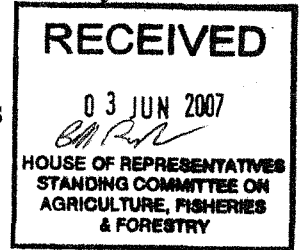


Submission to Inquiry into the Future Development of the Australian Honey Bee Industry.

Parliament of Australia – House of Representatives
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Introduction.

The seven *Terms of Reference* tend to be interrelated, making it difficult to compartmentalise a response. The *Discussion Paper* does an excellent job of scoping the subject without being exhaustive. However, the six *Key policy objectives* that provide the section headings for the *Discussion Paper* are not directly aligned with the seven terms of reference.

Therefore the headings in the submission follow all thirteen *Terms of Reference* and *Key Policy Objectives* plus one glaring omission, namely protecting the Australian honey bee industry from unfair competition, and Australians from the dangers of contaminated imported honey.

Summary

TR 1. The honey bee industry - its current and future prospects.

Currently, the honey bee industry is struggling to remain viable. Honey packers have been offering beekeepers less than the cost of production for bulk honey since February 2005. This is much more serious than just 'market forces at work' as discussed further under **TR4 Trade issues**.

The submission puts bee keeping in some historical perspective, from cottage industry to a huge, mechanised commercial enterprise of under-rated significance.

Now, a little way into the twenty-first century, the industry is facing many changes and challenges.

Apart from the threat of being wiped out by insect, fungal, bacterial or viral threats (see **TR3 Biosecurity issues**) the most serious threat to the survival of commercial beekeeping in Australia is the attitudes of urban Australians elaborated in **TR5** below, which has resulted in a vote-winning trend to lock up state-owned forests as national (i.e. State-managed) parks from which managed bee hives are to be phased out.

Also, migratory apiarists are facing a decreased area of native bush on freehold and leasehold grazing properties to the west of the Divide, while coastal areas are rapidly being cleared for agriculture and grazing, pine plantations, industry and housing.

As for the future, increasing fuel costs could start to force some beekeepers to swing back towards fixed-site apiaries with a suite of native and exotic vegetation to support a limited number of hives throughout the year, with perhaps some migratory and/or pollination component. Should the Varroa mite get into Australia, with the certain destruction of feral *Apis mellifera* colonies (i.e., bush hives), there would be a sudden demand for pollination services to be provided by a devastated beekeeping industry.

Without attention to several matters, the future of the industry looks bleak.

TR2. The honey bee industry – its role in agriculture and forestry.

Agriculture. Some little known historical facts of great relevance to crop pollination and to the environmental debate, are outlined. The important points are:

- Feral *Apis mellifera* had spread throughout Australia wherever the vegetation and water supplies suited them, by the mid-1800s
- Any adverse effect on the native flora and fauna caused by the honey bee *Apis mellifera* has had at least 150 years in which to occur.
- In all probability any conceivable damage has already happened, so there is little point in banning honey bees from conservation areas
- Where vegetation types have been fragmented, *Apis mellifera* with its five kilometre foraging radius, is better able to carry pollen between remnant fragments of forest than any of the native insect pollinators. It could therefore be critical to the survival of endangered plant species.
- Consequently, there could well be an advantage in keeping either feral or managed hives of *Apis mellifera* in conservation areas for the benefit of native flora in case the natural pollinators of some key native flora have been displaced by *Apis mellifera*
- **Feral bees have been providing free pollination to crop growers in most regions for the best part of 150 years**, but this is beginning to change as the habitat for ferals is being removed.
- **The free pollination service of the ferals could disappear suddenly if biosecurity is breached.**
- The failure of native insects to pollinate the early settlers' crops (when cultivations were surrounded by bush) holds out little hope that alternative pollinators can be found within Australia.
- The introduction of new exotic species is always fraught with danger.

Forestry. In Queensland, before green politics killed professional native forest management, forestry played a very important role in providing apiary sites in suitable locations, to allow beekeepers the dual advantage of harvesting honey and building beehive strength either before or after providing pollination services.

Conversely, the honey bee industry played only a minor role in forestry, as part of the community-obligation aspect of multiple forest use, namely supply of timber and other forest-products (including honey) in perpetuity, watershed protection, grazing, habitat for wildlife, and recreation.

Except for plantation areas, most of the State Forest estate in Queensland has been or is scheduled for conversion to (state-managed) national park, whereon beekeeping is to be terminated by AD2024 ostensibly because 'honeybees are not natural'. In reality it breaches a sacred ALP principle that no private individual should be allowed to profit from a public resource.

Forestry is a subset of land management that has been caught up in the misguided but well intentioned zeal of city dwellers to save the planet. See **TR5** below.

TR3 Biosecurity issues.

I would expect the Queensland Beekeepers Association submission and several others to canvas this vital issue in some detail, so the submission is brief. The currently perceived major threat is from Varroa mite. Although I am a participant in the 'sticky-mat' surveillance program designed to test for Varroa around ports every three months, I fear that the industry could be wiped out before this minimal surveillance program discovers its presence.

In view of the historical perspective as outlined above, there can be no doubt about the sudden and devastating effect that an undetected and unchecked incursion of Varroa would have on those crops that rely on pollination by *Apis mellifera*.

It is not only Australia that would be affected, as Australian soils support about 150 million 'people equivalents'. It is estimated that one-third of what we eat depends on *Apis mellifera* for pollination.

Appropriate biosecurity is vital.

TR4 Trade issues.

The bulk of Australian honey is produced by a relatively small number of large producers, who sell honey by the 200-litre drum or 1000-litre industrial bulk container (IBC) to the honey packers. The packers sell to three main classes of wholesale customers, namely domestic supermarkets and other retailers, domestic commercial enterprises such as bakers and biscuit makers, confectioners, restaurants and other commercial users, and overseas markets.

The submission outlines the reasons behind the packers' paying the bee keepers extremely low prices that are threatening to bankrupt commercial beekeepers, while supermarket prices are at an all-time high. The supply of Australian honey is again dwindling and honey prices have begun to rise, but still remain below the cost of production. However, this recent upward trend does not alter the fact that something needs to be done to keep the beekeeping industry financially viable.

A stable bee keeping industry is essential for all Australians. It would be impracticable and illegal for the packers to set prices for the various grades of honey. It is also impracticable to ask beekeepers, who must pay their bills, to withhold honey in order to force prices up. For their own good, Australian consumers and businesses need to reject imported honey and buy only honey collected by bees in Australia.

In the absence of any trade protection for the industry, this only leaves the right of the buyers to make an informed choice. We need to educate the public about:

- the importance of honeybees to the welfare of Australians (chiefly through pollination)
- the threat posed by bee parasites and diseases not yet in Australia
- the need for effective port surveillance to keep unwanted organisms out and to swiftly deal with any incursions before they spread
- the increased cost of some fruit and vegetables if feral pollinators are killed and growers have to pay apiarists for pollination services by managed beehives (Apiarists can use a miticide that does not pollute honey)
- the need for public native forests to remain available to keep beehives strong between pollination contracts
- the need to keep a viable beekeeping industry in all states of Australia to continue the pollination work in areas where managed beehives are already being used seasonally, and in case the feral hives are wiped out in other areas
- the need for householders and businesses to buy only honey 100% collected by honey bees in Australia.

In order to inform the public of where a container (of any size) of honey originated, we need to enact some very strict labelling laws, with meaningful penalties for breaches, and we need to police them diligently.

Wording such as 'Packed in Australia from local and imported ingredients' is too vague and should not be allowed. Retail packs of honey should be clearly and prominently labelled with the actual percentages by country of origin of the batches of honey that were used in the bulk blend from which the retail pack was filled.

TR5 The impact of land management and bushfires.

There are many misperceptions about trees and fire in the Queensland environment. The submission attempts to set the record straight.

Land management. In order to begin to understand what has happened and what is happening in the field of land management in Queensland, it is necessary to look at some history, and the interaction of local, national and international players and influences.

The submission very broadly outlines the coastal and inland vegetation and historical changes, and describes briefly the rise of a conservation movement in Queensland in the 1800s. These early Queenslanders were concerned with setting aside National parks for preservation of pristine areas and State Forests for sustainable use of natural resources; and their early model fits in with late 20th Century models agreed in United Nations documents to which Australia was and remains a signatory.

It also briefly describes the modern 'conservation' movement, which arose much later and is intent on environmental **preservation**, without any allowance for careful management and harvesting of natural resources. The conversion of non-plantation State Forests to effectively double the area of National Parks to around 6% of Queensland's land area, with the phasing out of beekeeping, is described.

The preservationists who aim to place a blanket ban on land clearing seem blissfully unaware that the stunted inland 'forests' being 'cleared' bear no resemblance to the tall coastal wet sclerophyll and rainforests. Few people appreciate that in many cases the third wave of invasive woody weeds is being cleared by the landholders to return the landscape to a condition resembling that of 1770, which also happens to keep it profitable for grazing. Studies have shown that over ninety percent of nectar, pollen and fruit on which non-grazing animals rely is produced in the riparian zones that occupy less than ten percent of the land area. Thus sensible clearing to retain the riparian areas would benefit the graziers without unduly affecting the beekeepers in many cases. Unfortunately, the ill-informed voting majority cannot see beyond the number of 'football fields' allegedly being 'cleared' annually.

