9 Apiculture

Honey bees (Apis mellifera) were first successfully introduced into Australia in 1822. They became widespread throughout native forests by the middle of the 19th century.

Prolifically flowering eucalypts producing large volumes of nectar are a feature of Box-Ironbark forests and woodlands, and commercial beekeepers keenly seek hive sites on public land in the study area. The study area is by far the most important region in Victoria for commercial apiculture. Large, old, wide-crowned trees are considered by beekeepers to be more reliable sources of nectar than small trees. Yellow box is the most highly sought Box-Ironbark species and this species is generally excluded from timber harvesting.

Beekeeping is a highly mobile industry with apiarists continually monitoring nectar flows and climatic conditions. Given that eucalypt nectar flows occur at irregular intervals, sometimes many years apart, occupancy of bee sites by apiaries, geared to infrequent nectar flows, are for relatively short periods on each occasion. The majority of honey production in south-eastern Australia occurs between September and April. Hives are typically moved between five to seven sites during a season, according to seasonal flowering, site availability, or to prepare bee colonies for orchard or other crop pollination.

Large producers in particular move throughout Victoria and even interstate, complicating estimates of production from particular regions, such as the Box-Ironbark study area (see Section 9.2). Nonetheless, there is reasonable consensus in the industry that around 60% to 70% of Victoria’s production of honey and other products, such as beeswax, comes from the Box-Ironbark study area.

There are 257 bee farm and range licences (1.6 km radius), and 428 temporary apiary rights (0.8 km radius) current for bee sites on public land across the study area. Commercial operators use about half the public land sites; the remainder is used by small-scale beekeepers. Access for apiarists is retained over a wide range of parks, reserves and state forest; however, permits are not issued over popular public use areas (for safety reasons) or over reference areas and their surrounding buffers, which are primarily set aside for the maintenance of ecosystems in as natural a state as possible.

Some sites on private land are strategically positioned to utilise nectar produced from adjoining public land. The range of bees from private land sites sometimes overlaps with public land licensed sites. It is estimated that around 60% of Box-Ironbark honey is derived from hive sites on public land; about 40% of Victoria’s total honey production.

9.1 Current products and production

Nectar from box and ironbark species consistently produces large quantities of premium quality honey. Increasingly, varietal honey is produced from favored species, especially yellow box, grey box or red ironbark. Apiarists also produce and sell beeswax, pollen and queen bees, and some are paid by orchardists to enhance pollination of fruit trees. On average, around 1 750 to 2 000 tonnes of honey are produced annually from Box-Ironbark public land, although there is considerable variation between ‘good’ and ‘bad’ years.

9.2 Economics and employment

The value of Box-Ironbark apiculture is difficult to quantify because of the mobility of the larger producers. However, if Box-Ironbark production represents 70% of Victorian production and 60% of that production is from public land, the annual value from public land of all products to producers would be about $4.1 million (see Appendix 5 for sources of economic and production figures). The proportion of processing attributable to ‘public land’ honey amounts to about a further $4.4 million annually. Nearly all this processing occurs within the study area, mainly by Capilano Honey at Maryborough.

Total Government revenue received from bee site licences within state forest in the Bendigo Forest Management Area during 1994/95 was $44 968 (or around 1.1% of the $4.1 million gross value of public land production to beekeepers in the study area).
In 1996/97, there were approximately 2,200 hive owners, registered and unregistered, in Victoria, with a total of around 115,000 hives. Apiculture is a part-time activity for the majority of honey producers. Those with 50 hives or less account for 76% of registered producers, but own and operate only 17% of registered hives. Apiculturists report that typical commercial sites in the study area would be stocked with 120 hives, each yielding an average of 30 kilograms during a good honey flow.

It is estimated that 66 full-time equivalent jobs for producers can be attributed to production from public land sites. Processing of ‘public land’ honey generates a further 13 full-time equivalent jobs, nearly all of these within the study area. On these figures, apiculture is the third largest industry on Box-Ironbark public land, after mining and tourism.

**Trends**

The industry has had relatively stable production levels throughout the 1990s, despite rising prices. Average prices received for honey increased by 26% over the period 1991/92 to 1996/97.1

9.3 **Issues**

**Potential impacts**

Honey bees and apiculture have the potential to affect nature conservation values in a number of ways. It is recognised that properly managed honey bee colonies are continually moved to sites of least limiting conditions, and the apiculturists endeavour to avoid potential competition with native nectar-feeders.

Nonetheless, both feral and managed bees are highly efficient consumers of nectar and pollen, and may compete with native nectar-feeding species, including indigenous bees and birds.2 Honey bees can aggressively displace native pollinators or simply reduce their food resources. Such competition may disrupt the complex plant-pollinator systems which have evolved between native plants and animals over thousands of years. Many plants require particular foraging behaviours to facilitate pollination and these behaviours may not be a feature of honey bee foraging.2

Loss of indigenous pollinators is a serious threat to flowering plant species around the world and may be disrupting Box-Ironbark forest and woodland ecology. Feral honey bees may also compete with indigenous fauna for tree hollows, which are generally scarce in the Box-Ironbark forests and woodlands.

There are documented accounts of feral honey bees displacing native animals, including threatened species in some instances, from hollows and nest boxes.3

As exotic animals, honey bees may be considered intrinsically out of place in conservation reserves, regardless of the nature of their effects on indigenous flora and fauna.

Some public land areas not intended to be available for apiculture (such as reference areas and buffers, areas of intensive recreational use, and some ecologically significant and sensitive areas) are accessed from hives on nearby private land. This problem is compounded by the fragmented nature of Box-Ironbark public land.

