the Australia and New Zealand School of Government

CASE PROGRAM 2006-10.2

The Painted Apple Moth Eradication Programme (B)

In late August 2002, Murray Sherwin, Director-General of the New Zealand Ministry of Agriculture and Forestry (MAF) had to decide whether to reverse his department's recommendation, made to Cabinet barely a month before, for the future management of the Painted Apple Moth (PAM) incursion. The fast-breeding moth, discovered three years earlier, threatened New Zealand's plantation forests as well as its native bush, potentially robbing the economy of $356 million in exports. Despite eradication efforts, including the controversial use of aerial sprays, new areas of infestation were still being discovered.

Murray Sherwin had become chief executive less than a year ago, arriving at MAF as controversy was building around his Forest Biosecurity Group's management of PAM. MAF's recommendation to Cabinet in July 2002, based on the weight of internal and external advice, and concern about the $90 million estimated cost of an all-out eradication attempt, was to continue with containment activities while further investigating other means of managing the pest. Government's response was to allocate $11 million in immediate resources and call for more detailed information on the options of long-term management, or a renewed attempt at full eradication. Sherwin realised there was substantial political support, despite the odds, for eradication. He now needed to know whether his department, besieged by media and community criticism, could believe in and commit to the task.

This case was developed by the Australia and New Zealand School of Government (ANZSOG) and funded by the New Zealand Ministry of Agriculture and Forestry (MAF). The case was written by Janet Tyson, with supervision by Dr Richard Norman, Victoria University of Wellington. It describes events preceding those in cases 2006-10.2 and 2006-10.3 but can be used in its own right. It has been prepared as a basis for class discussion rather than to illustrate either effective or ineffective handling of a managerial situation. The assistance of Ruth Frampton, Ian Gear, Peter Maddison, Barry O'Neil, Brett Sangster, Murray Sherwin, Max Suckling, and Peter Thomson is gratefully acknowledged.

The unexpected intruder

For the first 18 months, following the May 1999 discovery of what was quickly identified as the PAM, the normal containment and control procedures for new insect incursions seemed to be effective, and June 2001 was seen as a possible time for eradication to have been achieved.

The painted apple moth, *Teia anartoides,* is found in Tasmania and the temperate and warm temperate east coast of Australia. A minor garden pest, formerly known as the painted acacia moth because of its preferred diet, it did not figure as a known or potential threat to New Zealand plants. Occasional outbreaks had occurred, especially in Tasmania, but little documented research had been done on the PAM.

On 7 May 1999, MAF's Director of Forest Biosecurity, Dr Ruth Frampton announced the discovery of a new pest moth. Dr Frampton, as Chief Technical Officer under the Biosecurity Act, had the prime responsibility for managing the incursion. The moth, now positively identified as PAM, had been found in three properties in the suburb of Glendene, in Waitakere City, West Auckland *(Exhibit 1)* a region encompassing dense housing, bush wilderness and commercial orchards and vineyards.

All life stages – eggs, caterpillars, pupae and adults had been found, and two properties were heavily infested,[1] suggesting the moth had been in New Zealand for up to a year. Containment measures – ground spraying and removal of host vegetation – were already under way.

Newspapers described the arrival of a "voracious" intruder from Australia. The *New Zealand Herald*, describing "masses of caterpillars" and "white glossy egg masses containing as many as 700 eggs", referred to unnamed MAF officals as expecting "to take about four days to decide whether to eradicate it," and reported complaints from local orchardists that they had heard about the moth only through the news media." All over Auckland, calls came in from residents claiming to have found caterpillars, but no sightings were confirmed.

In a media release on 10 May, Ruth Frampton reassured local horticulturists: "It does from time to time become a serious threat for pines and acacias [wattles], but is not reported to be a major threat for orchards.[2]"

It was, however, an indiscriminate feeder and had already been found on at least one native tree species, the kowhai. This, along Australian reports of its taste for *Pinus radiata*[3] meant PAM posed a much greater potential threat than the closely-related white spotted tussock moth, eradicated two years earlier at a cost of $12 million. While males can fly, the female PAM is flightless. The caterpillars are adept at "hitch-hiking" on equipment such as cars or shipping containers. Young larvae could travel quite a distance "ballooning" with the wind.

[1] *The Dominion* 7-5-99 Ed 2 p 1, Paul Moran. 'Hungry Aussie moth arrives in Auckland.'
[2] MAF Media Release 10-5-99: Painted Apple Moth – What Threat to Orchardists?
[3] The main plantation forestry crop in New Zealand.

The initial response

A considerable body of knowledge had been built up during the Ministry of Forestry-led eradication of the tussock moth. In ensuing restructures, including the creation of a merged Ministry of Agriculture and Forestry, which had generated much bitterness in some forestry circles, this experience had been dispersed around a number of new entities.

