FORESTS & FOREST INDUSTRY COUNCIL OF TASMANIA

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The Chairman
Standing Committee on Agriculture, Fisheries and Forestry
Inquiry into the Future Development of the Australian Honey Bee Industry
Parliament House
Canberra
ACT 2600

Dear Mr Schulz M.P.

The Forests and Forest Industry Council of Tasmania takes a very active interest in the Honey Bee Industry and is pleased to provide a submission to your Inquiry.

This Council was instituted in 1989 by the State Government following the Helsham Inquiry and the creation of large World Heritage Area forest reserves in Tasmania. This saw a new approach taken to the issue of land use in forested lands. The Council continues today and is formed of representatives from sawmiller organisations, forest growers, private landowners, state agencies, unions, local government, tourism, indigenous people, regional forest communities, beekeepers, and furniture makers. It functions as a peak council providing advice to governments on forestry issues and operates in a strictly politically bipartisan fashion.

The Tasmanian Beekeepers/ Crop Pollinators Associations are integral members of the FFIC and have concerns with the perpetual yield of the leatherwood resource, which they rely on for nectar and pollen for honey production and to sustain the provision of pollination services for horticulture. Apiarists have a realistic view of the conflict between management of the forest for its timber and non-timber values but are keen to diminish the loss of leatherwood wherever possible. The FFIC has been working on a means of accommodating both requirements in proposed new models for forest management on public lands in Tasmania and it has retained its former general manager, Trevor Bird, who was engaged in this task to continue to see this work through.

While we are still some distance from an outcome, I would like to put the following information before the Committee to illustrate the approach our sub-committee (FFIC Apiary Working Group) of beekeepers and land managers is taking to resolve this dilemma of opposing priorities.

At present beekeepers obtain access to the forest on roads built with fees and royalties paid by sawmillers and pulpwood harvesters. Leatherwood trees often suffer collateral damage when wet oldgrowth stands are harvested causing apiarists concern for their future.

We see a new management model in place where apiarists will have title to their site licences on public land and can be free to trade these commercially. Benefit will pass to the land manager in the form of annual fees and the apiarist will benefit through greater security and potential income from long-term transferable rights.

The State Government has also ordained that clearfell harvesting of oldgrowth forests will be reduced to 20% of its former level and that variable retention silviculture will substitute for clearfelling techniques. This will result in improved retention of leatherwood.

It is possible for a more commercial and harmonious relationship to be built between these forest users under the proposed new management model. Site rents will be based on production and while fees may be based on a different charging mechanism, apiarists will achieve greater security and the capacity to realise a capital gain on their operations.

Our submission, prepared by Mr. Bird, explains our approach.

We would appreciate the opportunity to comment further should your Committee hold hearings as part of their inquiries into this matter.

Yours sincerely,

Rob Woolley
Chairman – Forests and Forest Industry Council of Tasmania

Submission to the Standing Committee on Agriculture, Fisheries and Forestry into the future development of the Honey Bee industry

EXECUTIVE SUMMARY

The Forests and Forest Industry Council has established an active Apiary Working Group to examine the issues associated with the use of Tasmanian forests for beekeeping and to make recommendations for the application of new and better methods of accommodating opposing priorities in forest management.

Our investigations to date indicate that:

1. Tasmania is viable as a honey producer;
2. It has a great product that deserves niche prices but its marketing is somewhat ad hoc;
3. Honey yields, pollination services, and apiary incomes are directly reliant on leatherwood, a large part of which is now in Reserves
4. Pollination services are very important, particularly to the small fruits/stone fruits industry;
5. Beekeepers have to compete with harvesting in multiple use forests, which removes leatherwood resource;
6. Almost all public multiple use forest is exploited by access for beekeeping purposes;
7. Land management and silvicultural reforms are being instituted that will (a) extend roading (b) mitigate clearfelling impacts;
8. If the honey industry is to further prosper in Tasmania, access needs to be gained to reserves and marketing and labelling needs to be upgraded;
9. The latter requires investment and beekeeping is an insecure industry;
10. The financial security of apiarists can be bolstered by the provision of long-term secure leases that can be traded;
11. A new sense of trust and cooperation has been engendered through the activities of the Apiary Working Group that should permit reforms to pass through with little disruption;
12. With leatherwood finite, the industry must look to expansion by changes in forest management, gaining access to reserves for non-

extractive use, more expert hive management, the continued security of quarantine, and a better commercial return for pollination services.

SIZE

The Tasmanian apiary industry had its beginnings as a cottage industry. The first hives were established in 1831 and by 1834 swarms had been despatched to Sydney and the Swan River Settlement (WA). By the mid 1840's bees were established at Badger Head, Port Sorell, Forth, and Swansea. Italian bees were introduced in 1884. In the 1920s Smith at Catamaran, Calway at Strahan, Stephens of Mole Creek, and Jones at Sheffield were reported to be working leatherwood.

Of 252 registered beekeepers (DPIWE, 2004) there are 55 Tasmanian Beekeepers Association (TBA) members with 80% of the hives owned by 20% of the members. The priority of the TBA is to pursue native forest resource and one of its functions is to partition the resource amongst apiarists.

There are over 18,417 hives registered for use in Tasmania. Total hive numbers have more than doubled from 7,200 in 1962-63.

The industry can be categorised according to the number of hives used by operators.

Recreational	<200 hives
Semi-commercial	200-999 hives
Commercial	≥ 1,000 hives

Of the 250 registered beekeepers, only 8% are regarded as fully commercial or semi-commercial operations using ≥ 200 hives. The remaining 92% are lifestyle/semi-commercial operators. Five beekeepers use ≥ 1,000 hives.

Hive Numbers	Business Units
<20	66% of beekeepers hold 4% of the hives
20-99	19% of beekeepers hold 8% of the hives
100-199	7% of beekeepers hold 13% of the hives
200-299	6% of beekeepers hold 29% of the hives
>1,000	2% of beekeepers hold 46% of the hives

In recent years the TBA together with splinter groups such as the Southern Beekeepers and the Save Our Leatherwood cluster have established a 'leatherwood fighting fund'. As part of this focus they engaged consultants to crystallise the aspirations of apiarists and to provide a 6-point plan to cement a more certain future for the Tasmanian apiary industry. Most of the aims and objectives found in this document already formed part of the agenda of the FFIC's Apiary Working Group.

RESOURCE

Vegetation mapping for the state shows there are 772,000 ha of leatherwood-rich forest of which 60% is in reserves, 35% in multiple-use State forest and 5% held in private tenure.

The two forms of leatherwood, *E. lucida*, a large leafed variety found in lowland wet mixed forest and gullies, and *E. milliganii*, a highland variety with small leaves found as a shrub at higher altitudes, are regarded by apiarists as the backbone of the Tasmanian honey industry.

The two species form an altitudinal seasonal flowering catena that stretches over at least six weeks and commences earlier in the warmer north of the State. The leatherwood 'season' may therefore be about 3 months in a statewide sense but it can fluctuate enormously depending on weather and climatic pre-conditioning for flowering.

The staggered flowering of leatherwood makes it of great utility to beekeepers. The sequence of pollen presentation with a progression of flowering from top to bottom of the tree, from north to south of the State, and from lowland forests to higher altitudes, all designed by evolution to avoid self-pollination, is what spreads the season.

Knowledge of the location and productive capacity of leatherwood stands is vitally important to apiarists. A proposal by Forestry Tasmania and FFIC for support for further work to map localised leatherwood occurrence has been submitted to the Tasmanian Community Forest Agreement Research into Alternatives to Clearfelling in Old Growth Forests implementation committee.

Much resource is now inaccessible to apiarists. There has been an enormous expansion in the area of national parks and wilderness areas, accompanied by a corresponding reduction in the area of State forests. One of the effects of the reduction in the area of State forests and the increase in the area of conserved land is the gradual disappearance of access roads. In most national parks, and in all wilderness areas, former logging roads are not maintained and in some instances are deliberately made impassable to vehicular traffic.

Recommendation 1
That the Committee consider recommending, in the light of the many benefits provided by the apiary industry, that land managing agencies make reserves more accessible to commercial beekeepers.

At least 93 plant associations were identified by beekeepers as being visited by managed honey bees. 14,500 hives are placed on 271 sites. Leatherwood, eucalypts and tea tree species provide the major public land resource. Both latter vegetation assemblages are more widespread than leatherwood and both have a collectively longer flowering period because of this wider distribution.

Land use by apiarists

Tenure	Reserves	Forestry Tas	Private
Proportion of land	40%	22%	30%
Hive placements	17%	28%	55%

Reserved land, where most of the leatherwood resource is to be found, is accessed mainly from its periphery. Private land has a prime role for over-wintering and for building up hives.

The introduced bumble bee is regarded as threat because of its ability to work in colder and wetter conditions than the Italian honey bee.

ECONOMICS

No single consistent reporting system exists so the FFIC has produced a time series of honey yield, harvest of timber products and the construction of access for comparative purposes. Historical trends indicate that the creation of reserves has established a ceiling on expansion.

18,000 hives appear to produce an annual average of 800-1000 tonnes of honey with a value in the region of $2.5M. The 2007 season has been the best for some years. Employment in the industry was found to consist of 60 permanent and 93 part time or seasonal positions.

Nationally, there are 3600 registered beekeepers with the majority of honey produced by fewer large operators. 62% of total honey production comes from the 250 businesses operating more than 500 hives. Only 16% of honey is produced by operators with 250 hives or less and only the over-500 hive businesses are described as being dependent on beekeeping for their major source of family income. In 2000-01 these businesses produced on average 17,300 kg of honey and received $32,800 from honey sales at an average price of $1.80 per kilo. Total cash receipts per business averaged $46,000 including sale of bees, wax, propolis, honeycomb and paid pollination services. Costs averaged $30,600 per business, 67% of total cash receipts, leaving an operating surplus of $15,400 per business. The average age of an operator was 54 years with 25 years experience in the industry.

On average, businesses had an estimated $236,400 worth of capital invested with the estimated average rate of return being minus 5%. Rates of return are better for the larger operators. 10% of honeybee businesses generate returns of 10% or better.

Receipts for Tasmanian operators appear to be better than counterparts in other States; their average price of $3.40 per kilo was almost double the national wholesale honey value ($1.80).

Recommendation 3:
That the ABS recommences the collection of apiary statistics to permit the benefit to the horticulture sector to be calculated.

POLLINATION

The Tasmanian pollination scene is changing rapidly and is becoming commercially vigorous. Pollination had been undervalued with an average of only $43 per hive captured in 2004 but more commercial apiarists in Tasmania are now pollinating, a sign that returns are starting to meet the value of the service provided. High stocking rates are required to ensure that pollination is effective. This means that little honey is stored by hives drafted

for pollination. Hives may require 10-12 weeks preparation. Extra costs are involved over and above lost honey production; transport, extra loading and unloading, hive management, and spray risk and insect damage from netting. Prices have not reflected these costs in the past.

The Crop Pollinators Association has compiled a Tasmanian Pollination Code of Practice containing prices and model contracts. Charges differ by crop with apples and pears set at $40 per hive and above, up to onions at $200 per hive. Broad acre work, particularly with canola, is also performed.

Recommendation 2
That methods of improving the return for pollination services be examined.

GROWTH
The amount of leatherwood available to the industry is the limiting factor to expansion. Evidence is provided to show that most accessible leatherwood has been exploited for the last 20 years.

Options for growth include the establishment of plantations (little evidence is available to suggest this is practical), mitigation of loss through changes in harvesting practices, more roading, changes to the licensing structure, making reserve boundaries more porous, and through improved marketing.

Silviculture and harvesting
A thinning trial to reduce eucalypt competition in leatherwood regrowth has commenced but results are not yet available. It is recognised that the proportion of leatherwood stems in regeneration after harvest is favoured by proximity to mature seed trees and light fuel loads. Forestry Tasmania is introducing variable retention harvesting practices that will result in the retention of more mature leatherwood in multiple use forests. These practices require that there be a market for non-merchantable residue as fuel.

Recommendation 4
That the Committee visit the extensive field trials of variable retention silviculture maintained by Forestry Tasmania at the Warra Long-term Ecological Response site.

Recommendation 5
That the Committee promote the use of residues for fuel to ensure the retention of mature leatherwood and the creation of more leatherwood rich regrowth.

MARKETS
It could be said that leatherwood honey is an acquired taste. Where it is well known it sells upmarket as a niche food; where it is unknown it is considered at best a constituent of blends. It is thin with a strong flavour and aroma, traits not conducive to ready acceptance in a blend, and it needs promotion to achieve a worthy, stand-alone price. With leatherwood blossom resource finite and diminishing, gains are more likely to be made in the marketing sphere than in the forest.

The establishment of a 'single desk' selling system has been advocated together with work to strengthen the brand and more effort to capture value for the iconic value and rarity of leatherwood honey.

However, these structural and marketing changes need to come from a small association without a paid secretariat and require considerable change from the traditional approach and speed in implementation once adopted. An incremental approach will not work. Sophisticated business management is required to bring it off. This has to come from an organisation that, except for its top echelon, is largely hobby players.

Recommendation 6
That the Committee consider providing assistance to enable a new marketing structure based on existing research and recommendations to be developed.

