



Gold Coast Regional Beekeepers Inc.

Introduction To Beekeeping



www.gcrbs.org.au

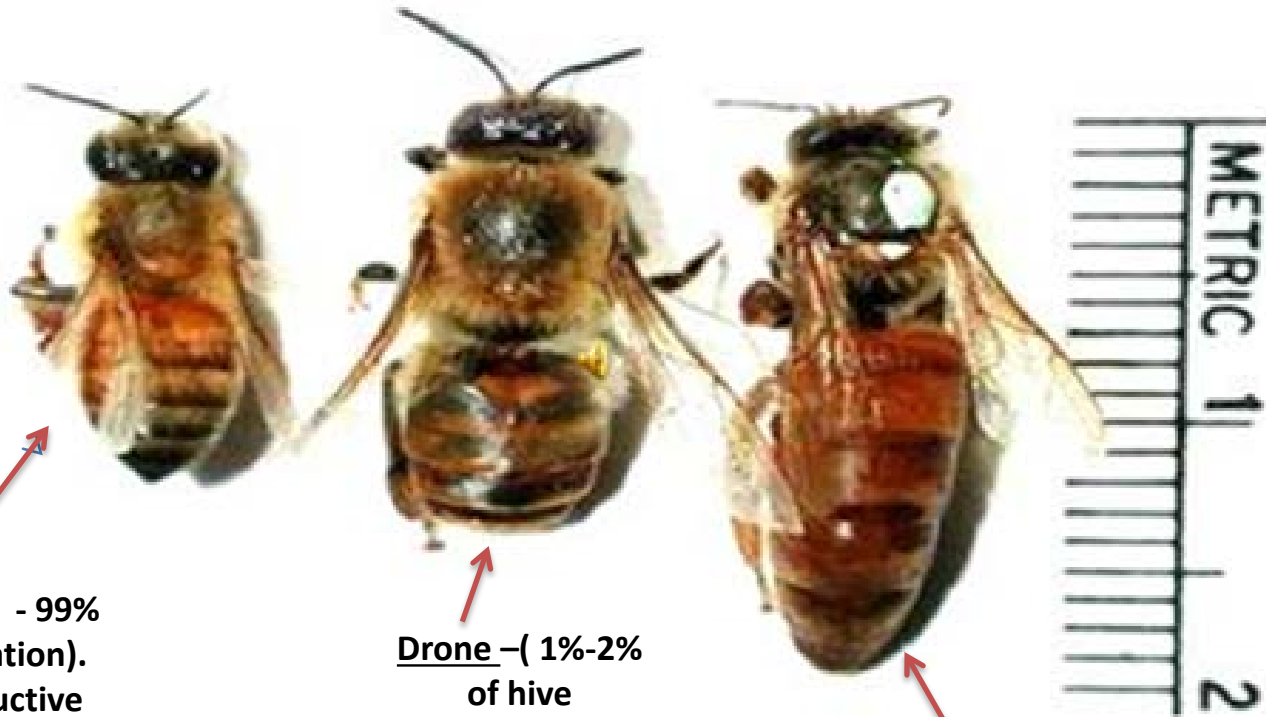
Prepared by John Polley

Overview

- Types of bees
- Developments of bees
- lifecycle of bees
- Bees communication and food sources
- Bee safety
- Bee equipment
- Starting out
- Starter kits – GCABS
- Good bee keeping practices

