

# Measuring impacts of pest animals on indigenous biodiversity in Southland: a report on a meeting between Environment Southland and Landcare Research

**Meeting date:** 21 Feb 2006, Environment Southland, Invercargill

**Present:** Richard Bowman (ES), Sherman Smith (ES), Amy Rush (ES), Mark Hunter (ES), Grant Norbury (LCR)

**Funding:** Envirolink Small Advice Grant (FRST)

## **Purpose of meeting**

Environment Southland asked Landcare Research for advice on monitoring the impacts of pest animals on indigenous biodiversity in Southland to enable improvements to be made to their Regional Pest Management Strategy through the review process.

However, discussion centred on broader, more strategic issues rather than on detailed monitoring methodologies. Advice on methodologies should come later once there is general approval for the strategy outlined in this report.

## **Background**

In the past, Environment Southland's strategic focus on pest animal management has been **pest-led**. For example, how and where does Environment Southland manage possums to mitigate TB threats? This approach has been useful in the past because of the emphasis on mitigating damage to agricultural production.

Performance monitoring under this scheme has focussed on indices of pest abundance, such as the Modified McLean Scale for rabbits, nest counts for rooks, and RTCI for possums (although performance in terms of impact has also been assessed by the number of livestock herds on movement control for TB mitigation). Performance measures based on pest abundance are problematic because they are unlikely to correlate in a linear fashion with impact. This means that it does not necessarily follow that any reduction in pest abundance translates into the same reduction in impact. The cost-effectiveness of pest control is therefore unknown.

Environment Southland's pest management objectives have now broadened to include mitigating impacts on biodiversity values (i.e., indigenous species that are important ecosystem drivers or are easy to measure). A pest-led approach in this case has limitations because it is often very difficult to ascertain which pest species is having what impact where. Measuring pest impacts on biodiversity is not straightforward. It requires good planning, science input, and robust methodologies. The costs of implementing impact monitoring on a regional basis (e.g., monitoring the non-TB benefits of maintaining possum control) would be prohibitive.

We therefore advocate a **site-led** approach for measuring and mitigating pest impacts on biodiversity values. For example, pest species at site A are collectively impacting on indigenous species X, Y and Z, and these impacts are being mitigated by control methods B and C. Multi-species pest management is

likely to be a more cost-effective and pragmatic approach than attempting to measure and mitigate the impacts of particular pest species.

A site-led approach would involve choosing a small number of sites that represent a range of key ecosystem types (see examples in Appendix 1). Intensive pest control would be implemented on these sites and the response of indigenous biodiversity monitored to quantify pest impacts. These sites would be showcases or exemplars of ecosystem management in Southland.

It is very important that the same monitoring is undertaken concurrently at similar nearby sites that are unmanaged. This will allow stronger inference about the benefits of pest control. Without unmanaged sites, this approach will lack the credibility to argue for more resources to expand the programme.

A key to the success of these projects is community involvement, along the lines of the Aparima Pest Busters at Mores Reserve near Riverton. Community involvement is one of the most effective ways of educating people about biodiversity issues. And it can potentially create employment. Also, community groups are able to access resources beyond the reach of government agencies. Our underlying premise for this approach is that well-documented biodiversity benefits of pest control, coupled with community ownership, will attract more resources for protecting biodiversity values (see diagram in Appendix 2).

A site-led approach has advantages of:

- Allowing management to be focussed at Southland's 'High Value Areas'
- Encouraging community participation and public awareness because it offers site-based activities and project ownership
- Requiring a multi-species/integrated approach to pest management
- Providing showcases of what can be achieved with multi-species pest management

A site-led approach requires:

- Monitoring changes in condition or state
- Methodologies that are science-based to acquire reliable and accurate data (Envirolink/Landcare Research input will be critical in this respect)
- Environment Southland to act as a promoter/facilitator and to build partnerships between communities, agencies, funders, corporate sponsors, etc.
- Performance measures that are based on impact, and on public awareness and participation

Site selection needs to take account of where:

- Specific biodiversity values and their threats have been identified
- There is community interest and proximity to towns
- Biodiversity benefits can be demonstrated by implementing threat mitigation
- The site can be matched with an unmanaged site nearby in order to demonstrate pest impacts in a robust fashion

Issues to consider:

- Will site selection be based firstly on biodiversity value or on community interest?
- If the former, need to ensure correct prioritisation of sites so that critical biodiversity values are protected first.
- Continuity of management. There are numerous examples of projects starting but the initiators then lose interest, leave, or die and the programme falters.
- If funds are being spent on non-critical pests or control is too intensive, there are opportunity costs to consider.

Although we advocate community-based 'site led' biodiversity projects to pursue pest management in future, Environment Southland still needs to continue to use a 'pest led' compliance based approach for rabbits and possums.

### **Recommendations**

1. Consider restructuring the RPMS Work Programme by moving away from a strictly pest-led approach to more community action based site-led approach.
2. Seek further advice from Landcare Research to:
  - a. Assist with review of pest animal management policy. This would have a technical focus, based on identifying SMART objectives with respect to monitoring pest animal impacts on biodiversity values.
  - b. Provide technical advice and guidance on identifying and applying tools for pest impact monitoring to best meet proposed RPMS objectives.
  - c. This work is likely to require additional funding (Medium level \$20K support from Envirolink). An outline of the proposed work is in Appendix 3.