Australia has been a participant in the development of, and a signatory to international treaties on resource management and environmental matters, but these international obligations have no effect until they are incorporated into domestic legislation and policies. It is important to be aware that the Australian and Queensland expressions of these agreements in the 1990s has consistently shifted the emphasis from concern for humans to an undue emphasis on environmental preservation. The internationally accepted term 'sustainable development' has been changed in Australia to '**ecologically** sustainable development' (ESD). This has a direct bearing on the predicament now facing Queensland beekeepers, as our policy makers pursue **ecological preservation** to the exclusion of sensible resource management. A further problem is the widespread misuse of Rio Principle 15, the **Precautionary Approach**, which zealous preservationists have renamed the 'Precautionary Principle' and redrafted to enable it to be used as an excuse to lock resources away and do nothing for fear of hypothetical disasters. This is elaborated in the body of the submission.

Quite clearly, the moves to exclude beekeepers from National Parks, and altering the tenure of former State Forests to National Park as a tactic to phase out sustained-yield harvesting, do not meet the Queensland Nature Conservation Act definition of 'Conservation' as '...the protection and maintenance of nature while allowing for its ecologically sustainable use'. Nor can the Queensland authorities be seen to be upholding the rights of humans (e.g. beekeepers) to a 'healthy and productive life in harmony with nature' as specified in the Rio Declaration.

One of the United Nations outcomes, Agenda 21, is an action plan to be implemented by the international community for ensuring sustainable development as we enter the 21st Century. **The need for integrated strategic planning at all hierarchical levels is a recurrent theme in Agenda 21.** It is only by integrated strategic planning that we may approach the ideal situation wherein all of a community's needs for land and other resources may be met. The alternative is a series of *ad hoc* decisions and numerous confrontations in each of which there is a winner and a loser, as we have seen in the past 20 years.

Despite several planning initiatives begun in the 1990s and the increased emphasis on public participation, there has not been any real attempt at strategic planning to cater for the resource needs of every interest group in the community. If Queensland cannot embrace the concept of first developing draft strategic plans for all competing land uses, then integrating them (i.e. adjusting each plan as necessary so that all may be accommodated), there is little hope for such a small and scattered interest group as beekeepers to achieve resource security.

Bushfires. The impact of bushfires seems to be an odd inclusion in this Inquiry. The term 'bushfire' generally conjures up visions of an unplanned and out-of-control fire against which any prudent beekeeper should have taken the well-known precautions.

If the term is intended to cover the fire management policies and practices of the land manager, such as controlled burning operations for fuel reduction, or regeneration burns, or burning flammable material between bare-earth fire lines to create a wide firebreak, etc, then this is an issue that needs to be addressed. Whenever two parties try to utilise the same area for different outcomes, there is always the potential for conflict.

There is clearly a need for better communication between the relevant beekeepers on the one hand, and on the other, the four Queensland Government departments now controlling apiary sites on state forests (native and plantation), national parks, and road reserves and stock routes. Beekeeper input to burning plans would also be highly desirable.

TR 6. The research and development needs of the industry.

The obvious and immediate R&D needs of the industry will probably be covered in fine detail in the official submissions of industry bodies. The following should be high on the list:

- Ongoing research into the life cycle of the small hive beetle *Aethina tumida* in Australian environments, with a view to practical and cost-effective control.
- Development of cheap and effective beetle traps to hopefully minimise damage by beetles until we have better knowledge of the pest.
- Ongoing research into control methods for each of the threats such as Varroa that have not yet arrived in Australia, with a view to guarding against strains that might be developing miticide resistance overseas.
- Action to ensure that in the event of any new organism arriving in Australia, suitable control methods including chemicals are available at short notice and appropriately registered for use.
- A comprehensive study into the pollination requirements of all crops grown in Australia, including the optimum density and placement of hives for each crop.

The first two dot points above involve two quite separate and barely-related tasks. The submission explains why.

The submission outlines some scientific work on pollens by DeGroot (1953) and recent findings published by Somerville (2001, 2005) and Manning (2001). These authors have discovered deficiencies in the amino acid balance of proteins, and in the essential oil composition of the lipids (fats), found in many Australian pollens. Both Manning and Somerville have flagged the need for beekeepers to look at the nutritional value of the pollens around their apiaries in order to be informed of potential problems arising from deficiencies. The thrust then seems to concentrate on the composition of supplementary feedstuffs or shifting the bees on to sites with more nutritious species.

However, there is an equally important third direction to explore – supplementary plantings of native or exotic species having an abundant supply of :

- nectar
- pollen with a high lipid (fat) content
- lipid fraction incorporating acceptable concentrations of the four fatty acids nominated by Manning

- pollen with a high crude protein level
- pollen protein to include all 10 essential amino acids but especially the four most commonly deficient in the Eucalypts and other Australian honey flora

The submission predicts a disturbing but realistic scenario that could require a partial swing to permanent apiary sites, with irrigated exotic plantings to correct the bee-nutritional deficiencies in some Australian pollens. Reasons are discussed in the full text.

To complete the picture, once the crops needing or benefiting from pollination have been identified, the nectar and pollen production of each species, and the pollen analysis as described above, need to be quantified.

It is time to move beekeeping a further stage out of the 'hunter-gatherer' phase towards a more sophisticated operation based on science as well as on the wealth of empirical knowledge accumulated by generations of beekeepers. The sooner we have the necessary information the better.

TR7. Existing industry and Government work that has been undertaken for the honey bee industry.

At the grassroots level, beekeepers are very good at sharing information, and quite inventive when it comes to combating problems such as designing beetle traps and various pieces of beekeeping equipment.

On the scientific side, it seems that all of the state departments of agriculture have apiary officers with science degrees in entomology and other relevant fields, to keep up to date with the science of beekeeping and to extend relevant information to the beekeepers. They also play a role in biosecurity programs and undertake research projects from time to time.

The Australian Government through the Rural Industries Research and Development Corporation (RIRDC) has undertaken some very important scientific work, including that mentioned above on bee nutrition.

The industry has willingly co-operated/participated in all scientific research, where appropriate. It is beyond my resources to list all of the publications and ongoing work of these bodies.

Response to Discussion Paper's Key Policy Objectives.

KP Objective 1. Addressing the threat posed by pest and disease incursions.

To the excellent section in the discussion paper under this heading, we need to add :

- A concerted effort to quantify the value to bees of the nectar and pollen from every crop that benefits from pollination by honeybees; and those species of the currently recognised honey flora used by beekeepers which have not yet been analysed; and of naturalised exotic plant species that are rich in the amino acids and essential oils often lacking in the Australian flora and that could be used to balance bees' diet and promote production.

The rationale for this recommendation is the need to continue the scientific approach to advancing the practice of apiculture in Australia, incorporating a strategy to prepare for the looming pollination crisis, as set out under headings TR2 and TR6 of the submission. This recommendation involves widening and intensifying a process of pollen evaluation already begun by Somerville in NSW, Manning in WA, and others.

KP Objective 2. Enhancing resource security.

While the main thrust of this section of the Discussion Paper is good, some of the comments are not valid in the Queensland context, as outlined in section TR5 of the submission.

Bee keepers certainly need greater access to national parks, but there is no need for 'research on the impact of honey bees on native flora and fauna...' since feral hives have been in National Parks for 150 years. Please refer to the first five dot points from section **TR 2** above.

The submission further explains why any 'research on the impact of honey bees on native flora and fauna' would be absolutely futile.

The fourth dot point of the resource security objectives needs to be expanded. The 'integrated land management strategy' should include more than just 'native vegetation'. Because of the ability of Queensland native tree species to regenerate naturally, and in view of the bee-nutritional deficiencies of many Australian species (see section TR 6 above), it would in many instances be more effective to supplement the native flora with scientifically chosen exotic flora. This ties in with the 'holistic' approach of the next dot point that recognises the value of Patterson's Curse *Echium lycopsis*, *E. vulgare* and Capeweed *Arctotheca calendula*, which are naturalised or acclimatised exotic 'weeds' from the Mediterranean, southern Europe and Africa respectively.

KP Objective 3. Creating a 'pollination industry'.

The rationale for this policy objective is well outlined in the Discussion Paper.

My only comment is that a scientific understanding is required not only 'of the needs of individual crop species and the bees servicing them', but also the quantity and quality of nectar and pollen contributed by each species being pollinated (in scientific terms as described in section TR 6 of the submission), so that a suitable strategy may be devised in each case to maintain the nutrient requirements of the bees. This point is also made under KP Objective 1 above, as I believe that while every effort should be put into blocking the threat posed by organisms not yet in Australia, we should be working on the fall-back plan of having a well organised and scientifically sound pollination industry in place.

The need for a better-organised pollination capability might come sooner than most people expect, because the small hive beetle arrived in Australia during a very serious drought. It needs high humidities to thrive, so it might wipe out the feral hives when our weather patterns oscillate to wetter conditions than recently experienced.

KP Objective 4. Meeting the research and development needs of the industry.

Again, this section of the Discussion Paper scopes the subject very well.

However, the fifth paragraph about bees in National Parks, shows bias, as more fully explained in the submission. The question of environmental impacts of bees in National Parks is a giant red herring. Feral bees have been in National Parks for 150 years, and any considerations of good or harm are now purely academic.

A probable reason for banning beekeepers (but not feral colonies) from National Parks in 1906, and again in 1948 when the Forestry Act was proclaimed, was that some of the conserved area was to be kept in a pristine condition in National Park, and the rest of the conserved area was to be managed as State Forest for 'the production of timber and other forest products in perpetuity, and the protection of a watershed therein'.

We should concentrate our research funding into areas where useful, positive information can be obtained, such as pollen analyses, to allow a massive scientific advance in bee management, rather than trying to prove a negative in order to shift a paradigm. Banning bees on National Parks was and is a political decision made in the absence of scientific certainty. Allowing managed hives of bees on National Parks could also be decided politically in the absence of any evidence over a period of 150 years that bees have caused any deleterious effects. The submission explains the near-imp possibility of shifting the green paradigm.

