

Matter of Fact

Newsletter from Science & Engineering and Computing & Mathematical Sciences



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

Spring 2010

Weta project gets makeover

When the Tongariro Natural History Society wanted to find out more about the weta living around Lake Rotopounamu, they called on University of Waikato biology student Kristi Bennett to make sense of their data.

"Over the past five years, we've been using volunteers to check our dozen or so 'weta motels' around the lake every month so we've got all this information but don't really know what to do with it," says TNHS director Sarah Gibb.

"Then Kristi came along and we asked her to put some science behind the information."

Bennett spent three months with TNHS over the summer as part of her Bachelor of Science (Technology) degree, majoring in biology.

Most of her time was spent working with overseas volunteers baiting for rats, stoats and weasels around Lake Rotopounamu, and removing willow from wetland. It's hard physical work, so when she was asked to advise on the weta project she jumped at the chance.

"Weta are New Zealand's equivalent of mice, and have an important role as nocturnal scavengers," says the former Fairfield College student. "But they're vulnerable to predators such as rats and the destruction of their habitat, so it was awesome to look scientifically at this project and see the results. I aim to go into this kind of work, so it was a fantastic opportunity."

Bennett found that the original project had just too many variables. The Lake Rotopounamu 'weta motels' were made of different materials



Kristi Bennett made sense of weta movements during her three-month work placement with the Tongariro Natural History Society.

and had been set up randomly on different kinds of trees, which could have skewed the observations, and there was no systematic process for collecting observations.

In her report, she recommended that TNHS increase the number of 'weta motels' and standardise the weta observation process so that all volunteers collect the same kind of information. She also suggested designating an area for rodent control in order to attract more weta, while setting up another control area to test the results.

"Thanks to Kristi's recommendations, all future data we collect on weta populations will have more credibility," says TNHS director Sarah Gibb.

Important enrolment changes for 2011

Times are changing and so too are the enrolment dates for school leavers applying to study at Waikato University.

To *guarantee an offer of place* for 2011, school leavers must apply to enrol by 1 December, 2010 and meet all the conditions of admission and entry, and achieve the NCEA Level 3 Certificate.

School leavers will be able to *secure admission* to the University of Waikato and a *guaranteed place* in Semester A 2011 if they meet the following conditions; apply online or submit an Application to Enrol form by 1 December; meet the requirements for the University Entrance standard (or equivalent); meet any additional requirements for the qualification they have selected; achieve the NCEA Level 3 Certificate (or equivalent); and accept a place by completing their enrolment (full payment of fees through student loan or other payment method), or by paying a non-refundable acceptance deposit of \$100, no later than two weeks after the firm offer of place is issued or by 28 January 2011 (whichever is later).

Note that school leavers who do not apply by 1 December can still apply up until 28 January. Applications will be prioritised and considered accordingly.

For full details on enrolment dates, visit waikato.ac.nz/study/enrol

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Work placement pays off

For Christina Strawbridge a masters research collaboration with Dow AgroSciences is the icing on the cake, following a successful work placement during her undergraduate degree at Waikato University.



Bachelor of Science (Technology) student Christina Strawbridge. Photo: Natalie Guest

Strawbridge completed a work placement at Dow AgroSciences in 2009 as part of her Bachelor of Science and Technology degree. She began with routine analyses but quickly moved on to help research and develop items in the new herbicides laboratory. Dow AgroSciences is a global leader in agricultural herbicides, insecticides, fumigants and fungicides.

Strawbridge's placement led to the research collaboration for her masters. "Completing my placement with Dow was such an enjoyable experience. The skills I learnt were invaluable and were skills that just can't be taught or perfected in a classroom environment."

She says she can't talk about the details, "But I can say I'm excited to be completing my research with a global company and I'm hoping to create and research something novel for the environment."

Strawbridge says the placement gave her the opportunity to develop a great rapport with

the team and the wider company. She worked closely with supervisor Derek Hopkins in the research collaboration. "It's all about getting your foot in the door and showing them what you can do," she says.

Tristan Speak, a Senior Chemist at Dow AgroSciences Actives to Products R&D division, says the work placement programme is highly beneficial to the company and Waikato University students. Mr Speak, who also supervised Strawbridge, says the programme benefits Dow through increased productivity, fresh ideas, helps employees develop leadership skills and often leads to job opportunities for the students.

"It gives us a full understanding of and access to the university's excellent research capabilities while the student benefits from the work experience gained in a research laboratory as well as the general exposure to a multinational company."