LICENSING
Site licences are issued annually and carry no transferable right. A shift to rolling, long-term, tradeable licences with a structured fee system would produce:

- Greater resource security for beekeepers,
- Entrench ownership of intellectual property in respect to sites,
- Security to invest and the capacity to trade in licences,
- A return to the owner of the forest commensurate with the value of access, value of the product, and the rights to continuing use, and
- A fundamental shift in relationships with other forest users.

The existing structure should be capped while reforms proceed.

SYNOPSIS
It is recommended that the Committee:

Consider how reserves may be made more accessible.

Examine how financial returns for pollination may be improved.

Recommences the collection of apiary statistics by ABS to permit the costs and benefits of the honeybee industry to the food and horticulture sectors to be calculated.

Become acquainted with the ecological research in variable retention silviculture at the Warra Long Term Ecological Response trials.

Promote the use of forest residues for fuels.

Provide assistance for a new marketing structure for a niche Tasmanian label based on existing research recommendations.

Submission to the Standing Committee on Agriculture, Fisheries and Forestry into the future development of the Honey Bee industry

The Forests and Forest Industry Council (FFIC) is the peak body providing advice to governments about economic and social and community concerns in respect to forestry issues in Tasmania. It is formed of representatives of all organisations with an interest in these matters that recognise the Forests and Forest Industry Strategy and the Regional Forest Agreement of 1997, 2005.

It has established an Apiary Working Group to identify the issues associated with the multiple use of native forests for timber and for apiary services and products with Beekeepers, Crop Pollinators and Forest Growers represented. The group is serviced by the FFIC.

The FFIC recently commissioned a census of the beekeeping industry and the compilation of a flowering profile of the main species used by honey producers and pollinators (Leech, 2005) as part of its engagement in this subject. A fact sheet distilling the main information from the study by Leech is attached as Attachment II. Information from this report, from Farley (2003), and work within the FFIC Apiary Working Group provides the following general picture of beekeeping in this State.

1. Many hives are managed at the sub-commercial level and most beekeepers are hobbyists;
2. Most hives are held by the largest commercial beekeepers;
3. Commercial beekeepers are interested in the concept of a single desk marketing system and would appreciate assistance in raising the value of iconic, branded Tasmanian honeys;
4. Pollinators believe their services are undervalued;
5. All declare a substantial interest in leatherwood;
6. Leatherwood honey yields vary, as does other agricultural production, but native forest harvesting also reduces yields;
7. Native forest site licences are annual and have no transferable value;
8. Access to leatherwood has been diminished by the creation of reserves and the loss of fringe roading;
9. Horticulturists indicate plans for expansion of some pollinated crops;
10. The extensive roading system through multiple-use forest means most accessible leatherwood is exploited and apiary returns may have peaked;
11. With leatherwood finite, the industry can expand only through changes in land management, more expert hive management, the continued security of quarantine, niche honey marketing, and a better commercial return for pollination services.

A summary action plan based on these facts, outcomes from the Leech study, and detailed committee work with the TBA/CPA is attached at Attachment III. The FFIC Apiary Working Group is engaged in progressing this action plan stage by stage.

This paper is confined to land use and licence aspects and does not dwell on the topics of quarantine, or hive and disease management in the Terms of Reference of the Inquiry.

The Tasmanian beekeeping industry

The Tasmanian Beekeepers Association (TBA) is incorporated and produces an informative newsletter (up to 14 pages in 2004). It has a strong committee structure with the executive meeting as frequently as monthly. The aims established in its Constitution are to:

- promote the welfare of the industry through common purpose,
- protect natural apiculture resources and to protect the unnecessary destruction of flora of value to apiculture,
- cooperate with government departments,
- make submissions and representations on behalf of the industry, and
- procure contributions of funds.

Of 252 registered beekeepers (DPIWE, 2004) there are 55 TBA members and the President, Julian Wolfhagen, concedes, "80% of the hives are owned by 20% of the members". The priority of the TBA is to pursue native forest resource (Wolfhagen, pers. com.) and the current Executive believes this was also the motivation for the establishment of the TBA 60 years ago. One of the functions of the TBA is a relatively informal partitioning of the resource amongst apiarists. This occurs at the branch level through resource sub-committees and must be considered a powerful tool. It places, to some extent, adjudication of distribution of the benefits arising from a public resource in the hands of the beneficiaries. That said, the licences distributed appear to have little formal substance or value. They are rolling annual permits with the requirement only of observance of the Forest Practices Code in accessing hive sites and a relatively loose reporting of hive returns. General practice, confirmed by discussion, seems to be that intervention from the land manager is rare.

The Tasmanian apiary industry had its beginnings as a cottage industry. Settlers believed the acclimatisation of honeybees was essential for the propagation of introduced, mainly European, food crops and pasture species such as clover and lucerne.

The first recorded introduction of *Apis mellifera* is in 1821, with a hive being presented to Lt Governor Sorell (Parker, 1995). This attempt failed, as did others, until 1831 when a Dr. Wilson set up a hive in the Government Gardens (Franklin Square). Success attended Dr. Wilson's efforts and by 1834 swarms had been despatched to Sydney and the Swan River Settlement (WA). By the mid 1840's bees were established at Badger Head, Port Sorell, Forth, and Swansea. Italian bees were introduced in 1884. Foul Brood and Bee Moth were known in 1921. In the 1920s Smith at Catamaran, Calway at Strahan, Stephens of Mole Creek, and Jones at Sheffield were reported to be working leatherwood.

Parker (1995) also records that in the early 1930s bee louse and *Nosema* were recorded as widespread and quarantine was probably not a strong point.

Despite this Tasmanian hives appear to be relatively free of introduced diseases although chalkbrood, European Foul Brood and *Nosema* remain rife. Some of the diseases found in NZ and Europe do not hamper Tasmanian production; this is put down to good hive management.

The TBA are members of the Australian Honey Bee Industry Council and frequently provide office bearers. The concerns of the AHBIC mirror those of the states with quarantine, nitrofurans, B-Qual, and conducting Apimondia in Melbourne in 2007 priorities.

The local industry is also served by RIRDC in that the Honeybee Research and Development sector of RIRDC maintains five R&D streams pertinent to Tasmanian concerns:

- Production, including bee husbandry and management, pests and diseases, nutrition, genetics, and income diversity (royal jelly, venom, propolis etc);
- Resources, including land clearing, rural dieback, forest harvesting, and conversion of Crown land to reserves that exclude exotic fauna (bees);
- Pollination, including effective quarantine to protect paid pollination capacity from exotic mite diseases and continuing evolution of the means to value pollination services;
- Off farm, including methods of improving extraction efficiency, quality assurance, and broadening the utilisation base such as extending shelf life in bakery products by the use of honey;
- Communication and Extension, mostly internal between the HBR&DC and beekeeper associations and the like.

In outlining its 2002-07 R & D plan RIRDC states its Resource Objectives to be to "maintain honey bee access and research into melliferous resources on both public and freehold land. Fund/support/provide science based information to support any future changes to Regional Forest Agreements." Its prime strategies to deliver this objective are listed as:

- "Develop a State based national database of melliferous floral resources.
- Determine replacement pollen and nectar sources.
- Support research that examines the impact of commercially managed honeybees on melliferous resources."

The goal for delivering the resource database target was 2005. RIRDC updates progress on research and development projects and the latest results are available on its website.

In recent years the TBA together with splinter groups such as the Southern Beekeepers and the Save Our Leatherwood cluster have established a 'leatherwood fighting fund'. The most useful piece of work to come out of this, aside from a publicity campaign focused on politicising the situation, is the work by Cubit (2005) to crystallise the aspirations of apiarists and to provide a 6-point plan to cement a more certain future for the Tasmanian

apiary industry. Most of the aims and objectives found in this document are part of the agenda of the FFIC's Apiary Working Group.

It is assumed that the TBA has communicated this document to the Committee for this Inquiry.

Leatherwood

Vegetation mapping for the state shows there are 772,000 ha of leatherwood-rich forest of which 60% is in reserves, 35% in multiple-use State forest and 5% held in private tenure.

These vegetation maps are very broadscale at present and based on the outcome of models proposed by Jarman and Brown (1983) and refinement by Hickey *et. al.* (1993), together with extensive analysis and ground-truthing by Ziegler (1993). Hickey *et. al.* provide a history of what, in today's parlance, would be termed rainforest occurrence models based on recognition of rainforest types on increasingly larger scale aerial photography backed by more and better ground surveys.

A proposal by Forestry Tasmania and FFIC for support for further work to infer localised leatherwood occurrence at a larger scale is to be submitted to the Tasmanian Community Forest Agreement Research into Alternatives to Clearfelling in Old Growth Forests implementation committee.

The two forms of leatherwood, *E. lucida*, a large leafed variety found in lowland wet mixed forest and gullies, and *E. milliganii*, a highland variety with small leaves found as a shrub at higher altitudes, are regarded by apiarists as the backbone of the Tasmanian honey industry. The pursuit of leatherwood for beekeeping commenced in the 1920s (Parker, 1995) and apiarists have placed hives in the Southern Forests since the landscape scale fires of 1967. They regard leatherwood as an essential natural booster for the provision of pollination services to agriculture, in much the same way that South Australian beekeepers are dependent on Banksia woodlands to develop hive strength for almond pollination.

The two species form an altitudinal seasonal flowering catena that stretches over at least six weeks and commences earlier in the warmer north of the State. The leatherwood 'season' may therefore be about 3 months in a statewide sense (Hickey, pers. comm.) but it can fluctuate enormously depending on weather and climatic pre-conditioning for flowering. The interaction that results in honey yield can be complex as weather also affects bee activity. At temperatures below 13^{0}C honeybee flight activity will virtually cease (Somerville, 1999).

The pollination ecology of leatherwood is relatively complex. Flowers of *E. lucida* are long-lived (12-13 days) and protandrous. This means the anthers mature before the carpels so that self-pollination is rare. The flowering period consists of 6-7 days of pollen presentation followed by stigmas entering a receptive state for 6 days. Mallick (2001), more exactly, determines that the

flowers are facultatively protandrous, i.e. the rate of maturation of the stigma is determined by the rate of removal of pollen from the anthers by insects.

Nectar is excreted continuously over the flowering period from the base of the stamens and is relatively dilute (20% sugar wt/wt) with a slower rate of supply at night. On warm days nectar is rapidly concentrated by evaporation to >60% sugar, increasing its attraction to insects.

It is this staggered pollen ecology that makes leatherwood of utility to beekeepers. The sequence of pollen presentation with a progression of flowering from top to bottom of the tree, from north to south of the State, and from lowland forests to higher altitudes, all designed by evolution to avoid self-pollination, is what spreads the season. The evolution of this heterogeneous sequence suggests that there must be an intricate inter-relationship with many native insects. Mallick lists a broad range, with native flies and beetles regarded as the most important.

Mallick also examined nectar production. It appears to be independent of temperature, humidity, and local shading so that nectar may be being accumulated under conditions when insects cannot work. Sugar is not reabsorbed by *E. lucida* flowers and pollen release is retarded on cold days. This pattern of nectar release and pollen conservation maximises both gender functions of *E. lucida* flowers and appears to be heaven-sent for beekeepers.

In an ecological sense, the apiarist is managing colonies of large aggressive foraging insects attending a species with a diverse and heterogeneous flowering system adapted to fertilisation by native competitors whose capacities are relatively modest in comparison.

Ecological purism and exclusion

The discussion above raises the possibility that competition by imported honeybees with native pollinators may disrupt the genetic balance and patterns of seed set of flowering species in conservation reserves. This issue has been considered in papers by both Ettershank and Ettershank (1993) and Mallick (2001). Mallick concludes from his examination of impacts at 13 sites that "hive bees appeared to have little net impact on the reproductive performance of *E. lucida* trees." Nevertheless, the intervention of exotic insects in a native system remains a concern with those managing reserves to preserve the *status quo*.

Whitten (2005) also refers to this issue and indicates, "The honeybee is an exotic insect and its presence in National Parks and other public lands is seen as inappropriate by various environmental movements – despite substantial scientific evidence that the negative impacts are minor; and despite the fact that the beekeeping industry, historically, has been a major and successful campaigner in preserving much of Australia's natural wilderness from development."

Whitten (2005) indicates that a strong commercial pollination sector is a useful quarantine ally. "There is also the prospect of exotic pests and diseases

entering Australia and decimating the feral bee population, thereby reducing its capacity to provide incidental pollination. Without a viable commercial beekeeping industry being around to pressure Governments (both Federal and State) into maintaining strict quarantine, the risk of honeybee pests and diseases entering Australia would probably increase."

Benecke (2007) notes, "Unfettered access to valuable native flora is a thing of the past in most of Australia. Because land conservation is a State matter, regulations governing keeping bees on conserved areas vary from State to State. In broad terms, traditional access to State forests remains, but access to national parks and wilderness areas is much more restricted. This situation has been compounded by an enormous expansion in the area of national parks and wilderness areas, accompanied by a corresponding reduction in the area of State forests. One of the effects of the reduction in the area of State forests and the increase in the area of conserved land is the gradual disappearance of access roads on both types of tenure. In State forests land available for timber harvesting has been greatly reduced and fewer access roads are being made or maintained. In most national parks, and in nearly all wilderness areas, former logging roads are not maintained and in some instances are deliberately made impassable to vehicular traffic.

Recommendation 1
That the Committee consider recommending, in the light of the many benefits provided by the apiary industry, that land managing agencies make reserves more accessible to commercial beekeepers.

