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**A**merica is at war again. This time, the battlefield is California and the enemy is a small insect called the light-brown apple moth, or LBAM. According to California's agriculture secretary, AG Kawamura, the moth is an invasive pest newly arrived in California that threatens the state's health, environment, forests, food supplies and quality of life.

'The crisis is immediate, and this is an environmental emergency requiring quick action by the state and federal governments,' Kawamura has said. 'Left unchecked, the light-brown apple moth could cause damage [to the food supply] as high as \$640 million annually.' State assembly agriculture commissioner Tom Berryhill agrees: 'If we let this thing get into the central valley [California's main agricultural area], this is Armageddon for agriculture.'

Last year, the US Department of Agriculture (USDA) gave the State of California Department of Agriculture (CDFA) \$90 million to wipe out the moth. CDFA launched an aggressive eradication programme in Santa Cruz and Monterey counties, as well as in the San Francisco Bay area. The official state of emergency over the LBAM enabled CDFA to put the programme into operation in September 2007 without the legally required environmental impact report (EIR). Today, nine months into the programme, a battle rages in California, but it is no longer the state of California against the LBAM – it's the people against the state.

The LBAM eradication programme consisted of a raft of measures to be implemented on public and private property, designed to leave no hiding place for the moth. They included:

- spraying of the nerve toxin organophosphate chlorpyrifos at nurseries

# Moth balls

Is the light brown apple moth such a danger to crops both agricultural and financial that the US government will risk the health of its citizens to eradicate it?

They spray, you pay, warns **Claire Robinson**

- spraying of the pesticides Btk and spinosad
- release of sterile moths
- release of *Trichogramma* wasps, which are a native predator.

In addition, three strands of the programme involved the release of a synthetic pheromone, brand-named Checkmate, which confuses the moth's mating behaviour. In the first, CDFA would place pheromone-releasing twist-ties in trees. In the 'SPLAT' (Specialised Pheromone and Lure Application Technology) method, the pheromone, mixed with a pesticide, would be squirted on to trees and telephone poles. Most controversially, CDFA would aerially spray the pheromone over residential areas every 30 days, to be continued for years as needed. The pheromone was enclosed in plastic time-release microcapsules that allowed it to remain biologically active for the full 30 days between applications.

The initial rounds of aerial spraying took place over Monterey and Santa Cruz counties from September to November 2007. The CDFA had told the public the pheromone was harmless, so no-one was prepared for what happened next. Hundreds of people got sick. Symptoms included respiratory difficulty, muscle aches, chest pains, palpitations, fatigue, dizziness, vomiting, swollen lymph nodes, body rashes and eye irritation. Women reported menstrual irregularities, and post-menopausal women had a return of menses. While some people recovered as the effects of the spray wore off, others did not. An 11-month-old boy went into respiratory arrest and nearly died. He is now asthmatic, in spite of the fact that he was in perfect health before the spraying and there is no family history of asthma.

### The sickness of the cure

A total of 643 complaints were received from people who said they were made sick by the spray. This is believed to be a gross underestimate, as no official channel for health complaints was publicised. The figure comes from Michael Lynberg of citizens' group Helping Our Peninsula's Environment (HOPE), who stepped into the gap and became unofficial receiver of health complaints.

Problems were not limited to human health. From the day after the spraying, people reported that pets suddenly became ill or died. Hundreds of dead seabirds washed up on the shore, coated in yellow foam. One theory said that the surfactant in Checkmate (an 'inert' ingredient designed to make the spray easier to spread) had washed the natural oils out of

## 'The CDFA had told the public the pheromone was harmless, so no-one was prepared for what happened next. Hundreds got sick'

the birds' feathers and drowned them. The same foam was seen floating in rivers and was pumped out from under boardwalks by municipal authorities.

More was to come. Twenty days after Santa Cruz was sprayed, a massive red tide arrived. A 'red tide' is a large red or brown-coloured algal bloom in the sea. Some release toxins and are linked with deaths of sea creatures. This red tide was, according to people who had surfed there their whole lives, the biggest and dirtiest ever. 'This spray caused the red tide to get that bad, that's my belief,' said ecologist David Haisten, a surfer for 20 years.

