

The evolution of environmental weed management on Auckland's regional parks

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Summary In 2018 Auckland's ratepayers supported an unprecedented investment in the regional natural environment. One of the programs that has benefitted from this investment is the management of environmental weeds on regional parks.

This program has undergone improvements across spatial scale, species targeted, ecological prioritization and information management, while also responding to diverse external drivers including the loss of social license for herbicide use, emerging plant pathogens and increased community appetite for conservation activities.

Local government reform, resulting in the amalgamation of staff from seven local government agencies has also led to different challenges and opportunities to integrate biosecurity and biodiversity planning.

Keywords asset based management, environmental weeds, invasive plants, pest plants, prioritisation, site based management

INTRODUCTION

There are more than 25,000 introduced plant species in NZ, and currently naturalisations are equal to the quantum of indigenous flora (Stanley and Bassett 2015). Once species are beyond eradication, research points towards an asset-based management program.

Tāmaki Makaurau, Auckland, is one of the sixteen regions of New Zealand and contains the country's largest urban area and corresponding population. Auckland Council is the unitary authority that forms the local government for the region. Distinct from other regions, the unitary authority manages twenty eight¹ regional parks encompassing 41,000 hectares. These parks support diverse ecosystems and threatened species and are highly valued by the people of Auckland. One of the most significant pressures on these parks are environmental weeds. Due to Auckland's temperate climate, sprawling urbanization and enthusiastic uptake of exotic garden plants, it has earned the reputation as being the 'weediest city' in the world.

¹ There is a 29th park in the network- Te Motu a Hiaroa/Puketutu Island is part of the regional parks weed control program however is co-managed by a trust involving Auckland Council, mana whenua and Watercare.

² Wild ginger (*Hedychium gardnerianum* Ker Gawl.) and moth plant (*Araujia hortorum* E.Fourn.) rules in the

The Natural Environment Targeted Rate will enable a step change for environmental protection and restoration. One of the programs that has benefitted from increased investment is the management of environmental weeds on regional parks. This investment has come at the perfect time for this program with the foundational work to handle increased investment being at a stage to take advantage.

DOING WHAT ALWAYS WAS DONE

Auckland's regional parks are a mixed-use public asset, with recreational and amenity values historically prevailing over conservation outcomes in park management especially in a weed management context, despite parkland being home to two of the region's largest remaining tracts of indigenous ecosystems, and many other smaller fragments of high value. In 2007 rangers on parks were more likely to be clearing prickly gorse away from tracks rather than worrying about an environmental weed growing in the middle of a forest fragment.

Management of the weed control program was split between sector-based conservation rangers and a regional biosecurity officer. The annual budget was held by the biosecurity team, funded by a biosecurity rate as well as general rates. Decision making on annual work factored in fairness across all parks despite some clearly having greater ecological value than others. Particular species, usually ones that the public recognized and complained about were targeted alongside species that were known forest ecosystem weeds. Rules in the Regional Pest Management Strategy supported this approach². Biodiversity specialists had little or no input. The meagre budget was split into weeks of contractors work and then divvied across the then 22 parks. Often the same contractor was used to do weed control across all parks with emailed instructions to control certain species of weeds. The contractor's report contained qualitative data with small amounts of quantitative data thrown in. All the geospatial data

Regional Pest Management Strategy for the Waitakere Ranges and Hunua Ranges, and region wide woolly nightshade (*Solanum mauritianum* Scop.) containment rules and gorse (*Ulex europaeus* L.) boundary rules.

and abundance data was retained by the contractor with council staff having very little ability to track success over time.

CHANGE THROUGH DATA IMPROVEMENTS
In 2006 the Auckland Regional Council³ geospatial team won an award for a geospatial database (BioMap) that helped general biosecurity staff manage their complaints work. It was intended to adapt this database to include regional parks work.

To prepare the parks to be included in the database all the regional parks were divided into smaller management units. Geographical features such as tracks, streams, ridges were used and generally of a size that a contractor team could cover in a few days. All data would then be recorded against these management units as data was recorded against properties in the BioMap system.

Data collected against management units included species present, species controlled, methodologies used, hours per methodology, herbicide and additives per methodology, and weather conditions during the control period.

