

EDC (03) 181

The preliminary assessment of the potential economic impact of the Asian gypsy moth over the period 2003-2053, in the absence of government intervention, ranges from \$5 million under a low impact scenario, to \$398 million under a high impact scenario. MAF believes that the potential impacts of the Asian gypsy moth are likely to lie towards the upper end of the range modelled.

Baseline Implications	None.
Legislative Implications	None.
Timing Issues	<p>Aerial spraying would need to commence in early October 2003 and be completed by the end of November 2003 while the Asian gypsy moth is in the larval life stage targeted by the spray. The most urgent component of implementing the eradication programme is communication with the local community and affected sectors. MAF estimates that at least four weeks' public notice will be required prior to the commencement of spraying. For spraying to commence on 6 October 2003, the public notification would need to commence no later than 8 September 2003.</p> <p>If spraying commenced any later than 6 October 2003, this would pose a risk to achieving eradication. The next opportunity to spray would be in spring 2004.</p>
Announcement	None.
Consultation	<p>DOC, MFE, ERMA, NZFSA, Health, Labour, DPMC, TPK, MoRST and Treasury were consulted.</p> <p>The Minister indicates that consultation with government caucuses and other parties represented in Parliament is not required.</p>

The Minister for Biosecurity recommends that the Committee:

- 1 note that on 27 August 2003, the Cabinet Economic Development Committee deferred consideration of the paper under EDC (03) 167 and invited the Minister for Biosecurity to report back on 3 September 2003 with further information on:
 - 1.1 the risks and probabilities of natural extinction, further detection and further incursion of any Asian gypsy moth population;
 - 1.2 the analysis of the estimated economic impacts of an established Asian gypsy moth incursion;

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1.3 a timeline and critical path for the proposed Asian gypsy moth eradication measures

[EDC Min (03) 20/1]

Probabilities of detection, natural extinction and further incursions

- 2 note that the Asian gypsy moth (AGM) Technical Advisory Group (TAG) considers there to be a medium-to-high probability that a self-sustaining population of AGM exists in Hamilton;
- 3 note that the probability that intensive surveillance would have detected such a population is considered to be low;
- 4 note that the TAG is of unanimous opinion that the probability of natural extinction of such a population is low;
- 5 note that the probability of a further incursion of AGM is considered to be low;

Economic impact assessment

- 6 note that gypsy moth is included in the World Conservation Union's list of 100 of the world's worst invasive alien species;
- 7 note that the potential economic impacts of AGM in New Zealand over the period 2003-2053 in the absence of government intervention are estimated to range from \$5 million under a "low impact" scenario to \$398 million under a "high impact" scenario;
- 8 note that this range reflects uncertainty as to how AGM would respond in New Zealand environments in terms of magnitudes of impacts and rate of spread;
- 9 note that this is a preliminary assessment, informed by consultation with a wide range of technical and sector experts and subject to peer review, but yet to be reviewed by the TAG;
- 10 note that the Ministry of Agriculture and Forestry believes that, based on the biology of this insect, availability of preferred host material, absence of natural parasites and favourable climate of New Zealand, the potential impacts of AGM are likely to lie towards the upper end of the range modelled;

Critical timing in implementation

- 11 note that aerial spraying would need to commence in early October 2003 and be completed by the end of November 2003 while the AGM is in the larval life stage targeted by the spray;
- 12 note that the most urgent component of implementing the proposed eradication programme is communication with the local community and affected sectors in preparation for aerial spraying, including establishing health support services;
- 13 note that Section 114A of the Biosecurity Act 1993 requires that at least two weeks' public notice be given of aerial spraying and the Ministry of Agriculture and Forestry estimates that communications activities would require a minimum of four weeks prior to commencement of spraying;

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- 14 note that for spraying to commence on 6 October 2003, communications activities would need to commence no later than 8 September 2003;
- 15 note that the Minister for Biosecurity indicates that consultation with government caucuses and other parties represented in Parliament is not required.