It is also necessary to understand the misuse of the Precautionary Approach by rabid preservationists before deciding whether to commit funds to a study into the effects (if any) of bees on the Australian biota. The official (Rio) version to which Australia was party, states:

*In order to protect the environment the **Precautionary Approach** shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.*

The unofficial version beefed up to suit preservationist goals (The Wingspread Statement defining the Precautionary Principle) is covered in the submission.

Insofar as bees in Australian bushland are concerned – and please remember that National Parks only began to be set aside some 50 or 60 years after the bushland of which they were a sample had been colonised by feral European bees– there is no evidence of ‘serious or irreversible damage’.

The *Precautionary Approach* requires the decision maker to consider a real threat – something that can do serious damage, or damage that cannot be rectified – and having recognised a real threat, not to delay doing something about it.

The Management Committee of QBA kept running up against the **Precautionary Principle** when negotiating with Environment and Heritage officers over continued beekeeping on former state forests now converted to National Park tenure, and were required to ‘bear the burden of proof’ just as the (unofficial) Wingspread Statement requires. To reiterate, there is no way to prove that continued commercial beekeeping will not ever ‘raise threats of harm’ (as distinct from actually doing any harm), so we should not waste money on any attempt to prove the unprovable.

We will achieve more through public education on the importance of bees, and hopefully shift public opinion from the preservation paradigm to a new paradigm that approves the environmentally sensitive utilisation of renewable resources for the benefit of human beings.

KP Objective 5. Improving professional training and development within the industry.

Yet again, the Discussion paper scopes this issue well, but the paragraph on food quality issues needs comment.

Myself and several others in my area eagerly took on the B-Qual training program, and we all benefited, but few elected to become accredited for reasons outlined in the submission.

KP Objective 6. Communicating the important role and requirements of the honey bee industry to governments, industry and the general public.

This is a really important policy objective, not to be considered least because it is last. All the points but the one in the final sentence have great merit.

Unfortunately, the experience of foresters in dealing with environmental preservationists is that any attempt to explain the scientific reasons behind management practices merely provided more avenues for them to cast aspersions. No amount of logic or scientific fact will shift their deep-seated beliefs. No member of a conservation organisation is bound to honour any agreement reached by their delegates. The normal social and business conventions do not apply to the green movement.

Certainly try to educate the general public, as we need public opinion on side, but the ‘environmentalists’ will have to be outflanked politically if we are to save the honey bee industry in Queensland.

Additional Key Policy Objective (7). Protecting the Australian Honey Bee Industry from unfair competition.

Australian honey producers are very small players in the world honey market, so it is quite easy for overseas producers to do two things: one, undercut Australian export honey to cause a glut in Australia, causing prices to fall; and two, dump cheap honey in Australia to send some producers broke.

Competition policy may be all very well, but it is not working in the case of cheap honey imports. There are far more important considerations such as keeping Australians employed, the ability of our country to be self-sufficient in all food production, and most important in this regard, the continued existence of the honey bee industry in order to be able to pollinate the crops that rely on honey bees.

It should be an easy option for the Australian Government to simply ban the import of honey on biosecurity grounds, for reasons elaborated in the submission, and with the support of a public education campaign as set out under the heading TR 4 Trade issues above.

Response to Terms of Reference.

TR1. The honey bee industry- its current and future prospects.

Currently, the honey bee industry is struggling to remain viable. Honey packers have been offering beekeepers less than the cost of production for bulk honey since February 2005.

This is much more serious than just 'market forces at work', as discussed further under **TR4 Trade issues** below. Even with the prospect of rising honey prices because of an emerging shortage as a result of the drought, current prospects are not good. While some producers might do well from honey withheld from sale, the bulk of beekeepers might not have honey available when the wholesale price reaches a reasonable level. Those with regular payments to meet must sell honey at a loss to survive in the short term.

To put the industry in some historical perspective, a century ago it was mainly a cottage industry with enthusiasts having a few hives, and the serious apiarists having up to a few hundred hives. The apiaries were all in fixed locations where there was a diversity of flowering plants producing pollen and nectar at intervals throughout the year, sufficient for the bees to survive and provide a surplus for the beekeeper. At that time, little of the coastal bushland had been cleared, and the grasslands west of the Great Dividing Range were becoming overrun with trees as a result of the fire-exclusion policies of the graziers. Swarms had escaped from apiaries and colonised bushland, so that pollination of introduced plants was no longer a problem.

As the twentieth century progressed, so did clearing for agriculture and housing etc, and a network of ever-improving roads catered for increasingly sophisticated motor transport. Until recently, fuel has been relatively cheap and abundant. The commercial beekeeping industry changed with the times, and the big operators became 'migratory' beekeepers who shifted their hives onto 'honey flows'. Individuals and family-owned beekeeping enterprises ran anything from a hundred to several thousand hives, and shifted them in loads of 50-150 hives. Most had home bases, while a few were completely mobile, camping near the bees and extracting their honey in mobile plants.

A hive in a good fixed location might produce three boxes of honey a year, while a hive being shifted continually onto good 'honey flows' will produce about five or more boxes of honey in the same time. It is the classic primary-production principle of greater outcomes from greater inputs.

Now, a little way into the twenty-first century, the industry is facing many changes and challenges. Apart from the threat of being wiped out by insect, fungal, bacterial or viral threats (see **TR3 Biosecurity issues** below) the most serious threat to the survival of commercial beekeeping in Australia is the urbanisation of Australia and the resultant muddled thinking of the bulk of our population when it comes to rural and environmental matters.

Statistics show that the population of Queensland has shifted from over 50% living and working in rural areas prior to 1940, to 92% living in the capital and regional cities by the 1990s. (The nation as a whole has statistics similar to Queensland's.)

Loss of connection to the realities of providing the necessities of human survival (water, food, fibre, shelter, energy) seems to have promoted a strange set of values in the city-dwelling majority, leading to some unfortunate resource-management decisions that will impact unfavourably not only on bee keepers, but the whole community. This point is elaborated in **TR5** below, but can be summarised as a vote-winning trend to lock up state-owned forests as national (i.e. State-managed) parks from which bees are to be phased out. Even the suburban hobby apiarists have been banned from keeping bees by several local governments paranoid about the threat of litigation and the increasing costs of attending to vexatious complaints about bees.

On top of the locking-away of State floral resources, migratory apiarists are facing a decreased area of native bush on freehold and leasehold grazing properties to the west of the Divide, while coastal areas are rapidly being developed for agriculture and grazing, pine plantations, industry and housing. As for the future, increasing fuel costs could start to force some bee keepers to swing back towards fixed-site apiaries with a suite of native and exotic vegetation to support a limited number of hives throughout the year, with perhaps some migratory and/or pollination component. Increasing capital values and consequent local government rates increases could be a limiting factor in setting up permanent apiaries.

Should the Varroa mite get into Australia, with the certain destruction of feral *Apis mellifera* colonies (i.e., bush hives), there would be a sudden demand for pollination services to be provided by a devastated commercial beekeeping industry. (I decline to use the popular term 'decimated' as it means to kill one in ten. If we only lost one hive in ten to Varroa before getting it under control we'd be laughing!)

Whether the industry could respond in a co-ordinated fashion is doubtful, because of its fragmented nature. Many beekeepers are not members of industry associations, and any control or influence exercised by government employees is minimal as staff levels are being reduced.

Without attention to several matters, the future of the industry looks bleak.

TR2. The honey bee industry – its role in agriculture and forestry.

Agriculture. Some little-known historical facts are very relevant to the matter of crop (in the broad sense) pollination, and to the environmental debate.

By the time Australia was settled, the slave-powered sugar-cane plantations of the West Indies and Mauritius were producing cheap and abundant sugar, the arrival of which featured in shipping reports in the early colonial newspapers. The colonists' desire to establish honey bees in Australia was therefore not entirely concerned with obtaining a supply of sweetener.

In about 1990 while delving into certain aspects of the development of forest policy in Queensland, I came across a contemporary article on pollination problems in the absence of honeybees. The early settlers were trying to establish all of the plants they were accustomed to growing in Europe. Many failed outright as the climate was unsuitable, but many plants brought to the colony in pots survived and grew well, and flowered, but did not set seed or produce fruit. Similarly, many species of imported seeds germinated and the seedlings thrived and developed and flowered but did not set fruit

or seed. At that time, the farm clearings were small and there was plenty of habitat for native insects, but the native insects were not attracted to the pollen of the exotic (= introduced) plants.

European plants had evolved alongside the European honey bee, *Apis mellifera*, and many depended on it for pollination. (Although I cannot immediately cite a reference for the above, there are good descriptions of problems with white clover, *Trifolium repens*, in New Zealand not setting seed until *Apis mellifera* was introduced there in 1843. Prior to that, white clover seed had to be imported annually from England to replenish cow pastures.)

The first European settlement in what is now Queensland occurred as a penal colony in 1824, but it is considered unlikely that *Apis mellifera* was introduced before free settlement commenced in 1842. The earliest reference in beekeeping literature is to a hive of black bees near Montague Rd in South Brisbane in 1854.

Coincidentally, 1854 is the year in which the Rev. Langstroth in America identified the 'bee space' and designed a removable-frame hive that revolutionised beekeeping. Among other advantages, hives could be robbed without killing the bees. Until then, the predominant English method of beekeeping was for a parent hive to be kept in a well insulated wooden box, which was never opened by the beekeeper. During the summer, the hive would rapidly fill with bees and honey, so the colony would produce new queen bees and swarms would issue from the hive. Beekeepers would capture the swarms and house them in straw skeps. When the skeps were heavy with honey, the bees were poisoned by fumes of sulphur dioxide from burning a spoonful of sulphur powder. The honeycomb and even the brood combs were eaten.