Other Tasmanian flora

As was reported above, Leech (2005) was commissioned by the FFIC to carry out a census of the Tasmanian Honey industry in conjunction with a TBA nominee. He also compiled a floral database with information gleaned from interviews of all commercial apiarists and many from the recreational sector. His report is particularly useful for those seeking to undertake pollination.

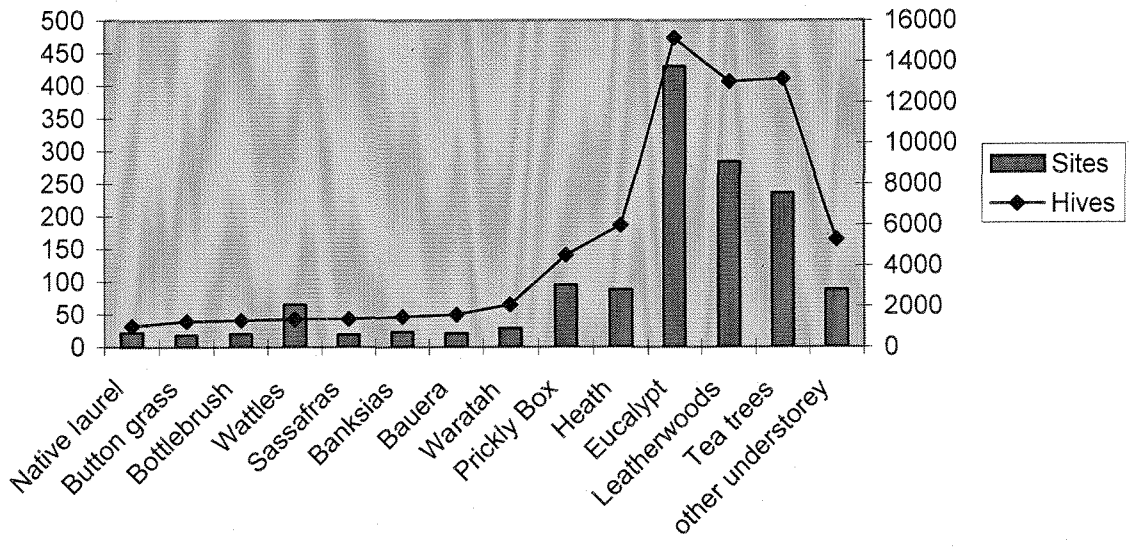
Leech (2005) demonstrates that at least 93 plant associations were identified by beekeepers as being visited by managed honey bees and goes on to emphasise that leatherwood is the most important element in the Tasmanian floral sequence for reasons of its timing and prolific production of nectar. His census shows that 14,500 hives are placed on 271 sites. His floral sequence summary also shows (see Table1 and Figure 1 below) that eucalypts and tea tree species provide a major resource for beekeepers. Both latter vegetation assemblages occur across much more of the State than leatherwood and both have a collectively longer flowering period because of this wider distribution. I make this point not to demonstrate some hierarchy (the regional management of flowering sequences is far too complex to be done justice in a few sentences) but to illustrate that different operators use the floral profile in different ways. Their priorities depend on where they are situated and their commercial relationships in the market. Those supplying interstate packing houses are much more dependent on white honeys from

clover/blackberry etc, or on eucalypt types that meet a particular brand niche exploited by the packing house.

Table 1. Comparative use of vegetation in Tasmania (Leech,2005)

Species group	Sites	%	Hives	%
Native laurel		22		1040
Button grass		18		1270
Bottlebrush		20		1310
Wattles		65		1378
Sassafras		19		1375
Banksias		23		1492
Bauera		21		1590
Waratah		29		2090
Prickly Box		95		4510
Heath		88		5968
Eucalypt	430	30	15157	22
Leatherwoods	284	18	13013	19
Tea trees	236	16	13146	19
other understorey		88		5279
TOTAL	1438		68618	

Figure 1 Hive disposition by site and host species



In a simple sense, it can be seen that placement in tea tree bush is a little more efficient than leatherwood or eucalypt. Tea tree sites seem to accommodate more hives while eucalypt requires more travel to place all of the hives taking resource. Leech's floral sequence has sparse data on hive yields for each vegetation type so only a general observation can be made

about comparative hive yields. It appears that placement in leatherwood is more efficient than Prickly Box, eucalypts, exotic flora - blackberry/clover, weeds, gardens, and forest understorey species in that order.

An alternative way of looking at the importance beekeepers attach to floral resources is to analyse the information provided by Leech (2005) in Table 2 as to spread of hives across tenure. Leech has recorded apiary site information by size of operator and by tenure. He shows that there are 5104 hive placements on DPIWE managed land, 8433 on State Forests, and 16874 on private land. Reserves form 42% of the land area of Tasmania, Forestry Tasmania administers about 22%, and land in private ownership represents about 30%.

Table 2. Land use by apiarists

Tenure	Reserves	Forestry Tas	Private
Proportion of land	40%	22%	30%
Hive placements	17%	28%	55%

It can be seen that reserved land, where most of the leatherwood resource is to be found, is under-exploited in comparative terms with State Forest. It is accessed mainly from its periphery.

Leech makes the point that private land has a prime role for over-wintering and for building up hives.

The insect and its competitors

Bees collect pollen and nectar, *viz.* protein and energy. Nectar is about 70% water, but as honey it contains 18% or less moisture.

Products include:

- Honey
- Beeswax
- Pollen
- Propolis – used to seal hive, can be used as a natural antiseptic
- Bee venom – relieves arthritic and rheumatic pain
- Royal Jelly
- Queens
- Mead
- Pollination services

A strong hive contains in the region of 30,000 bees, and up to 100,000.

Activity is regulated by temperature and rain events. Bees can be active above 13° C, increasing sharply to 19° C where activity reaches 'a relatively constant high level' (Somerville, 1999). At low temperatures only strong colonies fly any distance. Activity also ceases in wet weather. Bees will fly between showers but only a short distance – up to 150m. Headwinds decrease the ground speed of bees, reducing the number of flights in a day.

Threats arise from the failure of quarantine and competition from other foragers. Following the introduction of the bumblebee to Tasmania in 1992 Hingston (2003) reports evidence of bumblebee incursions "in all Tasmania's native vegetation types, six national parks, and the most remote parts of the WHA." Hingston sees danger coming from the bumblebees' more robust capacity to gather nectar in conditions too cold and wet for the European bee, and adds the concern that bumblebees could further reduce the feeding resource available to nectar feeding birds such as the swifts parrot.

There are also concerns expressed about the displacement of native bees from our forests and these may yet prove a threat through the closure of access to conservation reserves (but see the views of Ettershank and Ettershank, Mallick and Whitten above). A few organisations and entrepreneurs appear to be cultivating support for native bees although a web search did not encounter any significant Tasmanian attempts to foster these insects for commercial purposes. It is likely that native bees will continue to be promoted as a conservation measure but not as an economic alternative to the Italian bee.

Tasmania provides a stronghold for the black bee as a repository of genetic diversity and the Black Bee Reserve near Tarraleah is operated commercially with Italian hive sites excluded from this range.

Others promote alternative insects as a safeguard against the results of an inevitable breach of quarantine. Cunningham *et al* (2002) examine the consequences of a possible decline in honeybees for sustainable agriculture in a strongly developed argument for fostering native and alternate pollinators in the face of a catastrophic violation of quarantine by the honeybee mite, *Varroa destructor,* and associated pests and diseases.

Quantifying the Tasmanian Industry

The success and importance of the apiary industry is quantified by various methods of assessment with the result that reports are often conflicting. Honey yields are reported by different authorities using different qualifying criteria on what constitutes a commercial producer with these criteria changing over time. Either farm-gate, packers' prices, or retail are quoted to summarise value of the annual yield, and the importance of pollination is amplified into the sale price of the produce arising from pollination. Consider the following data from official publications.

The Tasmanian DPIWE (2004) reported farm gate apiary production value at 91/92 as $1.8M; 96/97 $2.1M; 97/98 $1.5M; 98/99 $1.5M; 99/00 $2.0M; and 00/01 $1.8M. This last record is based on the 27 largest apiarists and covers proceeds from 12,000 hives returning an estimated 944 tonnes of honey. There are actually more than 18,000 hives but as production efficiencies are less for smaller operators (Leech, 2005) the 2000/01 total figure may be in the region of $2.5M.

By comparison, Forestry Tasmania (2004) maintains hive registers for each district. They report:

Table3. Forestry Tasmania Hives by District

	Mersey	Murchison	Bass	Huon	Derwent	TOTAL
Year			sites/hives			
1996/7	10sites	210	2	67	54	343
	350hives	9130	86	1250	1791	12607
1997/8	10	190	2	66	65	333
	350	8515	86	1329	2031	12311
1998/9	10	187	2	66	71	336
	350	8435	86	1320	2141	12332

On this basis Forestry Tasmania maintains as many hives as were polled for production by DPIWE. Leech (2005) supplies another figure of 8554 hives on Forestry Tasmania land of a total rotating placement of 30,651.

As getting good figures is problematic, I have compiled a time series from every published source I could find, including Tasmanian Year Books.

The graphs below show how yield and hive numbers have increased over time. Data prior to 1975 were collected on the basis of surveys of owners with 5 hives and more; post-'75 DPIWE changed to focus more on commercial growers (threshold set at 40 hives+) after running data concurrently to establish a double-mass relationship.

The data show that yields and hive numbers increased until the mid-1980s and have been pretty steady since. The possible reasons for this are discussed below.

Figure 2. Honey Statistics 1957-75
5+ Hives

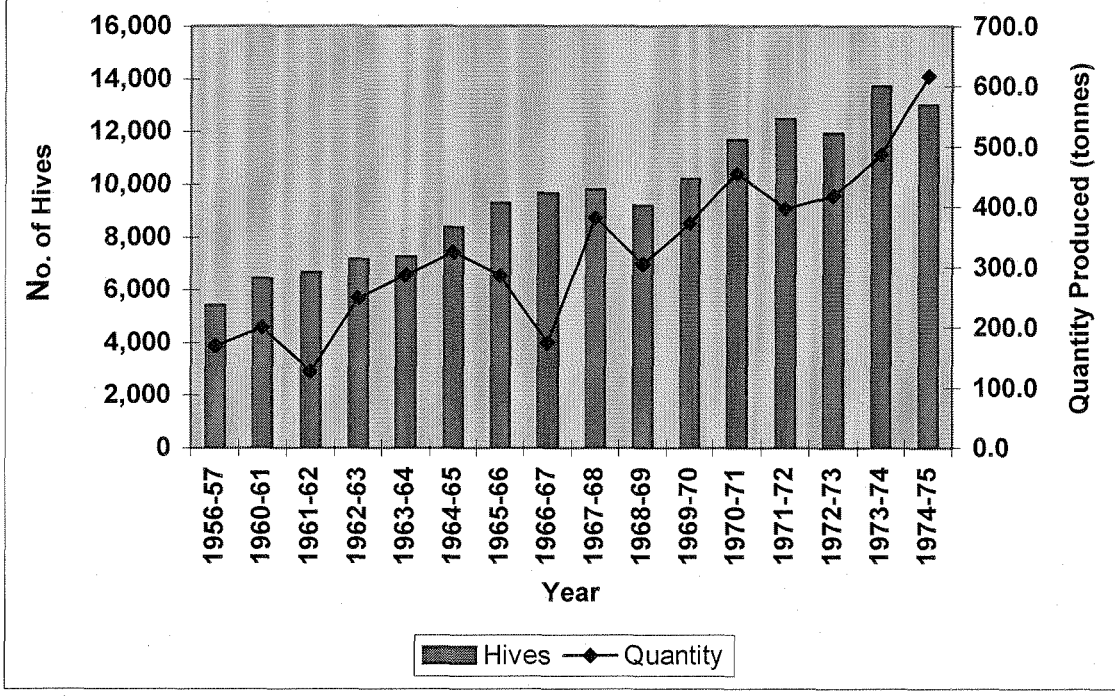
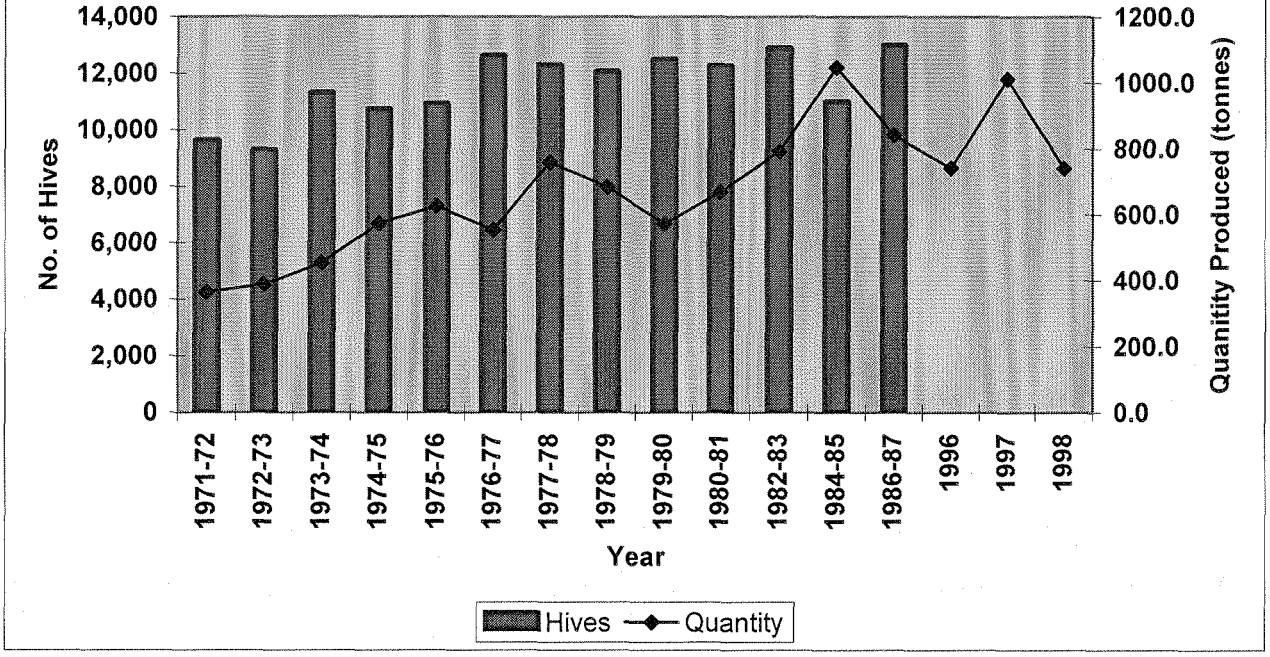