Fleur Gaston
for Secretary of the Cabinet

Copies to:

Cabinet Economic Development Committee
Chief Executive, DPMC
Lesley Haines, DPMC
Secretary to the Treasury
Geoff Dangerfield, Ministry of Economic Development
Minister of Foreign Affairs and Trade
Secretary of Foreign Affairs and Trade
Minister of Health
Director-General of Health
Director-General, Ministry of Agriculture and Forestry (NZFSA)
Director-General, Ministry of Agriculture and Forestry (Biosecurity)
Director-General, Ministry of Agriculture and Forestry (Agriculture)
Director-General, Ministry of Agriculture and Forestry (Forestry)
Chief Executive, Ministry of Research, Science and Technology
Secretary of Labour
Chief Executive, Te Puni Kokiri
Secretary for the Environment
Director-General of Conservation

Chair
Cabinet Economic Development Committee

GOVERNMENT RESPONSE TO THE INCURSION OF ASIAN GYPSY MOTH: ADDITIONAL INFORMATION

Proposal

1. *This paper responds to issues raised at the Cabinet Economic Development Committee meeting of 27 August 2003. It should be read in conjunction with the submission Government response to the incursion of Asian gypsy moth.*

Executive summary

2. On 27 August 2003, the Cabinet Economic Development Committee (EDC) considered the paper *Government response to the incursion of Asian gypsy moth*. In this submission, the Ministry of Agriculture and Forestry (MAF) recommends that the Government response to the incursion of Asian gypsy moth (AGM) be the pursuit of eradication based on aerial spraying in spring 2003 followed by mass trapping.
3. In considering this paper, EDC invited the Minister for Biosecurity to provide a report to the EDC meeting of 3 September 2003 with further information on the risks and probabilities of natural extinction, further detection and further incursion of any AGM population, the analysis of the estimated economic impacts of an established AGM incursion and a timeline and critical path for the proposed AGM eradication measures [EDC Min (03) 20/1].
4. The AGM Technical Advisory Group (TAG) considers there to be a medium-to-high probability that a self-sustaining population of AGM exists in Hamilton. The probability that intensive surveillance would have detected such a population is considered to be low. The TAG is of unanimous opinion that the probability of natural extinction of such a population is low. The probability of a further incursion of AGM is also considered to be low.
5. Gypsy moth is included in the World Conservation Union's list of 100 of the world's worst invasive alien species. A preliminary assessment estimates the potential economic impacts of AGM in New Zealand over the period 2003-2053 in the absence of government intervention to range from \$5 million under a "low impact" scenario to \$398 million under a "high impact" scenario. This range reflects uncertainty as to how AGM would respond in New Zealand environments in terms of magnitudes of impacts and rate of spread. Whilst this assessment has been informed by consultation with a wide range of technical and sector experts and subject to peer review, it has yet to be

reviewed by the TAG. MAF believes that, based on the biology of this insect, availability of preferred host material, absence of natural parasites and favourable climate of New Zealand, the potential impacts of AGM are likely to lie towards the upper end of the range modelled.

6. Aerial spraying would need to commence in early October 2003 and be completed by the end of November 2003 whilst AGM is in the larval life stage targeted by the spray. The most urgent component of implementing the proposed eradication programme is communications with the local community and affected sectors in preparation for aerial spraying, including establishing health support services. Section 114A of the Biosecurity Act 1993 requires that at least two weeks public notice be given of aerial spraying. MAF estimates that communications activities in implementing the proposed eradication programme would require a minimum of four weeks prior to commencement of spraying. For spraying to commence on 6 October 2003, these activities would need to commence no later than 8 September 2003. There is significant local community support for the proposed programme, but any delay in decision beyond this date would put at considerable risk ability to implement the programme in time to achieve eradication.

Background

7. On 27 August 2003, EDC considered the paper *Government response to the incursion of Asian gypsy moth*. In this submission, MAF recommends that the Government response to the incursion of AGM be the pursuit of eradication based on aerial spraying in spring 2003 followed by mass trapping.
8. In considering this paper, EDC invited the Minister for Biosecurity to provide a report to the EDC meeting of 3 September 2003 with further information on:
 - the risks and probabilities of natural extinction, further detection and further incursion of any AGM population;
 - the analysis of the estimated economic impacts of an established AGM incursion; and
 - a timeline and critical path for the proposed AGM eradication measures [EDC Min (03) 20/1].

