Beekeeping In Western Australia

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Introduction

This Bulletin provides background information for those wishing to keep bees or learn about beekeeping in Western Australia. Sources of more detailed information on beekeeping and the industry in Western Australia are listed in the final section 'Further information'.

The beekeeping industry

Development of the industry

Honey bees were first introduced into Western Australia in 1846. Honey bees had already been established in New South Wales for 24 years by importation from England. In 1873 there was one large apiary at Guildford. By 1881 there was a surplus of honey produced and 16 cases of Swan River honey were exported and sold in London.

Commercial beekeeping developed in the last decade of the nineteenth century. The Smith brothers, from their base at Bakers Hill, began migratory beekeeping with horse and cart in 1896, in the jarrah and wandoo forests nearby. The Cook cousins, who had earlier obtained beekeeping experience in New South Wales, helped the Smiths and later developed their own apiary at Toodyay in the Avon Valley.

There are about 1,100 beekeepers in Western Australia, most of whom keep less than 200 hives. These are mostly hobby or part-time beekeepers. The commercial apiarists, who number about 75, each have more than 200 hives. A successful full-time apiarist generally needs more than 300 hives for an adequate income.

Commercially managed hives produce between 140 and 230 kg of honey per hive each year and occasionally more. To obtain these high yields, commercial beekeepers move their apiaries to various vegetation types that are producing nectar, within the south-west of Western Australia.

Migratory beekeeping is made possible by the beekeepers using trucks with mechanical loaders to move their apiaries from one nectar flow to another and harvesting honey using central honey extracting plants (see Figures 4 and 5).

Honey and beeswax production

The first statistics on beekeeping were collected in 1896, when 2,267 hives produced 38 tonnes of honey and 1.8 tonnes of wax – an average production of 17 kg of honey per hive. Over the next ten years a fourfold expansion in the bee industry took place. In 1906, 10,349 hives produced 153 tonnes of honey and 3.8 tonnes of beeswax – an average of 15 kg of honey per hive.

The industry remained fairly static until the early 1930s. From 1934, the number of hives of bees increased by 50 per cent and by 1936 the production of honey from about 16,000 hives had increased to over 450 tonnes – an average of 28 kg per hive.

Another fairly static period followed through to the end of the Second World War, after which a steady increase in the industry to 1977 brought the number of hives of bees kept for production to 32,000, with an average production of 76 kg of honey per hive.

Since 1977 the number of beekeepers has been constant with about 75 commercial full-time apiarists, each having more than 200 hives of bees. The number of productive hives has steadily declined since 1965, mainly due to poor economic returns and diminishing floral resources.

Statistics on beekeeping are published by the Bureau of Statistics.

Marketing and export

Most of Western Australia's honey is marketed through cooperative or private packing organisations in Perth. They pack for the local retail trade and export. Most local trade is through the supermarket chains and only large organisations can meet their requirements. Most of the exports are in bulk 200 litre drums, although export in retail packs provides higher returns and these are vigorously sought.

Western Australia exports about 60 per cent of its honey; the remainder is used locally. Beeswax and honey exports total about $3 million a year. This represents about 10 per cent of Australia's annual honey production. The value of the industry was estimated to be worth about $7 million in 1996–97.
Honey prices are very much dependent upon the world honey market which fluctuates according to world production levels. With new demands and standards, the industry is constantly changing.

**Races of bees**

There were no honey bees (Apis sp.) present in Australia when the first settlers from Europe arrived. The only indigenous social bees belong to the genus *Trigona* and these occur in the Kimberley region. These bees are of no economic benefit to beekeepers as the amount of honey produced is relatively small.

The first honey bees introduced were the North European or dark bees, *Apis mellifera mellifera*, but following severe losses of hives in the 1880s, apparently from wax moths, Italians (*A. m. ligustica*) were imported; Carniolans (*A. m. carnica*) and Caucasians (*A. m. caucasica*) came later.

Italian bees are the race most commonly used by commercial beekeepers. Because only a few importations have been made from Italy over the years, the quality of the Australian stock has declined. The recent developments in bee breeding in Western Australia, including artificial insemination, have helped to improve and maintain present Italian stock.

Considerable interest was shown in Hastings’s Caucasian bees from Canada in the mid 1960s; however, these soon lost favour due to their slow build-up on honey flows, particularly following periods of dearth.

The importation of bees into Australia from overseas is controlled by regulations under the Commonwealth Quarantine Act.

**Diseases and pests**

American foul brood disease is the only troublesome disease in Western Australia. Beekeepers are required to report the occurrence of brood diseases in their apiaries.

In 1991 control of American foul brood disease was deregulated. Beekeepers are now responsible for its control. A method of wax dipping of infected hive boxes was introduced to assist the industry. Honey samples are also tested for disease spores by Agriculture Western Australia, to monitor possible infection.

The use of antibiotics for the control of bee diseases without a prescription is illegal. Since European foul brood disease is not present in Western Australia, using antibiotics is not warranted. Agriculture Western Australia monitors antibiotic residues in honey samples from packing houses.