For the initial response Ruth Frampton called on two of these new entities, MAF's National Plant Pest Reference Laboratory (NPPRL), which started "delimiting surveys" for moths, eggs and pupae,[4] and Vigil Forest Health, a business of the Forest Research Institute (FRI).[5] Vigil was contracted to treat all possible host trees on infested properties, and clear vegetation where appropriate.

By 14 May after visual surveys of every property within a 1 km radius of the discovery site, the moth had been found and treated at six sites. Notices advising about not moving vegetation out of the area had been put up. With containment costs climbing past $60,000, Ruth Frampton told her then manager

> "[The PAM] appears at this stage to have a limited distribution, it appears that we may be able to get on top of it using ground techniques…We don't yet know how much research to initiate and don't in any case have a budget for it."

By August, 1351 properties, parks and reserves, had been surveyed.[6] Eighteen infested properties had been found and treated, all but four of which now appeared clear of the moth.

Scientific and technical advice

Offers of assistance had come in to MAF and other agencies as soon as it was known there was a new moth discovery. One came from Dr John Clearwater, an independent researcher, who had worked with Canadian Dr Gerhard Gries to develop the synthetic pheromones of the tussock moth. The pheromones, developed within a year, made it possible to set up a wide-ranging trapping grid to track the moth and monitor control measures. This enabled eradication to be completed in two years.

In Rotorua, the FRI had just opened a new quarantine facility, and contacted MAF offering to establish a PAM breeding colony, and conduct host testing[7] trials free of charge. Dr Peter Maddison, the first expert to see the original infested site, also offered assistance. Now an independent entomologist, he had previously worked with many in the team at Landcare,[8] which had formally identified the PAM, and had contacts in Tasmania.

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[4] NPPRL had been recently set up as a plant parallel to the existing animal disease laboratory. Still to be clarified was its relationship with the existing Forest Research Institute (FRI).
[5] Until it was sold to FRI April 1999, this group of forest health experts had been part of MAF.
[6] MAF Media Release, 25-8-99, Painted Apple Moth – update.
[7] To establish what plants the moth could thrive, and be able to breed, on in its new environment.
[8] Landcare Research New Zealand Ltd was one of ten Crown Research Institutes (CRIs) established in the wholesale restructure of New Zealand science in 1992, with the overall aim to devolve decision-making, enhance accountability and deliver a profit. As research providers, CRIs could seek funding from a wider range of sources, but must compete with each other for access to government science

Early in June 1999, Ruth Frampton convened a Technical Advisory Group, comprising "leading researchers in the field."[9] The "TAG" concept had been developed to strengthen the quality and range of scientific advice to the Chief Technical Officer, but there was little specification, and across different biosecurity groups a range of interpretations, about how this might be done. Initial meetings on the PAM were informal, with no minutes taken. Numbers attending fluctuated and could be as many as 24, including invited advisers. Waitakere City Council officers, closely involved with logistics of the control operation, regularly attended.

The Technical Advisory Group included scientists from the NPPRL, Crown Research Institutes including HortResearch, Forest Research,[10] and some independent advisers.[11] Peter Maddison, whose offer of assistance had not been passed to Ruth Frampton, was not included, nor was John Clearwater, who had indicated he was keen to work on a synthetic pheromone for the PAM. No documented consideration was given to including climate and weather experts from NIWA.[12]

At its first meeting the Advisory Group recommended investigating the development of a synthetic pheromone attractant for the PAM.[13] The task of raising a captive colony of moths was given to HortResearch, then the only established centre for pheromone research, in Auckland. It would be over a year before Forest Research was asked to start a parallel colony, and two years before John Clearwater received moth material.

On 28 September a resident of the Auckland City suburb of Mt Wellington discovered a hairy caterpillar crossing his driveway and contacted NPPRL, which confirmed a PAM infestation 15km from the original finding.

Within a month, ground spraying and vegetation removal had confined the original infestation, while a delimiting survey of 1200 properties had found only 11 infested sites. Despite efforts to trace back the likely entry path of the moth, it could not be determined whether it was a completely new incursion or related to the first find.

MAF's October 1999 update on the successes in Mt Wellington would be the last media release on the PAM until 28 June, 2001. MAF's Director of Corporate Communications for the past five years moved to a new job, depleting the internal communications resource.

New political landscape

On 27 November 1999, a new Labour-led coalition government was elected. The Prime Minister, Helen Clark, and many of the Cabinet represented Auckland electorates. The portfolio of Biosecurity was initially allocated to Marian Hobbs, but

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funding allocated by the Foundation for Research, Science and Technology (FRST) according to policy priorities established by the Ministry of Research Science and Technology (MORST).

[9] Painted Apple Moth Project Close-Out Document, December 2004, p 190. Henceforth "CO".

[10] The Horticulture and Food Research Institute of New Zealand Ltd, and the New Zealand Forest Research Institute Ltd, now trading as Scion.

[11] CO 166

[12] The National Institute of Water and Atmospheric Research Ltd, another CRI.

