



In this newsletter we introduce you to some of our recent projects.

ACOUSTIC TAGGING OF KOI CARP

Telemetry conference: Adam Daniel recently returned from the 7th conference on fish telemetry held in Silkeborg, Denmark. Adam, supervised by Brendan Hicks, presented a poster describing the results of a koi carp tag retention tank trial. At 20-24°C, about 50% of the dummy tags were expelled within 3 months. To reduce expulsion, carp were implanted with the active acoustic tags in May at lower water temperatures (about 15°C).

Tag implantation: A team of researchers was out on the Waikato River in May catching koi carp and surgically implanting acoustic tags. The work is part of Adam Daniel's Ph.D. investigation into the basin-wide movements of koi carp with the aim of finding out whether a coordinated spawning migration takes place. The acoustic tags in each fish will send a unique identification code to a network of 20 automatic underwater receiving stations between the tidal reaches and Karapiro Dam.



Figure 1. Adam and Brendan electrofishing in the Waikato River.

OTHER PROJECTS

Remote sensing: Salman Ashraf, in collaboration with the Department of Geography, UOW, has completed a review of the satellite imagery available for remote sensing of water quality and aquatic habitats (Ashraf et al. 2007). This study was funded by Environment Waikato, and links research into pest fish and harmful algal blooms.

Feral goldfish: the new pest fish: Environment Waikato's Draft Regional Pest Management Strategy 2007-2012 will now recognise feral goldfish as a pest species on the basis of a submission by Brendan Hicks. At most Waikato locations, goldfish outnumber koi carp. They breed freely, and can hybridise with koi carp. Hybrids comprise about 1% of the koi carp population.



LAKE ROTORUA WATER QUALITY AND METEOROLOGICAL MONITORING BUOY

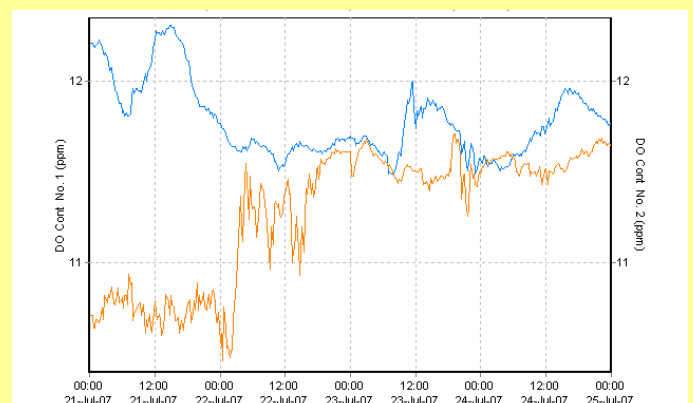
We recently completed the installation of the first solar powered, high-frequency meteorological and water quality monitoring station for the Rotorua lakes. The implementation of the monitoring buoy (pictured above) is the culmination of several months of intensive investigation by Chris McBride. It transmits quarter-hourly data in near real-time for a range of variables including:

Meteorology: wind speed and direction, air temperature, relative humidity, barometric pressure, and precipitation.

Water quality: surface and bottom dissolved oxygen, chlorophyll fluorescence (phytoplankton biomass), and water temperature at 2 m intervals over the 22 m water column.

Further water quality sensors will be added in a few months, including pH, light absorption, and bottom nitrate concentration. Two similar buoys will follow shortly after on Lake Rotoiti. The monitoring stations are funded by Environment Bay of Plenty and the collection and management of data is in partnership with local company iQuest. The live data for the Rotorua station, as well as the University's weather station near Lake Tarawera can be viewed using the guest login at: <https://data.iquest.co.nz/hydrote/>.

Figure 2. Surface and bottom dissolved oxygen concentration in Lake Rotorua over a four day period.



Christoph Brakel and Marcel Brokbartold



Figure 3. Marcel (left) and Christoph (right) finished their study at Waikato University.

Christoph and Marcel have returned to Lippe and Höxter University of Applied Sciences in Germany, after completing their internship at the Centre for Biodiversity and Ecology Research. They successfully set up models of the Lake Ngaroto catchment and the lake itself, following on from the work of summer student Rowena Beaton (see publications). These models will be developed further as options for managing water quality of Lake Ngaroto are considered together with the Waipa District Council. The report is now available on the LERNZ website.



“Unlike Iraq, this war can be won!”

Professor Daniel Simberloff
Keynote Speaker
University of Tennessee

Professor Daniel Simberloff was a Keynote Speaker at the Conserv-Vision Conference held at the University of Waikato on 2-7 July 2007. Professor Simberloff holds the position of Nancy Gore Hunger Professor of Environmental Science at the University of Tennessee and is the editor of the scientific journal *Biological Invasions*. The Department of Biological Sciences was fortunate to have a special presentation in which Prof. Simberloff gave a global overview of biological invasions. His final conclusions were that New Zealand's progress in invasive species control was world-leading, and that our pest control on mainland and offshore islands was a model for other countries to follow. The presentation is available in PDF format on request from Gary Whitehouse (garyw@waikato.ac.nz).

Special Welcome to Our New Technicians



Jeroen Brijis (left) is currently working under Brendan Hicks and Nicholas Ling as an advanced technician on pest fish research. He will assist with research projects on pheromone attraction of pest fish as well as assisting in research on the ecology of invasive fish, especially koi, catfish, and gambusia.

Warrick Powrie (above right) comes from a background in horticulture and marine dive industries. He has worked for the Ministry of Fisheries in compliance and has completed research for fisheries departments in Vanuatu and Niue. As a technical officer for the University, he will be providing technical support for graduate students and staff in laboratory and field work.

Recent Publications:

Ashraf, S., L. Brabyn, and B.J. Hicks. 2007. Remote sensing of freshwater habitat for large rivers and lakes of Waikato region using sub-pixel classification technique. *CBER Contract Report No. 63*. A report prepared for Environment Waikato. Centre for Biodiversity and Ecology Research, Department of Biological Sciences, School of Science and Engineering, The University of Waikato, Hamilton.

Beaton, R., D. Hamilton, M. Brokbartold, C. Brakel and D. Özkundakci. 2007. Nutrient budget and water balance for Lake Ngaroto. Report prepared for Waipa District Council. Centre for Biodiversity and Ecology Research, Department of Biological Sciences, School of Science and Engineering, The University of Waikato, Hamilton.

Burger, D.F., Hamilton, D.P., Gibbs, M.M., and Pilditch, C.A., 2007: Sediment nutrient release in a polymictic, eutrophic Lake Rotorua. *Hydrobiologia* 584: 13-25.

Duggan, I.C. 2007. Assessment of the water quality of ten Waikato lakes based on zooplankton community composition. *CBER Contract Report No. 60*. Client report prepared for Environment Waikato. Centre for Biodiversity and Ecology Research, Department of Biological Sciences, School of Science and Engineering, The University of Waikato, Hamilton.

Hicks, B. J., D. Hamilton, N. Ling, and S. Wood. 2007. Top down or bottom up? Feasibility of water clarity restoration in the lower Karori Reservoir by fish removal. *CBER Contract Report No. 54*. Report prepared for the Karori Wildlife Sanctuary Trust. Centre for Biodiversity and Ecology Research, Department of Biological Sciences, School of Science and Engineering, The University of Waikato, Hamilton.

Recent Events:

Conserv-Vision: the next 50 years. An international conference on conservation held at University of Waikato, 2-7 July 2007.

Field Days at Mystery Creek: A Waikato River model was the centrepiece of the University of Waikato stand.