American foul brood disease is often spread by the use of infected second-hand beekeeping equipment or by infected feral bees occupying hollow trees or wall cavities of houses. Care must be taken not to introduce the disease when purchasing used hive equipment or collecting swarms.

European foul brood and chalkbrood diseases do not occur in Western Australia. Quarantine restrictions are rigidly enforced to prevent the introduction of bees, honey, hive products, used hives and other beekeeping appliances that could introduce these diseases from the eastern States. European foul brood was detected in South Australia in 1977 and has since spread throughout eastern Australia. Chalkbrood was first detected in Queensland in 1994 and has now spread to all States of Australia except Western Australia.
Honey Plants of Western Australia

3. Tuart Forest and Woodland.
4. Heathland and Banksia Wooded Heathland, West Coast.
5. Heathland and Banksia Wooded Heathland, South Coast.
6. Wandoo Woodland Zone. 6A Wandoo Woodland with local Powder Bark. 6B Wandoo Woodland with York Gum Wooded Grassland. 6C Wandoo and York Gum with local Mallet 6D. Wandoo and York Gum with local Swamp Yate.
8. Mallee Zone with belts of Heathland and local Transitional Woodland.
9. Mulga Zone.
10. Savanna, Acacia thicket and steppe.
11. Savana woodland.
Acarine disease, an internal mite that infects the trachea of bees, is also not present in Australia. Varroa and Tropilaelaps mites which have caused severe losses of bees in other beekeeping countries have not been detected in Australia.

Sac brood disease, a common disease of honey bees in many parts of the world, has been identified in hives in Western Australia since 1979. Initially infections were high, causing severe losses of bees in some colonies. Now the disease is of minor importance, causing slight brood mortality when colonies are under stress.

The protozoon *Nosema apis* is a spore-forming microorganism which develops in the mid-gut of adult bees and causes bee losses in winter and spring. This disease is present in Western Australia, but does not appear to affect colonies.

Toxic substances in pollen and/or nectar can cause some losses of adult bees. This usually occurs for short periods in spring in some localities.

Wax moths (*Galleria mellonella*) will flourish in honeycombs that have been removed from bee hives and left unprotected. Small ants (*Iridomyrmex* spp.) can be troublesome in apiaries on certain sites. In the tropical north, bee-eating birds have been a nuisance in some places, particularly at Forrest River near Wyndham, the Ord River and Broome.

Further information on diseases and pests is given in the Bulletins and Farmnotes listed in the final section of this Bulletin.

**Sources of honey and pollen**

Nectar and pollen from flowering plants provide bees with virtually all their nutritional needs. In Western Australia, most of the nectar and pollen comes from native woodland and forest.

In addition, coastal heath provides an abundant source of nectar and pollen in the winter and spring. Introduced plants, including capeweed (*Arctotheca calendula*) and Paterson’s curse (*Echium plantagineum*), which are found in pastures of the south-west region, also provide a useful source of food for bees.

Climate and soil determine where the native species grow and hence where the beekeeper can site apiaries profitably.

There are three distinct climatic zones or provinces that are characterised by distinct types of natural vegetation – the Northern, Eremaean and South-West Provinces (see map).

**The Northern Province**

The Northern Province has a tropical summer rainfall pattern. Here rainfall occurs over the summer season between November and March. Less than 25 mm falls during winter. The mean annual rainfall in the south Kimberley is 300 mm and it ranges from 760 to 1270 mm in the north.

Temperatures are high, with a mean summer maximum of over 32°C and mean winter maximum over 27°C. In some areas of the Kimberley up to 110 days a year are 38°C and over, and it is common for more than 200 days in a year to reach 32°C and over. Under these conditions, it is essential to provide bees with adequate shade and a good supply of cool water.

In the Kimberley region the vegetation varies from woodland to wooded grassland and grassland.

The woodland is confined to the extreme north of the province and extensive woodlands occur along the permanent rivers and the mangrove formations on the coast. Vegetation in the Northern Province can be expected to yield reasonable honey crops at the beginning and at the end of the wet season, particularly in the northern Kimberley where the mean annual rainfall is greater than 1000 mm.

At the height of the dry season, woodland is dependent upon ground water and can usually be relied on to provide useful honey flows, depending upon flowering times. Mangrove forests are known to be very productive. The wooded grassland areas may also yield a crop of honey, but are likely to be unreliable.

Commercial beekeeping in the Northern Province has recently been directed towards pollination of crops near the Ord River though there are some hobby beekeepers and one commercial beekeeper. Successful beekeeping has been practised at Tablelands Station.

**The Eremaean Province**

The Eremaean Province occupies most of the State and lies between the tropical north and the Mediterranean south-west. The mean annual rainfall ranges from 150 mm up to 330 mm, with less than 180 mm falling in the four to five ‘wet’ months. Rainfall is received in the summer months over most of the area, particularly from tropical cyclones.