Figure 3. Production 1970-1998 for 40+ hives



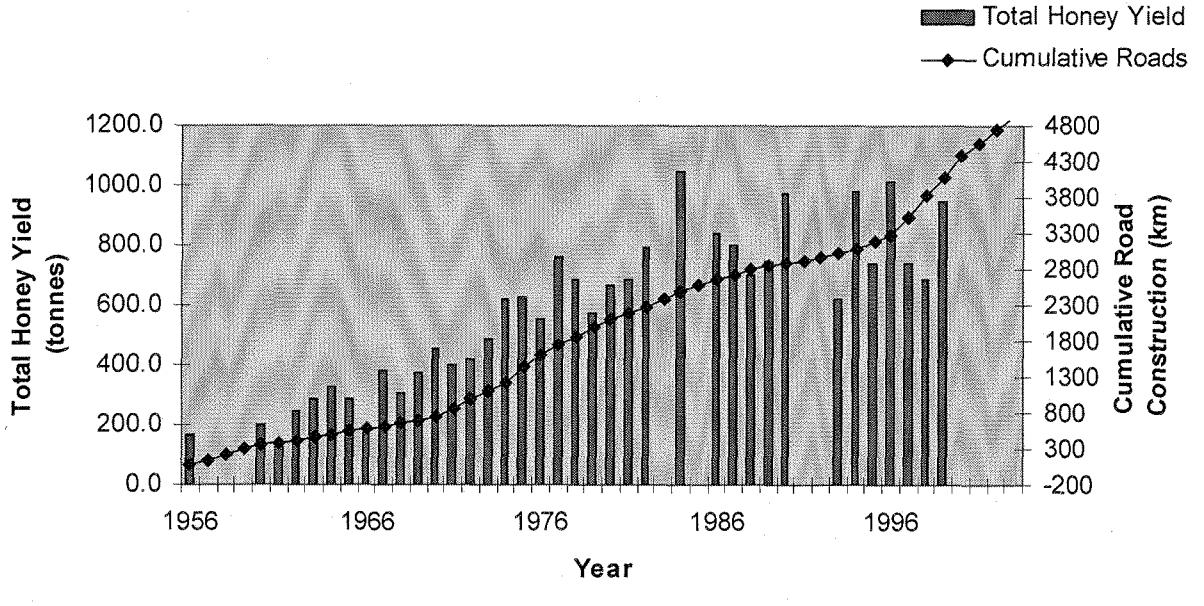
Hive numbers in the latter years are reported in round number 1,000s and appear to be only estimates.

The data from which these graphs have been drawn can be made available to the Committee. The search for primary information and compilation of the set represented a large and expensive undertaking for the FFIC and it is not our wish to publish these data at this time through this submission. They include honey returns with estimated leatherwood component, the cumulative length of roads constructed by Forestry Tasmania over the same period, and the reported yields of sawlogs and special species timbers from public forest.

Turning now to the production time series, it is possible to demonstrate graphically that the accessibility of floral resource is a large determinant in terms of the honey crop. While it is a given that annual variation in yield is more related to the environmental conditions that govern the strength of the flowering season there are other external influences that affect the size of the crop and one of these is access to leatherwood. Tasmanian apiarists regard this as the single most important issue facing the industry.

Figure 4 shows published honey statistics and cumulative length of road works by Forestry Tasmania over the period 1956 to 2004, with honey yield statistics being compiled as above. Drawing inferences from placing these two series together is obviously a simplification, given that the yield of honey is dependent on many more variables than the length of roading in public production forest and that production comes from many more sources than leatherwood. Putting that aside for the moment, it can be seen that there is a flex point in the honey yield time series at about the mid-1980s. I have assumed that this represents about the time at which most blossom in public forests became as accessible as it was going to be, with roaded hive sites intersecting collection circles at the 3km cost/benefit radius of foraging bees.

Figure 4. Cumulative road construction plotted against honey yield over time.



Since the mid-1980s there has been some diminution in the leatherwood resource. Albeit harvesting has occurred but the major change has been in the fourfold increase in reserve area in the last generation. Despite this the yield picture continues to appear pretty steady at sub-1000 tonnes, though with some annual climatic variation. This amount of blossom supports the current industry. However, if more players are encouraged to expand by access to better markets and higher margins, there is more pressure to increase access to leatherwood. This cannot come from present resources, as the flex point in the 1980s shows. The graph shows that State Forest leatherwood has been utilised at the current rate for about 20years.

Figure 5 is a plot of the same honey yield time series together with the annual harvest of sawlogs from crown land for the same period. Sawlog yields diminished from a high in the early 1970s until regrowth from forests harvested pre-war began to join the mix in the late 1990s. The trend is down for sawlog harvesting and up and then steady for honey. What is most apparent is the effect of the creation of extensive reserves on timber yields.

Figure 5. Sawlog harvest over time and honey yield.

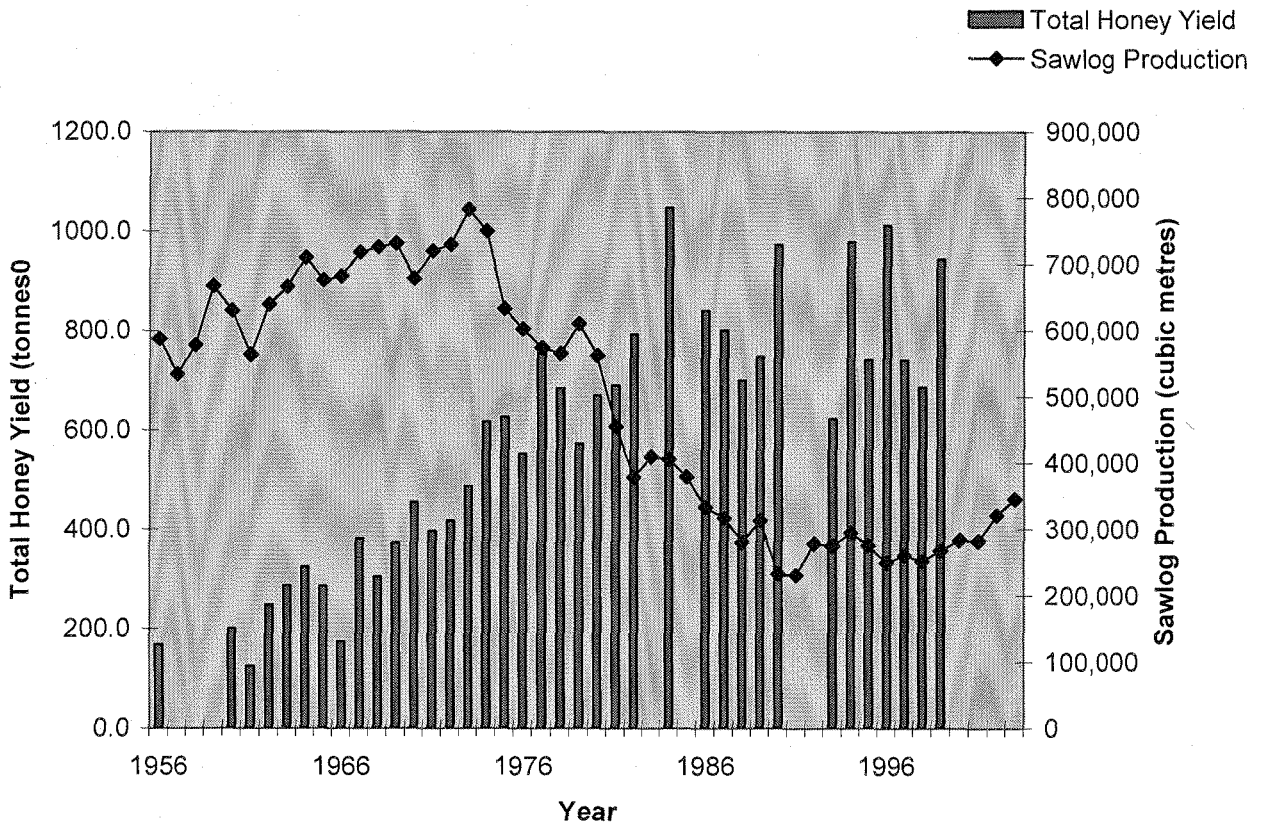
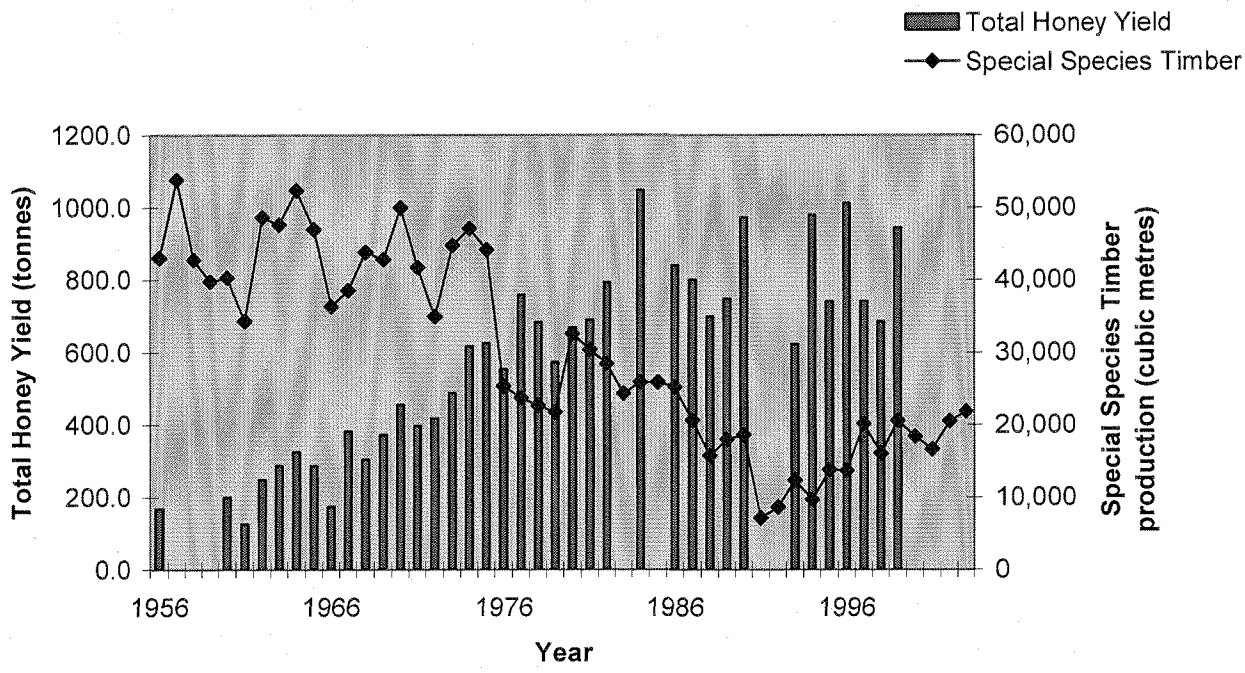


Figure 6 represents the honey yield series in conjunction with the harvest of special species sawlogs, the timber cut from stands in which leatherwood occurs. In Figure 5 we see honey yields increase as access is provided until the creation of reserves for wet forest conservation bite into the land bank.

Figure 6. Special species timber extraction and honey yield over time.



These graphs verify through three time series – sawlog yield, special species harvest, and honey that the formation of reserves from native forest has been deleterious to the prospects of both industries.

If most multiple use forest is now accessed to the productive limit of apiarists, and if the pollination industry is entirely dependent on leatherwood to raise hives to efficient pollinating capacity as is claimed by some, there appears to be a limit to which horticulturalists can intensify cropping. Only two changes are possible – more retention of leatherwood during harvesting to sustain the industry at current levels, or making the large areas of leatherwood in reserves more accessible to commercial beekeepers. Currently, more than 60% of leatherwood lies within World Heritage Area or other Reserve boundaries. It follows that consideration must be given to making these boundaries more porous for legitimate beekeepers and to finding ways to lessen the impact of harvesting on patches of leatherwood in public forest coupes. Both of these points require serious consideration and the topic of mitigating harvest impacts is being addressed.