The important point here is that the bee colonies first introduced into Australia were the black English bee - the result of centuries of selection of bees with the 'swarming gene' - i.e. they had a high propensity to swarm. For example, the naval surgeon T B Wilson brought the first successful hive of bees to Hobart Town in Van Diemen's Land aboard the convict transport ship 'John' (on which my grandfather's grandfather was third mate), arriving 28 January 1831. The hive was kept for a year in the Governor's garden, during which time either 15 or 17 swarms emerged (Sources vary). The hive was then taken to Sydney and presented to the Lt Governor, whence it supplied numerous swarms to settlers in NSW, and later to the Swan River Settlement in Western Australia. (The earlier introduction of bees to Sydney in 1822 is reported to have failed.)

The swarms from the original hive would have been housed in permanent wooden hives, to in turn produce swarms that could either be housed in permanent hives or in the temporary skeps for honey production. The practice was to kill off swarms in skeps before winter. Inevitably a good percentage of the swarms issuing from the permanent hives escaped into the bush to set up home in suitable hollows in trees (mainly). Each feral hive also threw several swarms, and according to some sources, feral hives of the black English bee were widely distributed in the Australian bush by the mid-1800s.

Between 1866 and 1872, there were several successful importations of the Italian (or Ligurian) strain of *Apis mellifera*. From 1872 to 1880 a Brisbane beekeeper J Carroll sent many Italian bee colonies to different parts of Australia, and there were other imports as well. Escaped swarms of the golden Italian strain interbred with the feral English black bees. Today's bush bees tend to be dark bees with yellow bands on their abdomens.

Modern queen breeders strive to produce pure strains of bees, mainly Italian (Ligurian) and Russian (Caucasian) with mild temperament, good honey production, a low tendency to swarm, and other desirable traits. With proper hive management, loss of swarms to become feral is less likely than with the stock of years gone by.

The important points out of all this are:

- Feral *Apis mellifera* had spread throughout Australia wherever the vegetation and water supplies have suited them, by the mid-1800s

- Any adverse effect on the native flora and fauna caused by the honey bee *Apis mellifera* has had at least 150 years in which to occur.
- In all probability any conceivable damage has already happened, so there is little point in banning honey bees from conservation areas
- Conversely, there could well be an advantage in keeping either feral or managed hives of *Apis mellifera* in conservation areas for the benefit of native flora in case the natural pollinators of some native flora have been displaced by *Apis mellifera*
- Where vegetation types have been fragmented, *Apis mellifera* with its foraging radius of five kilometres, is better able to carry pollen between remnant fragments of forest than any of the native insect pollinators. It could therefore be critical to the survival of endangered plant species.
- Consequently, there could well be an advantage in keeping either feral or managed hives of *Apis mellifera* in conservation areas for the benefit of native flora in case the natural pollinators of some key native flora have been displaced by *Apis mellifera*.
- Feral bees have been providing free pollination to crop growers in most regions for the best part of 150 years, but this is beginning to change as the habitat for ferals is being removed. Also, the free pollination service of the ferals could disappear suddenly if biosecurity is breached.
- The failure of native insects to pollinate the early settlers' crops (when cultivations were surrounded by bush) holds out little hope that alternative pollinators can be found within Australia.
- The introduction of new exotic species is always fraught with danger.

Forestry. In Queensland, before green politics killed professional native forest management, forestry played a very important role in providing apiary sites in suitable locations, to allow beekeepers the double advantage of harvesting honey and building beehive strength either before or after providing pollination services.

Conversely, the honey bee industry played only a minor role in forestry, as native forest species are either wind pollinated or have native animal pollinators (including arboreal mammals, insects, bats and birds).

Beekeeping featured only as part of the community-obligation aspect of multiple forest management, namely supply of timber and other forest-products (including honey) in perpetuity, watershed protection, grazing, habitat for wildlife, and recreation. Revenue from apiary site permits would not have covered administrative costs.

Except for plantation areas, most of the State Forest estate in Queensland has been or is scheduled for conversion to (state-managed) national park, whereon beekeeping is to be terminated by AD2024 ostensibly because 'honeybees are not natural'. In reality it breaches a sacred ALP principle that no private individual should be allowed to profit from a public resource.

Forestry is a subset of land management that has been caught up in the misguided but well intentioned zeal of city dwellers to 'save the planet'. See **TR5** below.

TR3 Biosecurity issues.

I would expect the Queensland Beekeepers Association submission and several others to canvas this issue in some detail, so I will be brief. The currently perceived major threat is from Varroa mite. Although I am a participant in the 'sticky-mat' surveillance program designed to test for Varroa around ports every three months, I fear that the industry could be wiped out before this minimal surveillance program discovers its presence.

The honey bee industry is one seldom thought of by the general Australian public. Its main **visible** product, honey, has a clean and green image envied by the rest of the world because of our island-continent's unique status regarding diseases, and the purity of our products. Its **invisible** product, pollination, far outstrips the value of its visible product.

In view of the historical perspective outlined above, I have no doubts about the sudden and devastating effect that an undetected and unchecked incursion of *Varroa* would have on those crops that rely on pollination by *Apis mellifera*. It would have the same destructive effect on our economy as Foot and Mouth disease has caused overseas.

It is not only Australia that would be affected. A QDPI soil scientist used to love posing the trick question of how many 'people equivalents' are dependent on the tired old soils of Australia. Most who are asked will quote the current population of Australia. The correct answer is something like 150 million, because of exports. It is estimated that one-third of what we eat depends on *Apis mellifera* for pollination.

Appropriate biosecurity is vital.

TR4 Trade issues.

There are many small honey producers who package their own honey and sell it to friends and at Sunday markets, but by far the greatest quantity of honey is produced by a relatively small number of large producers, who sell honey by the 200-litre drum or 1000-litre industrial bulk container (IBC) to the honey packers. A 15kg bucket is generally regarded as the smallest wholesale container.

The packers filter or centrifuge the bulk honey to remove fine particles of wax and other solids such as pollen, and heat-treat it to delay any tendency for the natural sugars to crystallise. Batches of honey are blended into larger production runs, and packed and labelled in quantities to suit three main classes of wholesale customers, namely domestic supermarkets and other retailers domestic commercial enterprises such as bakers and biscuit makers, confectioners, restaurants, and other commercial users (in bucket or drum quantities), and overseas markets in shipping container lots.

Honey producers lamented low prices throughout the 1990s, until in 2004, under the influence of a drought-induced shortage, the price paid by packers for bulk honey rose to a high of \$5.50 per kg. This forced the supermarket price of packaged honey to around \$9.00 per kg. The resultant buyer resistance caused retail sales to fall sharply, so the supermarket managers responded by reducing shelf space to about half of the display formerly enjoyed by honey.

Around the end of 2004 a glut of Chinese honey contaminated with an antibiotic used to combat a bacterial brood disease hit the world market at \$1 American per kg. Although this honey was not allowed into Australia, it was sold throughout Asia and the Arab world, thus displacing Australian honey. By February 2005 the packers had responded to the growing surplus of Australian honey by offering producers \$2.20 per kg, which was and still is less than the cost of production.

The price offered to beekeepers rapidly fell to \$1.80 as the packers sold some honey at a loss to match the \$1 American in order to retain their overseas customers and their domestic commercial buyers. Meanwhile the supermarkets kept the retail price of honey at \$9.00 per kg, unconcerned or unaware that this high price was causing a drop in tonnage of honey being sold. After all, the housewife could buy alternative spreads such as a glass jar of Hungarian cherry jam dumped in Australia for around \$2.00. With twice the mark-up on half the quantity occupying half the shelf space, and alternative products on offer, the supermarkets could not lose.

The supermarkets began calling for bids electronically, for packaged and labelled honey. One very disturbing aspect of this is that I have been told that packers do not know the identity of those against whom they are bidding. This raises the suspicion of dummy bidders. In order to survive, the packers continued to offer beekeepers ridiculously low prices so they could undercut one another and win tenders to supply the supermarkets with packaged and labelled honey at correspondingly low prices.

By the end of 2005 some of the Chinese producers were able to supply honey without contaminants, allowing a NSW importer to bid for supermarket contracts at even lower prices. Then Indian honey

also became available at third-world prices, but honey in the supermarkets is still around \$9.00 per kg.

The supply of Australian honey is again dwindling and honey prices have begun to rise above the \$2.00 per kg mark, but this does not alter the fact that something needs to be done to stabilise the beekeeping industry by somehow arranging for rewards commensurate with costs and effort.

Such stability is desirable not only for the honey suppliers, but also for all Australians. Some considerations follow.

The packers are a disparate lot apparently more concerned with competition amongst one another than with the viability of their suppliers. Added to this problem is the fact that price fixing is illegal in Australia, despite the apparent immunity of the oil companies whose prices fluctuate in unison but without any relativity to the international price of crude, almost as if they had formed a cartel. Therefore the packers cannot legally set a minimum price for a base grade of honey, or a schedule of prices for the various grades.

The beekeepers comprise a larger and therefore even more disparate group than the packers, each with a unique set of circumstances governing how honey is marketed and what minimum price is acceptable. While it might still be legal for a group of workers to set a minimum price for their services, it is doubtful whether a bunch of beekeepers could avoid charges of collusion (i.e., forming a cartel) if they attempted to fix the bulk prices of the various grades of honey. The success of any strategy for withholding honey until foreign supplies are exhausted would depend on the quantity of overseas honey available. Also, many of the big players have big repayments to meet, and so they must sell honey regularly for whatever the going price might be. Therefore it is not feasible to try to get honey producers to withhold honey as a strategy or tactic to force honey prices up.