Pesticide poisonings are common in the developing world, where poor communications, limited literacy and language barriers can mean suffering goes unnoticed by the rest of the world. This was California, however, home to Silicon Valley, the movie industry and a high proportion of educated English-speakers, many of whom were furious about what Dr Daniel Harder, director of the Arboretum at University of California, Santa Cruz, called 'a grand experiment involving 17 million people and 7,000 square miles'.

Virtually overnight, groups sprang up across the state to oppose the LBAM programme. Prominent in these groups was California's sizeable population of the chemically injured, who are well-informed about the dangers of chemical exposure. The aerial spraying of Checkmate acted as a lightning rod to enlist even those who had never been politically active. Within two months, 11,000 people had signed a petition against the spraying. By June 2008, the number topped 30,000. The father of the 11-month-old boy who was made asthmatic, US Air Force Major Tim Wilcox, was one of many residents who agreed to be filmed and have their testimony placed on the internet. So fierce was the backlash against the spraying that Foster Gamble of California Alliance to Stop the Spray (CASS) predicted, if it continued, that it would unleash the 'largest social unrest since Vietnam'.

CDFA's response was not, as some hoped, to arrange toxicity tests on Checkmate. Instead, CDFA awarded a \$497,000 no-bid contract

(subsequently cancelled) to the public relations firm Porter Novelli, to convince the public that the spray was safe.

The battle had already moved into the courts, though. In April, in a lawsuit brought by the city and county of Santa Cruz, a judge ordered CDFA to stop aerial spraying in the county until it had completed an EIR. The judge ruled there was no evidence of an emergency that would justify bypassing the EIR. One hour after the court ruling, Governor Arnold Schwarzenegger announced that aerial spraying was postponed until safety tests – for acute, not long-term effects – were completed. In May, a second court ruling banned aerial spraying in Monterey county, pending an EIR.

Local authorities joined the fight, with 29 cities and three counties passing resolutions against the aerial spraying. No fewer than five bills, variously demanding restrictions on spraying, EIRs, voter consent and disclosure of pesticide ingredients, were introduced into the legislature.

Experts investigated the components of the spray and found that the state's assertions of safety were based more on wishful thinking than on fact. Richard Philp, emeritus professor of pharmacology and toxicology at the University of Western Ontario in Canada, reviewed the available literature and could find no evidence that the pheromone in Checkmate had been tested for chronic toxicity on mammals. Nor could he find any data relating to aerial spraying of the chemical over residential areas. He concluded: 'The USDA and EPA documents I



reviewed are filled with contradictory statements regarding the toxicity testing of pheromones, inappropriate extrapolations from irrelevant toxicity studies, and are suggestive of a poor understanding of basic pharmacological and toxicological principles.'

### When inert means anything but

Questions about Checkmate's safety did not end with the active ingredient, the pheromone. Much initial support for the spraying was based on claims that Checkmate consisted only of a chemical copy of a natural pheromone, plus 'inert' ingredients. Many people are unaware that the manufacturers of pesticides and other noxious chemicals do not use the word 'inert' in the everyday sense of 'having no power of action'; instead, they use it to mean that the substance is not specifically meant to perform the action for which the product was designed

– for example, to kill insects or (in this case) to disrupt mating. Frequently, inerts present their own toxicological problems.

Lawrence Rose MD, former senior public medical officer for Cal-OSHA (the State of California's division of occupational safety and health) and a faculty member of the University of California San Francisco department of occupational/environmental medicine, says the symptoms suffered by residents are 'consistent with known toxicology scientific information of the ingredients of Checkmate'. These ingredients, he adds, include irritants, sensitizers, nervous-system disrupters, endocrine disruptors, allergens and hypersensitivity inducers. As for the long-term health effects, these are 'of concern due to the known induced mutations and suspected cancer risks of constituent chemicals'.