The southern area of the province receives some additional rainfall from the south-west winter rainfall system. Summer temperatures are higher than in other provinces, with the main climatic difference being the rainfall, particularly its unreliability.

The DeGrey and Fortescue River areas, with their Acacia-wooded grassland, do not seem very promising
for beekeeping because of the erratic rainfall normally produced by tropical cyclones. It might be possible to gather a crop of honey immediately after heavy rain depending on what species are in flower at the time.

In the southern area of the province, east of the agricultural area, there are woodlands in clay alluvial depressions, heathland on sandy uplands, and large areas of mallee and thicket. This area is shown in the map as the South-Western Interzone, as it has characteristics of both the Eremaean and the South-West Provinces.

The mallees are small *Eucalyptus* trees, often having several stems rising from a single large woody rootstock. The species are numerous, and crops of good quality honey can be obtained from these areas. The average annual rainfall ranges from 230 to 300 mm.

The vast dry areas of the inland southern part are covered by mulga bush dominated by *Acacia* shrubs. Elsewhere the vegetation is salt bush or tussocky grassland. There does not appear to be any potential for beekeeping in these areas.

**The South-West Province**

The South-West Province lies to the south-west of the 300 mm rainfall line, between the southern end of Shark Bay (north of Geraldton), to Israelite Bay, east of Esperance.

This province has a Mediterranean climate, which has most rain in winter. The mean annual rainfall ranges from 300 mm to 1500 mm, with the highest rainfall along the south coast where about one-third falls in summer. In the northern areas of the province a summer drought usually occurs, with little or no rain being received between November and March.

Mean maximum temperatures range from 16°C in the winter months to 27°C in the summer months. Over the summer, up to 20 days may reach 38°C and over, with 60 days reaching 32°C and over. Night frosts are experienced inland in winter.

The south-west corner of the State supports a dense vegetation of trees and shrubs with few natural grasslands. Annual herbs grow in winter, flower in abundance in spring, and lie dormant during the dry summer.

Eucalypt forests occur in areas with more than 600 mm of winter rainfall. The karri forest, dominated by *Eucalyptus diversicolor*, occurs in the extreme south-west where the annual rainfall exceeds 1000 mm, and summer rainfall is common. The karri forest is a mosaic of stands of pure karri and mixed stands of jarrah (*E. marginata*) and marri (*E. calophylla*).

The honey flow from the karri is one of the most prolific known. In years when a flow commences, from 130 to 230 kg of the finest quality honey may be harvested from each hive. A small amount of blossom is produced in the forest each year, but heavy flowering occurs only once in four to seven years or longer, and may continue for two years.

Production of nectar from the karri appears to be related to rainfall. Buds are formed about 18 months before flowering, and the main flowering period is usually from January to April. Red tingle (*E. jacksonii*) and yellow tingle (*E. gulfmyle*), which occur in the south near the coast, also yield good crops.

The jarrah forest (Figure 1) extends from just north of the Swan and Avon Rivers to the south coast, reaching eastward to Albany. Most of it, like the karri forest, is in forest reserves. Marri, which is a heavy producer of nectar, is common in much of the jarrah forest and also occurs on sandy coastal plains, particularly on deeper sandy soils overlying granite.

Forest blackbutt (*E. patens*) grows along banks of streams in the jarrah forest and wandoo (*E. wandoo*) inhabits the valleys on clay soils, particularly to the north and east of the jarrah forest. Powder bark wandoo (*E. accedens*) occurs occasionally in the jarrah forest on rokey laterite outcrops, particularly in the north and to the north-east of the jarrah forest.

Wandoo woodland extends eastwards and northwards from the jarrah forest, to where the mean annual rainfall is 400 mm. In the wandoo woodland, flooded gum (*E. rudis*) occurs near water courses, and powder bark wandoo on laterite outcrops in the northern areas. Southwards, brown and blue mallets (*E. astringens* and *gardenii*) occur on laterite hills, with swamp yate (*E. occidentalis*) growing in low-lying country south of Wagin.

Grasslands with York gum (*E. leoxphleba*) extend from the wandoo areas eastwards, where the mean annual rainfall ranges from 300 to 460 mm. Most of the wandoo and York gum country has been cleared for agriculture, particularly for growing wheat and raising sheep.

During winter and spring, most commercial beekeepers operate on the coastal heath land of the northern coastal areas. During summer, beekeepers move their apiaries to the forest areas in the high rainfall areas. Quarantine of some of the jarrah forest, for jarrah die-back disease (*Phytophthora cinnamoni*), has prevented considerable areas being used for honey and pollen production.

Most honey is produced in the jarrah forest and wandoo and York gum woodland areas. The main
Heath such as *Hakea trifurcata* will build up bee colony strength in the early spring and from August to September a crop of excellent honey is obtained from the parrot bush (*Dryandra sessilis*). Parrot bush grows on limestone, particularly in the heath areas north of the tuart zone.