[13] CO 169

later transferred to the Hon Jim Sutton. Sutton would steadily boost the baseline budget for biosecurity.[14] MAF's Post-Election Brief highlighted that forestry was now New Zealand's third largest primary sector export, accounting for $2.4 billion million or 11 percent of total merchandise exports annually.

David Cunliffe, a new Labour MP, was elected to the West Auckland seat of New Lynn, after a campaign in which the protection of the Waitakere Ranges had been a key issue. The Waitakeres, the iconic bush-clad backdrop to urban Auckland, were home to a number of native species, including the kowhai, symbol of spring with its prolific yellow flowers.[15]

The Green Party now had seven members in parliament, and a dedicated biosecurity spokesman, Ian Ewen-Street. He began what became a recurrent chorus of criticism of MAF's response to the PAM and failure to involve Dr Clearwater. The Green Party had an active membership in Waitakere, where there was also a branch of the nationwide conservation group Forest and Bird. Local president, entomologist Peter Maddison, worried that control measures for the PAM were ignoring what seemed obvious preventive actions, like clearing the wattles growing wild on the motorway and railway fringes. Carrying out his own investigations, he became even more alarmed to discover a large karaka cleaned of its leaves.

Containment and control

By 2000, up to 40 people were carrying out regular visual surveys in West Auckland suburbs, initiating treatment, and regular follow-up, if any PAM life stages were found. They had become adept at spotting the tell-tale webbing spun by the PAM caterpillar. The limited evidence available suggested the moth could be eradicated by June 2001 – in two years, like the tussock moth - using ground-based methods including spraying. On this basis, and a calculation that the potential economic impact of an uncontrolled moth incursion to be $48 million over 20 years,[16] Cabinet approved $1.75 million for the response, including some host testing trials to be conducted by FRI.

In order to be certain of the extent of incursion Forest Biosecurity needed a network of traps, and in order to set up traps they needed an adequate supply of females – or better still, synthetic pheromones.

HortResearch, which had had some initial problems,[17] was now getting a breeding colony of female moths established for the dual purpose of pheromone research and, knowing this might be a lengthy process, to provide live females for traps.

Aware of undercurrents of resistance to the eradication aim in some quarters, Chief Technical Officer Ruth Frampton gained another tool on 21 September 2000, when

[14] By 2001 it was $123 million.
[15] Kowhai is the Māori word for the colour yellow.
[16] This would later be described (in MAF Media Release 23-10-01) as "conservative" and more significantly, not incorporating costings for the impact on the conservation estate, which the Department of Conservation estimated as "significant."
[17] "Getting insect colonies going is an art as well as a science" according to HortResearch's Max Suckling. Disease was an early problem, also encountered by FRI with its tussock moth colony.

the PAM was made a notifiable organism under the Biosecurity Act. This made it a duty for anyone observing what might be the PAM to report it, and an offence not to.

At the operational level, MAF and FRI personnel were working closely to their common goal. A backdrop to these activities was higher-level forest industry criticism about MAF's approach – describing it as inappropriately "horticultural".[18] Feelings were also running high in the forest sector over the Government's likely annexation of its carbon credits to meet Kyoto Protocol commitments.

Frustrated by what they saw as slow progress towards controlling the PAM, some forestry leaders took their concerns to Barry O'Neil, MAF's Group Director, Biosecurity, in November 2000. As a result, a local biosecurity consultant and a US Department of Agriculture Forest Service scientist were commissioned to do an independent review of the PAM response.

Moth finds multiply

By December 2000, HortResearch had bred sufficient live females for trapping to start. It was quickly evident that eradication could be a much bigger task.

The grid of 153 traps, later expanded to over 300, revealed the moths to be much more widely spread: in Avondale (within Auckland City), Glen Eden, Glendene, Kelston and Titirangi (all Waitakere City). Typically for the Auckland isthmus, populated areas were fringed by inlets and waterways almost impossible to survey, or spray, from the ground.

Aerial spraying now came into the equation. Aware of public reaction against the perceived health effects of the "blanket" spraying that had eliminated the tussock moth from Auckland City in 1997, and on record[19] as a critic of the early decision to move to aerial spray, Ruth Frampton wanted to thoroughly explore all possible alternatives before taking this step, although it had always been on the table.

> "While my thoughts around [the tussock moth operation] didn't detract from going into an aerial operation, if that was needed, we need to pursue other avenues first."

Frampton and her Technical Advisory Group knew that ground spraying had eliminated PAM in areas such as Mt Wellington. They proposed, and in early 2001 began investigating, a world first: targeted aerial spraying, from helicopters, to focus on inaccessible (and unpopulated) areas like the banks of the Whau River.

As for the tussock moth, the spray would be Foray 48B containing Btk, "a biological water-based spray containing bacterial spores which affect only moth larvae."[20] Forest Biosecurity sought advice on the aerial application of Btk from the Environmental Risk Management Authority, the Ministry of Health, the Department of Conservation and the Civil Aviation Authority.