The 3 castes of honey bees

Worker - Drone - Queen

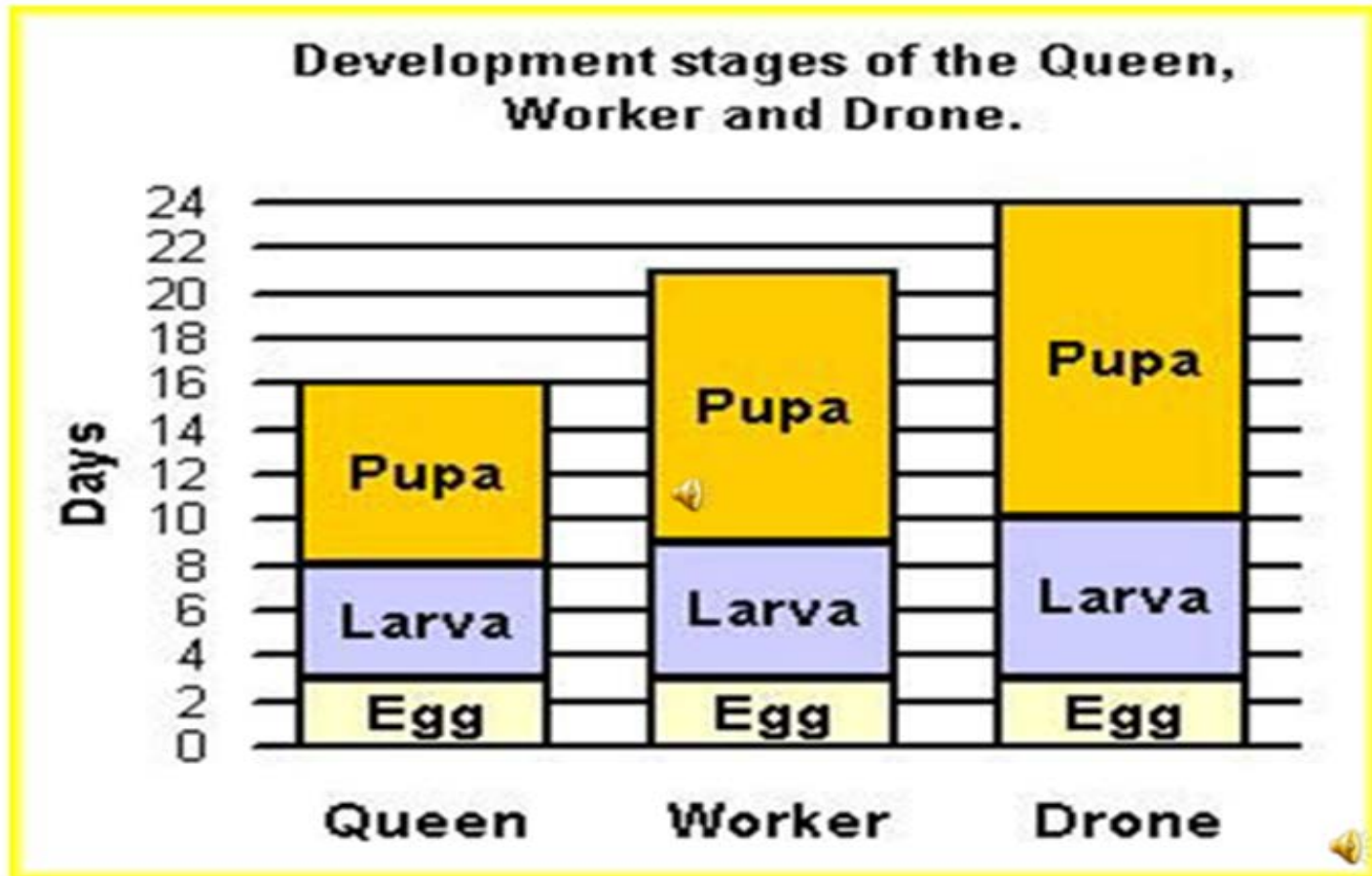


Worker - (98% - 99% of hive population). a non-reproductive female bee. Workers collect nectar, pollen, water and propolis, rear brood and carry out many other activities

Drone - (1%-2% of hive population). The male bee. It is large, has a square-ended body, very large eyes and NO sting

Queen - (1 per Hive) 🐝
The only reproductive female in the colony and mother to all bees in the hive. There is usually only one queen per hive.

Development stages of the different caste



Lifespans of the worker

Lifespan of a Bee





Nurse bee feeding young brood





How Bee's make Wax



Receiving food from a forager





Guard bees defending the hive against attack





Bees Fanning at the hive entrance



Head down, Bum
up, Wings going flat
chat creating air
movement
throughout the hive



Orientation flights

Orientation flights



Young bees walk out of the hive, fly a short distance in front, **turn by 180 degrees so that they are facing the hive, then hover back and forth in arcs.** After a few moments the orientation flight becomes characterised by the ever increasing circles around and above the hive and after a few minutes the bee returns to its hive without carrying any pollen or nectar

Orientation flights

Age related tasks of honey bees culminate in foraging, this being the final group of tasks they perform before death. Although the starting age for foraging is variable, it commonly peaks in bees over 20 days of age.