During the period 1990–92 the agency, with funding from the Honeybee Research and Development Council (HBR&DC), conducted a natural resource questionnaire for beekeepers to determine the honey production, economic value and geographical significance of apiary sites in Western Australia. A summary of the distribution of apiary sites is provided here. The final report is listed under Honeybee Research and Development Committee, at the back of this Bulletin under the heading 'Recommended reading'.

**Geographical location of apiary sites**

The distribution map of registered apiary sites (Figure A) identifies at least six areas of significance to beekeepers. These areas are best described as:

**Area A:**
An extensive area of land from Perth to Geraldton, where beekeepers target flora such as *Dryandra sessilis*, *Hakea trifurcata*, banksia species *B. menziesii*, *B. prionotes* and *B. attenuata*, *Callistemon spp.*, *Leucopogon conostephioides*, acacia spp. and the eucalypts *Eucalyptus wandoa* (winter type), *E. calophylla*, *E. todtiana*, *E. laxophleba* and *E. gomphocephala*. The exotic plant species are represented by *Arctotheca calendula* and *Echium plantagineum*.

**Area B:**
An area near Payne’s Find and Ninghan Station whose sole target species is *Eucalyptus laxophleba*.

**Area C:**
The eastern goldfields which has many eucalypt species. The target species include *E. caesaloides*, *E. transcontinentalis*, *E. torquata*, *E. oleosa*, *E. annulata*, *E. eremophila*, *E. flocktoniae*, *E. gracilis* and *E. salmonophloia*.

**Area D:**
The extensive forest region south of Perth to Bunbury contains the targeted species *Eucalyptus marginata*, *E. calophylla*, *E. wandoa* (spring and summer types), *E. astringens*, *E. patens*, *Banksia grandis*, *Agonis flexuosa* and *Melaleuca* spp.

**Area E:**
An area extending from Bunbury, south-west to Walpole containing the unique karri (*Eucalyptus*...
Figure A: Distribution and density of 5,400* registered apiary sites leased from the Department of Conservation and Land Management. (*includes 2,964 registered apiary sites which have been cancelled).

Figure B: Distribution and density of 1,039 private sites held by 69.1% of beekeepers who responded to the questionnaire.
diversicolor) forests which also contain targeted species E. marginata, E. calophylla, E. guilfoylei, E. jachsonii, E. megacarpa and Banksia grandis.

Area F:
The southern coastal district from Albany to Esperance. The targeted species include Eucalyptus cornuta, E. flochtoniae, E. platypus, E. occidentalis, E. aniceps, Lambertia inermis and banksia spp.

**Hive and apiary management**

**Hives**
The hives commonly used in Western Australia are ten- and eight-frame Langstroth hives. In the ten-frame hive, nine frames are generally used. However, some beekeepers use eight frames in the honey supers for ease of uncapping. Two or three full-depth boxes are used on each hive, and occasionally four. With the eight-frame hive seven or eight frames are used in the brood box while seven are used in the honey supers.

Commercial beekeepers use metal bottom boards with or without cleats. The hive is placed on wood or metal pallets, four or six hives per pallet depending on the position of the entrance, and held in place by corner brackets (see Figure 1). Where pallets are not used, similar bottom boards with wooden cleats underneath are used to raise the hive off the ground.

The bottom board is often galvanised iron to provide protection against termites and the cleats are painted with an anti-termite compound.

The most popular type of hive lid is the migratory lid and these are usually ventilated. A small plastic or masonite mat is placed on the top bars of the frames of the uppermost box, leaving a 25 mm space or more around the edge. The mat stops the bees building burr comb in the lid and provides an air space for adequate ventilation.

Acid pads, using carbolic acid (phenol), were used to clear honey supers of bees. The acid pad was placed on top of the full super on top of the hive and the fumes repelled the bees downwards into the empty super below. These cannot be used now, because phenol and other repellents potentially contaminate the honey.

Bee escape boards and bee ‘blowers’ allow the supers to be cleared of bees without the use of chemicals. Shaking and brushing bees off combs are also used by some beekeepers to clear bees from honey combs.

**Apiaries**

Commercial beekeepers’ apiaries usually consist of a truck load of bees, from 90 to 110 hives (see Figure 4). Occasionally the honey flow is not enough for a commercial load of bees to store a surplus. In these instances a good crop could be obtained if the apiaries were divided and placed on two separate sites.

With a lack of water in many areas, tanks of water with cork or polystyrene floats for the bees to land on are provided in each apiary. These are required by legislation where no natural water supplies are available. Consumption of water may be as high as 1 L per hive per day in hot weather and replenishing the water frequently under these conditions is essential to ensure the bees can cool their hive.

With ventilated migratory lids and ventilated hive closures, hives of bees can be moved with closed entrances in cool weather. However, most beekeepers using hive loaders find it more convenient to move their hives with open entrances.

Hives are loaded in the late afternoon and the truck parked in the apiary until all the bees have returned from foraging, before moving off at dusk. Care is taken to avoid stopping near bright lights as the bees are attracted to them, which may inconvenience the public, particularly at service stations or shopping areas.

The bees are usually unloaded at dawn on the new site. Should the journey take more than one night, the load of bees is parked under a shady tree during the day, well off the road and water provided.