**Research**

Despite a significant body of research, technical obstacles have constrained assessment of the impact of honey bee foraging on native nectar-feeding species and plant pollination. Relatively little research has addressed competition for tree hollows in the study area.

The occurrence of feral colonies tends to be very patchy but ranges from very low numbers in dry areas to nearly one per hectare where there are suitable hollows and access to water, frequently provided by fire dams in Box-Ironbark public lands.4

Feral bee colonies generally “appear to occupy only a small proportion of available hollows”, but “For many plants, [feral and managed] honey bees were the most frequent floral visitors, and often consumed more than half the floral resources being produced … Numbers of native bees may decline following influxes of honey bees into an area but data on this relationship were equivocal”.4 Research shows differing responses of honeyeaters to influxes of honey bees.

A major review of the impact of honey bees in Australia4 recommended research into the effects of introduced bees on a wide diversity of native flora and flower-visiting fauna, and into feral honey bee population dynamics and methods of removal.

To date there is little evidence which unambiguously demonstrates that honey bees have a substantial negative impact on native flora and fauna.5 Their long-term presence and widespread distribution make research difficult. Nonetheless, honey bees are an introduced species which compete for floral resources with native fauna,
suggesting some caution should be applied in parks and nature conservation reserves.

Little practical or research effort has been directed to the destruction of feral honey bee hives, but potentially effective options exist. Where there is an existing problem with feral bees, the identification and implementation of an effective control program is likely to have substantial benefits, for both nature conservation and licensed honey production.

### 9.4 Community views

Apiarists want to retain existing access to public land for apiculture, either generally or to specific forest areas. Recommendations in the Draft Report regarding regulation of hives on private land using public land resources, and the outcome of research into the effects of introduced bees and into feral bee control, were strongly opposed. The discretion of land managers to exclude apiculture from long-standing bee sites was an issue at consultative meetings and in submissions. Greater public land access was called for in some submissions, specifically to reference areas and their surrounding buffers.

Submissions from those specifically opposed to beekeeping called for the removal of managed bees from national and state parks, from nature conservation reserves, from areas with particular values such as swift parrot and regent honeyeater habitat or large old tree sites, and in some cases, from all public land because of perceived threats to natural or recreational values. There was support for increased restrictions on apiculture, and for research into the effects on native wildlife and ecological processes, such as pollination.

Conservationists and apiarists both supported increased control of feral honey bees, although some apiarists did not see this as a priority for their industry. A halt to harvesting of large, wide-crowned trees for timber was also promoted by both these groups. Apiarists called for consultation in regard to timber harvesting, silvicultural thinning and ecological thinning prescriptions.

### 9.5 Achieving a balance

The ECC has recommended that the apiculture industry maintain access to most Box-Ironbark forest and woodlands, excluding reference areas and their surrounding buffers, and where this does not conflict with key natural values or recreational sites. Apiculture is recommended to be permitted in national and state parks only at currently licensed sites.

The ECC acknowledges community concern regarding the presence of managed honey bees in sensitive areas. With protection of such areas a prime objective, land managers (in all public land categories) should continue to have the power to cease access to sites where honey bees are causing problems, for example:

- important regent honeyeater and swift parrot sites;
- sites that regularly attract large concentrations of native nectarivores, especially if threatened species are represented in those concentrations;
- areas with threatened plants whose pollination is likely to be disrupted by bees; and
- recreation sites where bee stings may endanger public safety.

At the same time, the ECC has responded to criticism regarding several recommendations in the Draft Report regarding land managers’ discretion. These have been amended, to include a course of action and a grievance process (see Recommendation R9 in Chapter 3). Draft recommendation R25, relating to hives on private land has been removed.

Research investigating feral honey bee population dynamics and methods of removal, and the effects of introduced bees on native flora and flower-visiting fauna is recommended and outcomes will guide future management decisions. It is recommended that this be a cooperative process involving NRE and the apiculture industry. Consultation with representatives from the apiculture industry in regards to forest management practices and ecological thinning should be considered by the NRE agencies responsible for these tasks.

Benefits to apiarists as a result of the recommendations in this report include:

- an increase in the numbers of large and wide-crowned trees in state forest and parks and reserves; and
- a systematic program to control feral bees across all public land.
RECOMMENDATIONS

R37 Apiculture continue in national and state parks, nature conservation reserves, state forest and other reserves, subject to Recommendations R39 and R40 below.

R38 Apiculture continue to be excluded from reference areas and their buffers.

R39 Subject to the provisions in Recommendation R9, land managers continue to exercise discretion to vary access to areas where:

(a) significant conflicts occur between beekeeping and other forest uses such as recreation; or
(b) research indicates the effects of nectar removal by managed bees are likely to have deleterious effects on ecological values;

and:

(c) land managers seek to maintain overall access by providing access to alternative sites where possible.

R40 (a) The Department of Natural Resources and Environment in partnership with industry initiate a research program to investigate feral bee population dynamics and methods of removal, and the effects of introduced bees on native flora and flower-visiting fauna;

(b) an advisory committee be established, including stakeholder participation, to monitor the research and research outcomes; and

(c) the results of research should determine subsequent management decisions.

R41 (a) The Department of Natural Resources and Environment establish an ecosystem-wide program to reduce feral bee colonies, focussed initially on areas likely to be most deleteriously affected, and with quantitative assessment of the cost-effectiveness of the program; and

(b) a series of long-term reference sites be established across the study area to monitor feral bee abundance.

Information Sources

1 ABARE (1998).
2 Schwarz and Hurst (1997).