Comment

Probabilities of detection, natural extinction and further incursions

9. There is limited information available on which to base quantitative estimates of probabilities of establishment of AGM in New Zealand and its successful eradication and what little modelling has been done uses US data on experience of European gypsy moth. Why MAF considers eradication based on aerial spraying in spring 2003 to be the Government's preferred response is outlined in the submission *Government response to the incursion of Asian gypsy moth*.

10. For the purpose of this paper, a subgroup of the AGM TAG, comprising TAG members with expertise in entomology and population modelling, specialising in lymantriid moths, was called on to provide expert opinion on the probabilities of existence of a self-sustaining population of AGM in Hamilton and natural extinction of such a population. The TAG considers there to be a medium-to-high probability that a self-sustaining population exists. All evidence points to an egg mass as the likely source of entry: the trapped moth was in good condition and males, although strong fliers, seldom fly more than 800 metres; an association with a known invasion pathway is evident; other life stages of AGM are too short in duration to have survived the journey via this pathway; and AGM would have been in its overwintering egg stage in the country from which entry via this pathway originated at the time of departure.
11. The probability that intensive surveillance would have detected further AGM activity is considered to be low. Such a population may be too small to detect or the moth flight season may have ended before the intensive trapping programme, which detects only adult male moths, was deployed in response to the trap find. Modelling indicates a low probability that low trapping densities, such as in place prior to intensive surveillance, could detect low population densities of AGM. Any population present would now be in its overwintering egg stage.
12. The TAG subgroup identified above is of unanimous opinion that the probability of natural extinction of such a population is low, given the abundance of the preferred host of this species in the proximity of the trap find, the absence of natural parasites of this species in New Zealand, the mild climate of Hamilton, which, together with egg mass size, is conducive to the ability of the moth to find mates, and the higher than average fecundity of this species at low population densities.
13. A further incursion of AGM is considered to be of low probability, but cannot be ruled out. In ten years of MAF's early warning trapping programme, this is the first time an adult gypsy moth has been found in New Zealand. All previous detections of gypsy moth have been of egg masses intercepted at the border or risk sites. Border inspections have been audited and, following the sea container review, MAF will shortly implement improved risk management for imported sea containers.

Economic impact assessment

14. Gypsy moth is included in the World Conservation Union's list of 100 of the world's worst invasive alien species. MAF commissioned an assessment of the potential economic impacts of AGM in New Zealand. The preliminary assessment estimates the potential impacts in the absence of government intervention to total between \$5 million and \$398 million (present value in 2003) over the period 2003-2053.

15. Given considerable uncertainty as to how AGM would respond in New Zealand environments, three scenarios were modelled, reflecting the range in expert opinion:
- a “low impact” scenario (\$5 million) – representing a conservative view on likely impacts, based on AGM thriving less well here than it has overseas;
 - a “medium impact” scenario (\$46 million) – representing what is thought likely to occur under current conditions, on current evidence; and
 - a “high impact” scenario (\$398 million) – representing a realistic possibility under AGM having greater impacts here than it has overseas.
16. These scenarios differ according to the magnitudes of impacts and rate of spread of AGM. The impacts included in these scenarios are indicated in the following table.

Sector impacts	Impact scenario		
	Low	Medium	High
Urban households: additional spray costs	✓	✓	✓
Urban golf courses and schools: additional spray costs	✓	✓	✓
Urban public trees: additional spray costs	✓	✓	✓
Urban public trees: additional replacement costs	✓	✓	✓
Pipfruit, stonefruit and berryfruit orchards: additional spray costs	✓	✓	✓
Pipfruit, stonefruit and berryfruit orchards: research and monitoring costs		✓	✓
Willow and poplar plantings: research and monitoring costs		✓	✓
Trade: additional vessel inspection costs		✓	✓
Trade: additional log fumigation costs		✓	✓
Trade: loss in market access to USA for pipfruit			✓
Plantation forestry: reduced yields			✓

17. Not quantified in any of these scenarios are losses in amenity values in urban areas and impacts on indigenous species, riparian, erosion control and shelter plantings and human health.
18. This assessment was informed by consultation with a wide range of technical and sector experts and subject to peer review. Due to the time constraint under which it was prepared, however, it has not yet been possible to place this assessment before the TAG to validate the coefficients adopted and to attempt to determine a more precise estimate, of greater assistance in decision-making.
19. It is uncertain which of the three scenarios modelled can be considered the most likely and there has been insufficient time for the TAG to review the economic impact assessment. MAF believes that, based on the biology of this insect, availability of preferred host material, absence of natural parasites and favourable climate of New Zealand, the potential impacts of AGM are likely to lie towards the upper end of the range modelled.