Pollination Services

In assessing this aspect of beekeeping I found that there was a general paucity of what might be termed scientific literature. Much of the information available is anecdotal and citations of formally refereed work are rare. There are some notable exceptions; Gill (1989) and Gordon and Davis (2003). Gordon and Davis assess the value of pollination services in the event of a shock to agriculture through various levels of a breach of quarantine.

Parker (1989) provides a practical guide for the farmer and the beekeeper intending to be involved.

Pollination probably has three modes (Gill, 1989)

1. Fruit set without bees as an agent for pollen transfer is low and economic yields cannot be produced in the absence of bees.

2. Bees are important though not essential to profitability

3. A yield advantage is probably conferred by the presence of bees.

Apiarists may be reluctant to enter the commercial pollination field for a number of reasons:

- low prices received – market adjustment is required to enable an increase to be passed on to the consumer in the price of produce,
- the cavalier use of sprays by many growers – if weather, pathogen potency and other factors are aligned it may be imperative for the grower to spray despite managed bees being on the crop
- spray chemical returned to hive making it difficult for the apiarist to sell unpolluted honey into discriminating food markets
- damage to the insect – netting to exclude birds can damage bee wings and reduce numbers on crops

Discussions with expert beekeepers confirm that where "tunnels" are used (presumably netted orchard rows) young bees are required as aged, injured bees return to the hive and die. Getting an active hive of young bees prepared for an early crops like cherries can require a large effort.

Somerville (1999) reports a Victorian study of cherry pollination. Trees caged from bees are reported to have a 2% fruit set compared to uncaged trees accessible to bees that gave a 36% fruit set. Corresponding fruit yields per tree were 1.9kg/tree vs. 35.2kg/tree. He reports 97% of the insects visiting flowers were honeybees. Unfortunately Somerville gives no citation for this study so no more detail is available. By my calculation this suggests a 33kg gain through pollination and with a $3-4 wholesale price for cherries this would amount to a pollination service of $100 per tree. Of course, there are many other costs to bear in raising cherries from the day flowers are fertilised (capital, netting, sprays, picking, packing to name a few) but the comparison does indicate that pollination services may be priced too low given Somerville recommends a stocking rate of 2-3 hives per hectare. He equates this to 30-40 bees per cherry tree in full flower.

The general view appears to be that hives used in pollination are often built up to 100,000 bees although the proportion actively foraging is not indicated.

Benecke (2003) reports that sugar feeding as a nectar substitute is common practice in Tasmania but rarely used in SA or WA. From 1 to 1.25 tonnes of sugar may be used per 100 hives. If sugar feeding is a common management tool for pollinators, this cost must be factored in. Ewington (pers. comm. 2005) reports that no commercial pollinators in Tasmania to his knowledge rely totally on pollination services for income. Hives used for pollination in the spring are transferred to leatherwood for honey production later.

Leech (2005) observes that it is industry practice to complement sugar feeding with pollen substitutes for bee nutrition.

Cunningham et. al. (2002) in their advocacy for native pollinators to lessen the dependence of farmers on *Apis*, suggest that market adjustment is required so that the price available to the pollinator is passed to the purchaser of farm products. They also make practical recommendations as to how feral bee populations might be supported by the farmer.

While DPIWE (Miller, 2001) observes in various publications that the honey bee provides services of anything up to $188M, being the value of seed and fruit set in agriculture, pollination is never listed as a "Challenge" in discussion of various crops in their fruit and floriculture publications. Diseases and markets are emphasised but pollination does not appear to have excited concern.

There may also be ancillary benefits. Benecke (2007) indicates that hives based on canola for pollination on the mainland are now returning increasing amounts of canola honey, which candies rapidly, so it has marketing problems but does form a new resource.
Valuations of pollination services are frequently expressed in 'shock' form, i.e. sudden and complete withdrawal of honeybee pollination services. This is not likely to happen unless there is a complete failure in quarantine procedures.

In the case of public forests where utilisation of leatherwood has plateaued because more access is superfluous, stocks will decline over time if clearfelling oldgrowth continues unabated. This would result in the gradual attenuation of pollination services and would be unlikely to be felt in the near term. Those horticulturists dependent on pollination are unlikely to allow a situation to develop where they suffer decline in fruit set without finding solutions such as feeding their own bees or other alternative.

Most commercial apiarists in Tasmania now pollinate, a sign that returns are gradually starting to meet the value of the service provided. Because building hive strength for pollination diverts yield, one would intuitively expect that for supply of pollination services to be attractive, there must be a net return greater than for honey which begs the question of whether leatherwood honey may one day be too valuable to divert to supporting pollination.

Pollination has been undervalued. High stocking rates are required to ensure that pollination is effective. This means that little honey is stored by hives drafted for pollination. Hives may require 10-12 weeks preparation. Extra

costs are involved over and above lost honey production; transport, extra loading and unloading, hive management, and spray risk and insect damage from netting.

For Tasmania, reports of the value placed on pollination services have been mostly anecdotal. The only real data were the prices that beekeepers are willing to do it for. Leech (2005) indicates that in Tasmania 4650 hives were enlisted in pollination in the period studied with an average return of $43 per hive. Gifford (1989) indicates that there were 2176 hives used in 1988-89 with a return of $24.60 on average. More recently, pollinators were rumoured to be asking, and in some cases, getting $100. This is a useful seasonal hedge and provides opportunities for more integrated hive management.

We now have definite information from recent work by the CPA who have compiled (Tas CPA Inc, 2006) a Tasmanian Pollination Code of Practice containing prices and model contracts. Tasmanian pollinators have branched into broad acre work, particularly with canola.

Recommendation 2
That methods of improving the return for pollination services be examined.

Comparative National Position

Current national production data are not readily available. The ABS has not collected honey and bee statistics since 2001 when it was part of a system of 'supplementary collections'. This particular supplementary census ceased but there was some interest in including a beekeeping production question in the agricultural census for 2005-06 (G. Ellerton, pers. com. ABS, Hobart). Data for 2001 are not separately identified in ABS publications but lumped in aggregate livestock products (ABS, 2004).

Gibbs and Muirhead (1998) in the aftermath of various Regional Forest Agreements, estimated there were 673,00 registered hives in Australia with 467,000 operated by beekeepers with a minimum of 200 hives. 45% of an annual production of about 30,000 tonnes of honey was indicated to arise from NSW.

They examined a number of ways of assessing the size and economic worth of the beekeeping industry, in the absence of ABS direct industry census data.

The following table uses data obtained by Gibbs and Muirhead (1998) from State Departments of Agriculture and in Tasmania, the TBA, to demonstrate ownership segregation by State. 'Commercial hives' are those held by apiarists managing 200 or more. There is no significant presence in ACT and NT. The hive data are presumed to be for 1996/97 but are current enough for the argument developed below.

Table 4. Gibbs and Muirhead 1996/97 Commercial Hives by State

	Commercial hives	Total hives	% commercial
NSW	209,049	277,642	75
Qld	78,857	130,723	60
VIC	73,057	119,551	61
SA	59,700	77,100	77
WA	36,837	52,328	70
Tas	9,184	15,213	60
Australia	466,684	672,557	70

Tasmania ranks below the national average in the commercial domain. The figure of 60% of hives in operations deemed fully commercial also demonstrates that there is a pool of 40% sub-commercial operators who may aspire to expand if opportunity in the form of resource access, greater demand, or improved prices or markets arose.

Taking the question of market price first, Farley (2003) in advocating the establishment of a 'single desk' selling system suggests that work be undertaken to strengthen the brand and more effort be made to trade on the iconic value and rarity of leatherwood honey. If present marketing campaigns are realised by the larger commercial Tasmanian honey suppliers and packers, we will see a price at $5 and above as compared to the former average ca. $2.50 for leatherwood (in 2003, $3.40). This will encourage sub-commercial operators to expand by taking on more hives and it is unlikely that pollinators will be as dedicated to leaving leatherwood honey on the combs to strengthen hives for horticulture. As a result we will see larger and more operators, putting more pressure on a finite resource.

Recommendation 3:
That the ABS recommences the collection of apiary statistics for the benefit of the horticulture sector.

Comparative Economic Snapshot

Australian honey is recognised as a quality product on the world market. Domestic consumption is about 15,000 tonnes per year of a 30,000 tonne harvest. Export of the remainder ranks Australia as the fourth largest honey trader. Seventy to eighty percent of production is based on native flora, giving Australian honey novel and distinct flavours.

The 30,000 tonnes produced has an estimated value of $51M (R&D plan for the Honeybee Program 2002-2007, RIRDC) while the honey industry has estimated the gross value of product, including queen and package bees, beeswax, pollen and pollination is around $65M. The value of pollination services to the Australian economy has been variously estimated at anywhere from $604M to $1.2B (Gibbs and Muirhead, 1998).

The value at export is as dependent on flavour as appearance. International market classification favours 'white' honey over dark amber in price but a more extensive grading system that includes presentation, moisture and purity or freedom from contamination is under development. While some honey is exported in prepacked form, much Australian product is shipped in bulk and blended on arrival, losing its identity. This also happens for some leatherwood honey in both the domestic and export markets.

At the Tasmanian level, the Resource Planning and Development Commission reports that annual production of honey is fairly stable at 1,000 tonnes, valued at $1.5M (but see DPIEWE estimates above). Apiaries do not employ many directly "but activities related to the honey industry help to boost the indirect value of the industry to around $50 million. These activities include; processing, manufacturing, retail, promotion, pollination services and regulation." The RPDC then states that the value of pollination services to the agricultural industry is estimated by DPIWE to be $118 million.

Leatherwood derived honey is estimated by RPDC to constitute 70% of total volume.

In comparison, the timber industry in Tasmania produces a fourth ($1.3B) of the GSP and employs more than 10,693 people (FAFPESC, 2004). Leech (2005) reports actual employment figures in the honey industry of 60 permanent and 93 part time or seasonal positions.

The RIRDC commissioned a national survey of the honeybee industry reported by Rodriguez *et. al.* in 2003. Production was estimated to have been 27,800 tonnes for 2000-01 with a gross value of $63m comprised of $53m for honey production, $3.3m for paid pollination services, $3.3 for queen bee sales, and around $2.5m for propolis, wax, and honeycomb production.

That survey showed Australia to have 3600 registered beekeepers with the majority of honey produced by fewer large operators. 62% of total honey production comes from the 250 businesses operating more than 500 hives. Only 16% of honey is produced by operators with 250 hives or less and only the over-500 hive businesses could be described as being dependent on beekeeping for their major source of family income. In 2000-01 these businesses produced on average 17,300 kg of honey and received $32,800 from honey sales at an average price of $1.80 per kilo. Total cash receipts per business averaged $46,000 including sale of bees, wax, propolis, honeycomb and paid pollination services. Costs averaged $30,600 per business, 67% of total cash receipts, leaving an operating surplus of $15,400 per business.

On average, businesses had an estimated $236,400 worth of capital invested with the estimated average rate of return being minus 5%. Rodriguez *et. al.* put this down to the size of the business, equating it with returns recorded for small farms. Rates of return are better for the larger operators. 10% of honeybee businesses generate returns of 10% or better. This is high for the agricultural sector.

There is also a large disparity between large and small in access to resource. The proportion of large honeybee businesses using public land was over 90% in 2000-2001 but only 53% of small businesses used public land. About 20% of honeybee businesses reported that use of public land had decreased in the last five years but use increased for the large businesses with 10% of those reporting demonstrating increasing use and larger volumes. There had been no change for around a third of all operators.

The average age of an operator was 54 years with 25 years experience in the industry.

In this analysis Tasmanian operators appear to fare better than counterparts in other States, their average price of $3.40 per kilo was almost double the national wholesale honey value ($1.80) and they may well have more robust businesses. On the figures above the national average position appears to unsustainable. Wolfhagen (pers. com.) estimates a Tasmanian operator with 20 hives to have a capital investment of $10,000 while a larger operation running 100 hives would be capitalised at $500,000.

Benecke (2007) reports the number of beekeepers and hives by State from material supplied by Associations.

Table5. Beekeepers by State in 2007

State	No. Beekeepers	% of Total	Number of Hives	% of Total Hives
NSW	3195	32	265474	44
QLD	3084	31	119418	20
SA	740	7	66013	11
TAS	179	2	17904	3
VIC	1927	19	96455	16
WA	880	9	39000	6
ACT	na	--	na	--
NT	4		1500	
TOTAL	10009	100	605764	100

Whereas in 2003 Benecke provided the following data:

State	No. of beekeepers	No. of hives	Ave. hives
NSW	3575	256055	72
Qld	3426	128671	38
SA	850	70000	82
Tas	243	16527	68
Vic	1820	110000	60
WA	989	44854	45
NT	6	<2000	
Total	10729	628107	59

NSW has lost operators but increased hive numbers, Queensland is regressing, as is South Australia, Tasmania is stable, and Victoria has seen more small

operators enlist. Drought and fire would have affected many of the mainland returns.

Leech (2005) provides an insight into Tasmanian hive ownership where the preponderance of hives are operated by but a few beekeepers. This pattern extends across the board with Benecke (2003) providing the following industry breakdown for NSW, which produces more than 40% of the nation's honey.

Table 6. NSW registrations in January 2007

	Beekeepers	Hives
Amateur (1 to 40 hives)	2475	20210
Part Time (41 to 200 hives)	401	41364
Commercial (more than 201 hives)	319	203900
Total	3195	265474

Amateur beekeepers account for 77% of registrations and experience shows that most amateurs own less than 11 hives.