Waikato student wins medal at informatics Olympiad

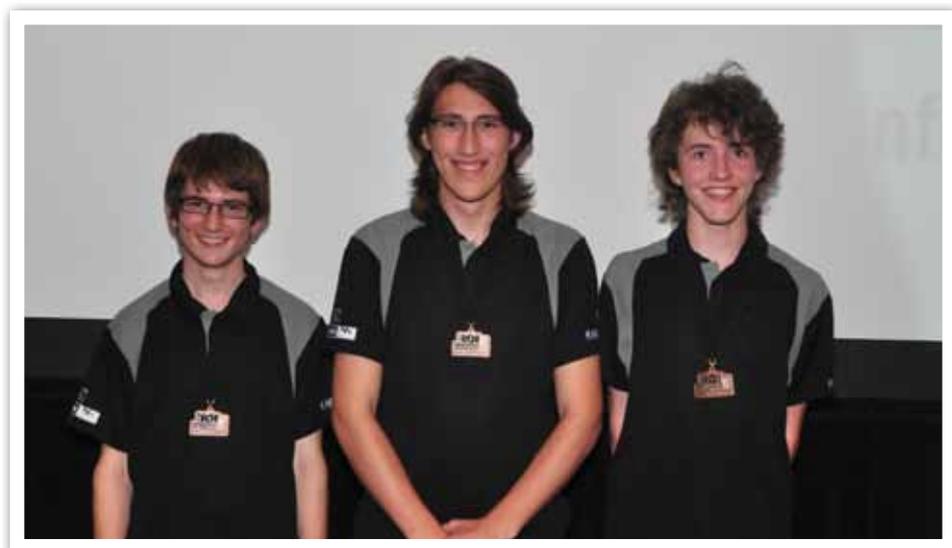
First-year computer science student Boris Pfahringer has come away from the 2010 International Olympiad in Informatics with a bronze medal for the second year in a row.

Pfahringer was part of a four-strong New Zealand team at the world's premier high school programming competition, held in August at the University of Waterloo in southern Ontario, Canada.

Team members Jamie McCloskey and Logan Glasson also won bronze medals, giving the New Zealand team their best-ever result at the annual competition. Pfahringer and McCloskey also won bronze medals last year.

The 2010 IOI featured more than 300 top computer science students who were selected through national computing contests. Some 250,000 students from more than 80 countries compete each year to represent their country at the competition.

Competitors have to demonstrate their skills in



Medal winners from left to right Logan Glasson, Boris Pfahringer and Jamie McCloskey.

problem analysis, design of algorithms and data structures, programming and testing.

On the first day of the competition, Pfahringer was the second person to solve one of the four

problems. "It was an awesome feeling to find out I was second in the world to solve one of the problems," he said.

Graduate Profile: Earth Scientist

Discovering untapped oil and gas for global company Chevron is all in a day's work for Earth Scientist and Regional Exploration Geologist Brad Hopcroft.

Hopcroft explains that along with trying to find more undiscovered oil and gas accumulations under the ground by interpreting seismic reflection data, his main day to day tasks also include maturing existing oil and gas prospects to be drilled.

"The best thing about my job is the opportunity to develop my career and move to other Chevron business units around the world for work placements," says Hopcroft.

"This week I'm presenting in Houston, Texas, at Chevron's global headquarters. I'll be speaking to the Global Exploration Leadership Team regarding the remaining oil and gas exploration potential in Western Australia."

The chance to work and train on world-class projects is also a highlight, he says.

"Chevron is a multinational oil company involved in oil and gas exploration, production, refining and marketing. It currently operates in over 180 countries. Chevron has been exploring for oil and gas in Australia for over 60 years. It currently has the largest total gas reserves in Australia of any company and is developing the biggest ever resource project in Australia; the Gorgon Project."

Hopcroft was offered his position with Chevron during his last year of study towards a Masters of Science majoring in Earth and Ocean Sciences, in 2008. The position is a five year training stint with the company. Hopcroft was one of only two New Zealanders to be offered a place on the graduate team during that year's intake.

"The broad range of subjects covered in my degree set me up well for my job."



Brad Hopcroft, Master of Science graduate, now works as an Earth Scientist for Chevron in Perth, Australia.

"Earth and Ocean Sciences degrees from Waikato University are definitely recognised in Perth by my employer, other petroleum companies in Perth and the mining companies in Western Australia. Most of my university class has moved to Western Australia and have had no trouble getting jobs."

Engineering Open Day popular with students



Andrew Thorrold of Melville High School, left, and Severin Mahoney-Marsh of Te Kuiti High School create beads in the Biochemical Engineering lab.
Photo: Natalie Guest

Almost 100 budding engineers spent a day at Waikato University recently, taking part in hands-on engineering activities.