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[18] "A plant pest is a plant pest, however big the plant is," Ruth Frampton said, pointing out that she had involved experts who could ensure control measures were appropriate for trees.
[19] As one of the three authors of a review of the tussock moth response.
[20] *Biosecurity NZ* Issue 62 page 6

In April 2001, Bruce Ross completed his term as Director-General of MAF. Larry Fergusson would be Acting Director-General for six months.

In May and June 2001, drafts of the independent Liebhold-Simpson report[21] on the PAM response, initiated after forest industry complaints, were circulated. The review – some aspects of which were strenuously challenged by MAF - pointed to problems caused by a lack of delegation and by "a web of personal issues" impacting on working relationships within the forestry sector; it said MAF should promptly prepare standard response procedures.

The report concluded that the moth "may not be as serious a threat to New Zealand as some other exotic pests because the female cannot fly." The report endorsed the overall eradication strategy as "appropriate" but made 33 technical and management recommendations including establishing an additional breeding colony for female moths, and developing a plan for targeted aerial spraying as an option for future control. It recommended "specialist support" in developing a communications strategy "to ensure that all those involved in the control programme are consulted."[22]

In many respects, the response was already meeting these requirements. Two months previously, FRI had been given moth material, and having also overcome establishment problems there were now two thriving breeding colonies. However, it was now clear that a synthetic pheromone would not be developed as quickly as it had been for the tussock moth.

By June 2001, MAF had hoped to be reporting on a successful eradication. Instead it was putting a second paper to Cabinet *(Exhibit 3)*, advising of problems with the pheromone development, and the possibility that targeted aerial spraying would be needed. Cabinet agreed a further $280,000 to progress the response, but asked for more information about the geographic distribution of the moth before any costly aerial spray programme began, and further detail of options.

In August 2001, moth material was made available to Dr John Clearwater to attempt pheromone development. The same month, Ian Gear and Davor Bejakovich joined Forest Biosecurity, bringing its staff complement to seven. Ian Gear, with a primary industry education and science background, had been employed to work on managing import health standards. Observing the PAM response, he saw a need for project management, and in his first weeks, offered to assist in this area. Ruth Frampton reminded him of the priority of maintaining a full spread of services to the forestry sector.

Frampton was making a huge personal commitment to a successful outcome for the eradication programme and for Forest Biosecurity, assuming the majority of a

[21] Review of the Response by the Ministry of Agriculture and Forestry to the Incursion of the Painted Apple Moth (*Teia anartoides*) (The Liebhold/Simpson Report) by New Zealand biosecurity consultant Dr Bruce Simpson and USDA Forestry Scientist Dr Andrew Liebhold.
[22] MAF Media Release 28-6-01: MAF releases Painted Apple Moth review.

workload that now involved discussions on new contracts for everything from operational management (AgriQuality) to helicopter operation and spray supply.[23] A further need was to set up a health service. As recommended by the Liebhold-Simpson report an external communications consultant was engaged, the public relations company Consultus; communications specialist Christine Morrison, originally contracted to work elsewhere in MAF, had been "loaned" to the PAM programme and became a key member.

An impossible ask

A frustration for Ruth Frampton, as she noted the steady increase in the number and range of moths being trapped, pointing to the inevitable need for aerial spraying, was the lack of available transitional funding.

> "In retrospect it was an impossible ask. Cabinet did not make any decision about the additional appropriation to MAF until late October, and we were hoping to get the aerial operation off the ground in November. You can't have contracts in place with people [for spray supply and helicopter hire] unless you have actually got the money.

In August, it was decided to formally alert the West Auckland community that a spray programme was likely, by inviting residents to a meeting. At the meeting – where surprise and outrage was expressed that the public had just been given information on a decision known since the beginning of the year – residents were invited to make nominations for a Community Advisory Group. The group held its first meeting in September, by which time a PAM Health Steering Advisory Group had also been established by MAF, as well as regular meetings of an interdepartmental officials group – many of them familiar with the tussock moth eradication.

Targeted aerial spraying

In October 2001, MAF put four options to Cabinet *(Exhibit 3)*: no further control; a combination of ground and targeted aerial spraying (MAF's recommendation at a cost of $11 million over three years);[24] further ground spraying and aerial spraying across the entire infested area; and a long-term management plan to control the environmental and economic impacts of the moth.

Cabinet directed MAF to proceed with the targeted aerial option. The spray would be delivered from helicopters, flying no less than 45m above ground,[25] to a precise target fixed by global positioning. To minimise spray drift, operations would not proceed when winds were above 12 kph.