BioMap also enabled the collection of point data, and it was decided to permanently collect location and infestation size of plants that required multiple treatments per season. These plants either spread vegetatively, i.e., were unlikely to be spread geographically across a park, or had other characteristics that meant that they were more likely to found at this point than elsewhere, e.g. moth plant where the majority of seed drop around mature plants and have long lived seed banks. By including this data in BioMap it also resulted in the transfer of data from contractors back to the council.

Annual specifications of work now included instructions and priorities per management unit with some point data information that was gradually added to as work progressed. Due to the improved BioMap system being developed, contractors captured and reported data via reports submitted per control period. Reports were stored until BioMap 2 became available for use.

CREATION OF AUCKLAND COUNCIL

In November 2010 Auckland Regional Council was amalgamated within the new unitary authority Auckland Council. The Regional Parks and Biosecurity departments remained largely

unchanged; however the Information Technology department amalgamation and restructure was delayed and ultimately shelved BioMap.

Amalgamation however brought improvements and presented great opportunities. The small Natural Heritage department was expanded into the Biodiversity team with highly experienced staff from seven agencies across the region. Strategic and operational work was beginning to join up across the landscape from private property, local parks and connecting into regional parks.

CONTRACT IMPROVEMENTS

The new council brought new staff introducing new ideas. Time based contracts were changed to job size contracts with key performance indicators. Enhanced specifications were developed to support accurate quotations with the eventual work specified to fit the budget. These specifications greatly assisted auditing which had been poorly undertaken to date.

In theory all work was accurately quoted on and delivered. In reality the opposite was true. Contractors were used to not being audited and felt that they would not get work if they did not propose a palatable price. Contract staff were having to rush through areas to meet the hours allocated and missed mature plants, setting back achievements at a site. As this was a rule rather than exception, one on one discussions with suppliers at site led to more accurate quotes, a focus on quality rather than quantity, and a shared recognition of the skill set that experienced weed control contractors held. Improved relationships with suppliers led to increased communication and with mutual understanding of outcomes this resulted in improved delivery across the program.

The operational program was maturing and held up to intense scrutiny generated from the implementation and review of the Auckland Council Weed Management Policy (2013) which was further compounded by concerns around glyphosate use.

What was more concerning for staff was the stagnating area of parks considered under management for pest plants in the region. This aspect was not helped by a budget that had not significantly changed since 2007, combined with the regional park portfolio increasing in size.

³ Auckland Regional Council was the local body managing the regional parks prior to the 2011 amalgamation of all Auckland local government.

TURNING THE TIDE

In New Zealand 2016 marked a groundswell of public support for conservation. The Predator Free 2050 goal brought nationwide attention to the biodiversity crisis. This was the perfect time for an equally ambitious project in Auckland. The review of how Auckland manages pests and the prioritisation of management of Auckland's ecosystems lined up with preparation for the long-term plan.⁴

Biodiversity Focus Areas Biodiversity Focus Areas (BFAs) are prioritised areas of ecological significance, which were created to achieve the objectives of the Auckland Biodiversity Strategy (2011) and are used to guide the planning and delivery of conservation activity in Auckland. Prioritisation was achieved by using the zonation model (Moilanen et al. 2005) with further refinements from national and local biodiversity specialists. These areas demarcate a representative range of all indigenous species and ecosystems, with a good number being contained within the regional park network, and a proportion of which were currently not receiving any weed management. All wetlands and gumlands, and most dunelands are considered high priority for management due to their threat status and ongoing decline in habitat quality.

RPMP review Previous pest management plans in Auckland were always restricted by budget availability and were mainly species focused. The new proposed Regional Pest Management Plan took advantage of the significant ecological areas under council management and protected them with site led and buffer programs. Other programs within the plan also utilized the site led approach to an extent, e.g., eradication on Aotea Great Barrier Island of weeds that are low incidence on the island despite being widespread elsewhere in the region. The bold programs proposed were supported by a budget bid to the long-term plan in the form of a targeted rate.

Natural Environment Targeted Rate In Auckland there has been precedent to use targeted rates to fund biosecurity work. The former Auckland Regional Council had a separate rate to fund biosecurity programs, and more recently Auckland Council charged location specific rates to fund possum control in said areas.

