



KNOWLEDGE AND INFORMATION ON THE USE OF NEW ZEALAND'S GREATEST ASSET

NLRC Newsletter

Issue 1
2013

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A Year in Review

It has been a year since the launch of the National Land Resource Centre (NLRC) – so it is timely to review how far we've come in taking a vision and making it a reality and highlight a small selection of the work we've done as well as some of our future plans.

Launch of the NLRC website

The NLRC website continues to provide users with the most current and up-to-date science information and news from across and beyond the science community in a friendly and engaging way. It incorporates a unique geo-referenced search capability. This now allows users to find science, resources and organisations active for a location or regional of their choice. New opportunities to engage with social media such as twitter and Facebook encourage stakeholders to open up a wider discussion on how best to protect New Zealand's greatest asset – land.

A survey of users

Two years of scoping before the NLRC was launched revealed a major pan-sector need for enhancing capability to use land-based science to better manage land resources. In response, the NLRC administered a pilot study and surveyed a range of sectors interested in managing land resources. The survey confirmed needs and also illustrated that there is a growing demand for short-course

technical training in the use of science data, information and tools. The Centre is now targeting engagement to determine how best to meet these growing needs and provide opportunities for more efficient transfer of knowledge from science providers to users.

Building partnerships

A recent workshop invited potential partner CRIs (AgResearch, ESR, Plant & Food Research, NIWA, GNS Science and Scion) to participate in developing a collaborative approach to the NLRC. The workshop gained feedback from the potential partner agencies on the role, function, and scope of the NLRC. As a result, partners will be formally incorporated within the NLRC in a 'Collaborative Committee', setting direction and determining priorities for the 2013/14 year.

The NLRC, Land Management Forum (LMF), Land Management Group (LMG), and Surface Water Integrated Managers (SWIM) are also working together to build a partnership that increases the effectiveness of regional council operations and interactions with farmers and other stakeholders.



Our Land and Water

The National Science Challenge [Our land and water] represents one of the most significant priorities for New Zealand. The NLRC has been keeping up with aims to work collaboratively to achieve this challenge.

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Urban Soils

A new NLRC video, created by Pierre Roudier, shows the successive waves of urban growth on high class land around Auckland from 1990 to 2008.

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A Survey of Users

The National Land Resource Centre (NLRC) conducted a pilot study on the current capacity-building needs in soil and land resource science and management. The study provided preliminary insight into capacity needs across a range of professions associated with natural resource management, and highlighted key areas where further investigation is required.

This study illustrates the need for a more comprehensive study that would guide the development of a collaborative approach to capacity enhancement. In time, there is potential for a more effective transfer of scientific information that will encourage the integrated management of natural resources to meet the need of a growing economy while at the same time protecting the environment.

According to those surveyed, there is growing concern that knowledge of soil and land resource science in New Zealand is waning and there is a need to re-build capacity for better and more sustainable land management. Of those surveyed, 84% 'Agree' or 'Strongly Agree' that there is a



need for building capacity in the soil and land resource sector within their organization.

The NLRC is currently working with partners from the CRIs, Massey and Lincoln Universities, regional councils, and the New Zealand Association of Resource Managers to determine the next steps, which will focus on bridging the gap between science and practice.

FOR MORE INFORMATION

To access the full review of capacity-building needs go to the NLRC website.

www.nlrc.org.nz



Building Partnerships

Regional councils are currently deciding how best to ensure the economic development of their regions while simultaneously protecting environmental integrity. In response to this the NLRC has been working with regional councils to facilitate better matching of land research to regional council land management and planning. The NLRC, Land Management Forum (LMF), and Land Management Group (LMG) are working together to build a partnership that increases the effectiveness of regional council operations and the interactions with farmers and other stakeholders.

The NLRC has released a new report 'Alignment of Special Interest Groups and the National Land Resource Centre

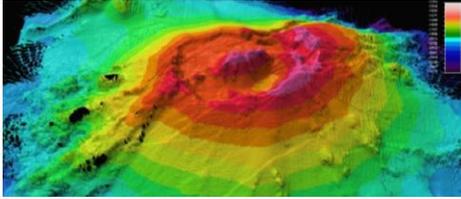
Priorities', available on the EnviroLink website, which highlights current critical issues and research priorities and provides recommendations for the development of a national research agenda. In time, there is potential for all land-based decision-making to draw on the same consistent information, increasing the effectiveness of regional council operations and streamlining the interactions with farmers and other stakeholders.