Announcing the intention to start aerial spraying within a month,[26] Biosecurity Minister Jim Sutton reiterated that, though studies had found no adverse health

[23] AgriQuality was one of two State-Owned Enterprises (the other was Asure) formed in 1998 when the former MAF Business Unit MAF Quality Management was split up, leaving other functions including the animal and plant laboratories within the core MAF.
[24] $4.8 million in 2001-02, $5.4 million for 2002-03, and $800,000 for 2003-04.
[25] A Civil Aviation Authority (CAA) requirement.
[26] MAF Media Release, 23-10-01: Targeted aerial spraying to go ahead in West Auckland.

patterns from the tussock moth spray, a health monitoring service[27] would be offered, including a register for people who might be particularly vulnerable, so they could have special treatment including if necessary relocation while spraying was taking place.

Ruth Frampton now introduced the operational plan for the PAM eradication programme.

A new Director-General

On 19 November 2001, Murray Sherwin took over as Director-General of MAF, recruited to the position after twenty years at the Reserve Bank of New Zealand, latterly as Deputy Governor. His focus switched from interest rates and exchange rates to the immediate issues facing his new department, one of the most immediate being the planned spray programme. He saw it was unpopular with some sections of the community:

> "It struck me as having the capacity to do us a lot of harm, both institutionally and in terms of the sort of outcome that we might or might not get, from a biosecurity perspective. It struck me also that it was indicative of some of the wider issues about the way the organisation worked, and that I was going to have to be dealing with as I came into this."

Ruth Frampton had hoped to start spray operations in November, taking maximum advantage of the warmer weather when, it was suspected, moths were most likely to be in flight. By December, she had the results of an extensive community survey showing the majority of the community understood and supported the need for aerial spraying.

However the Waitakere City Council – whose officers had been working with MAF since the first discovery of the moth in May 1999, but whose mayor and councillors, from the first community meeting in August 2001, had been vocally opposed to plans for aerial spray - was invoking its District Plan ban on low-level flying. The Council held firm even after moths were found within the Waitakere Ranges area.[28]

Eventually, with the agreed intervention of Biosecurity Minister Jim Sutton, a solution was found. Emphasising he was not (as earlier reported in the *New Zealand Herald*)[29] declaring a biosecurity emergency, the Minister said that he was unhappy that a spray programme had not yet begun, as the Waitakere Ranges was "an important resource for Auckland and the whole country" that might be devastated if the moth reached it.[30]

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[27] Operated by Aeraqua Medical Services (AMS), which had been involved in the latter stages of the tussock moth programme.
[28] *New Zealand Herald* 29-11-01, p5. 'Traps a warning sign of moth breakout', Anne Beston.
[29] *New Zealand Herald* 3-12-01, p1, 'Emergency powers to blitz apple moth', Anne Beston.
[30] NZ Government Media Release, 11-12-01:Waitakere intervention "unavoidable".

Alternative views

Murray Sherwin, trying to familiarise himself with how the PAM programme was running, and what the organisational structure was, found it a constant topic of conversation within MAF:

> "There was all this dialogue as to whether it was too little, too late, too much or too dangerous, or doomed to failure…Coming absolutely cold into a new organisation you don't have….an understanding of whose advice you trust, and where you turn to for a perspective. I was having to learn all of that absolutely from cold, with a group of people that I had not interacted with before, and who weren't necessarily accustomed to operating the way I was wanting to operate, either."

Keen to bring wider perspectives and greater resource to the PAM programme, he joined the department-wide project management steering committee established by MAF internal auditor Jim Greeks in December.

On 14 December 2001, the Technical Advisory Group received a proposal, backed by the Waitakere Community Advisory Group and others, including pheromone scientist John Clearwater, to trial biodynamic "peppering", using a dust made from ground-up male moths, as an alternative means to control the moth.[31]

A week before Christmas, MAF issued three media releases, one saying that Agriquality would manage a West Auckland operations HQ, and another outlining medical services, saying that 60 people had already signed up to be alerted ahead of spray days.

In the third release, Murray Sherwin "deplored the personal attacks on Dr Ruth Frampton who has been leading the Painted Apple Moth response programme in West Auckland" and confirmed that she would continue to lead it.

The *New Zealand Herald* had quoted an "unnamed scientist" as having attacked the Ministry's handling of the moth eradication attempt, and said the Waitakere community advisory group, appointed in August 2001, had called for the resignation of Ruth Frampton, describing the eradication programme as a "fiasco".[32] A separate article quoted local MP David Cunliffe as saying Frampton would no longer be the accountable line manager, and new staff needed to be put in place to manage the project more tightly.[33] The *New Zealand Forestry* newsletter reported that a technical advisory group of scientists, conservationists and others had sent a letter to the Minister asking that Dr Frampton be replaced.[34]

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[31] "Peppering is a biodynamic method of pest control, which aims to inhibit the reproductive potential of the pest being targeted…The theory holds that the specific preparation methods produce the negative "energy" of the pest's reproductive force…used in the field it enters the soil and surrounding vegetation producing an "unfriendly" and inhibiting environment." Excerpt from the submission, quoted by Dr Ruth Frampton in Peppering the Painted Apple Moth, for New Zealand Skeptics, Summer 2003.