**Figure 4.** (left) Moving bees, using an hydraulic loader.

**Figure 5.** (below) A modern central extracting plant.
Apiary sites are controlled by the Department of Conservation and Land Management (CALM), to whom applications to use a site have to be made. An apiary site permit is issued subject to the regulations under the Conservation Act.

The main provisions of these regulations are that an applicant must have at least 25 hives of bees and not hold more than four apiary sites for every 50 hives owned in the South West Zone. Two additional sites for every 50 hives are permitted in the Remote Zone. No person can be granted a permit for a site within 3.0 km of a site granted to another person.

The number of apiary sites in each zone held by a beekeeper is likely to increase in the near future and this change will be announced by CALM.

A deposit has to be paid on application for a site, and the annual rental for each site paid. Beekeepers are required to notify the CALM District Office when placing hives in the district.

Permits are issued from the Operational Headquarters of CALM in Como. However, each CALM District Office maintains maps showing the apiary sites in the area under its control.

CALM officers are very helpful to beekeepers and are very knowledgeable about the distribution and flowering times of nectar producing trees in their area.

### Honey extracting plants

Hives soon fill with honey on a good honey flow and the beekeeper removes full supers of ripe honey for extraction. Care is taken to ensure that most of the cells in the supers to be extracted have been capped by the bees, as extracting unripe honey, in uncapped cells, can lead to fermentation. The supers of honey are either loaded on to a truck and taken to a central extracting plant, or taken to a mobile extracting plant.

Central honey extracting plants, most of which have modern equipment, are becoming more popular (see Figure 5). Automatic uncapping machines, horizontal radial extractors with fully automatic controls, spin dryers to separate the honey from the cappings and modern wax melters that prevent damage to honey and beeswax are widely used.

Even in smaller mobile plants, the use of similar equipment will increase efficiency, cleanliness and freedom from damage. The use of stainless steel in honey and beeswax equipment has improved the quality of both products.

These mobile plants are towed to each apiary site where usually two persons work together, one removing the honey supers from the hives to the van, while the other uncaps and extracts in the van. As the frames are processed the empty supers are returned to the hives. The main advantages of this method are that less supers and frames are required than with a central extracting plant and supers and frames can be returned to the original hives, minimising any risk of spreading disease.

Honey extractors are available in various sizes to suit different requirements and numbers of hives. Large radial extractors which extract both sides of the comb at the same time are becoming more popular than the conventional semi-radial extractor where the frames must be reversed to extract each side.

The honey flows from the extractor to a honey sump. Honey sumps incorporating strainers and baffles to clear the honey of froth, wax and bees are commonly used. The honey is pumped from the sump by a pump controlled by a float switch, direct into 200 litre drums on a truck or in the case of central plants into settling tanks.

Where honey is pumped direct into drums, a special drum filler is used. This prevents bees from entering the drum while it is filling, and the overflow from a full drum enters the next drum and avoids spillage.

Mobile plants can extract about eight 200 litre drums per day, while central plants can extract ten or more drums per day depending on the equipment used and the labour available.

Gas-fired steam or hot water units are used to supply the plant for uncapping and warming of honey prior to filtering and pumping. Portable electrical generators are used to provide electricity to run electric motors for the pump, extractor and power uncappers in mobile plants. The generators are placed some distance from the van to eliminate noise and exhaust fumes.

### Selling honey and wax

Honey is sold according to colour and is graded from extra white to dark amber, using a Pfund honey grader. Most Western Australian honey falls in the light amber to medium amber classes, while a few honeys such as taylorina (Psoralea pinnata) from Albany can reach the white or extra white grades. Flavour is also taken into account and honey may be downgraded if it is not suitable for table honey.

Honey is sold in 200 litre drums direct to honey packers. Smaller containers are not accepted because of inconvenience of handling. Roadside sales and sales through other outlets are not encouraged by the industry.

Beeswax must be free from metal stain and extraneous matter. Wax is sold to honey packers or to equipment suppliers. The price of beeswax fluctuates and many beekeepers hold their wax until the market is favourable.
The Bee Breeding Program

The program began in 1980 when commercial apiarists donated their best honey producing hives. Daughter queens from the best of these were mated to selected drones at Rottnest Island – free of wild bee colonies, so that controlled mating was assured.

Twenty families of bees were selected and bred. Each year five daughter queens from the best hive in each of these families are artificially inseminated with mixed drone semen collected from the same top hives. The best daughter queen in each line was selected as next year’s breeder.

Drone hives were evaluated similarly and the best also contributed to the pool of mixed semen from within the breeding program.

Artificially inseminated queens not selected for the breeding program were sold.

Daughter queens raised from the best Al queens in the breeding program were mated on Rottnest Island to drones from selected hives in the program. These controlled mated queens were the main source of genetically improved stock sold to beekeepers for breeding their own queens.

A third group was produced by mating on the mainland. Here mating could not be controlled, but the area was "flooded" with drones from the breeding program to give a high probability that these queens would mate with drones from the selected lines.