Worker bees returning from foraging



The Life of a Worker Bee



Collecting Nectar and Pollen for the hive

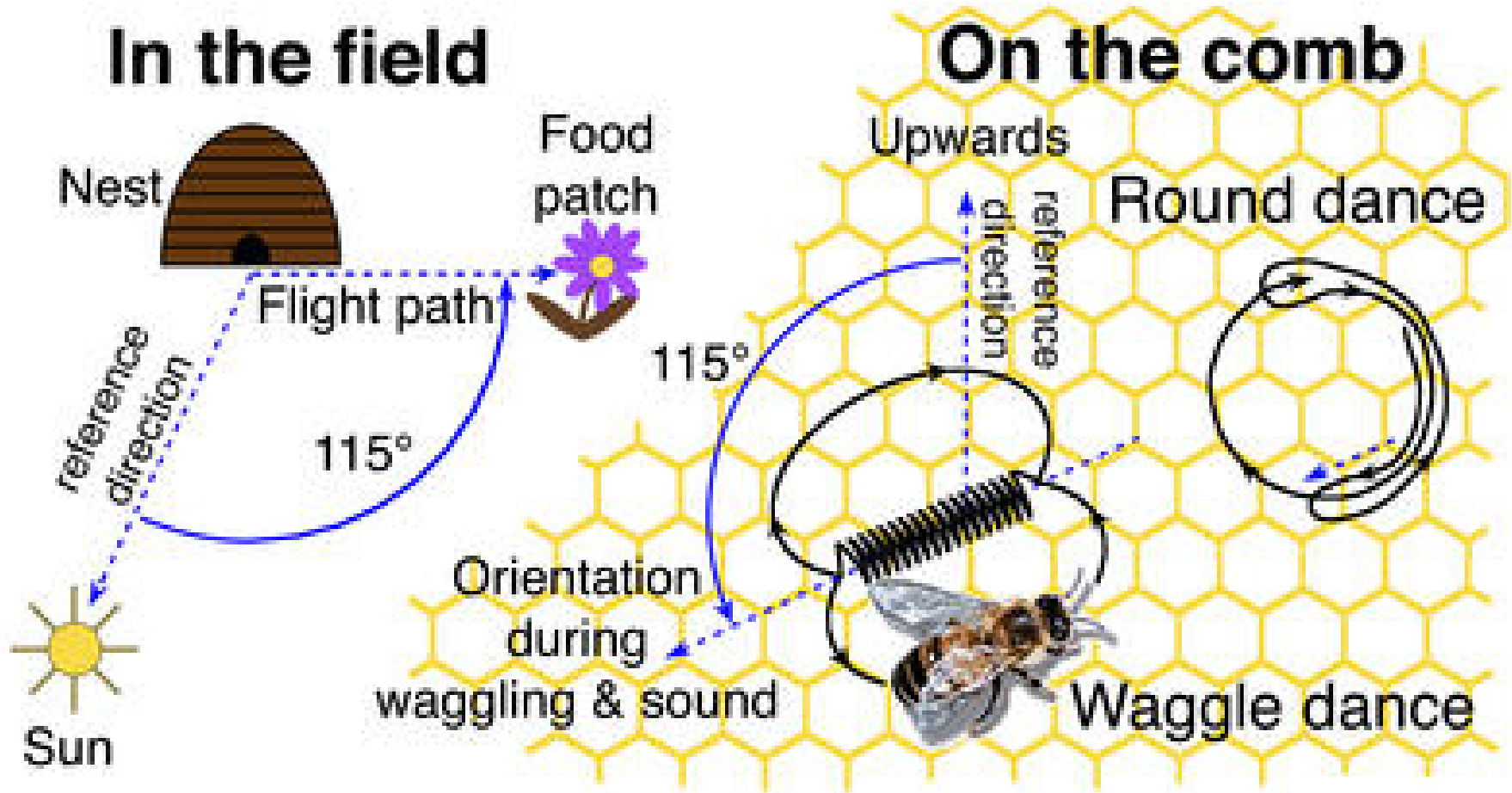




Foraging bees collecting water for hive



How do Bees communicate where they found the food source ??

