

COMMUNITIES MONITORING ENVIRONMENTAL HEALTH,
BIODIVERSITY AND THREATS TO OUR BIOSECURITY.

CITIZEN SCIENCE

ENVIRONMENTAL RESTORATION AND BEYOND

In 2015, the NZ Landcare Trust embarked on a three-year, Ministry for the Environment-funded project: Citizen Science Meets Environmental Restoration. The project recognises the major role played by community environmental groups in conservation in New Zealand; and that their environmental monitoring activities form part of a groundswell of public participation in science. Since the project began, the term ‘citizen science’ has moved rapidly into everyday usage. Citizen science now appears in strategic documents, highlighting the importance of engaging wider audiences in scientific studies, and collecting environmental data that otherwise would/could not be collected. The case studies in this publication provide a glimpse into the diversity of environmental citizen science and how tools and technologies are creating new opportunities for communities and scientific research.



NZ Landcare Trust project achievements

The project centred on bringing diverse people together around New Zealand to better understand environmental citizen science activities underway (and planned), barriers and opportunities.

Workshops in Year One brought together nearly 170 people in five main centres: Christchurch (pilot study), Dunedin, Nelson, Palmerston North and Auckland. These sessions were discussion-based, drawing together project coordinators, educators, scientists and decision-makers across community groups/trusts, the secondary and tertiary sector, crown research institutes, government agencies and private enterprise. Year Two meetings comprised of field trips to look at projects in action (e.g., community predator control initiatives, Marine Meter Square national coastal monitoring, and schools engaging in water quality monitoring). Targeted discussions also took place (e.g., scientist, museum and community experiences of running a BioBlitz). In Year Three the final series of meetings focused on practical training (e.g., how to monitor water quality, how to design your restoration project monitoring program). A comprehensive Inventory of Citizen Science Programs, Projects, Resources and Learning Opportunities (2016) was also produced.

What is citizen science?

Descriptions of citizen science are evolving. As the movement matures, new technologies expand the ability of the public to become involved in scientific research as well as shape the scope and nature of the scientific research undertaken. The US Federal Government's definition therefore includes technology: Contributions of the public to the advancement of scientific and engineering research and monitoring in ways that may include:

- Identifying research questions
- Designing/conducting investigations
- Designing/building/testing low cost sensors
- Collecting and analysing data
- Developing data applications
- Developing technologies for science
- Solving complex problems



Key barriers and solutions identified in working group meetings

BARRIER

Negative attitudes and perceptions

- Limited faith in the community's ability to contribute useful data
- Rigid mind set of managers/scientists for capturing data outside traditional methods

SOLUTION

Enhancing data quality

- Providing training
- Access to dedicated experts for advice on protocol use, data analysis
- Nationally accepted toolbox of standardised, compatible protocols
- Accreditation scheme for data collection

Managing data well

- Effective systems for recording, storing and disseminating data
- Integrated feedback loops to participants/funders.
- Links with existing databases e.g., NatureWatch NZ and Land and Water Aotearoa (LAWA)

BARRIER

Lack of awareness and engagement in community

- Low scientific and ecological literacy
- Limited diversity of participants in projects

SOLUTION

Broadening engagement and participation

- Harnessing community 'passion and priorities' e.g., biosecurity and freshwater quality
- Incentivising participants to maintain energy levels
- Enabling flexible involvement (diverse activities, flexible hours)
- Students, iwi/hapu and immigrants as participants and leaders
- Testing theory but maintaining flexibility; the 'joy of discovery'

Strengthening communication feedback loops

- Telling great stories with clear outcomes
- Using 'common language' vs scientific language
- Creating formal networking opportunities like workshops, and informal e.g., meetups, email lists, Facebook pages and newsletters



BARRIER

Limited funding

- Funding for time
- Obtaining equipment
- Time investment required for working with volunteers

SOLUTION

Thinking creatively

- Information on models and sources of funding (e.g., crowdfunding); applying for, and reporting on funding transparently
- Flexible funding focused on outcomes - not rules
- Supporting project coordinators to enhance professionalism
- Making citizen science funding/donations tax deductible

BARRIER

Poor project design

- Conflicting monitoring objectives between community members, scientists, regional and central government agencies

SOLUTION

Building credibility

- Shared socio-cultural and scientific objectives
- Citizen science 'Ambassadors', Coordinators and Field staff
- Managing community and scientific needs and expectations: fit for purpose projects

BARRIER

Silos

- Duplication and inefficiency

SOLUTION

Creating a Citizen Science info hub

- Project pages to connect volunteers, project coordinators and local/regional/national projects, experts register, resources (project development, scientific design, community engagement)

Where to from here?

The rich discussions generated over the course of the project combined with a network of citizen science volunteers, coordinators and potential leaders have brought more shape to the field of citizen science in New Zealand. A pathway is now needed to action solutions identified by project participants, that draws in existing initiatives such as the Participatory Science Platform (Curious Minds; Ministry for Business, Innovation and Employment) and maps out a strategic direction for citizen science in New Zealand.

Further information

www.landcare.org.nz/Regional-Focus/Manawatu-Whanganui-Office/Citizen-Science-Meets-Environmental-Restoration

www.monicalogues.com/category/working-group-meeting/

www.curiousminds.nz



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This resource is the introduction to a series of case studies generated as part of NZ Landcare Trust's Citizen Science Meets Environmental Restoration project, funded by MFE's Community Environment Fund - www.landcare.org.nz/CitizenScience