Queen bees from the Western Australian breeding program were sold to beekeepers throughout Australia and overseas. This program was sold in 1991, mainly to beekeepers in Western Australia, for future operation and benefit of the beekeeping industry.

The program is of considerable benefit to the industry, by providing valuable breeding stock, bred for local conditions. As a result, local apiarists can avoid the risk of introducing exotic bee diseases through importing breeding stock.
Legislation

Under the Beekeepers Act (1963–80), all beekeepers are required to register with Agriculture Western Australia and to brand their hives with a registered brand. The import of bees, combs, used hives, honey and used beekeeping appliances is prohibited or controlled.

Beekeepers must report the occurrence of brood diseases in their apiaries, and take steps to eradicate diseases and pests. Provision is made for the destruction, irradiation or disinfection of infected articles and for the quarantine of infected apiaries. Water must be provided for bees on each apiary site.

The Health Department of Western Australia and the Trade Measurement Unit regulate the packing and marketing of honey on the local market.

The Bush Fires Board administers the Bush Fires Act 1954 and the regulations concerning the use of fire during fire bans. Beekeepers are advised that the regulations cover the use of smokers.

Health (Food Hygiene) Regulations 1993 apply to honey extracting plants and caravans. Beekeepers are advised to liaise with their local Health Environmental Officer of their Shire regarding compliance with these regulations.

Apiary Site Permits are issued under the Forest Management Regulations 1993 and the Conservation and Land Management Act by CALM.

Agriculture Western Australia extension and research

Agriculture Western Australia gives advice to beekeepers, the public and government on all aspects of apiculture and the beekeeping industry. Demonstrations of beekeeping techniques are given as required and field days are held in conjunction with beekeeper organisations.

Research is conducted into various aspects of the beekeeping industry. Subjects that have been studied include:

- Minimising the spread of American foul brood disease by improvements to hive and apiary management
- Improving honey and beeswax quality
- Pollen harvesting and storage
- The availability of beekeeping flora and the regeneration of honey plants
- Managing commercial bees in the natural environment
- Beekeeping resources
- Cost of honey production
- Efficiency of bee escape boards for clearing bees from honey supers
- Pollination research and development of pollination services to farmers.
- Bee breeding

The last subject was a major field of research and development. The Bee Breeding Program, which started in 1980, achieved worldwide recognition for its genetically improved queen bees. The demand by Australian and overseas beekeepers for breeding stock increased beyond the capacity of production, particularly during the spring months.

In 1991 this program was handed over to beekeepers and queen breeders for the future benefit of the industry. The agency has an ongoing commitment to assist the industry to maintain the program.

Further information

Beekeeper associations

- The WA Beekeepers Association Inc., 157 Parkin Street, Rockingham, WA 6168. The association is open to all beekeepers owning 25 hives or more.
- Pollination Association of WA Inc., 30 Leonora Street, Como, WA 6152. The association promotes the use of bees for pollination of crops and members provide a pollination service to farmers and horticulturists. Its members operate under a code of practice which they are obliged to follow.
- Western Australian Farmers Federation (Inc.), Beekeepers Section, 239 Adelaide Terrace, Perth 6000.

Membership is open to all beekeepers, as well as associates, students and retired members. The Section is a member of and has representatives on the Federal Council of Australian Apiarists Association (FCAA) which operates at a national level.

- The Western Australian Apiarists' Society.

Membership is open to all who are interested in beekeeping. Meetings are held on the first Wednesday of each month at 7.30 p.m. at Agriculture Western Australia, 3 Baron-Hay Court, South Perth.
**Government services**

**Beekeeper registration and hive brands.**
Correspondence concerning registration and hive brands should be addressed to:

**Executive Director**  
Agriculture Western Australia  
Locked Bag No. 4  
Bentley Delivery Centre WA 6983

All beekeepers are required to register with Agriculture Western Australia and to apply for a registered brand for marking hives and equipment. Registration is renewed on 31 December each year. A registration fee is charged for registration and a brand fee is payable on initial registration. These fees are reviewed each registration period.

**Advisory services**
Enquiries on honey and beeswax production and processing should be addressed to:

**Senior Apiculturist**  
Agriculture Western Australia  
Locked Bag No. 4  
Bentley Delivery Centre WA 6983  
Telephone: (08) 9368 3569  
Facsimile: (08) 9474 2479

**Bee diseases and quarantine**
Enquiries concerning bee diseases, quarantined apiaries and the export of honey, apiary products, queen bees and package bees should be directed to:

**Mr J. Beard, Apiary Inspector**  
Agriculture Western Australia  
Midland District Office  
36 Railway Parade  
MIDLAND WA 6056  
Telephone: (08) 9250 9419

**Apiary sites**
Applications for apiary site permits should be addressed to:

**The Apiary Site Officer**  
Department of Conservation and Land Management  
50 Hayman Road  
COMO WA 6152

Beekeepers should consult the local CALM office to determine the availability of sites, and then inspect the areas before applying for a site. Application forms are available at CALM, Como and the application may be forwarded through the district office, or the beekeeper may apply personally by appointment at the Department of CALM at Como.