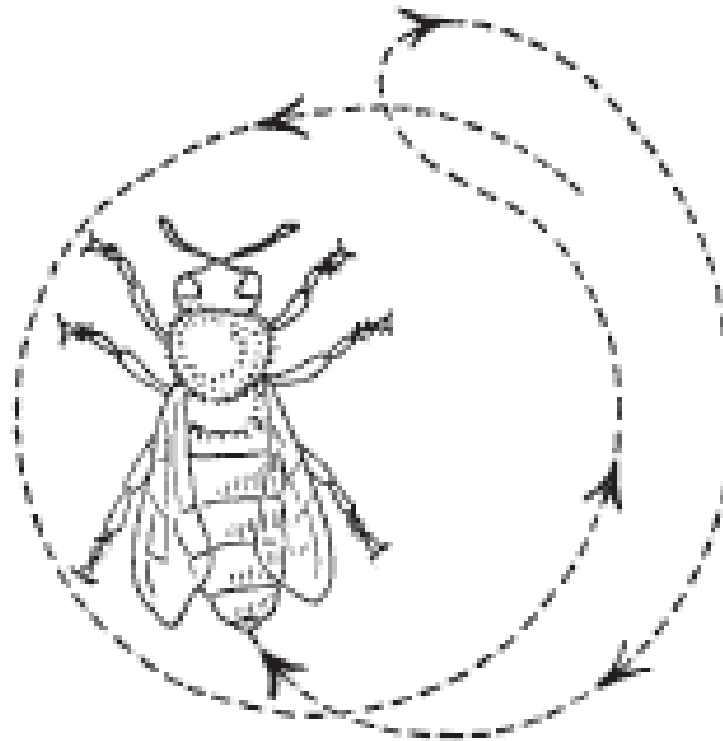




Components of the dance language

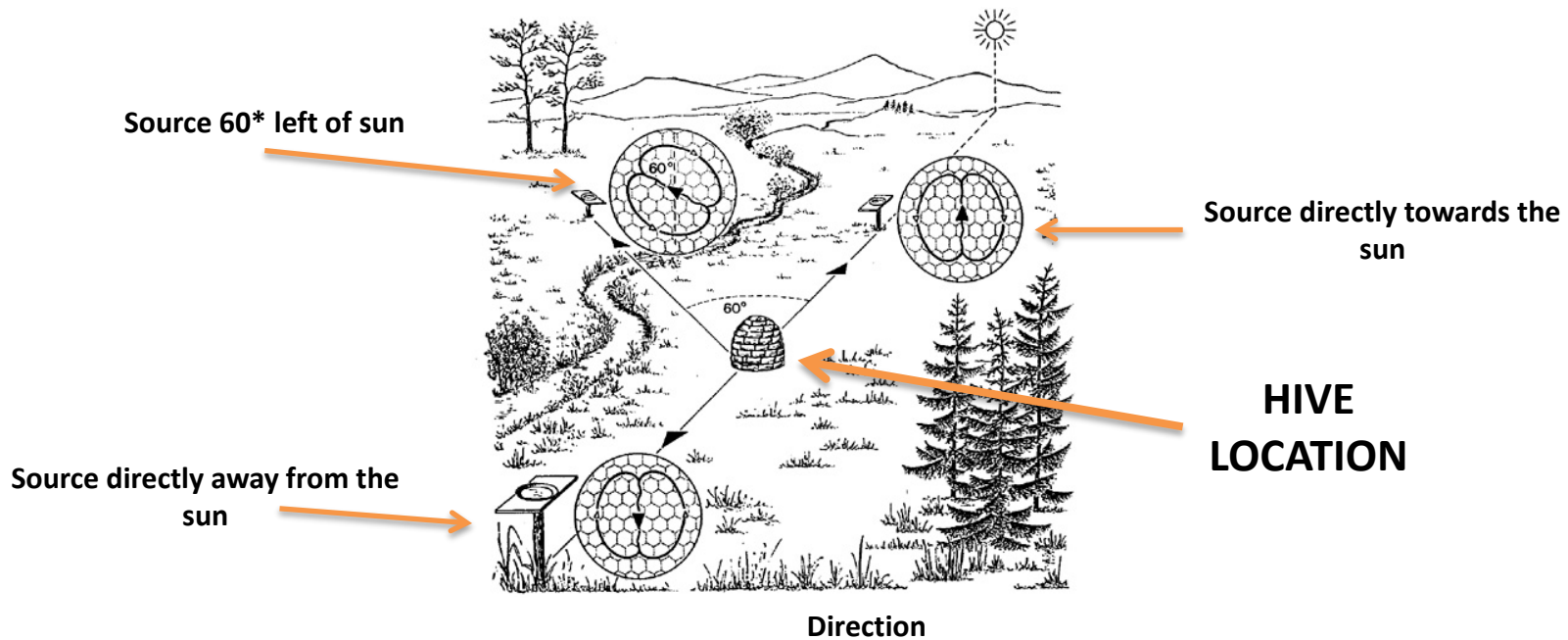
At its core, there are two things communicated in a dance: distance and direction. These two pieces of information are translated into separate components of the dance.

The 2 most common dances are the Round Dance and the Wag Tail Dance



The Round Dance





While the representation of distance in the waggle dance is relatively straight-forward, the method of communicating direction is more complicated and abstract. The orientation of the dancing bee during the straight portion of her waggle dance indicates the location of the food source relative to the sun. The angle that the bee adopts, relative to vertical, represents the angle to the flowers relative to the direction of the sun outside of the hive. In other words, the dancing bee transposes the solar angle into the gravitational angle. The figure below gives three examples. A forager recruiting to a food source in the same direction as the sun will perform a dance with the waggle run portion directly up on the comb. Conversely, if the food source were located directly away from the sun, the straight run would be directed vertically down. If the food source were 60 degrees to the left of the sun, the waggle run would be 60 degrees to the left of vertical.

Because the direction information is relative to the sun's position, not the compass direction, a forager's dance for a particular resource will change over time. This is because the sun's position moves over the course of a day. For example, a food source located due east will have foragers dance approximately straight up in the morning (because the sun rises in the east), but will have foragers dance approximately straight down in the late afternoon (because the sun sets in the west). Thus the time of day (or, more importantly, the location of the sun) is an important variable to interpret the direction information in the dance.