FOR MORE INFORMATION

To read the full report, go to the EnviroLink website.

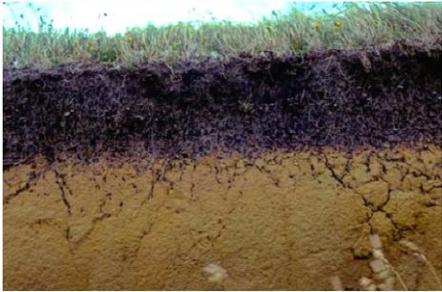
www.envirolink.govt.nz

NEW ZEALAND LAND INFORMATION



Land-use information

Several new tools and data sets of land-use and resource information are currently available on the LRIS Portal and the NLRC website.



Healthy Ecosystems

Healthy soils and appropriate land use underpin sustainable primary production.

NEW ZEALAND LAND FAST FACTS

45%

Land under primary production

25%

Contribution of primary production to GDP

FOR MORE INFORMATION

To learn more fast facts about New Zealand's land and economy visit the NLRC website.

www.nlrc.org.nz



"Essentially all life depends on soil" – Charles Kellogg, 1938

Advances in land and water

The NLRC aims to keep up-to-date with the newest information and activities related to land and water. We would like to share some key activities that are happening near you.

National Science Challenges

The National Science Challenge 'Our land and water' represents one of the most significant priorities for New Zealand – how to drive economic growth from the land without undermining the health of the resources on which the growth is based.

The challenge is to find best practice solutions and new ways of using the land that simultaneously drive production gains and protect land and water. This will require a collective science effort at farm, catchment and regional scales and a pulling together of the data, science and knowledge that sit in many agencies.

Another key component will be making sure our science and the technologies and evidence that are derived from them can be more easily accessed and 'consumed' by those driving decision-making processes, best practice, and innovation – increasing the need for social, economic, and participatory research skills and reinforcing the role of initiatives such as the NLRC.

In December 2012, the NLRC worked with 16 agencies, ranging from Federated Farmers, CRIs, regional councils to Business New Zealand, to consider the shape of the national science challenge. This resulted in a submission to MBIE. The NLRC and its partners continue to support the development of the national science challenge, which reinforces the need for a

collaborative approach to ensure science enables the wise use of land and water resources.

Land Use Change

Growth in population, coupled with economic development, has resulted in considerable change in New Zealand's land in the last 20 years. Recent land-use intensification can cause decline in the ecosystem condition the services provide. Understanding and managing the impact of change requires good evidence on the state and trend of land-use change.

There are several sources of New Zealand land-use and resource information available on the NLRC website. For example, the New Zealand Land Cover Database (LCDB) is a digital map of the land surface of the country, and its third edition (LCDB3) is now available. Upgrades are currently taking place that will result in a fourth edition, LCDB 4.

Land resource information can also be searched, sourced, and obtained from the Land Resource Information System (LRIS). LRIS is a web interface for a wide range of digital land information resources, including the New Zealand Land Resource Inventory (NZLRI), the National Soils Database (NSD), and derivatives, such as Fundamental Soil Layers (FSL), digital soil maps, and other spatial databases.

Data from these systems have been used in a diverse range of applications – including regional resource management and national monitoring of carbon sources and sinks.

Soil and Water

Healthy soils and appropriate land use underpin sustainable primary production and contribute to New Zealand's ability to neutralise greenhouse gas emissions. Increasing demand for urban development or intensified pastoral agriculture puts pressure on land, water, and soils, especially as most of New Zealand's soils are of low natural fertility. Because of the vastness of the environment and the rapid rate at which it is being changed, it is important to monitor and measure environmental conditions and trends using the most advanced and specialized methods, tools and technologies.