CALM, in consultation with the beekeeping industry, have developed a code of practice for beekeepers occupying CALM lands. Beekeepers are expected to abide by the conditions set out in the code. Beekeepers using apiary sites on CALM managed land should check with the CALM district office to determine if burning or logging operations will affect the use of the site.

**Export of bees and apiary products**
Beekeepers wishing to export queen bees or package bees must have an export permit and health certification before shipment. Arrange to have these by contacting the livestock export veterinary officer of the Western Australian Quarantine Inspection Service (WAQIS) at Canning Vale (telephone (08) 9311 5333). The exporter should also send the requirements of the importing country and an import permit from the government of the country to which the consignment is to be sent.

One month's notice, with the above details, should be supplied to WAQIS, so that the apiary from which the bees are to be exported can be inspected and the appropriate export certification can be provided in time for shipment.

Persons wishing to send or take honey or apiary products interstate must obtain a Health Certificate for the interstate movement of apiary products from:

**Mr J. Beard, Apiary Inspector**  
Agriculture Western Australia  
Midland District Office  
36 Railway Parade  
MIDLAND WA 6056  
Telephone: (08) 9250 9419

**Importations**
The importation of bees, combs, and used beekeeping equipment is effectively prohibited by the Health and Freedom from Disease requirements of the Beekeepers Act (1963). Seek advice from Agriculture Western Australia if further information is needed.

**Local honey sales**
Enquiries about regulations concerning the packing and marketing of honey should be directed to:

**Health Department of Western Australia**  
189 Royal Street  
EAST PERTH WA 6000

and

**Trade Measurement Unit**  
321 Selby Street  
OSBORNE PARK WA 6017
Honey marketing

The marketing and promotion of honey in Australia has been administered by a number of organisations in recent years and is currently being handled by the secretariat of the Federal Council of Australian Apiarists Association (FCAAA). FCAAA is also the secretariat for the International Honey Exporters Organisation which represents member countries who export honey. It publishes a monthly newsletter providing honey production and marketing information at a national and international level to its members.

FCAAA is currently restructuring their organisation by forming a new peak industry body, the Australian Honey Bee Industry Council (AHBIC), which will incorporate all sectors of the apiculture industry including the packing and marketing sector of the industry.

For further information about honey marketing, contact either:

Chief Executive Officer
Mr Linton Briggs
Federal Council of Australian Apiarists Association
Telephone: (03) 5766 2216
Facsimile: (03) 5766 2400

or

Secretary
Mr Eduard Planken
The Honey Packers and Marketers Association
Telephone: (08) 9271 8133
Facsimile: (08) 9271 1025

Honey packers

Wescobee Pty Ltd
99 Beechboro Road
BAYSWATER WA 6053
Telephone: (08) 9271 8133
Facsimile: (08) 9271 1025

K.T. Healy and Co.
40 Willcock Street
FERNDALE WA 6155
Telephone: (08) 9350 6344
Facsimile: (08) 9350 6323

Sawyer’s Apiaires
21 Cross Road
BEDFORDALE WA 6112
Telephone and facsimile: (08) 9399 4307

Pollen processors

Pollen is dried, cleaned and packed for sale by processors and where it is used for feeding bees, they can arrange irradiation to prevent the spread of American foul brood disease.

Commercial Beekeeper’s Cooperative Pty Ltd
Cnr Lennard Street & Railway Parade
HERNE HILL WA 6056
Telephone: (08) 9296 4008
Facsimile: (08) 9296 4284

K.T. Healy and Co.
40 Willcock Street
FERNDALE WA 6155
Telephone: (08) 9350 6344
Facsimile: (08) 9350 6323

Statistics

Production statistics are collected and compiled by the Australian Bureau of Statistics. Please note that informing the Bureau of Statistics that you are no longer a beekeeper is not informing the Agriculture Western Australia as required under the Beekeepers Act.
**Suppliers of bees**

Hives of bees are advertised in the 'For Sale' columns of Saturday's 'The West Australian' newspaper or 'The Sunday Times'. Honey packers may also be aware of beekeepers wishing to sell hives. Persons wishing to purchase hives and keep bees are reminded of their legal requirements to register them with Agriculture Western Australia under the Beekeepers Act and should ensure that the hives are free of bee diseases before purchasing.

Western Australian queen bee producers sell queen bees throughout Australia and overseas, usually through the mail. Some also supply package bees for export and nucleus colonies with young queens.