[32] *New Zealand Herald*, 17-12-01, p3. 'Scientist attacks moth pest operation', Anne Beston.

[33] *New Zealand Herald*, 18-12-01, p3. 'Pest-moth scientist staying, says MAF,' Anne Beston.

[34] *New Zealand Forestry:* the industry information centre, 18-12-01 lead article 'War in the Air'. Downloaded from www.nzforestry.co.nz/nzf_archive.asp?viewarchive=yes&areticleid=339. 22-02-05

Calling it "totally inappropriate" to single out an individual staff member for such criticism, Murray Sherwin said:

> "Clearly there are concerns and frustrations in the West Auckland community over the programme to eradicate Painted Apple Moth. I share some of those concerns and I'm determined to get the aerial spray programme underway as soon as possible.
>
> "Coming new to this programme, I do see some weaknesses in the MAF approach to date. They mostly relate to inadequate use of project management methodology and we have taken steps to remedy that."[35]

MAF had consulted widely and would continue to listen to community concerns, he said. "We are determined to mount a successful project. This is complex and does not happen quickly. We are making progress." Having agreed not to spray over Christmas, the new start date was early January 2002.

To Ruth Frampton, fronting a series of community meetings at the time, the reaction was something she had expected, and felt was more aimed at MAF than herself personally. Despite this, she felt it was essential to have a MAF presence.

> "If there were degrees of badness [in how MAF was perceived] it would have been far, far worse not to have been fronting those meetings.
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> "We knew, from the tussock moth programme, that inevitably there was going to be a proportion of the population that was not happy with the response, and therefore I suppose I saw it as part of the job…The support that I got from the people immediately involved in the programme kept me going. There was a job to be done…I tried very hard not to take the public criticism personally."

Spray delay and more moth finds

During December 2001 new moths were found in the outer limits of the trapping grid, including Titirangi and Oratia, at the base of the Waitakeres. Reinfestation was found in a previously treated area.[36] These catches prompted a revision of the target zone to 560 ha. As the *New Zealand Herald* pointed out, five times as many households – 4500 – would be in the revised zone.[37]

Windy weather now intervened to frustrate efforts to start the spray programme. Then there were false starts caused by mechanical failure, and clogged nozzles on the spray boom; on 16 January catches were made in the central Auckland areas of Pt Chevalier and Waterview. [38] On 21 January 2002 the *New Zealand Herald* editorialised "Slack response to pest a disgrace." The same day, a helicopter successfully began the first three-day aerial spray operation, and in February completed a second.

After the third aerial spray, moth numbers had been reduced by 85 percent. However, evidence was mounting of more widespread infestation. New trap catches occurred

[35] MAF Media Release 17-12-01: MAF Director-General says personal attacks inappropriate
[36] MAF Media Release, 3-12-01: Painted apple moth finds explained.
[37] *New Zealand Herald*, 12-1-2002 p5. 'Spray blitz to hit 4500 properties', Anne Beston.
[38] *New Zealand Herald* 16-1-2002 p3. 'Moth zone likely to expand', Anne Beston.

near the Chelsea Sugar Refinery on the northern side of the Waitemata Harbour, well away from previous ones.

By now it was known that male moths were most likely to be flying when temperatures were above 17 degrees C, raising the possibility of occasional activity in winter months. The Technical Advisory Group was contemplating more extensive aerial operations, and expanding the boundaries of the control area to 10,000 ha.

Ruth Frampton felt that, at last, the programme was getting into its stride and making significant headway. But she warned that the current effort might not eradicate the pest and that increased funds, and a greatly increased treatment area, were needed.

Interviewed by a team from the Audit Office, also reviewing biosecurity, she had been asked what she would do differently in another incursion. Given the same resources and decision processes, nothing, she said.

Director-General Murray Sherwin, meanwhile, while respectful of Ruth Frampton's talents and impressed by her commitment, was growing increasingly concerned at the amount of responsibility being carried by and information being held in Forest Biosecurity, and by Frampton in the widely-empowered role of Chief Technical Officer[39] in particular. "I felt we were expecting too much of one role, and there needed to be a structure to support it."

An expanded target

The MAF team now began preparing a paper to Cabinet on possible future options, basing the costings on a target area of 6000 ha, ten times larger than the original one. PAM was regularly featuring in parliament, and a growing pile of ministerial questions was waiting to be answered.

As the fourth spray operation was scheduled, for early April, the Waitakere City Council's environmental management committee, chaired by Councillor Penny Hulse, held an emergency meeting. This received, and endorsed the (self-selected) community advisory group's plan to continue eradication using ground spraying only, and urged government to do the same. The ten-point plan included the recommendation to continue with "alternative and complementary techniques."[40] A new internal MAF audit of the PAM response began, and new calculations of economic impact.

