

Painted Apple Moth Eradication - Community Option – (MAF Option 3)

REPORT AND RECOMMENDATIONS OF SPECIAL SCIENCE MEETING

BACKGROUND

Following the initial development and submission to MAF of the Community Option for the eradication of Painted Apple Moth, members of the Community Advisory Group (CAG) met with a group of scientists on May 28th, at New Lynn to urgently critique, develop and strengthen the Option's 10-point plan. (*Appendix 2*). The CAG specifically requested assistance from scientists with experience in successful eradication of insect pests in New Zealand. The following scientists freely gave of their time and expertise to assist us:

John Bain, Dr John Clearwater, Jarred Gribben, Dr Peter Wigley, Dr Gordon Hosking, Prof. Peter Maddison (CAG).

SITUATION STATEMENT

The meeting endorsed the CAG's view that the continuing PAM eradication programme will only be successful if it is able to work with the community. The management of the PAM programme to date has resulted in unfortunate alienation of the community, and this must be remedied. Whilst the eradication of the moth may still technically be possible through widespread aerial spraying, it was considered that further community alienation using this method could jeopardise future biosecurity operations.

The Community Option therefore centres on bringing the community back on board, in a partnership with MAF. It is based on sound science and addressing eradication in a way that the community can support. It is premised upon open consultation, full disclosure of information, and engagement of the community in the programme. It requires trust to be re-established between the community and MAF. It sets out to develop a sustainable approach to a biosecurity operation that it was felt could provide an innovative model for biosecurity operations world-wide.

RECOMMENDATIONS

In addressing the Option's 10-point plan the group was immediately stymied by the lack of critical scientific data and analyses that was fundamental in determining any proposed operational plan or programme. The recommendations that emerged at the meeting are therefore directed at moving the eradication operation towards a point where specific decisions can be taken, and options implemented, based on hard data. It was considered vital that immediate actions should drive the current programme to this decision-making position as rapidly as possible without compromising or endangering the current programme or any outcome or options. In this regard, the first recommendation is of prime importance.

1.0 As a matter of urgency, the establishment of an operational science group (OSG) in place of the technical advisory group (TAG).

There were seen to be a number of problems endemic in the current TAG/MAF set-up. These include failure to initiate timely research programmes including the resulting failure to develop the critical pheromone, failure to identify and obtain data necessary for delimiting the zone of infestation, failure to incorporate lessons learned during Operation EverGreen, and poor relationship with the community. These problems are not the fault of TAG as such, but are a function of the way in which it was constituted. As an advisory group it has had a rather peripheral role in the ongoing operation, particularly when its advice is not listened to or evaluated.

There was agreement that what was needed instead was an operational group with a hands on science-approach, reflecting the successful model of Operation EverGreen, and indeed utilising its expertise and accumulated wisdom. In establishing the OSG there is a need to keep it as a small core group, with members chosen on the basis of their expertise, and their ability to work together, with MAF and with the community. Given the current eradication situation and the need to meet at the earliest possible opportunity, it was seen that the ability of the OSG members to work with each other from day one, was the critical criterion for initial membership. Our recommendations (*Appendix 1*) for membership was in no small sense driven by observations of this meeting and the interactions of those present, as well as their obvious experience.

This core OSG would work with a wider reference group that included appropriate expertise and representation from DoC, HortResearch, Forest Research, Waitakere City Council, Auckland City Council, CAG, etc., drawing on additional expertise as and when needed.

2.0 There must be an urgent re-analysis of all PAM raw data

There was considerable concern at the meeting that existing data and analysis appears to be patchy and incomplete, with no apparent structure for centralising or pooling all information. There is also the need to identify what is not known and therefore needs to be known in deciding what further data is collected. Only after thorough analysis of all raw data both past and current, will it be possible to determine whether the on-going PAM operation should be one of eradication, containment, or slowing the spread.

The OSG must therefore be given immediate and urgent access to all raw data from day one of the PAM programme, including:

- all finds of larvae, pupae, eggs and females
- all caged female trap catch results and meteorological data
- sterile male trials – e.g. distribution of moth catches
- all areas that have been ground searched or surveyed

- all areas that have been ground sprayed
- all areas that have been aerial sprayed, together with spray deposition data and GPS track records for each event
- all information on PAM biology, population, behaviour, pheromone development
- current operating instructions for field teams.

All further action should be premised upon this thorough analysis. However, in the meantime the following steps are recommended to improve the potential success of the PAM Operation.

3.0 Definition of the infested area (previously referred to as “buffer zone” in the community option) must be undertaken as a matter of urgency

This is regarded as the fundamental issue, and it still remains unaddressed after three years of the PAM programme. Definition or delimitation is critical to a long-term strategy. It must be achieved before it can be decided whether or not eradication is still practicable under any option, or whether containment or slowing of the spread are more appropriate strategies to pursue.