The sun's position is also a function of one's geographic location and the time of year. The sun will always move from east to west over the course of the day. However, above the tropic of cancer, the sun will always be in the south, whereas below the tropic of Capricorn, the sun will always be in the north. Within the tropics, the sun can pass to the south or to the north, depending on the time of year. In summary, in order to translate the direction information contained in the honey bee dance language, one must know the angle of the waggle run (with respect to gravity) and the compass direction of the sun (which depends on location, date, and time of day).

Starting Out

- ❖ Carry out research into the keeping of bees, to see what is involved with the management of bee hives.
- ❖ Join a local beekeepers (apiary) club and talk to people who have been involved in beekeeping for many years. Decide if beekeeping is for you.
- ❖ As a member of a bee club, you can join experienced members opening and inspecting hives as well as extracting honey. This enables you to get some prior knowledge and experience before buying your own hives and equipment.
- ❖ Decide whether you will start beekeeping by buying all of the necessary supers, frames, bottom boards, excluders, lids etc. and building your own hive, an existing hive from a club member or starting with a nucleus hive from a breeder or club member. For your first hive it is often easier to buy an existing, productive hive and grow from there.
- ❖ To keep bees in **Queensland** you must first register with the **Dept. Agriculture, Fisheries and Forestry (DAFF)**, and obtain your Registered Brand Number. In **NSW** this is done through **DPI**. This registration is to be renewed yearly.
- ❖ Now you are ready to get your own bees. Use the knowledge of experienced members when you choose your equipment. New, second hand, or built by you. It is your choice, but don't buy 2nd hand equipment unless you have them inspected to make sure they are not been infested by a foul brood. Helping new members is one of the prime functions of the club.

Beekeepers Starter Kit

A list of Basic requirements that a beginner will need to start beekeeping

The hive body consists of the following parts;

- Bottom Board complete with 2 slide out Small Hive Beetle (SHB) traps
- 2 x 10 frame Supers (wooden boxes) 1 for the Brood Box and 1 for Honey collection
- 1 x complete migratory Lid
- 20 x Frames (Full Depth)
- 20 x Sheets of Full Depth Foundation (was sheets to fit in the frames)
- 1 x 600g roll of wire, (threaded through the frame to support the foundation.)
- 1 x bag 500 Brass eyelets, (to prevent frame wire from digging into frame timber)
- 1 x Emlock and metal strap, (to secure the hive supers and lid.)
- 1 x Spur wheel Embedder, (to embed the frame wire into the foundation.)
- 1 x Embedding board, (to support the foundation while wire is embedded.)
- 1 x 500g pack 65mm x 1.4mm Flat Head Nails
- 1 x 500g pack 30mm x 1.5mm Flat Head Nails
- 1 x 250g pack 25mm x 1.4mm Flat Head Nails

Protective Clothing;

- 1 x Brimmed Hat with Veil

Or

- Bee Jacket with hooded veil
- Full Bee suit with hooded veil
- Overalls / Disposable Tyvak overalls w/hat and veil
- 1 x Pair sturdy long sleeved gloves
- Boots/Shoes

Basic Tools;

- 1 x Smoker 4" Stainless Steel
- 1 x Bee Brush
- 1 x Hive Tool
- 1 x 20 litre plastic pail and lid

This equipment is available in flat pack from the Gold Coast Amateur Beekeepers Society's equipment officer at Club prices.

General Safety Precautions and Protection

- Always wear protective clothing that is light and of smooth texture as bees will react unfavourably to dark or woolly materials

The Beekeepers hat should have a wide brim to support the veil and keep it away from the face. Straw hats, complete with veils are available from equipment officers.

Avoid wearing scented lotions, perfumes, etc. while near hives.



Body protection can be achieved with a full protective apiary suite complete with helmet, cotton coveralls fitted with elastic cuffs and wrist bands or Tyvek disposable overalls that come complete with a hood. Thick light coloured socks are also advisable to be worn with work boots and ankle covers, many experienced beekeepers do not wear veils or gloves by preference