This only leaves the right of the buyers to make an informed choice. We need to educate the public about:

- the importance of honeybees to the welfare of Australians (chiefly through pollination)
- the threat posed by bee parasites and diseases not yet in Australia
- the need for effective port surveillance to keep unwanted organisms out and to swiftly deal with any incursions before they spread
- the increased cost of some fruit and vegetables if feral pollinators are killed and growers have to pay apiarists for pollination services by managed beehives (Apiarists can use a miticide that does not pollute honey)
- the need for public native forests to remain available to keep beehives strong between pollination contracts
- the need to keep a viable beekeeping industry in all states of Australia to continue the pollination work in areas where managed beehives are being used seasonally, and in case the feral hives are wiped out elsewhere
- the need for householders and businesses to buy only honey 100% collected by honey bees in Australia.

In order to inform the public of where a container (of any size) of honey originated, we need to enact some very strict labelling laws, with meaningful penalties for breaches, and we need to police them diligently.

Wording such as 'Packed in Australia from local and imported ingredients' is too vague and should not be allowed. Retail packs of honey should be clearly and prominently labelled with the actual percentages by country of origin of the batches of honey that were used in the bulk blend from which the retail pack was filled.

TR5 The impact of land management and bushfires.

Land management. In order to begin to understand what has happened and what is happening in the field of land management in Queensland, it is necessary to look at some history, and the interaction of local, national and international players and influences.

There are many misperceptions about trees and fire in the Queensland environment. Popular belief has it that the whole of Queensland was pretty well covered with ancient trees when Cook sailed up the coast in 1770, and the early settlers cleared the country and we should revegetate the whole State with trees. This is boosted by the fallacy that trees produce oxygen and can offset the damage done by burning fossil fuels in our vehicles and power stations. (Over the full life, death and decay cycle of every woody plant, the amount of carbon dioxide taken from the atmosphere during growth is exactly the same as the amount given off during destruction/decay.)

In fact, most of the coastal ranges and coastal plains of Queensland, and the eastern slopes of the dividing range were covered with forests ranging from wallum types, through dry sclerophyll and wet sclerophyll to several categories of rainforest, interspersed with grassy areas kept treeless by aboriginal burning practices. The flora was rich and diverse, and well suited to apiculture. The flattest areas with the best soils carrying the best timber trees, which also yielded some of the best honey, were cleared for agriculture and urban and industrial uses. The majority of Queensland's freehold farms were east of the dividing range.

West of the range the country was predominantly savannah woodlands and grasslands, again kept that way by the Aborigines, merging into arid country further inland. Some excellent historical research published in the early 1990s by Dr Bill Burrows of the Tropical Beef Research Centre, Rockhampton, describes how the early graziers went to great lengths to exclude fire because they relied on grass to produce their wealth. This policy was counter-productive for grazing in the longer term, because without fierce fires to kill the tree seedlings, much of the grassland suddenly became impenetrable cypress pine thickets and hardwood forests, the latter eminently suited to honey production as the trees matured. Most of the properties west of the Divide were Crown leasehold, many of which were later converted to freehold.

Concerned at the gradual denudation of the forested parts of the countryside, a forest conservancy movement began in Queensland at least as early as 1870. Its efforts were rewarded by the establishment of a Forestry Branch within the Department of Public Lands in 1900, and in 1906 with 'An Act to provide for the Reservation, Management and Protection of State Forests and National Parks.' The administration and management of National Parks for the preservation of areas of high conservation significance and areas of outstanding scenic grandeur became a function of the newly formed forest service, a unique arrangement in Australia that was to last for nearly 70 years. The utilitarian forest needs were to be met by setting aside State Forest areas, and for many years there were also vast areas of Timber Reserve awaiting assessment and eventual conversion to other tenures (state forest, national park, various farming and/or grazing leaseholds, freehold, etc).

This 1906 concept of land management bears remarkable similarities to a checklist of priority actions published in 1980 by the International Union for the Conservation of Nature and Natural Resources (IUCN) in 'World Conservation Strategy – Living Resource Conservation for Sustainable Development'. From memory, the prioritised ten-item checklist began with, '1. Preserve good quality crop land for crops. 2. Preserve good grazing land for grazing. 3. Preserve good forests for timber production...' and ended with '10. Set aside representative areas for nature conservation.' This publication put concern for the welfare of humans ahead of other considerations, and was produced with Australian participation and agreement.

Meanwhile, the modern conservation movement had been gaining momentum, having received its impetus from the publication of *Silent Spring* by Rachel Carson in 1962. The Australian participants in this movement believe that any form of disturbance to the natural forest will lead to its destruction or degradation. This runs counter to scientific observations that the greatest biodiversity and the

greatest chance of species survival occur where either natural 'disasters' or human intervention result in a 'normal' forest, i.e., one managed by clearfelling of annual coupes so that approximately equal areas of all annual age classes from bare earth to maturity are created, so providing a full range of habitats for plants and animals. A similar result is achieved in native forests where only the accessible parts of a forest are harvested by a system described as poly-cyclic single-tree selection, which takes some of the trees at intervals (the harvesting cycle) as they reach maturity. The conservationists believe in letting all forests attain what they have described as 'old growth', with absolutely no harvesting of any human benefits except some pharmaceuticals that have yet to be discovered.

Having gained incredible political influence, the leader of the conservation movement in Queensland has managed to reverse the priority order of the 1980 IUCN checklist, shifting nature conservation reserves from tenth to first priority and banning all production from native forests. There is a firmly held belief in our Department of Environment and Heritage that the highest and best use of forested land is its preservation as national park. There is no limit to the number of vegetation types and animal habitats, so there is no limit to the amount of country that 'should be' locked away from human activities. The zealots believe that people should be excluded from even walking through the vast majority of national parks. Around 1990, about 11% of Queensland's land area was state-managed. State Forests totalled about 4% of the land area, National Parks about 3%, total road and rail reserves about 1% and so on. By some unknown process the greens calculated that Queensland needed 6% of its area to be set aside as National Park to meet conservation objectives. And because State Forests represented the bulk of the vegetation types that had not been utterly ruined, the 6% objective could be achieved quite conveniently by rolling the State Forests into National Park or 'National Park Recovery' areas. Allowing good farmland to be subdivided for housing completed the reversal of agreed United Nations priorities. So much for Australia's commitment to sustainable land management and international treaties.

True to the adage that new players tend to think that nothing happened before they joined the game, these modern do-gooders also want to place a blanket ban on land clearing, blissfully unaware that the stunted inland 'forests' being cleared bear no resemblance to the grand coastal wet sclerophyll and rainforests of their dreams. They fail to appreciate that in many cases the third wave of invasive woody weeds is being cleared by the landholders to return the landscape to a condition resembling that of 1770, which also happens to make it profitable for grazing. Studies have shown that over ninety percent of nectar, pollen and fruit on which non-grazing animals rely, is produced in the riparian zones that occupy less than ten percent of the land area. Thus sensible clearing to retain the riparian areas would benefit the graziers without unduly affecting the beekeepers in many cases.

Australia has been a participant in the development of, and a signatory to international treaties on resource management and environmental matters, but these international obligations have no effect until they are incorporated into domestic legislation and policies. It is interesting to note that the Australian and Queensland expressions of these agreements in the 1990s has consistently shifted the emphasis from concern for humans to an undue emphasis on environmental preservation. The internationally accepted term 'sustainable development' has been changed in Australia to 'ecologically sustainable development' (ESD). This has a direct bearing on the predicament now facing Queensland beekeepers, as our policy makers pursue **ecological preservation** to the exclusion of sensible resource management. A further problem is the widespread misuse of Rio Principle 15, the **Precautionary Approach**, which zealous preservationists have renamed the 'Precautionary Principle' and redrafted to enable it to be used as an excuse to lock resources away and do nothing for fear of hypothetical disasters.

In May 1993 I presented a paper to the annual conference of the Queensland Environmental Law Association (QELA), titled *The integration of ESD principles into the management of natural resources in Queensland – From Rio to Oodnagalarbi*. At that time, there was a bewildering array of initiatives seeking to influence resource management. QELA ran its conference on the question of what was being done in Queensland to implement the output of the Earth Summit at Rio. At the

time, I was employed as a senior project officer in a QDPI team working on updating and combining eleven Acts into a single piece of natural resource management legislation that was not to include preservation tenures such as national parks. It was doomed. Permission has not been sought from QELA to republish the entire 15-page paper, but a few excerpts would be in order to illustrate and hopefully clarify the bewildering array of agreements and policies affecting land management.

'...this paper outlines steps being taken to further develop legislation dealing with resource management in Queensland that incorporates principles stated in the Inter-Governmental Agreement on the Environment (IGAE) and policies agreed by national representatives at the United Nations Conference on Environment and Development (UNCED) at Rio de Janeiro. It also mentions relevant parts of the Council of Australian Governments (COAG) agreements, viz. ESD, Greenhouse and National Forest Policy. IGAE was reached among Governments within Australia in February 1992, and UNCED (the "Earth Summit") was held in June 1992. COAG is an extension of the Special Premiers' Conference, which reached agreement on 7 December 1992.'

'The main outcomes from Rio were:

- the Climate Change Convention
- the Biodiversity Convention
- the Rio Declaration on Environment and Development
- Agenda 21.'

'The Biodiversity Convention has implications for all natural resource managers. It has as its primary aim, the Conservation and sustainable use of biological diversity and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources. In Queensland, its aims are incorporated in the Nature Conservation Act 1992 which is administered by the Department of Environment and Heritage. (See definition of biological diversity in S10; "Conservation" defined in S9 "is the protection and maintenance of nature while allowing for its ecologically sustainable use").'