Students travelled from as far afield as Whangarei and Turangi for the day that proved so popular that spaces filled up long before the registration closing date.

Throughout the Engineering Open Day on July 16, students and their parents rotated through the five key areas of engineering - biochemical, electronic, materials and process, mechanical, and software.

Among other activities, the students learnt to make beads from a biochemical reaction, used a computer to operate a small, robotic car and watched a demonstration from the Waikato Engineering Motorsport team. Software Engineering involved small groups of students devising a paper prototype of a piece of technology which allowed them to use social networking in class, without the teacher's knowledge.

Students and their parents were also talked through Waikato University's degree structure and the focus on work placements during study at Waikato.

Congratulations

National awards for engineering students

Waikato University Mechanical Engineering students Bayleigh Petchell and David Lynch were recently presented with awards recognising excellence in practical engineering report writing. The awards were presented by the Association for Consulting Engineers NZ at the Innovate NZ Awards of Excellence dinner in New Plymouth on 31 July. Three awards were given for the Tonkin & Taylor/ACENZ Best Practical Report 2010, of which Waikato University students won two. Petchell and Lynch each received \$1,500 for their outstanding efforts. More than 120 entries were received for the award.

Funding won for innovative idea

University of Waikato PhD student Shane Carter has been awarded a prestigious Te Tipu Pūtaiao Fellowship to fund his research aimed at developing sustainable technology to anaerobically digest waterweed and utilise the energy created during the process. His idea for iwi to turn waterweed into energy has won funding from the Foundation for Science, Research and Technology worth \$107,500 over three years.

Biology lecturer wins national teaching excellence award

Waikato University Biology lecturer Dr Alison Campbell has been recognised for her exceptional teaching practices with a national Tertiary Teaching Excellence Award, including \$20,000 to be used to develop her teaching. Funded by the Tertiary Education Commission, the awards acknowledge teaching practices that are student-focused and committed to promoting effective learning. Dr Campbell's teaching initiatives include her science blog, 'bioblog', her websites 'Science on the Farm' and 'Evolution for Teaching' and her seminars at the 'Waikato Experience Biology Days'.

Prestigious award for engineering professor

Waikato University Engineering lecturer Professor Janis Swan has been awarded the JC Andrews Memorial Award, the most prestigious award bestowed by the New Zealand Institute of Food Science and Technology Inc. The award, presented in late June at the organisation's annual conference, is made in recognition of the recipient's substantial contribution to science and technology in the food industry.

What's on

5-10 DECEMBER

Hill Laboratories Waikato Science Summer School

The Hill Laboratories Waikato Science Summer School is open to Year 12 students who have an interest in science, and who will be going on to study Year 13. Those who are selected enjoy a fun-packed week of activities, including an overnight field trip to collect samples, laboratory sessions at the University of Waikato, a visit to Hill Laboratories and accommodation and meals at a University of Waikato Hall of Residence. Applications have closed for this year's event.

14 APRIL

Kīngitanga Day

Kīngitanga Day is a celebration of the relationship between the University of Waikato and the Kīngitanga. Kīngitanga Day is an opportunity for our students, staff and the wider community to gather on campus and celebrate our distinctive heritage, histories and relationships.

13 MAY

University Open Day

The University of Waikato Open Day is an invitation to the public to come on campus and experience a taste of university life. The free open day offers visitors a chance to attend mini lectures on a wide range of topics, get involved with interactive displays and view a range of fun activities and entertainment. The Faculty of Science & Engineering will have an exciting range of lab displays, tours and mini lectures.

7-8 JUNE

Waikato Experience Biology Days

Come along to the Department of Biological Sciences' WEB Days for Year 13 Biology students and teachers. Seminars and lab work cover topics including DNA technology, human evolution, biotechnology, and animal behaviour/plant responses to the environment. Contact biology@waikato.ac.nz

9-10 JUNE

Osborne Physics and Engineering Days

Upper high school students and teachers are invited to lectures and demonstrations relevant to the Physics curriculum and current research. Contact engineering@waikato.ac.nz

For a full list of events, visit events.waikato.ac.nz

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Top ecologist named Dean of Science & Engineering

Professor Bruce Clarkson has been named the new Dean of Science & Engineering.

Prof Clarkson is recognised as one of New Zealand's foremost authorities on ecological restoration, and leads a \$300,000 per year government-funded research programme.

As dean, Prof Clarkson aims to increase the university's opportunities to make an even more significant contribution to New Zealand's economy and



Dean of Science & Engineering
Prof Bruce Clarkson.

environment and also to better connect with leading international research programmes.