

OBI Year 8 Review

LERNZ has received feedback following the recent Ministry of Business, Innovation and Employment review of the Outcome Based Investment (OBI) programme as part of the Freshwater Multi Contract Review. At this stage the results are confidential because LERNZ was provided with an opportunity for feedback on the assessment. The results of the review are expected to be able to be made available very soon. The LERNZ research programme now has just under two years of funding remaining. Careful consideration is given as to how to continue to evolve the research to meet the substantial demands faced for freshwater management in New Zealand.

Te Riu O Waikato

In June, a LERNZ information day was hosted by Te Riu o Waikato at the Waikato-Tainui headquarters in Hopuhopu. LERNZ researchers and post-graduate students (see below) presented their work on freshwater ecosystems. Topics ranged from effects of boat electro-fishing on eels by Josh de Villiers to green-house gas emissions from lakes presented by Arianto Santoso.



LERNZ researchers at the Waikato-Tainui headquarters

Attending the information day were representatives from the Waikato Museum, Waikato Regional Council, Tainui and Landcare Trust. Following the presentations a tour of the Waikato-Tainui College for Research and Development was given by Ricky Maipi. He highlighted the impressive teaching facilities available at the endowed college. The LERNZ research group would also like to thank Aareka Hopkins for organising and facilitating the information day.

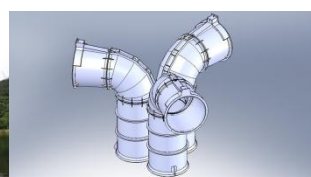
Lake Rotoehu Monitoring Buoy

Chris McBride and the LERNZ team have constructed and installed the latest of a number of solar powered, high-frequency meteorology and water quality monitoring buoys in Lake Rotoehu. The buoy transmits quarter-hourly data in near real-time for a range of variables. Meteorological variables include wind speed and direction, air temperature, relative humidity, barometric pressure, and precipitation. Water quality variables are monitored at 15-minute intervals and include surface and bottom dissolved oxygen, chlorophyll fluorescence and phycocyanin (indicative of phytoplankton and cyanobacteria biomass respectively), water temperature, pH, light attenuation and bottom-water nitrate concentration.

The Lake Rotoehu monitoring buoy is the most recent of those funded by the Bay of Plenty alongside Lakes Rotorua, Rotoiti and Tarawera. It has a profiling capability enable readings through the entire water column and avoiding sensor replication on the usual fixed string cabling.

Lake Rotoehu Destratification Devices

Working in association with Environment Bay of Plenty, Max Gibbs from NIWA and Hiroshi Yajima from University of Tottori, Japan; LERNZ researchers have recently finished the first stage of monitoring work assessing the effects of two destratification devices that were installed in Lake Rotoehu in August 2012. The devices are designed to use diffused compressed air to entrain and lift hypolimnetic water to the surface, mixing it with warmer epilimnetic water. This mixing would prevent the formation of stratification. Water velocities were designed to run at 0.3-0.4 m/s to reduce frictional loss and water flow for each device was calculated to be 15,000m³/hr. Further scaled-back monitoring work will be carried out this summer following modifications to the devices to improve their efficiency.



The destratification devices are composed of three pipes that entrain and direct the water horizontally. Images Andy Bruere and Hans Burggraaf.

Rotorua Te Arawa Lakes Research Presentation

The Rotorua Te Arawa Lakes Programme has a unique relationship with the University of Waikato with the Bay of Plenty Regional Council sponsoring the Chair in Lakes Management and Restoration. Recently, LERNZ students were invited to be part of an evening of presentations from post graduate students on their research projects undertaken to protect and restore the Rotorua Te Arawa Lakes.

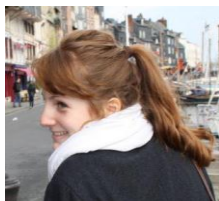
The presentations were very well received by a large audience made up of Bay of Plenty Regional and Rotorua District Councillors, partner agency staff, key stakeholders such as iwi, research organisations, farming organisations, community groups, rural professionals and individuals. Talks were given by Jonathan Abell (PhD completed), Rebecca Eivers (PhD in progress), Dylan Clarke (MSc completed), Jamie Peryer-Fursdon (BSc in progress) and David Hamilton on behalf of chemistry undergraduate students who carried out studies on Lake Okaro.

Welcome

LERNZ received visits from Claire Heiwy and Carolina Cabrera. Claire is a second-year student in Agriculture at the Institut Polytechnique LaSalle Beauvais, a French Grande Ecole. She carried out work with David Hamilton and Grant Tempero on nutrient budgets for peat lakes in intensively farmed agricultural catchments in Waikato. Carolina Cabrera is a MSc student at the Universidad de la República, of Uruguay. She worked on a predictive mathematical model of phytoplankton at Laguna de Rocha.



Carolina Cabrera



Claire Heiwy



Jonathan Abell



Grant Tempero

Grant Tempero has recently joined the pest fish programme in a research position. Grant is well known to many, having completed his PhD at the University of Waikato and worked within the Department of Biological Sciences as both a Research Assistant and Laboratory Manager.

Farewells

Deniz Özkundakci has recently moved on as leader of the LERNZ harmful algal bloom project to take up a position at the Leibniz Institute of Freshwater Ecology and Inland Fisheries in Berlin, Germany. Deniz provided excellent contributions to the modelling undertaken by LERNZ. We wish Deniz all the best in his new position and good luck for his family (wife Britta and daughter Linnea) in returning to their home country.

Jo Faber has left the LERNZ team to take up a new position with BNZ in Hamilton as an Agribusiness Partner. Jo has been the LERNZ Research Manager for the past 3 years and will be replaced by Anthea Kivell on a part-time basis while a replacement is found. In turn, we would like to welcome Anthea who is familiar to many from her assistance to the programme over the years. Jo takes with her the best wishes of the LERNZ team.

Recent Publications

de Winton M, Jones H, Edwards T, Özkundakci D, Wells R, McBride C, Rowe D, Hamilton D, Clayton J, Champion P, Hofstra D. 2013. Review of best management practices for aquatic vegetation control in stormwater ponds, wetlands, and lakes. Prepared by NIWA and the University of Waikato for Auckland Council.

Abell JM, Hamilton DP, Rutherford JC . 2013. Temporal and spatial variations in sediment, nitrogen and phosphorus transport in stream inflows to a large eutrophic lake. *Environmental Science: Processes & Impacts* doi:10.1039/c3em00083d.

Collier KJ, Clapcott JE, Hamer M, Young RG. 2013. Extent estimates and relationships with landcover for functional indicators in nonwadeable rivers. *Ecological Indicators* 34: 53-59

Collier KJ, Hamer M. 2013. Ecological response differentials as an alternative benchmark for stream and river monitoring. *Freshwater Biology* doi:10.1111/fwb.12145.

Collier KJ, Olsen AR. 2013. Network design influence on assessment of ecological condition in wadeable streams. *Marine & Freshwater Research* 64: 146-156.