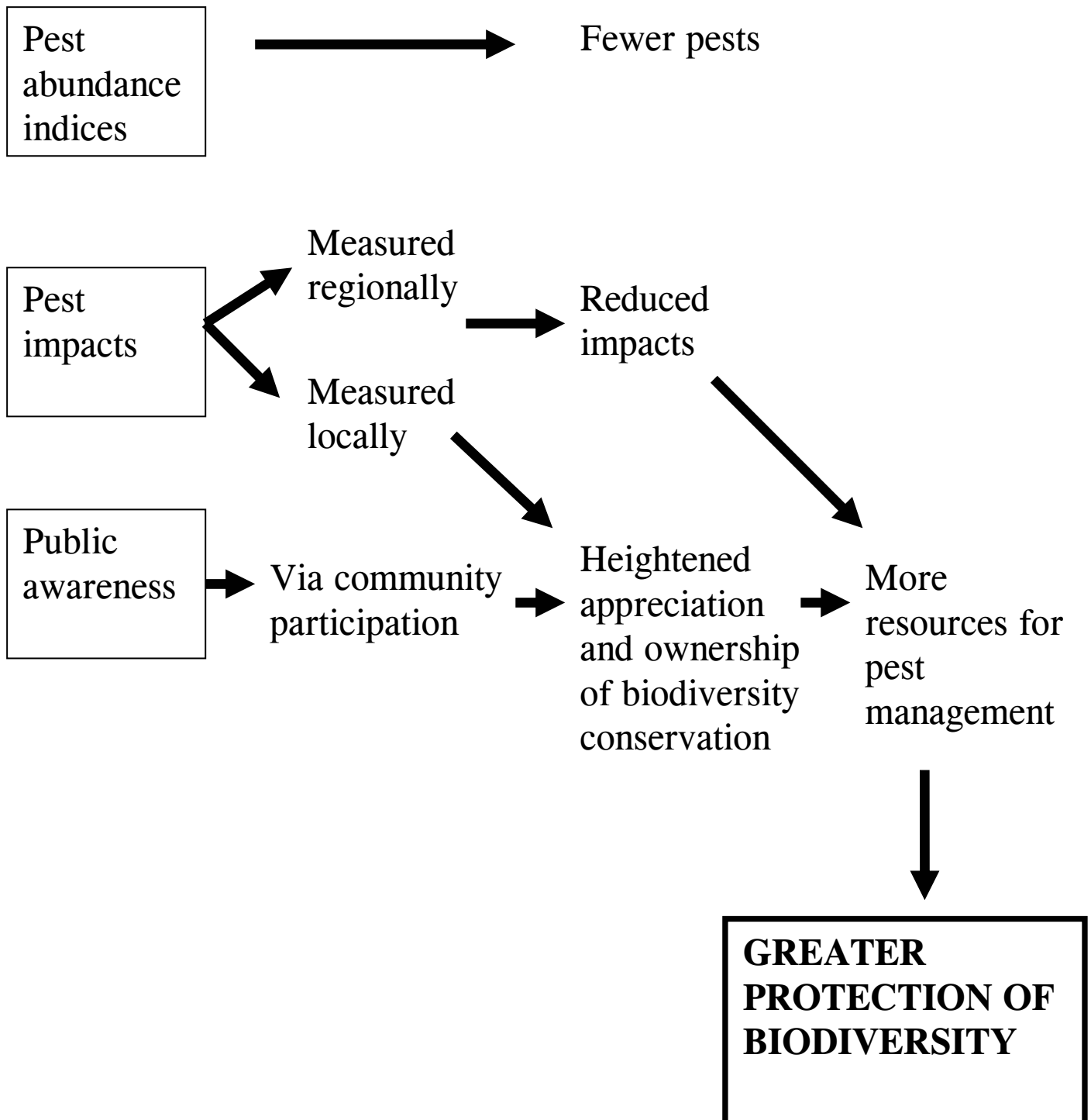
**Appendix 1** – Suggested High Value Areas for site-led pest management

High Value Area	Habitat	Community/Agency support	Unmanaged matched site
Mores Reserve	Coastal Podocarp	Aparima Pest Busters	Wolfgang's property
Lower Maitauna Covenants	Lowland Podocarp-floodplain	ES/Waituna Landcare	
Avondale Black-billed Gull	River bed	ES/DOC/ RMcCI	
Stewart Island	Coastal Podocarp	SIR CET	
	Wetland Peat Bogs	Wetland Working Group	
Bluff Hill	Coastal Podocarp	DOC/ICC/Bluff Iwi	
Sandy Point	Coastal duneland/estuary	ES/OLCG/ICC/DOC	

Appendix 2 - Summary of rationale for site-led approach

Performance measures

Desirable outcomes



**Appendix 3** - Outline of proposal to Envirolink for medium funding to implement the “Tool Application Phase” of measuring pest impacts on indigenous biodiversity in Southland.

Landcare Research will provide the following:

1. Three day visit to potential High Value Areas with Environment Southland staff to become acquainted with the ecosystem types and the range of pest and indigenous species they want to monitor.
2. Meet with Aparima Pest Busters to understand their community approach to biodiversity protection.
3. Review the relevant monitoring literature and consult with other Landcare Research scientists involved in pest and biodiversity monitoring.
4. Draft a manual on:
  - a. Monitoring tools that are tailored to each ecosystem type identified for site-led management in Southland.
  - b. Sampling intensity needed to enable statistical judgments that are accurate and reliable using the data collected to date by the Aparima Pest Busters at Mores Reserve.
5. Circulate draft for review by Environment Southland.
6. Revisit the identified sites with Environment Southland staff to discuss the pragmatics and specifics of implementing the recommended monitoring tools for a given site.
7. Submit approved monitoring manual to Environment Southland.