'The Rio Declaration enunciates 27 principles to be observed to achieve global sustainable development. Note that "ecologically" does not precede "sustainable development" or "sustainable use" in the UNCED proceedings.'

'There is a fairly close correlation between the Rio Declaration and IGAE.... The most remarkable difference is that the Rio Declaration squarely places human beings at the centre of concerns for sustainable development, and recognises their rights to a healthy and productive life in harmony with nature, whereas IGAE seems to place more emphasis on the protection of nature as well as the sustainable use of natural resources.'

Quite clearly, the move to exclude beekeepers from National Parks, and altering the tenure of former State Forests to National Park as a tactic to phase out sustained-yield harvesting, do not meet the Queensland Nature Conservation Act definition of 'Conservation' as '..the protection and maintenance of nature while allowing for its ecologically sustainable use'. Nor can the Queensland authorities be seen to be upholding the rights of human beekeepers to a healthy and productive life in harmony with nature.

'Agenda 21' is an action plan to be implemented by the international community for ensuring sustainable development as we enter the 21st Century.

'Although the Australian initiatives were not direct descendants of the UNCED (Rio) proceedings, they were developed simultaneously and with the same motives and utilising the same source documents, namely the World Conservation Strategy and later variations on the sustainable development theme. For practical purposes, IGAE is the Australian version of the Rio Declaration, and NSESD is the Australian equivalent of Agenda 21.'

The next quote from my 1993 paper is even more relevant now than it was then:

The foregoing has outlined the commitment at international, national and Queensland Government levels, to (ecologically) sustainable development. Agreement at these three levels has also recognised the need for local government and community involvement. **The need for integrated strategic planning at all hierarchical levels is a recurrent theme in Agenda 21.** It is only by integrated strategic planning that we may approach the ideal situation wherein all of a community's needs may be met. The alternative is a series of ad hoc decisions and numerous confrontations in each of which there is a winner and a loser, as we have seen in the past 20 years.'

Despite several planning initiatives begun in the 1990s and the increased emphasis on public participation, there has not been any real attempt at strategic planning to cater for the land and other resource needs of every interest group in the community. For example, no one in Queensland has ever identified all of the potential dam/water-storage sites, let alone attempted to integrate

conflicting bids for the same sites, such as roads and other utilities. Planning schemes have tended to be authoritarian, and the nearest thing to integration was the 'urban footprint' plan designed by the state government and inflicted on the local governments, which had to amend their planning schemes to fit.

If Queensland cannot embrace the concept of first developing draft strategic plans for all competing land uses, then integrating them (i.e. adjusting each plan as necessary so that all may be accommodated), there is little hope for such a small and scattered interest group as beekeepers to achieve resource security.

Bushfires. The impact of bushfires seems to be an odd inclusion in this Inquiry. The term 'bushfire' generally conjures up visions of an unplanned and out-of-control fire against which any prudent beekeeper should have taken the well-known precautions.

If the term is intended to cover the fire management policies and practices of the land manager, such as controlled burning operations for fuel reduction, or regeneration burns, or burning flammable material between bare-earth fire lines to create a wide firebreak, etc, then this is an issue that needs to be addressed.

Whenever two parties try to utilise the same area for different outcomes, there is always the potential for conflict. The forestry staff managing an area are concerned with the logistics of seasonal fuel reduction over large areas, with limited staff and largely unpredictable weather with often small windows of opportunity when the drought index and predicted temperature, humidity and wind strength and direction are all favourable. It is nigh impossible to predict with certainty precisely when burn-offs will occur, but at least the area manager should be able to inform beekeepers with sites in the area (whether occupied or not) of the intended burning program before the start of each season. Especially when there have been staff transfers, it is easy to overlook informing apiary site holders immediately before burning, as decisions to burn can be made suddenly, particularly where aerial ignition of large areas is concerned, and there can be quite a flurry of activity. When burning patterns are being planned, and revised because the weather does not always co-operate, the flowering pattern of the honey producing trees (often less reliable than the weather) is probably the least of the forest manager's worries.

There have been instances where beekeepers have paid annual site fees for say three years, waiting for a particular species to not only flower but also for there to be enough water in the soil to allow the trees to produce nectar, and just when the buds start to open, the area has been burnt and the flowers ruined. The beekeepers then feel that not only had lease fees been taken under false pretences, but also they had been cheated of a honey flow which might have paid the bills. On top of this they would probably have had to find another suitable site at short notice.

The Queensland Beekeepers' Association has just about finished helping with the identification and map location of all apiary sites on former state forests recently changed to national park tenure. The QBA had to lobby strongly to have all sites, not just the currently occupied ones, recognised by Parks and Wildlife staff.

There is clearly a need for better communication between the relevant beekeepers on the one hand, and on the other, the four departments now controlling apiary sites on state forests (native and plantation), national parks, and road reserves and stock routes. Beekeeper input to burning plans would also be highly desirable.

TR 6. The research and development needs of the industry.

The obvious and immediate R&D needs of the industry will probably be covered in fine detail in the official submissions of industry bodies. The following should be high on the list:

- Ongoing research into the life cycle of the small hive beetle *Aethina tumida* in Australian environments, with a view to practical and cost-effective control.

- Development of cheap and effective beetle traps to hopefully minimise damage by beetles until we have better knowledge of the pest.
- Ongoing research into control methods for each of the threats such as Varroa that have not yet arrived in Australia, with a view to guarding against strains that might be developing miticide resistance overseas.
- Action to ensure that in the event of any new organism arriving in Australia, suitable control methods including chemicals are available at short notice and appropriately registered for use.
- A comprehensive study into the pollination requirements of all crops grown in Australia, including the optimum density and placement of hives for each crop.

The first two dot points above involve two quite separate and barely-related tasks. We do not know what the small hive beetle is up to in Australia. We were told it bred in beehives, wiping them out. Here, adult beetles come and go from healthy hives, and can sometimes be found in compost bins. All the beekeepers of my acquaintance found adult small hive beetles in their hives months before anyone experienced damage within a hive. In September(?) 2005 I had just tied a net over a truck load of hives at dusk when thousands of small hive beetles arrived, trying to get back into 'their' hives for the night. None of my healthy hives with a resident population of adult hive beetles has ever shown evidence that the beetles bred in those hives. However, in the 2006-07 season, due to reduced attention to hive management for reasons of more pressing priority, several of my hives swarmed. Six percent of hives appear to have experienced failed succession; whereupon the small hive beetles took advantage of the weakened hives and abundant pollen build-up (because of the lack of brood to be fed) and promptly laid millions of eggs with resultant 'slime-out'.

A common principle in plague management (in the broad sense) is that it is rarely profitable to kill adult members of the plague population by what may broadly be described as mechanical means. In some cases, killing the adults might satisfy a very human instinct, but actually exacerbate the problem by stimulating more frenzied breeding to fill the gap left by those killed. All successful control regimes have relied on an intimate knowledge of the life cycle of the organism, and then employing one or more strategies, such as removal of one or all of the factors essential to the development of the target organism (food, water, shelter, warmth, presence or absence of light, etc), or identifying the stage in the life cycle where the organism is most vulnerable and easily neutralised, or providing one or more predators and conditions suitable for the predator(s) to do the job. Meanwhile, a practical and effective adult-beetle catcher would at least reduce stress in beekeepers.

I would like to look beyond the immediate problems to a scenario wherein *the feral hives have been devastated or completely wiped out by a predator, leaving only hives managed by beekeepers to pollinate an estimated one-third of the plants we rely on for food; large migratory beekeepers have been allowed to use all state-managed lands including national parks, but even this does not support sufficient hives for the growing task of pollination; the cost of fuel is a limiting factor in shifting hives over long distances; and the prospect of relatively small apiaries in 'permanent' locations (except when a load of hives might be shifted to pollination jobs in the vicinity) is becoming attractive.*

In fact, circumstances have steered my wife and I to acquire a 16ha (40ac) farm as a base for beekeeping. The area is great for growing beehives because of the suite of native species that produce pollen and nectar practically throughout the year. With some irrigated exotics to supplement the natives, it might even produce some good honey flows provided it is not overstocked. The problem lies in selecting appropriate plant species, and this is where more research is needed.

Beekeepers have long been aware of the importance of pollen, and the collapse of hives put onto honey flows from a single species that does not produce the quantity and quality of pollen required

by the bees. For example, our top honey species, yellow box *Eucalyptus melliodora*, can not be worked unless another species is flowering nearby to produce suitable pollen.

Initially, plant pollens were evaluated solely on their crude protein content, and it is still a good rule of thumb that the crude protein level should be above 20%. An exception would be heavy pollen production with a good amino acid balance in the protein. A paper by D C Somerville of NSW Agriculture (RIRDC Publication No. 01/047) in 2001, *Nutritional Value of Bee Collected Pollens* quotes the ten amino acids necessary to meet honey bee nutritional requirements as identified and quantified by DeGroot, 1953. (From a distant memory of Biochemistry II, they are the same ten that are essential to human welfare.) Of the 194 pollens tested in Somerville's study, 35% were deficient in isoleucine, 5.6% were deficient in valine, and 1% were deficient in methionine. Tryptophan was not tested in this study, but Somerville quotes Rayner & Langbridge (1985) as having identified 10 species out of 20 deficient in this amino acid. Of the 42 samples from Eucalypts and the related genera *Corymbia* and *Angophora*, 74% were deficient in isoleucine. Another publication by Doug Somerville, *Fat Bees SkinnyBees – A manual on honey bee nutrition for beekeepers* (RIRDC Publication Number 05/054, May 2005) provides the available pollen analysis data on a range of species worked by beekeepers. It is a good start, and it would be good to see this sort of effort extended to include more Queensland species.