Several projects and tools are underway that actively work towards developing best management practices and decision support tools to understand the big picture of water quality and management. Below are some examples of some current projects happening around the country.

Integrated Research Aquifer Protection (IRAP) is a collaborative research that is a result of growing concern among the public and policy makers that the intensification of land use may cause deterioration in groundwater quality.

SFF Hawke's Bay is another project that is exploring irrigation options for the Ruataniwha Basin. AgResearch is supporting the development of several pre- and post- irrigation model farms by modelling the likely effects of nutrient losses to surface and ground water, using OVERSEER and GIS analysis tools in conjunction with SPASMO, and including on-farm mitigation and avoidance options.

AquaTRAC, which was commissioned by the Foundation for Arable Research (FAR) and built by Plant and Food Research, enables farmers to take a paddock-specific approach to irrigation management as, by tracking soil moisture levels and crop requirements, it calculates when each paddock requires watering and how much to apply.

FOR MORE INFORMATION

Have a project or new technology you are working on and want to share? Tell us about it!

<http://www.nlrc.org.nz/resources/add-a-resource>

Urban Soils

Auckland is facing the challenge of accommodating a growing population, with a growing need for more housing. One proposal to increase housing availability is to expand the city into the rural land that surrounds it. But all land is not equal.

Some parts of the rural land – where the soils and climate support thriving produce, dairying, and bloodstock sectors – are more valuable than other areas. Such high-class land is a precious and limited resource.

A change in the use of land therefore requires a consideration of the various tradeoffs that will need to be made. Urbanisation of agricultural land is essentially an irreversible process. Dividing agricultural land into relatively small parcels for housing produces a sharp rise in land value, making it difficult for farmers to buy back; and many of the qualities of high-class land require centuries to return to their initial state.



A new NLRC video shows the successive waves of urban growth on high-class land around Auckland from 1990 to 2008. This new way of communicating science has led to increased media attention and greater awareness of the threats to productive land.

FOR MORE INFORMATION

View this video and other NLRC videos on the NLRC YouTube channel.

www.youtube.com/LandResourcesNZ

Around Town

Soil Information Workshop

On 16 and 17 August the NLRC hosted a trans-Tasman soil information workshop at the Landcare Research office in Wellington. The workshop followed a 1-day joint soil and geology information modeling workshop at GNS Science Lower Hutt.

These workshops are typical of a growing community of scientists who have been collaborating to develop standardised ways of storing and sharing data. Sharing land and soil information this way can bring many benefits: increasing the efficiency of data management and exchange by reducing the number of file formats and data structures with which users must deal; allowing the integration of data from disparate data sources; and, by focusing on core land and soil concepts rather than one-off user interfaces, increasing the likelihood that the data may be reused for multiple, unforeseen, purposes.

The 1-day workshop (attended by Landcare Research staff) covered how the two groups used one another's data and identified much common ground. They considered shared technology and integration options in their information models (not just physical phenomena, but also observation and sampling activities, and the use of technical vocabularies). It is clear that the emerging soil information community can learn a lot from the geology community's successes (and mistakes), while the soil community can teach the geologists much about describing quantitative data and the related uncertainty.

FLRC Annual Workshop

The NLRC attended the 26th Annual Fertilizer and Lime Research Centre Workshop in Palmerston North in February this year. Workshop discussions explored the accurate and efficient use of nutrients on farms.

At the workshop the NLRC proposed a new approach to information dissemination through greater collaboration and partnership between scientists, industry, and government. Agendas and priorities for land resource management are developing quickly and there is an increasing need to work together

to ensure the right research is done by the right teams and made available to users in the right way.

SLUA Assembly

What kind of science can help NZ manage its soil and land resources better in the future? How can experts in the management of these resources set a new research agenda that will help NZ address the challenges that lie ahead – from sustaining production now to feeding future generations around the globe? What do we have to offer in the national science challenges?

These were some of the questions a group of leading soil and land-use researchers discussed at Lincoln on 24 August as part of the Soil and Land Use Alliance (SLUA). Landcare Research, AgResearch, Scion, and Plant & Food Research have formed the Alliance to ensure a more collaborative approach across core and contestable funding opportunities. These four organisations recognise that the best outcomes for New Zealand will result from coordinated investments, research activities, and capability development across the range of landscapes, sectors and land uses we represent.

