Compassionate Passes, and as Facilitator for the Faculty of Science aegrotat working group. Maxine Pfannkuch chaired the judging panel for the Faculty of Science Distinguished Teaching Awards and consulted and commented on Epsom Campus Mathematics Education courses for primary and intermediate teachers for the Ministry of Education Initiative.

Uniservices

Year	Revenue	Increase	Billings	Increase
2001	\$41,642		\$52,549	
2002	\$103,841	149%	\$162,525	209%
2003	\$247,747	139%	\$299,805	84%
2004	\$546,941	120%	\$593,182	98%
2005	\$600,514	10%	\$723,453	22%
2006	\$647,631	8%	\$830,311	15%

IX. OVERALL COMMENTS ON PROGRESS WITHIN THE DEPARTMENT

Student numbers, which hit an all-time high in 2004 and 2005, dropped by 2% which was considerably less than the budget forecast of the impact of restructuring which was 5%. We continue to be pleased with the way the Faculty has moved in its budgets to address indicators of pain such as high student-to-staff ratios and a very high contribution rate. Patricia Metcalf, who had been a 50% Senior Lecturer gained a full position. We failed to fill one position in mid-2006 but that was re-advertised in November together with a new position for 2007 and we are looking forward to the opportunity to advance some of our strategic priorities in areas such as survey sampling and social statistics, molecular technologies, statistical computing and data mining, business, ecology, and medical statistics.

Research productivity was very good. Uniservices revenues were up by 15%, pleasing progress after a pattern of extremely strong growth in that area with Marti Anderson again being the greatest contributor by a wide margin. There are still more innovative approaches being developed in teaching (particularly around the use of new technology) and programmes. The financial health of the Department continues to depend on the continuation of our role as the providers of Statistics service teaching across the University. We take this role very seriously, and continuously strive to improve the quality of our courses as evidenced by our 2003 National Teaching Award. The great strength of this Department in teaching has been further recognised by Dean of Science Distinguished Teaching Awards to statistics staff members every year from 2004 to 2006. Our biggest problem is still lack of space on the City campus and the mismatch between where our work is and where many staff are accommodated leading to much downtime in travelling.

This Report is the final act of my term as HoD of a great Department which has been a real privilege to serve. I am very grateful to all staff in Statistics and the team at the Faculty of Science for the excellent support they have always provided. This is also the last Departmental Report of this form because new planning and reporting procedures begin in 2007.

Chris Wild

HoD, Department of Statistics

January 2007