Commercial stratification was as follows:

	Beekeepers	Hives	Average
201 to 500 hives	171	60055	351
501 to 1000 hives	113	83877	742
Greater than 1000 hives	35	59968	1713
Total	319	203900	

The 148 beekeepers owning over 500 hives may be termed professional beekeepers. They constitute only 4.8% of total apiary registrations in NSW.

In his 2003 summary Benecke provides commercial production data. The table below is derived from ABS data for producers with >50 hives. It illustrates the relative performance of each state.

Table7. Commercial production (>50 hives)

	% national prod'n	yield per hive (kg)
NSW	41	78
Qld	10	57*
SA	14	84
Tas	4	80
Vic	23	92
WA	7.5	100

* many hives dedicated to queen production

Some apiarists in WA have diversified into pollen production sold as a protein supplement to pollinators.

Packers.

In rank, packing houses are the organisations trading as Capilano, Leabrook Farms, and Wescobee. Some of these function in the form of cooperatives in that shareholder apiarists consign their annual production to the packer. Most of their product is generic representing many floral and regional inputs and some appears under a supermarket's home brand. A number of Tasmanian beekeepers supply Capilano.

Wescobee was established in 1992 to take over the assets of the former West Australian Honey Pool. The Honey Pool traded only in honey but Wescobee can trade in any product.

The Australian Honey Bee Industry Council is supported by a levy of 1¢ per kg of honey sold through packers, plus ½¢ per kg from the packing house.

To summarise, Tasmanian beekeepers appear to produce more than the national average and receive more for their honey. There are relatively fewer large commercial operators. It would also be interesting to study the progress made by Wescobee in its 15 years of existence, given its apparent similarity of purpose to the model advocated for Tasmania.

Comparative monetary values

Leatherwood honey, because of its strong and distinctive flavour, is often masked by the large interstate commercial packing houses by dilution with white honeys to make it more palatable to the consumer who buys on price and bulk. Where leatherwood is distinctively badged and offered as an upmarket product it commands a much better price ('The Age', Epicure insert 10/7/07, features 'Meillerie' leatherwood honey from the D'Entrecasteaux Channel region at $30 per kilo). This indicates that further work to establish brand recognition and increase margins is warranted.

Mallick (2001), as part of his investigation of pollination ecology of leatherwood, gathered data on nectar yield from flowers and bee visitation rates and used these data to estimate the foraging range of bees from apiaries located in the forest. He then used this information to calculate honey yield per hectare of forest and converted this to honey value/hectare/year. He then made an extreme comparison, using honey value over the expected lifetime of a leatherwood tree against the value of native timber harvested and replaced by a 16-year recurrent hardwood plantation over the same period.

This report is only a short form example of Mallick's calculations. The reader seeking to understand the caveats applied should read the original thesis. Mallick finds that honey production would amount to a total of $8800 per hectare over a typical 250-year flowering life for leatherwood in full production and uses figures provided by Hickey (Forestry Tasmania) for timber yield and stumpage value in wet forest - 100m^3 of sawlogs at $20 per m^3 and 250 tonnes of pulpwood at $15 per tonne from a typical hectare. Mallick adds in road tolls of $5 to give a return of $6250 if clearfelling had occurred.

If the land were converted to hardwood plantation and these were extended in 16-year rotations over 250 flowering seasons, Mallick calculates a timber return of $80,000 per hectare after discounting production by 10% at each harvest. While these assumptions may not be realistic, the comparison remains stark – honey $35 per hectare for 250 years, an aggregate of $8,800 or timber $6,000 + $80,000, an aggregate of $86,000, ten times more.

The ratio of value added in processing is likely to be higher for timber than honey, which remains relatively untransformed. Mallick appropriately adds pollination services, the maintenance of biodiversity, and the aesthetic and spiritual values of unlogged forest to provide both commercial and intrinsic values. It is also apparent that he should have included a component of $30/kg niche marketed product.

While there may be many problems with Mallick's analysis, not the least being over saucing the pudding in favour of timber value by using an assumption of many rotations of plantation pulpwood, it is a useful attempt at comparison. There will be claims by both camps that the produce values used should be modified.

The purpose of the FFIC approach is to develop sounder commercial relationships with the land manager so there is no reason why both industries cannot co-exist.

Access to Resource base

The Committee, under Term of Reference #5, would be aware that much native vegetation is inaccessible to apiarists and that the approach differs by state jurisdiction. A state-by-state summary derived from Benecke (2007) is attached as Attachment I.

In general terms Gibbs and Muirhead (1998) report that policy on access to conserved areas on public land varies; NSW has drastically reduced access to national parks as a continuing strategy, and in Victoria access agreements that do not compromise conservation are reflected in legislation. In South Australia with much less native forests, recourse to conserved Banksia heathlands is essential to support almond pollination.

They also report that beekeepers believe access to native forests to be essential because native forests on public lands provide the 'safe harbour' and clean rehabilitation area needed to maintain and rebuild the strength and health of hives.

The information provided by Benecke (2007) shows that Tasmanian site fees are relatively similar to those of interstate counterparts. Where Tasmanian apiarists currently pay a site licence fee of $11.06 and $1.98 per hive (GST incl.), NSW apiarists face a charge of ca. $80, Victorian operators in the region of $60-$110, WA beekeepers $84 + application fee, and, in Qld , the prospect of a lockout. A good Tasmanian site may carry 50 hives and

beekeepers do not have the opportunity to roam in pursuit of blossom and also face greater costs in getting their produce to market.

Silviculture

If the amount of leatherwood is the limiting factor to the expansion of some sectors of Tasmanian horticulture it is worth investigating what means there are of increasing the resource.

Heese (RIRDC) commenced a silvicultural trial involving the release of leatherwood by eucalypt regrowth thinning and there have been annual reports identifying increases in stem diameter and observations on flowering in relation to climate in previous seasons. A final report appears to be in progress.

I inspected some areas in Sumac and NW sites in company with Sue Jennings of Forestry Tasmania where leatherwood has been planted in trial establishments of rainforest species. Ample leatherwood remains and while it is often overtopped by more aggressive competitors such as blackwood and myrtle, there are 8 m tall stems that appear to have flowered because there are seedlings beneath them. None of the competing material has been thinned so the leatherwood crowns are narrow. (For background of planting trials see Hickey and Wilkinson, 1999). It appears from this that plantations are not a ready solution to loss of access to mature leatherwood.

The capacity of leatherwood to occupy a site, either as volunteers on forest margins or within lightly burnt coupes is not in question. A test of regeneration from seed-tree retention as part of a silvicultural systems trial (Jennings and Hickey, 2003) in which most of the merchantable myrtle timber was removed showed that recruitment of non-target *Eucryphia* from parents outside the harvested area or from incidentally retained trees was second only to *Nothofagus*.

One of the reforms contained in the Tasmanian Community Forest Agreement in relation to apiarists is being rolled out at present. Forward roading to Special Timbers Management Units, which are usually in wet forest and contain leatherwood, is being established. This will lead to increased access to resource pockets and provide more hive sites close to reserve boundaries. The quantum is unknown at this stage but the total then becomes the upper limit for the future unless the World Heritage Area Boundary can be made more porous to hive placement.

Strong lobbying of politicians, conservation agencies, and the environmental movement will be required for this to eventuate.

The next option comes from potential changes to harvesting practices (Forestry Tasmania, 2005). Aggregated retention systems are being adopted in place of conventional clearfell logging. It is the intention within these for harvesting boundaries to be adjusted to protect copses of mature leatherwood where there is little timber resource beyond them. This creates

problems for establishing regeneration depending on topography, fuel loads, and access that are the subject of research at present.

It is unlikely that traditional hot fire regeneration procedures will be possible with meandering boundaries. Regeneration will have to be produced from fire burning in less fuel or by mechanical disturbance. Cooler burning conditions are thought to promote leatherwood regeneration and the risk of scorch across firebreaks should be less.

Fuel loads will have to be reduced by removal of large logging slash for bio-energy conversion. Active lobbying by beekeepers for approval of the use of native forest residue for power generation by the Federal Energy Regulator is warranted.

The outcome of changes in harvesting are unquantifiable but can be expected to result in a greater leatherwood component in regeneration, more retained mature trees, and more prolific flowering. Retained leatherwood exposed on boundaries will receive more sidelight, promoting flowering.

It must be stressed that these reforms are not possible without alternative markets for out-of-specification logs and fibre; the only known alternative potential is as fuel and extraction and transport costs will weigh heavily in this regard.

The means outlined above show that there are ways in which our forests can be made more leatherwood rich, albeit at a cost to wood production and at a price.

Recommendation 4
That the Committee visit the extensive field trials of variable retention silviculture maintained by Forestry Tasmania at the Warra Long-term Ecological Response site.

Recommendation 5
That the Committee promote the use of residues for fuel to ensure the retention of mature leatherwood and the creation of more leatherwood rich regrowth.

New Business Model
The Farley/Newstead (2003) model, written with the TBA, calls for the adoption of a new business mode for the industry.

It suggests:

- Major restructuring of the Tasmanian honey industry for all but the field collection aspect;
- Establishment of a honey network with a serious shift in market approach and client management;
- Immediate changes to the relationships between exporters, packers, and brokers;

- Location of a substantial investor to carry a honey bank so that sales are achieved through a 'single desk' model;
- Passing increased costs to consumers.

Implementation will require extensive skilling, consumer research, branding, pricing changes, distribution, and a totally new marketing structure.

There is a challenge in finding the optimum pathway to market. The market for leatherwood honey is soft and variable. Where it is well known it sells upmarket as a niche food; where it is unknown it is considered a constituent of blends. It is thin with a strong flavour and aroma, traits not conducive to ready acceptance in a blend, and it needs promotion to achieve a worthy, stand-alone price. With leatherwood blossom resource finite and diminishing, gains are more likely to be made in the marketing sphere than in the forest.

However, these structural and marketing changes need to come from a small association without a paid secretariat and require considerable transformation of traditional approaches together with speed in implementation once adopted. An incremental approach will not work. Sophisticated business management is required to bring it off. This has to come from an organisation that, except for its top echelon, is largely hobby players.

The danger to the TBA of not implementing these changes, which were based on their own recommendations to secure their future, is that their marketing will remain hit and miss, labelling and appellation advantages will be lost and future overtures for assistance in the absence of demonstrated action may go unanswered.

Recommendation 6
That the Committee consider providing assistance to enable a new marketing structure based on existing research and recommendations to be developed.

Tradeable licences

With the leatherwood resource outside reserves finite and declining, there are only two options to grow the honey industry:

- Retention of leatherwood through optimal silviculture;
- Finding new and better pathways to market.

The inherent disadvantage in success - a more secure resource and better prices at market, is that more operators will be attracted to the sector, pushing competition for resource higher and neutralising access and silvicultural reforms. It was suggested in discussion by TBA officials that the only way to overcome this is to set a limit on entry, i.e. freeze licences.

This is well and good, it suppresses new entry but in setting a barrier it temporarily creates an artificial anti-competitive environment. The National Competition Policy (Trade Practices Act Part IV) requires that access to public resources be open rather than exclusive so the only way to institute a ceiling

but remain within the law is to make licences tradeable and transferable. This establishes a market in which licence holders can compete for resource. The value placed on the licence by the apiarist will be set on the basis of business efficiency, expectations in relation to price and yield, stability and sustainability of resource, make some accommodation for climate, fire and other agricultural risks, and cover other inherent business expenses like distance to market and operational costs.

With a site licence that can be traded on the open market, the beekeeper has gained a capital asset. The price a licence owner is willing to pay for the site reflects a view of its production capacity and its security. The resource manager then has a trading market in which comparative commercial judgments can be made.

It is expected that setting commercial apiary site rentals and trading will:

- Increase the value of sites
- Concentrate ownership
- Increase utilisation
- Favour the more efficient operators

Conclusion

This submission covers a broad field but dwells in some detail on various aspects of the dilemma between wood production and leatherwood retention in Tasmania's public forests. It outlines the ecology of the major species involved, provides historical timber extraction and honey yield data, and draws conclusions from the comparison of these over time.

National data are provided for comparison.

It concludes that new land management techniques will have less effect on the resource and that there are still opportunities to increase yield and to assist pollinators by making reserved land more available. It also advocates the adoption of marketing recommendations to assist the industry.

It also charts, to a lesser extent, the work of the FFIC's Apiary Working Group and its endeavours to find a solution to a previously intractable problem through changes in the licensing system and by different approaches to harvesting. This latter engagement has taken a considerable time and much has been left unsaid. The author and other members of the Working Group would welcome the opportunity to provide more information to your Committee's Inquiry.

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Attachment I. State-by-State comparison of reserve management for apiary purposes

In 1993 (Ziegler, 1993) indicated that 37% of leatherwood distribution lay within Tasmanian Wilderness World Heritage Area boundaries and thus was inaccessible. It is now 60% with the area of reserves quadrupling in the last generation. Some of this area remains accessible from the ribbons bordering the Lyell Highway. The number of hives accommodated in these strips is an indicator of what could be available in reserve areas that are currently less accessible.

It seems that beekeepers are heavily reliant on public land in most states, making them alert to a purist mood within reserve management agencies that would see exotic bees excluded from reserves. Some of the effort of the AHBIC is devoted to countering this threat.