The main suppliers are as follows:

*Mr S. Kutasi*
25 Coronation Street
NORTH PERTH WA 6006
Telephone: (08) 9443 2741
Facsimile: (08) 9443 2722

*Bee Pack of Western Australia*
31 O' Malley Street
OSBORNE PARK WA 6017
Telephone: (08) 9445 3518
Facsimile: 61-8-9307-4102

*Agents for: John L. Guilfoyle Pty Ltd*
John L. Guilfoyle (WA)
1 Wildon Street
BELLEVUE WA 6056
Telephone: (08) 9274 5062
Facsimile: (08) 9274 7142

*Mr Alan Baker*
307B Walkers Avenue
LANCELIN WA 6044
Telephone: (08) 9655 1862

To purchase breeding stock from the WA breeding program run by Better Bees WA, please contact:

*Mr S. Kutasi*
25 Coronation Street
NORTH PERTH WA 6006
Telephone: (08) 9443 2741
Facsimile: (08) 9443 2722

During September and October, large numbers of bee swarms are available in the Metropolitan area. Beekeepers wishing to collect swarms should place their names in the Telecom Yellow Pages, under 'Apiarists' or 'Pest Control'. Agriculture Western Australia does not collect swarms nor does it remove bee colonies from buildings. This activity is open for beekeepers and Pest Control firms – see Telecom Yellow Pages, under 'Pest Control' and 'Apiarists'.

**Suppliers of beekeeping equipment**

The main suppliers of beekeeping equipment are as follows:

*Agents for: Pender Beekeeping Supplies Pty Ltd*
Symonds Seed
51 King Edward Road
OSBORNE PARK WA 6017
Telephone: (08) 9446 5200
Facsimile: (08) 9445 1657

*Agents for: John L. Guilfoyle Pty Ltd*
John L. Guilfoyle (WA)
1 Wildon Street
BELLEVUE WA 6056
Telephone: (08) 9274 5062
Facsimile: (08) 9274 7142

*Mr Stan Taylor*
Lynwood Apiaries
15 Rose Street
UPPER SWAN WA 6069
Telephone: (08) 9296 4349
Facsimile: (08) 9296 4349

*In addition:*

*Bee Engineering*
Rear 134 Oats Street
CARLISLE WA 6101
Telephone: (08) 9361 2315

manufactures stainless steel honey extracting equipment.

**Recommended reading**

**Books**


The above are obtainable through beekeeping equipment suppliers.
Periodicals

- *The Australasian Beekeeper* published by Fender Beekeeping Pty Ltd, PMB 19, Maitland, NSW 2320.
  Telephone: (049) 327 244 Facsimile: (049) 327 621
- *American Bee Journal* published by Dadant and Son, Hamilton, Illinois, 62341, USA.

The above journals are published monthly and provide articles of interest to beekeepers including results of the latest research and current information on the beekeeping industry.

Agriculture Western Australia

- Bulletin No. 3618 'Honey plants in Western Australia' (Agdex 300/38). Illustrated descriptions of 45 eucalypts important in honey production; calendar of honey flows; descriptions of vegetation types producing honey.
- Bulletin No. 4227 'Brood diseases of bees' (Agdex 481/653). Causes, diagnosis and control of several brood diseases; with colour illustrations.
- Bulletin No. 4318 'Preventing the spread of American Foul Brood disease through barrier management of hives' (Agdex 481/653). Apiary management methods to minimise infection of an apiary and spread of the disease.
- Bulletin No. 4250 'Honeybee pollination of crops' (Agdex 100/20). Includes pollination management, honeybee food selection, apiary management and bee nutrition, pollination agreements, effects of pest control methods on pollination and bees.
- Bulletin No. 4298 'Honeybee pollination — technical data for potential honeybee pollinated crops and orchards in Western Australia' (Agdex 200/26).
- Farmnote No. 5/97 'Sac brood disease of bees' (Agdex 481/653). Illustrated. Causes, diagnosis and control.
- Farmnote No. 13/97 'Avoid trouble from bees' (Agdex 481/20). Explains how to avoid and treat bee stings, especially in residential areas.
- Farmnote No. 17/97 'Wax moth and its control' (Agdex 481/612). Illustrated.
- Farmnote No. 17/95 'American Foul Brood disease' (Agdex 481/650).
- Farmnote No. 80/95 'Honeybee swarms and nests' (Agdex 481/614).
- Farmnote No. 42/96 'Ant and termite control in the apiary' (Agdex 481/614).
- Farmnote No. 43/96 'European Foul Brood disease of bees' (Agdex 481/653). Illustrated. Causes, diagnosis and control.
- Farmnote No. 44/96 'General guide to backyard beekeeping' (Agdex 481/10). Points for the urban beekeeper to consider to avoid complaints by neighbours.
- Miscellaneous Publication No. 4/92 'Preservation of wooden hive equipment' (Agdex 481/721).
- 'A Food Handler's Guide for Beekeepers — Honey'.
- 'A Food Handler's Guide for Beekeepers — Pollen'.
- 'New rules in the bee industry' (Video; 10 minutes duration).
- 'Golden Queens' (Video; 13 minutes duration).
- The Rural Industries Research and Development Corporation also provides research reports on various aspects of beekeeping. Enquiries should be directed to:

  Secretary
  Honeybee Research and Development Committee
  Rural Industries Research and Development Corporation
  Telephone: (06) 272 4539
  Facsimile: (06) 272 5877