Both Rose and a Kentfield-based physician, Dr Ann Haiden, say the small size of the microcapsules presents a hazard. Haiden says they can be inhaled into the deeper parts of the lung, where they are difficult or impossible to dislodge. As well as causing respiratory problems, such particles can trigger heart failure. Haiden is not reassured by a report by California's Office of Environmental Health Hazard Assessment and CDFA that found no definite causal link between the spraying and

people's symptoms. She notes that this conclusion was not based on findings, but 'lack of useful data-gathering'. In other words, a case of don't look, don't find.

Faced with an onslaught of opposition, CDFA backed off. On 19 June, in what was greeted as a victory for millions of Californians and thousands of spray opponents, agriculture secretary Kawamura announced that the state would no longer aerially spray pheromones over urban areas to fight the LBAM. Many critics of the LBAM programme responded with caution, however, for two reasons. First, as State Assembly Member Jared Huffman says, 'the devil is in the details': a question mark lingers over which areas of California will be designated 'urban'. On a radio phone-in with Kawamura, worried callers wanted to know if their rural areas would still be sprayed.

The second reason for caution, say some

citizens' groups, is that people will be lulled into a false sense of security, and will be so grateful for the end to aerial spraying that they will passively submit to the ground-based campaign – which is equally toxic. The twists and traps are pheromone-based, and have produced symptoms in exposed residents, as have BT sprays. Oakland activist Isis Feral said of the CDFA's U-turn on aerial spraying: 'This is precisely what some of us have warned would be the outcome of focusing on aerial spraying only. The state will be saturating our air supply and exposing us to the same toxic chemicals by different methods. The trapping and eradication programme should be opposed in its entirety. The apple moth is not a threat, but pesticides are.'

Feral's assertion that the LBAM is not a threat cuts through the public health and environmental arguments (serious as they are) to question the very basis of the eradication programme. She is not alone in her view. Since the launch of the programme, well-credentialed experts have challenged almost every claim that the state has made about the LBAM. Chief among them is the notion that the moth is a major threat to agriculture.

**'CDFA claimed it wants to prevent "anticipated" harm from the moth – a pre-emptive approach that recalls US foreign policy'**

Steven Munno is an organic farmer at the Center for Agroecology and Sustainable Food Systems at the University of California, Santa Cruz. Though the moth is on his farm, he says it has done no damage to his crops or those of other organic farmers he knows. Indeed, CDFA admitted in court that the moth has caused 'no documented crop losses in California'. It claimed it wants to prevent 'anticipated' harm from the moth – a pre-emptive approach that recalls US foreign policy over the past decade.

The LBAM, Munno says, is 'just another insect', and one that organic farmers are well-equipped to deal with. What is causing economic damage to farmers, he says, is the time they must spend dealing with the bureaucracy of the LBAM programme and examining their crops for moth larvae. This involves excessive handling, which, with a delicate crop such as strawberries, can make it unsaleable. 'It's a tremendous drain and it



STOP THE SPRAY  
No Ground Spray Not Ok

DONT  
SPRAY  
MY  
KIDS!

## Pesticide

makes some things no longer profitable,' Munno says. Some farmers have had produce quarantined, and are forbidden even from selling it locally in case it is shipped out of state. There is no compensation.

Dr Daniel Harder agrees that the moth is no cause for alarm. He travelled on a fact-finding mission to New Zealand, where the LBAM has been established for more than 100 years and is managed by Integrated Pest Management methods. He says no special measures are taken against the moth as it is controlled '80 to 90 per cent' by natural predators: birds, spiders, earwigs and beetles. The moth only became a

unnecessary and ineffective, why is it being pursued? One reason is US trade policy. Under the North American Free Trade Agreement (NAFTA), the LBAM is defined as a quarantine pest. In 2007, Canada and Mexico invoked trade quarantines against Californian produce on the basis of the simple presence of the LBAM.