In late April, an update of the December 2001 community survey showed an increase in support in most areas for the eradication campaign, but a decline in some West Auckland areas. Auckland Regional Council announced its support for the option – costed at $20 million – of spraying up to 50,000 ha across the city.[41]

On 10 May 2002, just after the successful conclusion of the fifth spray operation, it was announced that Ruth Frampton was stepping down as Director, Forest

[39] Reporting directly to the Director-General rather than the head of biosecurity.
[40] Minutes of an emergency meeting of the Environmental Management Committee of the Waitakere City Council, held on Tuesday 9 April, 2002.
[41] *New Zealand Herald*, 4-4-02, p5. 'Councillors back $20 million attack on pest', Anne Beston.

Biosecurity. She would remain a member of the PAM Technical Advisory Group. The same day, it was announced that, because of the increased target area, spraying of residential areas in future would be by fixed wing aircraft, leaving the helicopter to do the "tricky parts.[42]" Blanket spraying would begin.

New Lynn MP David Cunliffe wrote to the *Western Leader*

> "It is important to note that Dr Frampton had a difficult and thankless task and gave it her best effort. We wish her well as she moves to take up a more technical role elsewhere in MAF. …….selection of a permanent replacement is underway, with an emphasis on management, delegation and community relations skills."[43]

He assured constituents their ground spray-based proposal would be fully considered in decisions on the project future.

The Green Party used the occasion to call, once more, for an urgent Select Committee enquiry into the response programme;[44] some months later, the *National Business Review* would call Frampton a "sacrificial lamb" to the forces of anti-science.[45]

The PAM Project

Ian Gear was now appointed acting Director Forest Biosecurity, with responsibility for the PAM eradication programme. In recent months, like his colleagues, he had become increasingly involved with PAM work. Having deputised for Ruth Frampton on occasion, he realised many of the issues to be faced. He was aware of concerns held by technical experts in MAF and in the wider industry, and limited faith in MAF's ability to succeed with eradication.

Personally, he was convinced that eradication was still possible, despite the spread of the moth. It was also essential, given MAF Policy's reassessment of the potential impact of an unchecked moth incursion, which ranged from a low of $58 million, through a medium of $157 million, to a high of $356 million.

Eradication would, however, require the right tools, the right structure, substantially increased resource, and greater departmental faith in a positive outcome. In late May, Murray Sherwin announced $6 million more funding through Vote Biosecurity in the upcoming budget to upgrade the ability of laboratory services, which (especially the relatively new plant pest laboratory with its emergency response role in PAM surveys) had been under pressure from a large workload. The increased resource would help develop a central database of information for responding to incursions of unwanted pests and diseases, and create a new team of incursion investigators.[46]

One of Ian Gear's first actions was to undertake a stocktake of the PAM project, and establish the PAM response as a separate, stand-alone project. In June 2002 he began

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[42] MAF Media Release, 6-5-02: Faster aerial spray operation planned.
[43] www.cunliffe.org.nz/6.news/releases/detail/asp?id=57 downloaded 22-12-05
[44] Green Party media release, 9-5-02: Moth programme falling to pieces as head resigns.
[45] *The National Business Review*, 20-9-02, p15. 'Painted apple moth laughs all the way to the Waitakeres' and 'Anti-science activists' sacrifical lamb', Owen McShane.
[46] MAF Media Release, 24-5-02: New fnding will enhance capabilities of MAF laboratories.

contracting staff to provide necessary skills not available within MAF. The first of these was tasked with preparing a project specification and co-ordination plan. Carson Group was engaged to provide project management and administration resources. The need for a communications specialist, policy analyst and a project manager with experience in the provision of health services was identified, and appointments made.

Over the next two months, the PAM Project Team was consolidated. A PAM Steering Committee was established with Murray Sherwin as sponsor. A risk register was established and populated during a risk management workshop which included participants from within MAF, other Government agencies, and contracted service providers. A strategic planning workshop divided responsibilities into four functional areas: science, operations, health and communications.

The constituency of advisory groups was examined and where necessary changed, for instance by creating specialised teams from the previously large scientific and technical advisory group. Ten participants, including representatives of Treasury and the Department of Prime Minister and Cabinet, met to consider long-term scientific needs.

Gear also began what would become a progressive move to transfer operational management responsibility to Agriquality, which would be formally appointed head contractor later in the year. Ultimately, Agriquality would take responsibility for all operational aspects, from pheromone trapping to aerial spraying and health services, and including frontline communications, after the Consultus contract ended. MAF maintained direct responsibility for some research contracts, and for strategic activities, including communications.

Despite new findings of PAM in the previously unaffected West Auckland areas of Swanson and New Lynn, Ian Gear remained convinced the moth could be eradicated.