Benecke (2007) recounts the following arrangements state-by-state:

NSW

Access to public land was taken for granted until recently. While sites were regulated and a fee was charged for occupation, the sites were transferable. There was no question of banning bees.

In 1984 the NSW NPWS announced a phase out of beekeeping from national parks. The beekeeping fraternity reacted strongly and this policy has never been fully implemented but sites used traditionally that were unregistered in 1990 have been lost to the industry.

Feral honey bees have been listed as a 'key threatening process' on Schedule 3 of the Threatened Species Conservation Act (TSA) of NSW by the TSA Scientific Committee. A Threat Abatement Plan is in preparation by the NPWS and it will apply to all land tenures.

In terms of commercial bees, existing sites on the NPWS may still be transferred when the business is transferred to another family member or transferred to a purchaser when the business is sold. If a site becomes vacant the NSW Apiarists' Association advertises it and conducts a ballot amongst applicants. The reported charge for a site in 2003 was $70 pa. No new sites have been granted in the reserve estate.

In State Forests there are seven Forest management Zones as a result of the RFA. Zones 1 and 2 are the most sensitive and conditions for the keeping of bees are analogous to NPWS rules. There is limited transferability of sites and no new sites are to be established. In the other five sites the first come, first served principle applies. A site is 1.5 km^2 in area.

The average annual rental per site on forests, parks, or stock routes is ca. $80 pa.

Queensland

A policy of no new bee sites in National Parks came into force in the 1990s together with an announcement that existing sites would be phased out over three years. Negotiations have led to a compromise in the short term whereby Resource Reserves have been created in National Parks. The Reserve tends to be the actual former apiary site. Beekeeping is a permitted activity in a Resource Reserve so the effect is for bee-free National Parks peppered with Resource Reserves. State Forest is being converted to National Parks and it appears that one outcome of this change will be the exclusion of apiary sites from these areas by 2024

There has been conjecture (*Chinchilla News*, 2005), now confirmed by the ruling above, that beekeepers will be excluded from forests west of the Great Dividing Range, leading to a loss of 4000 sites. Queensland beekeepers fear that the Channel Country of far western Qld will also go the same way.

Victoria

The push to exclude bees commenced in the early 1980s. Buffer zones from which bees are excluded were created around Reference Areas and Wilderness Areas. An increase in wilderness reserved in the 80s and 90s has also extended the buffer areas so that bees are excluded from sites adjacent to the enlarged Wilderness Area.

Outside Wilderness Areas and Reference Areas there are Reserved Forests, Uncommitted Crown Lands and National Parks.

There are two classes of licence, the first for a Permanent Site located in Forests or Crown Lands for which there is a fee for the 0.4 ha of hive site together with a fee per hectare for public forested land within a radius of 1.6km. In practice site licences vary from $59 to $112 per year with the annual fee composed as follows - $23 for the hive site + 11^{c} per hectare for all the forested land within the designated forage area.

Temporary Bee Sites are licensed for three or six month periods and cover an 0.8km radius. They can be renewed so that many temporary sites are held continuously. The fee is $40 per six-month period, which is effectively the minimum recognised.

Only Temporary Sites are permitted in National Parks and only if there is a history of apiary usage before gazettal as a reserve.

West Australia

80-90% of honey produced in West Australia comes from native flora on one form or another of public land. Apiary sites are spaced at least 3km apart and a two-tier pricing policy applies.

Sites in the southwest cost $84 per year and the remote zone, $42 pa. There is an application fee of $100 for 1-5 sites in the southwest and $50 in the remote zone. Beekeepers may hold ten public land sites for every 100 hives owned in the southwest and eight sites in the remote zone. Sites are transferable with the sale of the business and the Minister for Environment and Heritage is

investigating a proposal for commercial trading of sites. At present, a fee of $8.50 is payable for transfer of a site.

In 2007 the Department had 3506 sites, 2203 in the southwest and 1303 designated remote. By my calculation licence fees would appear to amount to $240,000 per year plus application fees.

South Australia

Public land is critical to over-winter bees, particularly if it carries *Banksia ornata*. There are four site categories, Forest Reserve, Water Catchment, National Park, and Heritage Agreement Areas. The fee structure is:

- All sites, $75 each + GST
- Transfer of a site to another beekeeper, $200 fee.
- Burnt sites, no fee until vegetation recovers.

Tasmania

Most of the principal honey crop for Tasmanian beekeepers, leatherwood, lies within the boundaries of reserved land managed by DPIWE. Existing licensed sites can continue and licences may be transferred to another fit and proper commercial beekeeper but the possibility of new sites being registered is remote. Recent practice has been that if occupation falters for whatever reason, e.g. road washout, the right lapses.

On State Forest, the TBA has an accord with Forestry Tasmania under a community forest agreement spelling out obligations on both parties. A code of practice termed "Guidelines for Beekeeping on State Forest" is in force.

The levy for State Forest for 2007/8 currently stands at $11.06 per site and $1.98 per hive, both inclusive of GST and subject to annual escalation in accord with CPI.

Northern Territory

Bees are banned from national parks, usually the only place where permanent surface water can be found.

The thread common to at least the first three states and echoed in Tasmania is that the advent of RFAs has seen state forests where access has been unfettered transferred to reserves. Access is either denied or roads are closed / not maintained. Tasmania's charges are low in relation to others.

Appendix II. Summary of points from Census by Mark Leech for FFIC (2005):

TASMANIAN APIARY INDUSTRY PROFILE

FACT SHEET

METHODOLOGY

- The information used in this report was obtained from an industry-wide census that also involved undertaking a series of regional workshops and one-on-one interviews with apiarists.
- All registered beekeepers were contacted and invited to participate.
- This study provides a snapshot of Tasmania's apiary industry during the 2003/2004 season.
- The methodology used in this study covered approximately 80% of the registered hives from business units with ≥ 20 hives, and represents the most comprehensive data-set on aspects of beekeeping in Tasmania.

INDUSTRY STRUCTURE

- There are over 18,417 hives registered for use in Tasmania. Total hive numbers have more than doubled from 7,200 in 1962-63.
- The apiary industry segments can be categorised according to the number of hives used by operators.

Recreational	<200 hives
Semi-commercial	200-999 hives
Commercial	≥ 1,000 hives

- Of the 250 registered beekeepers, only 8% are regarded as fully commercial or semi-commercial operations using ≥ 200 hives. The remaining 92% are lifestyle/semi-commercial operators. Five beekeepers use ≥ 1,000 hives.

Hive Numbers	Business Units
<20	66% of beekeepers hold 4% of the hives
20-99	19% of beekeepers hold 8% of the hives
100-199	7% of beekeepers hold 13% of the hives
200-299	6% of beekeepers hold 29% of the hives
>1,000	2% of beekeepers hold 46% of the hives

MARKETS

- Tasmania's apiary industry is characterised by the dominance of leatherwood honey, which accounts for approximately 70% of Tasmania's average annual production of 1,000 tonnes.

- At the time this census was undertaken, bulk prices for honey varied between $3,000-$5,000 per tonne.

- Smaller recreational and semi-commercial operators both pack and direct market some of their product. Many of the larger semi-commercial operators sell their honey in bulk to packagers either locally or on the mainland at commodity prices. One large operator exports some bulk honey. A significant price premium can be achieved where honey producers engage in packaging and marketing their product.

EMPLOYMENT

- The apiary industry employs over 150 people on a permanent or seasonal and part-time basis (60 permanent and 93 part time or seasonal). This represents 100 fte positions in the Tasmanian apiary industry.

- While beekeepers with >1,000 hives are considered to be the main commercial sector, there are a number of operators with <500 hives who employ up to 6 fte employees in commercially viable businesses. This is achieved through vertical integration and control of the supply chain.

FLORA

- Bees make extensive use of whatever flora is available, whether native or introduced. In Tasmania, managed honeybees access just under 100 floral species, including agricultural weeds such as blackberry and gorse.

- Leatherwood is the most important floral element in the Tasmanian floral sequence, being accessed by at least 12,500 hives from at least 271 sites. It is the latest flowering species providing crucial winter stores.

- Reliance on the traditional clover/blackberry "white honey", once the mainstay of the industry, has reduced in the face of changing agricultural practices and biological control.

SITE USE BY LAND TENURE

- The five main honey producers utilise a mixture of public and private land to access leatherwood and provide for wintering, build-up and breeding. Both DPIWE and Forestry Tasmania administer apiary sites on public lands under their jurisdiction. Overall, only 20 of the 250 registered beekeepers are able to access Parks and Reserves managed by DPIWE.

- The vast majority of beekeepers are dependent on land managed by Forestry Tasmania to access leatherwood resources.

- The refusal of public land managers to maintain roads as a defacto exclusion mechanism is contentious with beekeepers (such as in World Heritage Areas and National Parks).

POLLINATION

- The pollination services provided by managed bees is an invaluable service to Tasmania's agriculture and horticultural sectors. In Tasmania, commercial beekeepers provide pollination for a number of significant crop species.

- In 1989, around 2,000 hives were used in pollination services at an average charge of $26 per hive. Today, over 4,500 hives are used to pollinate crops at an average price of $43 per hive. Pollinators are anxious to increase their charges.

- There are opportunities for beekeepers to develop pollination services in new crops and high-value seed production.

- The direct income for commercial pollinators surveyed in this report was less than 1/3 of their annual gross turnover.

- Some sections within the apiary industry regard leatherwood feedstock as fundamental to the health and strength of hives coming out of the winter, due mainly to the nectar that leatherwood produces.

LEATHERWOOD ECOLOGY

- Leatherwood are rainforest trees that occur predominantly in mixed wet forests and mature rainforest. More than 60% of Tasmania's leatherwood is now in permanent forest reserves (World Heritage Areas, National Parks and Forest Reserves).

- It is believed that European honeybees are now the most important pollinators of leatherwood. Leatherwood is thought to flower well and produce large quantities of nectar if there is a wet winter and spring followed by a warm to hot summer.

- Some forests containing leatherwood have been harvested and regenerated, and there is some evidence that leatherwood recovery in areas previously logged can occur after about 30 years.

- Only between 12%-33% of mature leatherwood trees flower in any particular year.

INTERACTIONS WITH FORESTRY

- Site disturbance from logging operations is a significant concern for beekeepers. There is evidence that forestry operations have impacted on stands of leatherwood within and adjacent to logging coupes in areas of State forest.

- The Tasmanian Community Forest Agreement (TCFA) addresses the concerns of beekeepers by:
    - Phasing out clearfelling and moving to alternative silvicultural techniques, such as aggregated retention;
    - Reducing the need for high intensity burns in the regeneration process by removing forest residues for bio-energy production;
    - Providing forward roading to access leatherwood rich forests in Special Timber Management Units (STMUs) in Tasmania's southern forests.

DISEASES AND THREATS

- There are a number of diseases that affect all of the life history stages of bees that can have a devastating affect on bee numbers and hive management. Vigilant quarantine practices are essential to protect apiary and pollinated crop industries.
- Bumblebees are a significant problem, and pose a competitive threat to commercial honeybees as pollinators and in foraging for nectar. European wasps are also predators of honeybees, especially in autumn months when searching for protein.
- Improved weed control and measures such as the removal of willows have reduced foraging activity that would ordinarily contribute to hive survival and build-up.

Appendix III. Summary Options and Action Plan agreed between TBA, CPA, and FFIC:

Tasmanian Beekeepers' Association, Tasmanian Crop Pollination Association and Forests and Forest Industry Council

Joint Options Paper

The purpose of this options paper is to canvass consideration of alternatives to current operating procedures that will:

- Deliver greater resource security for beekeepers,
- Entrench ownership of their intellectual property,
- Provide the security to invest and the capacity to trade in licences,
- Provide a return to the owner of the forest commensurate with the value of access, value of the product, and the rights to continuing use, and
- Produce a fundamental shift in relationships with other forest users.

Prospective changes in land management and harvesting systems form part of this whole.

Initial processes

Public Resource

The FFIC has been involved with Executive members of the Tasmanian Beekeepers' Association and Tasmanian Crop Pollination Association in discussing this matter for some time. We have agreed to recommend policy opportunities that will permit the evolution from a largely life-style occupation into a more commercial apiary industry, run by professionals.

Outcomes must be acceptable to all. They should provide the maximum access attainable to native forest resource while providing returns to land managers that reflect the value of access to resources and deliver tenure arrangements where stakeholders will have certainty, ownership, and investment opportunity.

Recommendation 1
Government formally recognise a Forests Council Policy Panel to make recommendations on administration of public land tenure through the Apiary Industry Liaison Committee.
This Panel should consist of Julian Wolfhagen, Peter Ewington, Lindsay Bourke, Des Wilmott, Trevor Bird, Sean Riley, and Graham Sargison.

The TBA and CPA have outlined a seven-point plan. The Panel should work through this to deliver:

- A continuing yield for recognised production units
- A rolling plan for the management of leatherwood-rich forest

- A site allocation strategy for operators on Crown land that provides a commercial return for the land manager and rewards efficient value-adding apiarists
- An appellation, accreditation, and marketing strategy to strengthen the brand and R&D to deliver premium market penetration
- A more commercial and professional pollination industry
- R&D to create production efficiencies and volume return from the resource
- A freeze on licences and sites while a market-based allocation process is instituted

In addition apiarists, through the TBA and CPA, have indicated they seek tradeable tenure for operators

In turn, land managers seek to implement a commercial licensing system based on identified areas of operation with mutual expectations regarding access that:

- returns value for the use of the resource to the Tasmanian public
- recompenses administration and management costs
- includes a commercial assignment system for usage.