Full protective suit

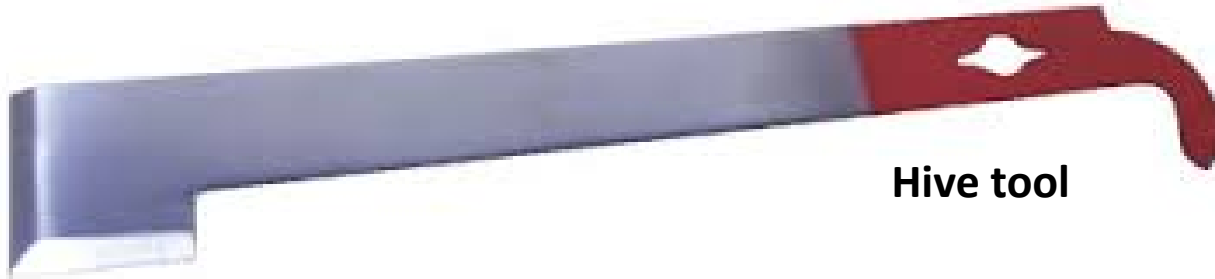


Long sleeved gloves

A pair of long sleeved beekeeping gloves that allow easy movement of the fingers when lifting frames

Beekeeping Tools

- The two most essential tools used by beekeepers are the Smoker and the hive tool.



Hive tool



Smoker

The Smoker.

It is best to buy a smoker that has a barrel of approximately 100mm. This size smoker will provide an ideal amount of cool smoke to subdue the bees before opening the hive and during the time it is open.



Always have your smoker well alight and producing large volumes of COOL smoke before entering your apiary. Take care not to burn yourself or set fire to the grass around where you are working. Beekeepers use a variety of materials in the smoker to provide the cool smoke, items such as sugar cane mulch, tea tree bark, old leaves from pine trees or gum trees, small twigs or dead grass. Once they have found a favourite fuel, most beekeepers will stick to it as they know how long it will burn and the quality of smoke generated



The Hive Tool

This tool is used to separate the boxes when opening the hive and to separate and lift the frames which hold the combs