Foster Gamble of CASS gives a second reason why the LBAM programme refuses to die: 'Follow the money'. Checkmate is manufactured and marketed by a company called Suterra, owned by Stewart A Resnick. Resnick is also the owner and chairman of the California-based Paramount Farming Company,

one of the biggest producers of citrus fruit and other food in the US. In the film *Illegal LBAM Spraying: Who Profits? How to Stop It?*, Gamble traces the financial links between Resnick's companies and Governor Schwarzenegger. The California Secretary of State's website reveals that Resnick and Paramount donated over \$144,000 to Schwarzenegger's 2005-2006 campaign to become governor of California. As Schwarzenegger said during

his campaign, 'I think any of those kind of real powerful special interests, if you take money from them, you owe them something.'

Quite. And how did the governor pay back his debt to Resnick? Some say, by allowing the programme to go ahead until it was challenged in court. Under the aerial spray programme, Gamble points out, Resnick would not have had to pay to spray his orchards but, through Suterra, would have made hundreds of millions of dollars from the taxpayer-funded aerial spraying. Resnick still stands to gain from any ground-based measures that use Suterra's products, but if the LBAM programme is withdrawn and the moth remains a quarantine pest, Paramount's export trade will suffer.

### A way out of the clouds

There is a way out of the quarantine problem. The quarantine demand from Mexico specifies that its terms can change in the light of 'more

technical and scientific information' on the LBAM. Larry Bragman, a member of the town council of Fairfax, says Harder and Carey's reports constitute such information and should be used to reclassify LBAM as a non-quarantine pest, as it is in the EU.

The third and most important reason for the survival of the LBAM programme is that it is, in the words of Maxina Ventura of DontSprayCalifornia.org, a gravy train. Ventura says residents need to understand that the LBAM programme is just one in a long line of similar programmes stirring up alarm over the latest 'pest of the month'. The LBAM programme was piggy-backed in on the glassy-winged sharpshooter (a leafhopper insect) programme, and will be followed, Ventura predicts, by a gypsy moth programme.

Like the orchestrated perpetual war of George Orwell's novel *1984*, these programmes can continue indefinitely, soaking up vast amounts of taxpayer money. The dollars flow from the federal government to the state and thence to the counties, which, says Ventura, get shiny new trucks and guaranteed extra staffing for about a decade per programme.

The programmes are designed in consultation with invasive species and exotic pests councils. These councils have ballooned over the past decade and are dominated by pesticide industry representatives, always ready with a chemical solution to the 'problem' they have helped identify (an argument made by biologist David Theodoropoulos in his 2003 book *Invasion Biology: Critique of a Pseudoscience*). What's more, the money allocated to the counties is ringfenced for pesticides; it cannot, for example, be spent on educating farmers or the public about non-toxic pest management. Ventura points out that unless the LBAM programme is opposed in its entirety, another one like it will be along soon, with people and the environment the losers.

Foster Gamble would like to see a 'win-win' outcome that would benefit everyone: the money allocated to schemes such as the LBAM programme should be redirected to help farmers implement sustainable pest management methods like those already in place on many organic farms. For that to happen, politicians will have to cut the umbilical cord connecting them to the pesticide industry. Some would say it's high time. **f**

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**Pictured** Locals protest against LBAM spraying

problem in the 1980s, when organophosphate pesticides wiped out predators and LBAM numbers spiked. When organophosphates were abolished due to health concerns, the beneficial insects came back and the LBAM ceased to be a problem. Harder says predators of LBAM also live in California and should be allowed to do their work.

Another high-profile critic of the LBAM programme is Dr James Carey, professor of entomology at the University of California, Davis, and a specialist in invasive pests. Carey takes issue with the CDFA's claim that the LBAM is a new arrival in the state – he thinks it has been there for 30 to 50 years. He and fellow UC Davis entomologists Frank Zalom and Bruce Hammock co-wrote a letter to the USDA, saying there is no evidence that the LBAM will be more economically damaging than its many relatives in California. What is more, they say the programme will not work.

'I seriously doubt there's any entomologist in the country who believes that eradicating this pest is possible at this stage,' Carey says.

Given the evidence that the LBAM eradication programme is expensive, unsafe, unhealthy, economically damaging,

### Further information

- [www.dontspraycalifornia.org](http://www.dontspraycalifornia.org)
- [www.LBAMspray.com](http://www.LBAMspray.com)
- [www.veganreader.com](http://www.veganreader.com)