Commercial focus

Key impacts upon the future of the honey industry are:

- The creation of reserves that place leatherwood out of reach or that result in the incremental closure of vehicle access routes
- The loss of tracts of leatherwood through logging and regeneration burning of coupes
- The removal of exotic weed species that provide exotic honeybees with resource
- Commodity marketing
- ad hoc supply of pollination services
- Continuation as a sub-commercial or cottage industry.

These impacts form part of the supply and demand picture on which commercial outcomes will build.

They must be managed to ensure:

- maximum access to our nectar resources
- our unique honeys command a high price
- security for investors through commercial licences
- a commercial return to the forest manager.

<u>Supply</u>

There will always be some restriction on supply, either through limits to floral resource, climatic and plant physiological pre-conditioning to flowering, or weather interruptions to seasonal nectar flow.

Recommendation 2
The Panel recommend how floral resources may be made more accessible.

Demand

Demand is largely built on market penetration. Commercial outcomes rely on quantity and the price difference between production costs and purchase price.

Recommendation 3
The Panel approach DED for assistance in devising a marketing plan.

Recommendation 4
The Panel review beekeeper progress in relation to the 2003 DED package.

Land management issues

Comparison with operations in other States indicates that Tasmanian apiarists using public land do so at a cost advantage to their interstate competitors.

Reserve managers are usually intent on exclusion of exotic bees and operation of this policy is more detrimental to Tasmanian interests because reserves in other States tend to have a higher perimeter to area ratio making floral resources relatively accessible. A system of Resource Reserves applies in Queensland.

Recommendation 5
That beekeepers explore opportunities to gain non-intrusive access to floral resources in reserves through hive placement on boundaries or lake shorelines or other means.

On State Forest, the TBA has an accord with Forestry Tasmania under a community forest agreement spelling out obligations on both parties. A code of practice termed "Guidelines for Beekeeping on State Forest" is in force.

Tasmanian beekeepers are now prepared to pay 2% of wholesale honey value as hive rent. By comparison more extractive food industries (abalone) pay 9% of beach price.

Recommendation 6
That the Policy Panel produce an equitable and auditable licence fee structure that reflects the benefit obtained through access to resources and recompenses land managers for services and administration.

This structure should canvass options for joint ventures with land managers and provide a pathway to full commercialisation including means of:

- Restricting entry
- Providing rolling licences
- Providing title or tenure.
- Making licences transferable

- Structuring fees

A set of recommendations to handle issues such as recognition of eligibility, transfer of title, performance criteria, and site classification is attached.

Silviculture

There have been major reforms in silviculture made by the Government and associated with the Tasmanian Community Forest Agreement. Clearfelling in tall wet forests will be reduced to 20% of the former area. A program based on ecological research in the Warra will provide for a system of aggregated retention to be used. In moving to the 2010 target, Forestry Tasmania has undertaken to give special consideration to leatherwood rich coupes during the transition so that as much leatherwood as possible is retained. Coupes will also be smaller so more leatherwood will regenerate from fringing seed sources.

The Government intends to proceed with biomass energy generation. This will remove fuel from coupes. Leatherwood regeneration is favoured by less intense burns.

There is a strong accent on Special Timbers Managing Units in the TCFA. Funds have been provided for forward roading to STMUs, most of which contain leatherwood so this resource will become more accessible.

Recommendation 7
That members of the Panel form the reconnaissance advisory group for forward roading to STMUs.

Forestry Tasmania has re-examined its harvesting plans for leatherwood-rich coupes in the current schedule. The aim is to maximise the potential for these to be treated under the aggregated retention system.

Area of Deferred Coupes containing leatherwood

The following coupes in Leatherwood-rich forest types have been deferred from the 2005/06 clearfelling schedules.

Huon District:
EP004F (47ha) future Aggregated Retention.
KD019D (64ha) future Aggregated Retention
Total 111ha

Murchison District:
FR011A (48ha) future Aggregated Retention
FR015B (65ha) future Aggregated Retention
SU020B (52ha) future Aggregated Retention
SU022C (50ha) future Aggregated Retention
SU035B (45ha) future Aggregated Retention
Total 260ha

Derwent District:
There are several coupes in the Wedge Block, which are being considered for Aggregated Retention subject to contractual commitments.

Recommendation 8
That the Panel note Forestry Tasmania's efforts to ameliorate the effects of harvesting in leatherwood rich forest and advise regional resource committees of the identity of deferred coupes.

That the next version of this joint document merely note deferment of coupes and not identify every particular.

Marketing

The Department of Economic Development has drafted recommendations with the apiary industry to make marketing more robust. Some beekeepers have made investments in packing and marketing in line with this advice.

Leatherwood honey is available from nowhere else. The route to boosting market price lies in strengthening the brand through trading on the iconic value and rarity of leatherwood honey.

Recommendation 4
The Panel review beekeeper progress in relation to the 2003 DED package.

Pollination services

The provision of pollination services is partially dependent on access to native forest floral resources. While horticulturalists realise this there appears to be less awareness of the need to establish commercial links to the use of this resource.

Recommendation 9
That the Panel consider means of assisting crop pollinators achieve a commercial rate of return that includes provision for services rendered and provides a return to the public land manager.

OPTIONS

It is agreed that change occurs. There are a number of possible routes, and options for each sector are compared below. All are retained in this version, as they are the likely to have been the most studied section of the document.

Recommendation 10
That a precise set of options to achieve the aims of the Panel be adopted.

OPTIONS

Tenure management

A. Sites

1. Freeze access
   - Enables structure to be determined within existing bounds.
   - Avoids 'claim jumping'
   - Forms part of TBA 7-point plan

OR

2. Continue in current 'restricted' sense
   - Enables structure to be determined but opens opportunity for jockeying for positions
   - Goalposts likely to move

OR

3. Abolish historic 'rights' to sites
   - Provides a clean slate with all applications to be determined on merits.

B. Allocation

1. Do nothing
   Anti-competitive, cosy, and perpetuates 'hobby' syndrome

OR

2. Retain status quo but with Resource Committees given official standing
   Collegiate system is anti-competitive and lacks commercial focus

OR

3. Land managing agency determination
   - Could end up with a number of systems
   - Retrograde

OR

4. Existing usage confirmed by a regulatory instrument
   - Provides start point for future trading
   - Conforms to 7-point plan

AND

5. Uniform system
   - Land managers apply consistent criteria
   - Allows commercial adjustment with and between clients

C. Licences

1. Retain as annual
   - Sub-commercial and expensive to administer
   - Minimal certainty for investors
   - No incentive to upgrade operations

OR

2. Site licences purchased
   - Staggered introduction
   - Commercial and competitive
   - Forms part of 7-point plan

AND

3. Accreditation
   Operator/licensee qualified in:
   - B. Qual and quarantine and disease management
   - Attenuated forest practices course

4. Efficiency
   Blocks assessed for underutilised capacity
   Use it or lose it
   Conforms with apiarists' aspirations and 7-point plan

D. Trading

1. Recognise traditional rights and implement at agreed time scale
   - Ramp up
   - Family succession
   - Value set by market
   - Capital gain for all existing players
   - 7-point plan conformity

OR

2. Immediate open market trading
   - Becomes target for speculators
   - Possible amateur hive management – 'share' farming
   - Likely to disrupt implementation of other reforms
   - Values will fluctuate in early trading

Land management

E. Resource

1. Retain status quo
   - Provides no certainty to client apiarist
   - Value varies spasmodically
   - Reserves remain under-utilised and provide minimum return to public
   - Inefficiencies rife

OR

2. Establish site fee system
   - Identify proportion of land section with unchanged management
   - Categorise capacity and calculate continuing yield
   - Manager and tenant agree to future schedule
   - Established for term of licence

- Fee renegotiated at end of term
- Permits future change in land use

AND

3. Introduce Resource Reserves system
   - Makes reserve boundaries porous
   - May require access to be constructed
   - Benign use
   - Returns usage fee to public
   - Opposed by purists

AND

4. Joint ventures
   Exclusive permit in return for joint infrastructure investment
   Conditions determined by negotiation

Fees

F. Site licence

Fee set by land manager
- reduces incentive to produce

OR

Tender negotiated with land manager
encourages full utilisation
tenant free to exploit maximum
manager free to locate more efficient operator when contract novated

G. Hive fee

1 percentage of value of reported yield
- capacity of land unit categorised
- temptation to under-report
- fees establish trade value of site
- conforms with 7-point plan

OR

2 Fee negotiated as part of site tender
- Many arrangements, administratively complex
- Variable between land tenures
- Enables flexible joint ventures

ATTACHMENT 1 – LICENSING MODEL

RECOMMENDATION 1

That apiary licences for the 2006/07 season be limited to those apiarists who were the holders of, or purchased, an apiary licence for the 2005/06 season. The purpose of this measure is to cap the overall number of licences with access to leatherwood resources on public land, and develop an industry structure from this base that reflects the level of financial and operational commitment of existing participants.

RECOMMENDATION 2

That apiary licences be re-named "Public Land Apiary Accreditations".

RECOMMENDATION 3

That the holders of an Apiary Accreditation undertake an attenuated Forest Practices course mainly addressing roading issues. Although such a course is yet to be developed, it would enable apiarists who gain access to new sites and roads that are suited only to light traffic to play their part in road maintenance.

If the recommendation to limit entry to those with a prior history of access to public forests is accepted, then the next logical step is to define access more specifically in terms of the "nature" of the proposed apiary accreditations. The intent here is to formally re-structure the "capped" beekeeping activity in a way that reflects the current informal industry structure. To do this, however, we need to recognise the following factors:

- the diverse nature of the Tasmanian apiary industry (including levels of financial and operational commitment of individual operators);
- the need to sustain and support commercially viable beekeeping operations;
- the need to have a transparent and equitable mechanism for allocating access rights to beekeepers
- the need for provisions that allow Public Land Apiary Accreditations to be handed down to family members;
- the need to provide for lifestyle operators.

Creating more defined management arrangements

A system combining all of the above factors into a single generic entitlement would be complex, if not impossible. However, a four-tiered Public Land Forest Apiary Accreditation could conceivably result in a licensing structure that broadly reflects current levels of activity.

The major thrust of this proposal is to define management arrangements for beekeepers in a way that will provide much clearer guidelines for access and operation than has previously been available. It is important to note that no existing beekeeper with access to apiary sites in State forests will lose access under this proposal, however, their subsequent level of access, or that which they might have aspired to, may be diminished.

The following recommendation is structured around the "base" entitlement called the Public Land Apiary Accreditation, which permits the use of apiary sites in State forest. Those beekeepers who qualify for a Public Land Apiary Accreditation will be allocated one of four levels of access (designated as A, B, C, or D) based on their past involvement in the industry.

RECOMMENDATION 4

That entitlements allocated as Public Land Apiary Accreditation be graduated into four categories (A, B, C and D).

These four levels of access range from Category A accreditations for those with an extensive commercial involvement in beekeeping in State forests, through to Category D accreditations for those who undertake beekeeping in State forests on a very small scale, such as those who are involved in the industry more for lifestyle reasons.

Developing performance criteria

An important part in the category allocation process is the development of suitable performance or "qualification" criteria. For the purpose of this exercise it would be reasonable to assume that such factors as numbers of hives used, number of apiary sites used, amount of capital investment, extent of value adding or number of years involvement may be used in some combination or formula to determine the category (A, B, C, or D) that is attached to an individual's Public Land Apiary Accreditation.

RECOMMENDATION 5

Applicants who are successful in qualifying for a Public Land Apiary Accreditation will also qualify for a particular category (A, B, C or D) based on meeting specific performance criteria.

In any event, the development of an allocation system that uses performance criteria is something that would require extensive consultation with all of the stakeholders involved.

RECOMMENDATION 6

That an appropriate consultative mechanism be developed involving stakeholder representatives to determine the performance criteria used in the allocation of accreditation categories.

Transferability

In terms of transferability, it is difficult to justify the move to full transferability of Public Land Apiary Accreditations when it unclear whether or not the industry can sustain the current number of State forest Apiary Licences. Therefore, before considering any move to fully transferable Public Land Apiary Accreditations, there is an opportunity to promote rationalization of the current industry structure by creating a system of transferability that is contained within the industry itself.

That is, if the holder of a Public Land Apiary Accreditation wishes to sell his/her access entitlement to another person, then that person must only sell this entitlement to another person who is also the holder of a Public Land Apiary Accreditation.

In addition, further restrictions may also be placed on the transfer of accreditations, such as restricting the transfer of accreditations between categories. For instance, it may be appropriate that category C and D

accreditations become non-transferable, so that the numbers of accreditations gradually diminish to a point where a sustainable number of accreditations is reached, one that meets the objectives for creating a commercially viable apiculture industry in Tasmania's State forests.

RECOMMENDATION 7

That the transfer of Public Land Apiary Accreditations will be restricted to those persons who are also the holders of Public Land Apiary Accreditations.

RECOMMENDATION 8

That category C and D Public Land Apiary Accreditations be non-transferable until further notice.

RECOMMENDATION 9

Recommendations 7 and 8 above will not apply in circumstances where the holder of a Public Land Apiary Accreditation wishes to transfer the accreditation to a direct family member.