Australian hive tool



USA hive tool

Bee hive components - Bottom Board

SHB grid

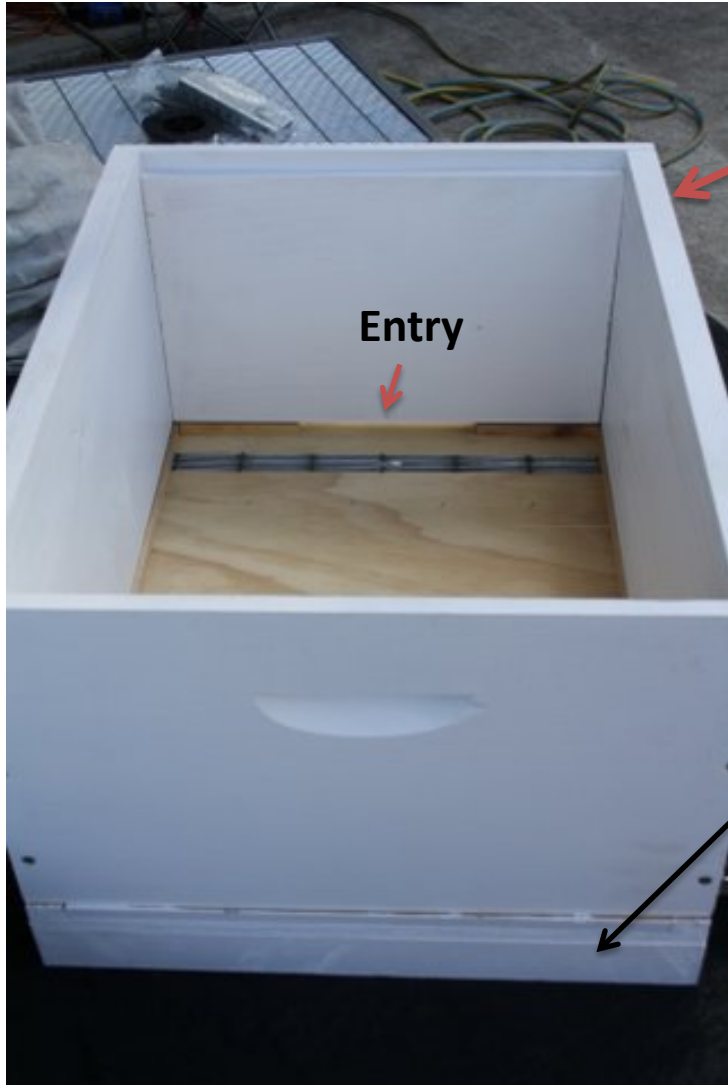


SHB oil traps



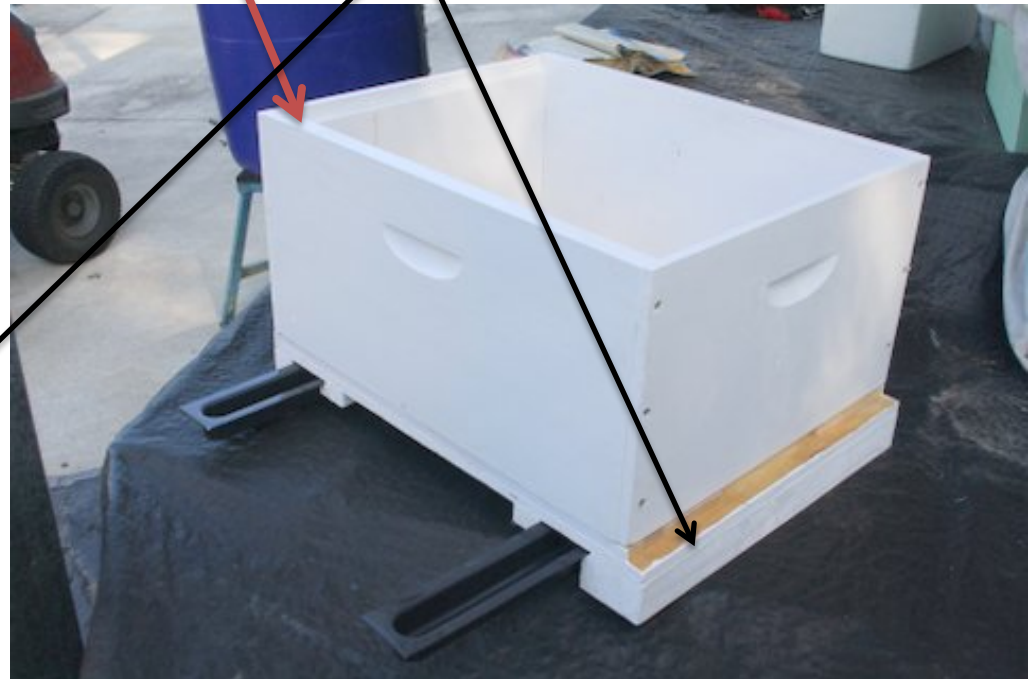
Bottom Board with Small Hive Beetle (SHB) traps