Critical timing in implementation

20. Aerial spraying must coincide with or slightly precede the development of larvae, the timing of which in New Zealand is predicted to follow bud burst on deciduous host trees around late September-early October. The TAG considers that spraying would need to commence around this time and to be completed by the end of November, after which time AGM would be pupating and no longer susceptible to the spray. The operating plan is being developed for spraying to commence on 6 October 2003. Any later would

pose a risk to achieving eradication. As AGM has only one life cycle per year, if aerial spraying does not occur in spring 2003, the next opportunity to spray would be in spring 2004. By this time, significant spread would likely have occurred, given how well adapted this species is to rapid spread and how conducive the New Zealand environment would be to its survival. This would cause both the cost of eradication to increase and almost certainly the technical feasibility and probability of success to be reduced.

21. There are a number of operational arrangements that must be finalised before aerial spraying could commence, including convening a meeting of the TAG to approve the operating plan, confirming the target area for aerial spraying, finalising contracts, confirming the airfield to be used, establishing aircraft and ground systems and weather stations, testing and calibrating the aircraft to be used and implementing other safety and security measures.
22. Of greatest urgency, however, in implementing the proposed eradication programme is the need to commence communications with the local community and affected sectors in preparation for aerial spraying. MAF has held discussions on the possibility of spraying with key stakeholders and the local community, who have expressed significant support for the proposed eradication programme. Further communications activities in implementing this programme would involve meeting and discussing arrangements with key stakeholders such as territorial local authorities, Waikato Hospital and schools, sporting organisations and business interests in the target area, providing information to the local community, seeking to address concerns and establishing health support services. Section 114A of the Biosecurity Act 1993 requires that at least two weeks public notice be given of aerial spraying. MAF estimates that the above activities would require a minimum of four weeks prior to commencement of spraying. To enable spraying to commence on 6 October 2003 therefore requires that these activities commence no later than 8 September 2003. Any later would put at considerable risk ability to implement the programme in time to achieve eradication as well to address adequately the concerns of the local community and to minimise the disruption caused.

Consultation

23. The Department of Conservation, Ministry for the Environment, Environmental Risk Management Authority of New Zealand, New Zealand Food Safety Authority (Agricultural Compounds and Veterinary Medicines Group), Ministry of Health, Department of Labour (Occupational Safety and Health Service), Department of the Prime Minister and Cabinet, Te Puni Kōkiri, Ministry of Research, Science and Technology and the Treasury have been provided with a copy of this paper.

Financial implications

24. This paper has no direct financial implications.

Human rights and gender implications

25. The proposals in this paper are consistent with the Human Rights Act 1993 and have no gender implications.

Legislative implications

26. There are no legislative implications associated with the proposals in this paper.

Regulatory impact and compliance cost statements

27. Neither a regulatory impact statement nor a business compliance cost statement is required as the proposals in this paper would not result in a Government Bill or statutory regulations.

Publicity

28. There is no proposed publicity associated directly with the proposals in this paper.

Recommendations

29. It is recommended that Cabinet:

Probabilities of detection, natural extinction and further incursions

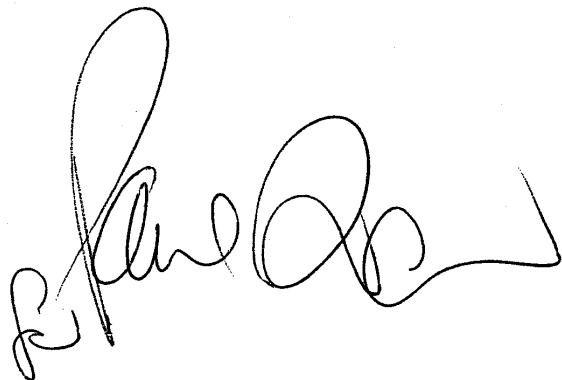
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13. **note** that for spraying to commence on 6 October 2003, communications activities would need to commence no later than 8 September 2003.



Hon Jim Sutton
Minister for Biosecurity