An issue of judgement

While the project structure was being put in place, Murray Sherwin had been involved in a series of meetings. It was clear that MAF would have to go back to Cabinet for more money, so he wanted to thoroughly test the options:

> "…trying to involve a wider group of people in thinking about what's going on here and what we had to do, and what their options were and where the balance lay. Because at the end, it became an issue of judgement. What do we want to put in front of Cabinet?
>
> "The options ranged from let's just do nothing, forget it, come to the conclusion that we've lost it, we're not going to be able to retrieve it, so just cut our losses and stop trying to spend money on it. The second option was continue to contain it while developing options for the future, so investing in science to try and work out how we can control it, with parasites or disease or whatever might get to it. Then there was widespread blanket spraying, or the option of localised treatment to contain it."

As promised, the community proposal for peppering was also tabled as an option, but gained no support.

In the urgent paper that went to Cabinet at the end of June, MAF's recommendation supported the Treasury view that it was time to settle for long-term management of the PAM. The Department of Conservation wanted to see an extended and extensive aerial spray operation over the full 35,000 ha area where male moths had been trapped. The paper posed six options: no further control; long term management; eradication by ground-based methods; eradication by aerial spray over an area up to 6000 ha, or 35,000 ha; and an interim containment programme over 900 ha, to preserve the option of eradication.

The *New Zealand Herald* predicted the government would abandon the eradication programme.[47]

Interim decision

Murray Sherwin was not so sure. It had now become clear to him that:

> "…there were no scientific options that were likely to be of any value to us within any meaningful timeframe. There was nothing, nothing in the cupboard that we could look to, such as biological control. We had nothing there. Just nothing."

Attending the Cabinet Committee considering the July paper, he had highlighted the raft of uncertainties surrounding this moth incursion, and the 20 to 40 percent chance that eradication would fail. However, he discovered a strong feeling that "60 to 80 percent chance of success" was worth backing, especially as there was a high level of concern about the risks to the flora and fauna of the Waitakere Ranges.

Cabinet's response was delivered just before the 27 July 2002 election, and at a time when both MAF and the Government were under attack over an alleged cover-up of GE contaminated corn.

Supporting interim containment, and appropriating $14 million for it, Biosecurity Minister Jim Sutton[48] said "Cabinet has asked for more detailed information on each of two longer-term options: an all-out effort to get rid of the painted apple moth, and a management plan that accepts that eradication is not possible." Both options had potentially high costs, he said, and many factors had made this a difficult project.

> "Until the outbreak in West Auckland no-one in the world had done any real research on the painted apple moth. We have no way of knowing with any certainty whether it would be a serious pest in New Zealand. And we have no certainty of success in an eradication attempt. Cabinet is giving this programme close scrutiny. It is an important matter to get right."

After the election

Following the election, Chris Carter, MP for Te Atatu, an electorate on the margins of the PAM infestation and close to the Waitakere Ranges, became the Minister of Conservation. The Green Party gained a record nine MPs.

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[47] *New Zealand Herald*, 25-6-02, p1. 'Cabinet set to kill off $11m pest blitz', Anne Beston.
[48] MAF Media Release, Hon Jim Sutton, 3-7-02: Painted apple moth.

In August, Peter Thomson was appointed as the new Director, Forest Biosecurity. Thomson, looking for new challenges, had left Carter Holt Harvey, one of New Zealand's largest commercial forestry companies. Thomson saw PAM as just one of the operational challenges to be met, "and I knew that, operationally, just about anything is possible when you put your heart and mind to it." In consultation with Barry O'Neil, Assistant Director-General, he made the judgement that his most useful immediate contribution to his group's most high-profile programme would be to provide advice and strategic direction to Ian Gear, now confirmed as PAM Project Director.

Thomson introduced himself to a wide range of people in MAF. He was surprised to find that, "No matter what we started talking about, the conversation would always turn to PAM, and their great concern about the impact the response was having on the department." A prevailing view was that it was time to "let go" of the eradication attempt. Ian Gear was not among the pessimists.

> "I was bloody determined we were going to [eradicate the moth]. To me it was no different from a one-hectare paddock. I was simply using a bigger machine to get the stuff on. It was doable, and there was good advice and support."

He had polled all members of the Technical Advisory Group, by email, asking them to give their individual view – on a one to ten scale – of the possibility of eradication succeeding and felt there was sufficient backing to forge ahead.

In late August Murray Sherwin convened a round-table discussion involving all the Assistant Directors-General, the Forest Biosecurity Director, the PAM Project Director and some others, including the head of the Crown Forestry Group. In his mind was the thought that

> "if Government wanted eradication, MAF would have to try and deliver it. I didn't want Cabinet to say, well, against your advice, we are going to ask you to do the widespread area spraying and incur this cost. I didn't want them coming back in two or three years time saying, well you failed, you failed because you never had your bloody heart in it in the first place."

What he intended to say to the meeting was

> "There is no [alternative] option of control. There is nothing there. We have got ministers who are ready to go for the blanket spray. If we are going to go for the blanket spray, I want it absolutely clear within this organisation that this is not something that we are prepared to fail at."

But first he asked each individual in turn, "What is your advice?"