Rob Manning of WA Agriculture presented some of his findings to the 2003(?) Annual Conference of QBA. He made the point that all ten amino acids were abundant in the European flora which evolved alongside the European honey bee, but they were often lacking to greater or lesser degree in much of the Australian flora, so it is no great wonder that bee populations often crash on Australian flora. Tryptophan, methionine, valine and isoleucine are the four amino acids commonly low in Australian pollens. Kleinschmidt (1983) also found in a Queensland study that lysine, histidine and arginine were also limiting in some areas of Queensland.

Manning's talk at the QBA Conference was based on a paper he had published in *Bee World* (Vol.82 No.2 2001) *Fatty acids in pollen: a review of their importance for honey bees*. From a welter of fascinating information, Manning identified four fatty acids of vital importance in bee nutrition: palmitic, oleic, linoleic and linolenic. The first two are nutritionally very important, a good supply of palmitic being critical to the development of larvae, while linoleic and linolenic have good antimicrobial properties believed to be important in controlling AFB. So not only should pollens have a high fat content, but also an adequate concentration of these four fatty acids within the fat component. Also, it seems that bees prefer pollens with a high fat content.

Both of the above authors/researchers have flagged the need for beekeepers to look at the nutritional value of the pollens around their apiaries in order to be informed of potential problems arising from deficiencies. The thrust then seems to concentrate on the composition of supplementary feedstuffs or shifting the bees to more nutritious species.

My suggestion is to open up a whole new research direction aimed at identifying species suitable for (irrigated) planting to supplement the pollen available from native species and crops that are to be pollinated. For my property I am interested in exotic species with high lipid (fat) content incorporating acceptable concentrations of the four fatty acids nominated by Manning, high crude protein levels including all 10 essential amino acids but especially the four most commonly deficient in the Eucalypts and other Australian honey flora. The reason for wanting to plant exotics is that all the natives suitable for my site are already here, and planting more will not fill the thin patches in the flowering calendar, or rectify nutrient deficiencies in the pollens. Suitable exotic species might be grown as hedges, windbreaks or in clumps to ensure a continuous flowering. Irrigation in dry times should ensure nectar is produced. Such complementary plantings might make fixed apiary sites viable.

To complete the picture, once the crops needing or benefiting from pollination have been identified, the nectar and pollen production of each species, and the pollen analysis as described above, need to

be quantified. It might then be feasible to match up complementary plantings to balance the bees' diet on some pollination jobs. We must continue to move beekeeping out of the 'hunter-gatherer' phase towards a more sophisticated operation based on science as well as on the wealth of empirical knowledge accumulated by generations of beekeepers. Such a move might be likened to the way in which German immigrants to South Australia, without any traditional knowledge of wine making, revolutionised the wine industry by delving into the science underlying the production of good-quality wines.

TR7. Existing industry and Government work that has been undertaken for the honey bee industry.

At the grassroots level, beekeepers are very good at sharing information, and quite inventive when it comes to combating problems such as designing beetle traps and various pieces of beekeeping equipment.

On the scientific side, it seems that all of the state departments of agriculture etc have apiary officers with science degrees in entomology and other relevant fields, to keep up to date with the science of beekeeping and to extend relevant information to the beekeepers. They also play a role in biosecurity programs and undertake research projects from time to time.

The Australian Government through the Rural Industries Research and Development Corporation (RIRDC) has undertaken some very important scientific work, including that mentioned above on bee nutrition.

It is beyond my resources to list all of the publications and ongoing work of these bodies.

Response to Discussion Paper's Key Policy Objectives.

KP Objective 1. Addressing the threat posed by pest and disease incursions.

To the excellent section in the discussion paper under this heading, I would add the need for:

- A concerted effort to quantify the value to bees of the nectar and pollen from every crop that benefits from pollination by honeybees; and those species of the currently recognised honey flora used by beekeepers which have not yet been analysed; and of naturalised exotic plant species that are rich in the amino acids and essential oils often lacking in the Australian flora and that could be used to balance bees' diet and increase production.

The rationale for this recommendation is the need to continue the scientific approach to advancing the practice of apiculture in Australia, incorporating a strategy to prepare for the looming pollination crisis, as set out under headings TR2 and TR6 above. This recommendation involves widening and intensifying a process of pollen evaluation already begun by Somerville in NSW, Manning in WA, and others.

KP Objective 2. Enhancing resource security.

While the main thrust of this section of the Discussion Paper is good, some of the comments are not valid in the Queensland context.

As outlined in section TR5 above, most of the country west of the great dividing range (which is where the best and most of the honey comes from) was originally grassland or savannah woodland, kept in that condition by regular hot fires lit by Aborigines. There, and in cleared areas on the coastal side of the range, a land manager has only to stop ploughing, burning or using herbicides for trees to return with a vengeance. And clearing seldom has the potential to cause salinity problems on the areas that were grassland or savannah woodland when Cook sailed up the coast, because, unlike the salinity-prone areas of the southern states and isolated occurrences in Queensland, they are not underlain by ancient sea beds full of salt. This is difficult for southern land managers and

politicians to believe, because it is outside their experience, but western graziers will persist in wanting to minimise tree cover in favour of grass because it is the only sensible thing to do.

Bee keepers certainly need greater access to national parks, but there is no need for 'research on the impact of honey bees on native flora and fauna...' To reiterate the first six dot points from section TR 2 above:

- Feral *Apis mellifera* had spread throughout Australia wherever the vegetation and water supplies have suited them, by the mid-1800s.
- Any adverse effect on the native flora and fauna caused by the honey bee *Apis mellifera* has had at least 150 years in which to occur.
- In all probability any conceivable damage has already happened, so there is little point in banning honey bees from conservation areas.
- Conversely, there could well be an advantage in keeping either feral or managed hives of *Apis mellifera* in conservation areas for the benefit of native flora in case the natural pollinators of some native flora have been displaced by *Apis mellifera* or other influences.
- Where vegetation types have been fragmented, *Apis mellifera* with its foraging radius of five kilometres, is better able to carry pollen between remnant fragments of forest than any of the native insect pollinators. The continued presence of *Apis mellifera* could therefore be critical to the survival of endangered plant species.
- Consequently, there could well be an advantage in keeping either feral or managed hives of *Apis mellifera* in conservation areas for the benefit of native flora in case the natural pollinators of some key native flora have been displaced by *Apis mellifera*.

To add my personal experience to the evidence from the literature as outlined in section TR2 of this paper, during my career in Queensland forestry from 1959 to about 1992, I observed feral bees in just about every state forest, national park, timber reserve and other rural tenure from the south-western cypress country and through the coastal forests to the rainforests of north Queensland.

Any 'research on the impact of honey bees on native flora and fauna' would need to produce results quickly to be of any use in decision-making on the fate of bees in preserved areas, but any meaningful experiments would need to be conducted over several years to cater for the influence of the usual range of seasonal variations. The usual approach to testing is to inflict something on the subject of the test, and observe and/or quantify what happens. As it would be nigh impossible to find an area that has been devoid of *Apis mellifera* throughout the period of European settlement, it might prove more practicable to monitor a pair of areas for several years, then remove all feral bees from one area and observe the result. A reliable source has it that such a trial was conducted to demonstrate the belief that European honey bees had a deleterious effect on native bees, but instead of native bees flourishing as expected after feral colonies of European bees were removed, the native insects copped a hiding from avian predators deprived of easy and more filling prey in the shape of *Apis mellifera*. My efforts to obtain a copy of this paper have failed. The alleged result certainly fails the test of 'political correctness'.

NSW beekeepers are allowed access to National Parks in NSW, so why should Queensland beekeepers not be allowed to utilise Queensland National Parks?

After all, such an arrangement would be in keeping with Australia's treaty obligations outlined in the Rio Declaration on Environment AND Development. Allowing bees on National Parks would also be consistent with the Queensland Nature Conservation Act definition of 'Conservation' as '...the protection and maintenance of nature while allowing for its ecologically sustainable use.'

The fourth dot point of the resource security objectives needs to be expanded. The 'integrated land management strategy' should include more than just 'native vegetation'. Because of the ability of Queensland native tree species to regenerate naturally, and in view of the bee-nutritional deficiencies of many Australian species (see section TR 6 above), it would in many instances be more effective to supplement the native flora with scientifically chosen exotic flora. This ties in

with the 'holistic' approach of the next dot point that recognises the value of Patterson's Curse *Echium lycopsis*, *E. vulgare* and Capeweed *Arctotheca calendula*, which are naturalised or acclimatised exotic 'weeds' from the Mediterranean, southern Europe and Africa respectively.

KP Objective 3. Creating a 'pollination industry'.

The rationale for this policy objective is well outlined in the Discussion Paper.

My only comment is that a scientific understanding is required not only 'of the needs of individual crop species and the bees servicing them', but also the quantity and quality of nectar and pollen contributed by each species being pollinated (in scientific terms as described in section TR 6 above), so that a suitable strategy may be devised in each case to maintain the nutrient requirements of the bees. This point is also made under KP Objective 1 above, as I believe that while every effort should be put into blocking the threat posed by organisms not yet in Australia, we should be working on the fall-back plan of having a well organised and scientifically sound pollination industry in place.

The need for a better-organised pollination capability might come sooner than most people expect, because the small hive beetle, already in Australia, might wipe out the feral hives when our weather patterns oscillate to wetter conditions than recently experienced.

KP Objective 4. Meeting the research and development needs of the industry.

Again, this section of the Discussion Paper scopes the subject very well.