A Path Forward for the NZLRI and LUC

As part of a review into the status and future development of New Zealand Land Resource Inventory (NZLRI) and the Land Use Capability (LUC) classification system, Landcare Research organised a 1-day workshop in Christchurch on 9 October 2012. The goal was to determine a path forward for the NZLRI/LUC so that it remains fit for purpose and can meet the needs of users and stakeholders now and into the future.

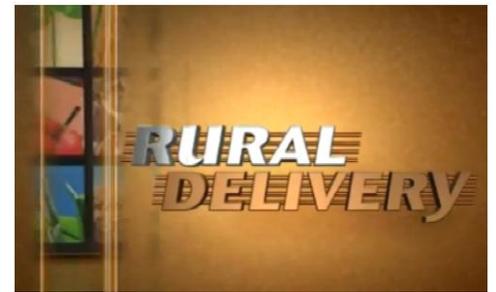
Land management and planning staff from 12 of the 16 regional councils were represented, as well as a number of private consultants, recently retired 'experts', Landcare Research, AgResearch, and GNS staff well versed in the Land Use Capability methodology.

AROUND TOWN



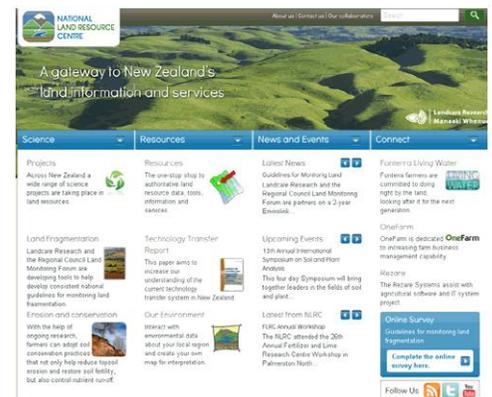
NLRC workshop

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NLRC on TVNZ One

Rural Delivery, TVNZ One, presents Dr Alison Collins discussing the recent initiatives of the NLRC.



NLRC website

The NLRC is a gateway to authoritative science data and information from a variety of sources and providers.

NLRC on TVNZ One

In August 2012, Dr Alison Collins, Director of the NLRC, was interviewed on Rural Delivery on TVNZ One. With agriculture, mining and tourism providing more than a quarter of our GDP, our future prosperity is highly dependent on understanding and managing our land resources. But at present information on land resource, and the capability to commission, generate, interpret, and use it, are distributed across many organisations. Addressing the issue of fragmentation to get more value from land and water research is a key aim of the NLRC.

NLRC website

The NLRC website is an online gateway to New Zealand's land and increasingly, water resources. It has helped remove the barriers resulting from information residing in multiple organisations or not being easily accessible. It provides a direct link to a range of authoritative data and information from a variety of sources and providers, and direct access to NLRC commissioned reports. At present there are over 700 resources available on the website, including up-to-date news, information, and up-coming events.

The NLRC has also gone social – streaming social media such as Twitter and Facebook. This encourages openly discussion on how best to protect New Zealand's greatest asset – land.

Soil Horizons

The NLRC recently acquired Soil Horizons newsletter. Soil Horizons is an annual newsletter, previously published by Landcare Research, which communicates the work of scientists working in soil and land research. Soil Horizons was first published in 1997 and has become increasingly popular throughout New Zealand and overseas. It has a mailing list of over 1000 recipients, including researchers, students, regional and national decision makers, agri-business, media, and the general public.

Previous issues of Soil Horizons have included articles on soil mapping, soil quality, land rehabilitation, impacts of waste waters, nitrates, pesticides and heavy metals on the environment, cropland erosion and soil degradation, non-point source pollution on land and water resources, and climate change research topics, including greenhouse gases. This year the theme will be around the National Science Challenge 'Our Land & Water'. The upcoming issue will showcase research that aims to enhance productivity while maintaining land and water for future generations.

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Supported by



Landcare Research
Manaaki Whenua