In 2017, as part of the long-term plan process, the council consulted Aucklanders about the option of a Natural Environment targeted rate. Three options,

including retaining the status quo, were offered as part of the engagement. Aucklanders overwhelmingly voted in support of the higher of the two options. The rate is expected to raise \$311 million over 10 years, which is predicted to protect a minimum of 66% of parks with significant ecological areas, a significant boost for conservation in Auckland.

“WALKING THE TALK”

Budget from the new rate became available from July 2018. For regional parks this meant over double the budget in that financial year with further increases year on year. Immediate work included contracting an auditor, and surveying 735 hectares of land in the Waitākere Ranges to plan future weed control. Existing work programs were ramped up where it was easy to do so. Where good information existed for BFAs novel weed control on species commenced e.g. tree lupin (*Lupinus arboreus* Sims) and boxthorn (*Lycium ferocissimum* Miers) on duneland at Muriwai to protect three dune ecosystems and the threatened plants pīngao (*Ficinia spiralis* (A.Rich.) Muasya et de Lange) and sand coprosma (*Coprosma acerosa* A.Cunn.). Where limited information was available botanical surveys for non-forest ecosystems commenced to aid weed management.

However a range of operational and logistical steps needed to happen before the full effect of the increased budget could be utilised. The Biodiversity and Biosecurity teams were merged and operational responsibility for the regional parks weed program was handed back to the parks department with the inclusion of new supporting roles. Increased conservation delivery requirements created challenges for a constrained supplier market compounded by the COVID 19 outbreak. This experience highlights the importance of long lead in times and other considerations to support a viable contractor pool.

Also, what gave the regional parks program an advantage to make the most of the targeted rate initially, i.e., good data management, other weed control programs started to benefit from enhanced data management through geospatial apps connected to a centralized database. The simplicity of other council run weed programs meant that they were first to receive the upgrades.

Ruru our geospatial database. The restructure established a Bio Information team who are specialists in biodiversity and biosecurity

⁴ The 10-year budget sets out the priorities and funding for Council activities that are planned over a 10-year period, for the whole of Auckland Council.

information management. One tool that is under development by this team is Ruru, an award-winning⁵ information system in which all conservation work undertaken by Auckland Council will eventually be held and managed through. All the regional parks weed data is in the process of being uploaded, and in time all contractor work will be reported through this system. We have yet to realise the full benefit of having this system in place combined with a 10-year dataset, but one direct benefit will be more clarity of the program to interested parties outside the immediate regional parks team.

NEXT STEPS

Aside from bedding in the new management team for the regional parks weeds and increasing annual work to meet the key performance indicators of the targeted rate program, additional work is needed.

Ecosystem prescriptions are being developed for all the biodiversity focus areas to address all environmental activity, and where these sites have greater complexity, ecosystem management plans are proposed. Outcome monitoring is being set up to track the success of all the targeted rate programs through measuring changes in ecological integrity within managed sites. Monitoring will also examine management interventions and pressure reduction, such as removal of pest plants, to understand the impacts of different interventions to inform ongoing site based management decisions.

DISCUSSION

The regional park weeds program now follows management practices better aligned to what is now understood to be best practice management for widespread environmental weeds (Clarkson and Grice 2013). New Zealand's Parliamentary Commissioner for the Environment recently released a review of how New Zealand manages weeds that threaten native ecosystems. The report mentioned an ideal state of effective management of environmental weeds in a regional context. A region would have a biodiversity strategy that clearly identifies which remaining ecosystems are most precious and where they are. There would be a biosecurity strategy that helps identify, require monitoring, and prioritise management of weeds that threaten the identified ecosystems. Finally, a pest management plan with clear rules for the management of these weeds at

these sites (Parliamentary Commissioner for the Environment 2021). Although Auckland's current mix of strategies, plans and programs focused through the delivery of the targeted rate does not quite follow this exact recipe, the approach covers broadly similar concepts and will deliver the same outcomes.

This work illustrates the fundamental importance of adequate resourcing and the gains that can be made. Instead of weeds transforming ecosystems the targeted rate program will transform conservation in Auckland. The regional parks weed program also demonstrates continual change and adaptation. The work will never be complete, there will always be pressures from exotic species. Management practices need to evolve, to make the most of technological improvements and continue to use the best information available.

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⁵ Ruru won the Environment and Sustainability Award at the 2021 New Zealand Spatial Excellence Awards