The key to defining the infested area is urgent re-analysis of all existing data as above, together with timely input of new data as it comes in. Meanwhile there should be an immediate programme to increase the number of traps set, and redeployment of existing traps (if necessary) to assist this definition. This should be done on the basis of the following priorities:

- Intensive trapping over a 2km zone beyond the outer edge of the known infestation, i.e. moth catches or larval finds; beginning with a coarse survey and refined as the data comes in.
- Investigation via ground searches and trapping of distribution along transport corridors, looking at obvious places, including rail tracks and motorways well beyond the area of known infestation.
- Monitoring line/grid of traps between known infested area and sensitive high-value areas, such as Waitakere Ranges and Woodhill Forest.
- Trapping along tracks and ridgelines within the Waitakere Ranges as these are more likely to be infested than dense bush.
- Ground searches of any areas where there have been male moths trapped, but no ground searches undertaken.
- Intensive search of host groups outside of known infested area.

Surveyors should be pulled from the known infested areas and redeployed into outer zones and other priority areas. It is recommended that experienced surveyors be given the freedom to use their own initiative and intuitive sense to look where they think PAM might be present within the broad areas defined above, rather than within a prescriptive boundary.

4.0 Response to ongoing PAM finds must continue

During this delimiting process, all trap catches must trigger intensive ground surveys and a more concentrated deployment of traps.

All larval finds should be treated with Foray 48b by ground spraying, the extent depending on the locality. Common sense rather than prescription should guide this.

Egg masses should be physically removed (in a manner that ensures no eggs are lost) or spot sprayed with pyrethrum. The broadcast use of Decis as a 'prophylactic' should be discontinued.

Beyond this, the options for control, including future use of sterile male moths for contracting the area of infestation, depend entirely on what is revealed in the information gathered by the intensive search, together with the re-analysis of existing data.

It should be re-emphasised that it is not possible to be more precise in treatment options at this point when the extent of the infestation spread remains unknown, and definition of the infested area has not been determined.

5.0 Research must be reviewed, supported and expanded

The vital need for ongoing research in all areas of the programme was affirmed by the meeting. Whilst the review of all available data as recommended in this report will provide the basis for determining what further research should be carried out, there were a couple of specific areas highlighted for immediate attention.

- Pheromone: The meeting endorsed the vital necessity of continuing, and funding, all pheromone research as a priority. All material relating to pheromone development should be reviewed by the OSG.
- Hosts: The need for a comprehensive host list for targeting possible PAM locations in the field, must drive continued research in this area. There should be on-going feeding trials of both indigenous and exotic plants, taking into account seasonal variations. In particular there must be testing of the 'elite' clonal varieties of *Pinus radiata*.

6.0 'Partnership' programmes must to be explored and encouraged

The vital need to bring the community back on board and re-establish trust and support for the PAM programme, could be, in part, met by encouraging the 'partnership' programmes as outlined in the 10-point plan - in addition to re-engaging trust with CAG and the community through full disclosure of information and open consultation.

- Wattle removal: It was considered that wattle removal should not be progressed until the intensive survey is completed. But after this it should be considered as a useful management tool that will engage the community and Territorial Local Authorities in a positive partnership role. Wattles are a targeted weed species in the Auckland region. Therefore it would be possible to work with Waitakere and Auckland City Councils and various environmental groups to remove them followed by planting with appropriate natives. This action could be rapidly implemented after the survey is completed. Starting with the critical transport corridors and creeks, removal may produce several eradication benefits:
 - rapid reduction of the PAM's preferred food species over winter before likely population explosion in spring;
 - increased 'ballooning' distance the caterpillar will have to span.
 These two benefits may well assist in slowing the spread, giving time for other, eradication, tools to take effect.
- Trap production: an intensification of the trapping programme may require the rapid increase of trap production. The task of trap assembly could well be undertaken by the community as was done with Operation EverGreen.

CONCLUSION

The overwhelming sense that the Painted Apple Moth eradication programme has brought biosecurity in this country to the crossroads, has driven this urgent need to find a new direction. Without doubt, incursions of unwanted pests will continue to happen, and there will be future eradication programmes required in urban and populated areas. However it is clear from the experience of this PAM operation that the dis-empowerment and consequent alienation of the community now poses the biggest threat to biosecurity.

The urgent need to turn this programme around and re-establish community trust and backing must over-ride all other considerations. Continued and widening support for the Community Advisory Group's Option has confirmed and validated this plan. The strong encouragement and support of the senior scientists present at this critical meeting was further confirmation that this approach brings not only the greatest chance of PAM eradication, but the best chance we have of restoring mutual respect and the ability to work together.