However, the fifth paragraph about bees in National Parks, shows bias in assuming that *honey bees are having (impacts) on native species, and whether negative impacts can be managed or suppressed.* - my emphasis. The author of this passage has demonstrated the near-impossibility of finding an independent researcher, in the very sentence in which (s)he advocates independent research. This sentence clearly implies that there are impacts, and that some of them will be negative and will need to be suppressed.

The question of environmental impacts of bees in National Parks is a giant red herring. Feral bees have been in National Parks for 150 years, and any considerations of good or harm are now purely academic.

The green movement has brainwashed the general public with so many doom and gloom scenarios lacking any basis in scientific fact, and so misused the Precautionary Approach that no one has the courage to make a decision unless a proponent can demonstrate that something will **not** happen. It is impossible for anyone to guarantee absolutely that something will **not** happen. I cannot absolutely guarantee that I will not be killed by a piece of space junk if I go outside to feed the chooks tomorrow morning. If you do not receive this you will know that I was killed by falling space junk. The previous sentence matches the level of logic one can expect from environmental preservationists. It is far more realistic to require someone to prove that the feared disaster **will** happen, or at least that there is a realistic chance that it will happen. By proposing unrealistic hypotheses and reversing the logical onus of proof, the green movement has managed to block numerous developments and delay others at great expense.

A probable reason for banning beekeepers (but not feral colonies) from National Parks in 1906 and again in 1948 when the Forestry Act was proclaimed, was that some of the conserved area was to be kept in a pristine condition in National Parks, and the rest of the conserved area was to be managed as State Forest for 'the production of timber and other forest products in perpetuity, and the protection of a watershed therein'.

We should concentrate our research funding into areas where useful, positive information can be obtained, such as pollen analyses, to allow a massive scientific advance in bee management, rather than trying to prove a negative in order to shift a paradigm. Banning bees on National Parks was and is a political decision made in the absence of scientific certainty. Allowing managed hives of

bees on National Parks could also be decided politically in the absence of any evidence over a period of 150 years that bees have caused any deleterious effects.

On the other hand, shifting a paradigm is extremely difficult, because people close their minds as soon as someone commences a logical argument to refute their deep-seated beliefs. No amount of research effort will convince the green movement that honey bees have done no damage, and will not do any damage in the future. Few people can pull off a paradigm shift as effectively as C. Columbus did in 1492 to convert the flat-earthers into believing that the earth is pretty close to being a sphere.

It is necessary to understand the misuse of the Precautionary Approach by rabid preservationists before deciding whether to commit funds to a study into the effects (if any) of bees on the Australian biota.

The Precautionary Principle in Biodiversity Conservation and Natural Resource Management was published in 2004 by IUCN Policy and Global Change Group and runs to 61 pages including covers. It quotes the Rio version (1992) and the subsequent “Wingspread Statement ... formulated in the late 1990s by a meeting in the USA of scientists, government officials, lawyers, and labour and environmental activists.”

The Rio version states:

*In order to protect the environment the **Precautionary Approach** shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.*

The Wingspread Statement uses the term **Precautionary Principle** and the following definition:

When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof.

The IUCN 2004 paper makes some pertinent comparisons of these two versions, including, “While not the result of public or multilateral discussion or negotiation, [the Wingspread Statement] has been influential in the broader debate on precaution and provides a useful counterpoint.” So we now have an unofficial version being widely used because it suits preservationist aims better than the original, internationally agreed version did.

Insofar as bees in Australian bushland are concerned – and please remember that National Parks only began to be set aside some 50 or 60 years after the bushland of which they were a sample had been colonised by feral European bees – there is no evidence of ‘serious or irreversible damage’.

The *Precautionary Approach* requires the decision maker to consider a real threat – something that can do serious damage, or damage that cannot be rectified – and having recognised a real threat, not to delay doing something about it.

The Management Committee of QBA kept running up against the **Precautionary Principle** when negotiating with Environment and Heritage officers over continued beekeeping on former state forests now converted to National Park tenure, and were required to ‘bear the burden of proof’ just as the Wingfield Statement requires. To reiterate, there is no way to prove that continued commercial beekeeping will not ever ‘raise threats of harm’ (as distinct from actually doing harm), so we should not waste money on any attempt to prove the unprovable.

We will achieve more through public education on the importance of bees, and hopefully shift public opinion from the preservation paradigm to a new paradigm that approves the environmentally sensitive utilisation of renewable resources for the benefit of human beings.

KP Objective 5. Improving professional training and development within the industry.

Yet again, the Discussion paper scopes this issue well, but the paragraph on food quality issues needs comment.

Several bee keepers in my area eagerly took on the B-Qual training program, and we all benefited from the course. I was motivated to set up a honey extraction room, plant and facilities that would easily pass B-Qual inspection, and others also brought their operations up to standard. We were told that after passing two consecutive annual inspections, and subject to spot checks without notice, we would be accredited and could use the B-Qual logo on our honey labels. Then the goalposts shifted and it became \$100 per year membership and annual inspections at \$400 each, every year, not just the first two years. One B-Qual inspector at the QBA Conference in 2005 answered a question by saying that if he were doing an inspection and found a deficiency, that would be the end of the inspection, and he would come back when it had been rectified for a further \$400 fee. Some packers offer two cents per kg bonus for B-Qual-accredited suppliers. So after the first 25 tonnes of honey in a year, we would be able to add \$20 per tonne to arrive at a price that would still be below the cost of production.

There is no doubt that food safety training is worthwhile, and it is undoubtedly easier to accredit producers than to test every batch of honey for contaminants. A recent TV report cast doubts about the intensity of testing of foodstuffs arriving in Australia. The question arises whether Chinese, Indian and Argentinian beekeepers are B-Qual certified, and whether their product is adequately tested before admittance to Australia.

The main reason few beekeepers in my area have become B-Qual accredited, is that it is not compulsory. The feeling is that if we become accredited we would get nothing but a \$500 per year bill, no marketing advantage, and a financial disadvantage compared with other beekeepers, especially when compared with overseas producers who are already undercutting our price.

KP Objective 6. Communicating the important role and requirements of the honey bee industry to governments, industry and the general public.

This is a really important policy objective, not to be considered least important because it is last on the list. All the points but the one in the final sentence have great merit.

Unfortunately, the experience of foresters in dealing with environmental preservationists is that any attempt to explain the scientific reasons behind management practices merely provided more avenues for them to cast aspersions. No amount of logic or scientific fact will shift their deep-seated beliefs. No member of a conservation organisation is bound to honour any agreement reached by their delegates. The normal social conventions do not apply to the green movement.

Certainly try to educate the general public, as we need public opinion on side, but the 'environmentalists' will have to be outflanked politically if we are to save the honey bee industry in Queensland.

Additional Key Policy Objective (7). Protecting the Australian Honey Bee Industry from unfair competition.

Australian honey producers are very small players in the world honey market, so it is quite easy for overseas producers to do two things: one, undercut Australian export honey to cause a glut in Australia, causing prices to fall; and two, dump cheap honey in Australia to send some producers broke.

It is all very well for Australians living in cities to advocate competition as a means for them to obtain food and other goods at the cheapest possible prices (while demanding high wages and salaries). However, there are other important considerations such as keeping Australians employed, the ability of any country to be self-sufficient in all food production, and most important in this regard, the continued existence of the honey bee industry in order to be able to pollinate the crops that rely on honey bees for pollination.

It should be an easy option for the Australian Government to simply ban the import of honey on biosecurity grounds. The spores of two serious brood diseases are carried in honey. Unless every batch of honey entering Australia is comprehensively tested for all honey bee disorders carried by honey, and the antibiotics used in some countries to treat these diseases, then both the bees in Australia and the Australians who eat the honey are at risk.

Once spore-contaminated honey reaches the consumer, it only takes one person to feed some lorikeets and for a foraging bee to collect some of that honey from a bird feeder, and we have an outbreak of that disease. The biggest concern is that it could be a new strain.

People are not affected by the spores of the bee disorders, but by the oxytetracycline hydrochloride (OTC) used to treat the disease, particularly in China where there is reputed to be no control over apiarists' activities. To quote Warhurst and Goebel, 'Residues of OTC in honey are a serious risk to human health. Small amounts can cause resistant bacteria to develop and these bacteria jeopardise the treatment of human diseases. Small doses can also cause sensitivity in some humans.'

To reiterate the points made in TR 4 Trade issues above, we need to educate the public about:

- the importance of honeybees to the welfare of Australians (chiefly through pollination)
- the threat posed by bee parasites and diseases not yet in Australia
- the need for effective port surveillance to keep unwanted organisms out and to swiftly deal with any incursions before they spread
- the increased cost of some fruit and vegetables if feral pollinators are killed and growers have to pay apiarists for pollination services by managed beehives (Apiarists can use a miticide that does not pollute honey)
- the need for public native forests to remain available to keep beehives strong between pollination contracts
- the need to keep a viable beekeeping industry in all states of Australia to continue the pollination work in areas where managed beehives are being used seasonally, and in case the feral hives are wiped out elsewhere
- the need for householders and businesses to buy only honey 100% collected by honey bees in Australia.

In order to inform the public of where a container (of any size) of honey originated, we need to enact some very strict labelling laws, with meaningful penalties for breaches, and we need to police them diligently.

Wording such as 'Packed in Australia from local and imported ingredients' is too vague and should not be allowed. Retail packs of honey should be clearly and prominently labelled with the actual percentages by country of origin of the batches of honey that were used in the bulk blend from which the retail pack was filled.

A very costly labelling and policing regime, and the legislation to enable it, could be avoided simply by banning the importation of honey to Australia.