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May 30th 2002

Appendix 1

Recommended members of OSG

1. Director of Forest Biosecurity, MAF.
2. John Bain, Forest Research (34 years), a key link with the forest research providers; extensive experience in incursion responses, also works with people with expertise on spraying; was a member of the Operation EverGreen (OE) Operational Science Group, and currently a Member of the PAM TAG.
3. Dr Gordon Hosking – independent scientist; strong links with Forest Research; and leader of the successful Operation EverGreen Science Programme.
4. Dr John Clearwater – expertise in pheromone development and deployment; key link with world Lymantriid specialists and pheromone synthesisers; responsible for the successful identification of the White Spotted Tussock Moth pheromone; currently assisting with the synthesis of the PAM pheromone in an unpaid capacity.
5. Dr David Baird - quantitative ecologist; his population modelling expertise was critical to the success of Operation EverGreen, and is for the PAM programme.
6. Dr Peter Wigley – independent researcher, expert in Btk, was a member of the OE Operational Science Group and the Ministerial Science Panel.
7. Prof. Peter Maddison – local entomologist who first found PAM; expertise in pheromones and eradication programmes in the Pacific Is (rhinoceros beetle); member of the CAG, and head of the local branch of Forest & Bird; teaches ecology.
8. Hana Blackmore – from the Community Advisory Group; has in-depth knowledge of eradication programmes from community perspective, particularly health issues (both Operation EverGreen and PAM); a critical thinker, and strategic analyst.
9. Dr Meriel Watts – Community Advisory Group and its representative on the TAG; was also on the OE Operational Science Group and the OE CAG; has expertise in pesticides, and in community policy partnerships.
10. Kerry Bodmin – Waitakere City Council Landscape Planning Co-ordinator, MSc Environmental Science, plan ecology; member of both CAG and TAG; key link with Waitakere City, whose goodwill and continued support is crucial for success.

In summary this group draws on the expertise of five members of the current TAG, six members of the successful Operation EverGreen Operational Science Group, and four members of the PAM CAG.

It provides rigour in all the necessary areas of science, provides continuity with the existing programme, experience of previously successful programme, and strong links with the community. Forming this group with these personnel is likely to have the added benefit of gaining the confidence and support of the forest industry.

Appendix 2

Painted Apple Moth - Community Option

Pursue eradication through a highly resourced and intensive, government funded community supported ground based operation across the entire area where male moths have been trapped.

There will be:

- no aerial spraying over populated areas
- ground spraying of larval finds carried out with a Btk –based spray
- programmes to consult and enlist the support and participation of the public and local government to help detect infestations; to wipe out weed hosts; and to control the movement of vegetation
- expanded funding and support for all research and development programmes into the painted apple moth and alternative and complementary techniques for its eradication
- increased resources put into researching adverse health effects and providing treatment for those affected by either the previous or the ongoing programme

To implement this option we are proposing the following 10-point plan.

(This will be further developed with full public and community input and consultation. The PAM-CAG eradication plan previously published in 2001 is also undergoing modification as a result of the current situation and community input.)

1. **Buffer Zone** At the fringes of the infestation, a 2km buffer zone will be created in order to prevent the moth spreading further. This will be provided by an intensification of the trapping programme and a greater public education process. (This buffer zone will aim to protect the Waitakere Ranges and other sensitive areas.)
2. **Research and Development** An increase in the scientific effort and support to produce synthetic pheromone and to develop other eradication methods such as the sterile male technique is required. The latter would require much greater rearing and sterilisation facilities coupled with public education. Research into the effects of the eradication methods on natural ecosystems will be undertaken.
3. **Public Support** A great increase in the programme to develop public education and community involvement in the campaign, We want the involvement of the THOUSAND EYES of the Community, with

- inclusion of children and youth, and translation of information for the Auckland ethnic communities.
4. **Host Removal** The months from now and through winter 2002 should be used to eradicate wattles and other weed hosts from the infested and peripheral regions. [A large percentage of larvae have been found on wattles - removal of these will help delay the spread and "buy time" for the eradication.]
 5. **Sector By Sector Approach** Infested areas and hotspots will be treated by ground spraying by trained teams. This work will be intensified to remove the moth sector by sector. Spot aerial spraying of individual trees or inaccessible infested areas may be needed. Any aerial applications will be the exception to the rule and will not be carried out without careful and detailed planning and full consultation and agreement of affected people.
 6. **Safest Choices** BTK will be the pesticide of choice for larval infestations.- with the formulation used disclosed to medical professionals so that allergies can be addressed. Other methods such as Decis may be used for non-larval stages on inanimate objects, except in residential areas or populated public places.
 7. **Management** Management of the eradication will be locally based, with appropriate advisers from outside as well as within MAF. A full strategic plan outlining the eradication programme that includes measurable expectations and optimum outcomes will be made available to the PAMCAG, TLAs and other stakeholders.
 8. **Health** Increased resources will be put into all areas of adverse health effects and treatment Greater education and involvement of local health practitioners will be provided for. The formulation of sprays used must be available to health professionals to enable the proper recognition and treatment of allergies.
 9. **Monitoring** Extended monitoring, especially around the fringes of the range, is needed. This will need to be in until eradication has been completed.
 10. **Public Consultation** The PAMCAG and other community networks will be better utilised for community education and consultation.