Bee hive components - Brood Box fitted onto Bottom Board

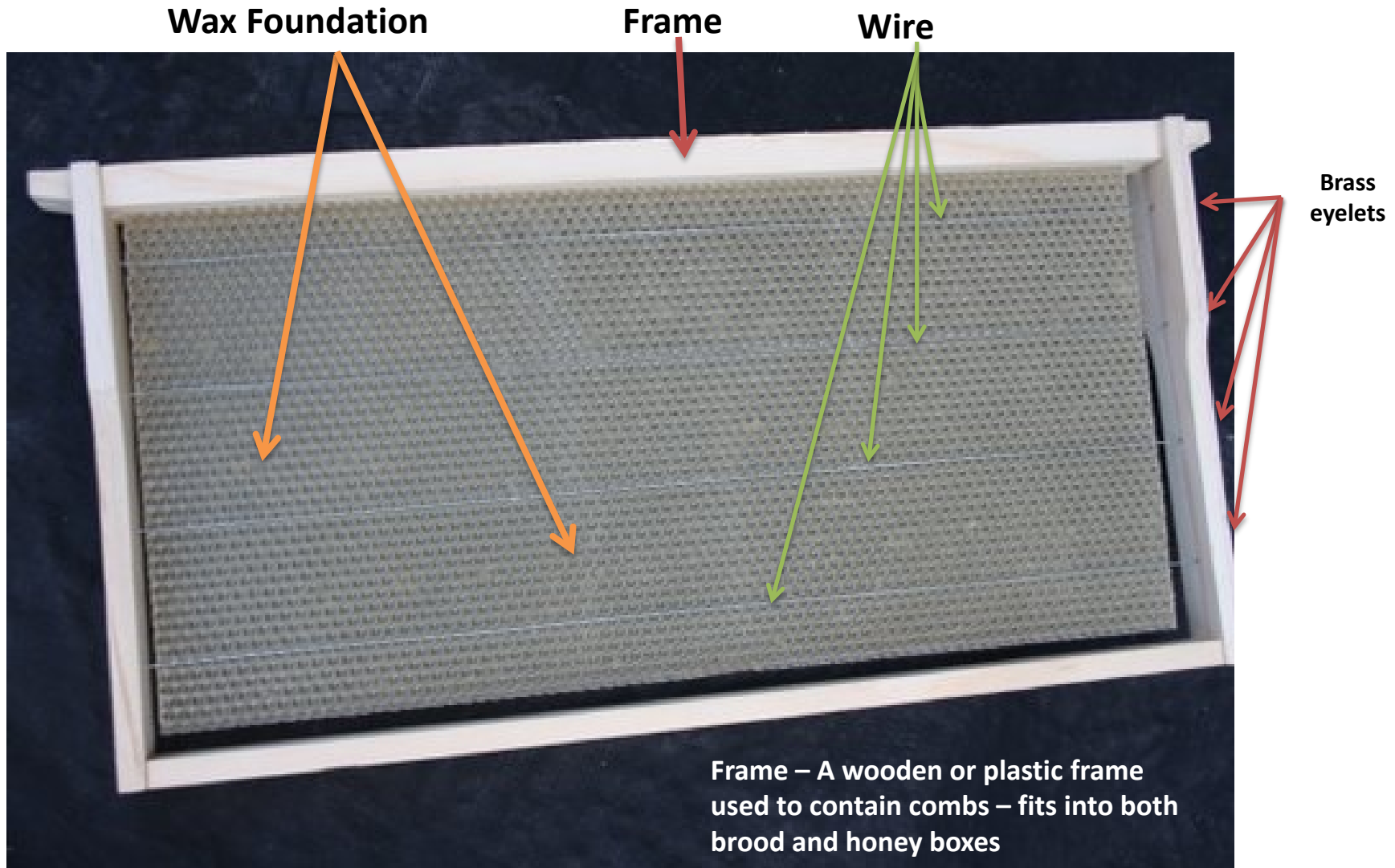


Brood Box - the bottom box of a hive, which usually contains the brood of the colony, also called a brood chamber

Bottom Board - The base of the hive that allows the bees entry to the hive



Bee hive components - Completed frame wired and foundation fixed



Bee hive components - completed frames being placed into brood box

10 frames in a brood box



Many apiarist prefer to run only 9 frames in the brood box to lessen the chance of damaging the queen during inspections and in honey supers so the bees are able to build out the comb further which in turns makes for easier uncapping.

Bee hive components - Queen excluder in place above brood box

Queen excluder



Queen Excluder

A perforated sheet of zinc, or plastic, or a wire screen placed between the brood chamber and super to prevent the queen having access to the super whilst allowing workers free access

Bee hive components - Honey super (box) with 9 frames above brood box

Honey Super
The top box above the queen excluder where the bees store capped honey

Queen Excluder
Prevents the Queen and drone from going higher in the hive

Brood Box
Where the queen lays eggs, the brood are raised and honey and pollen are stored to feed the brood

Bottom Board
Allows worker bees access to the hive and often contains SHB traps



**Honey Super –
9 Frames**

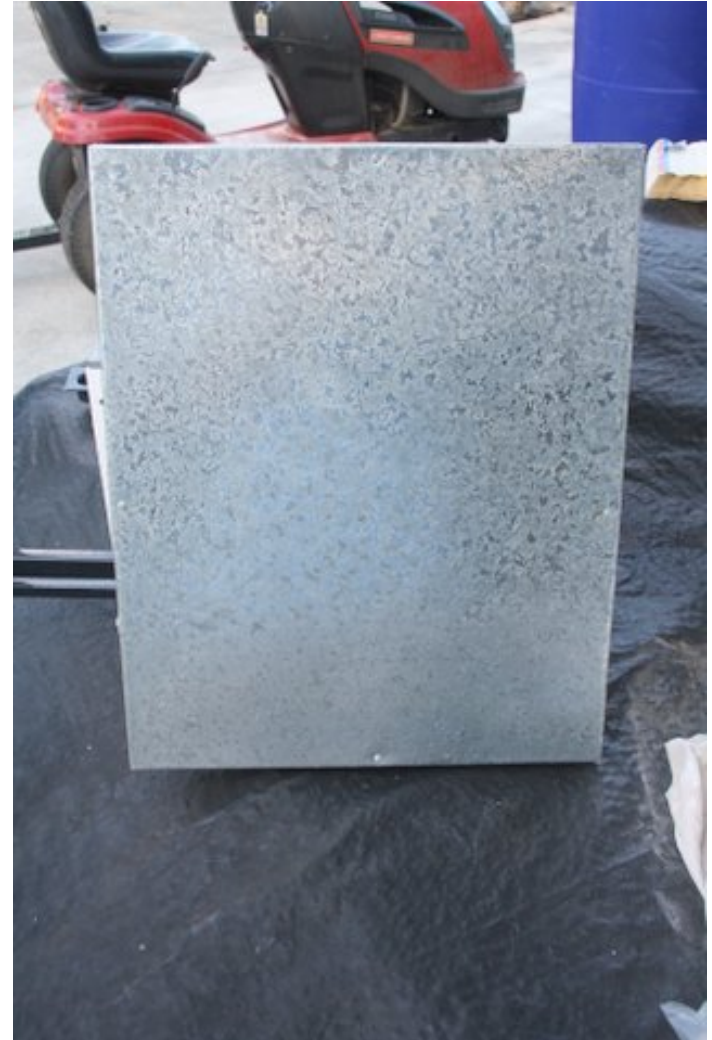
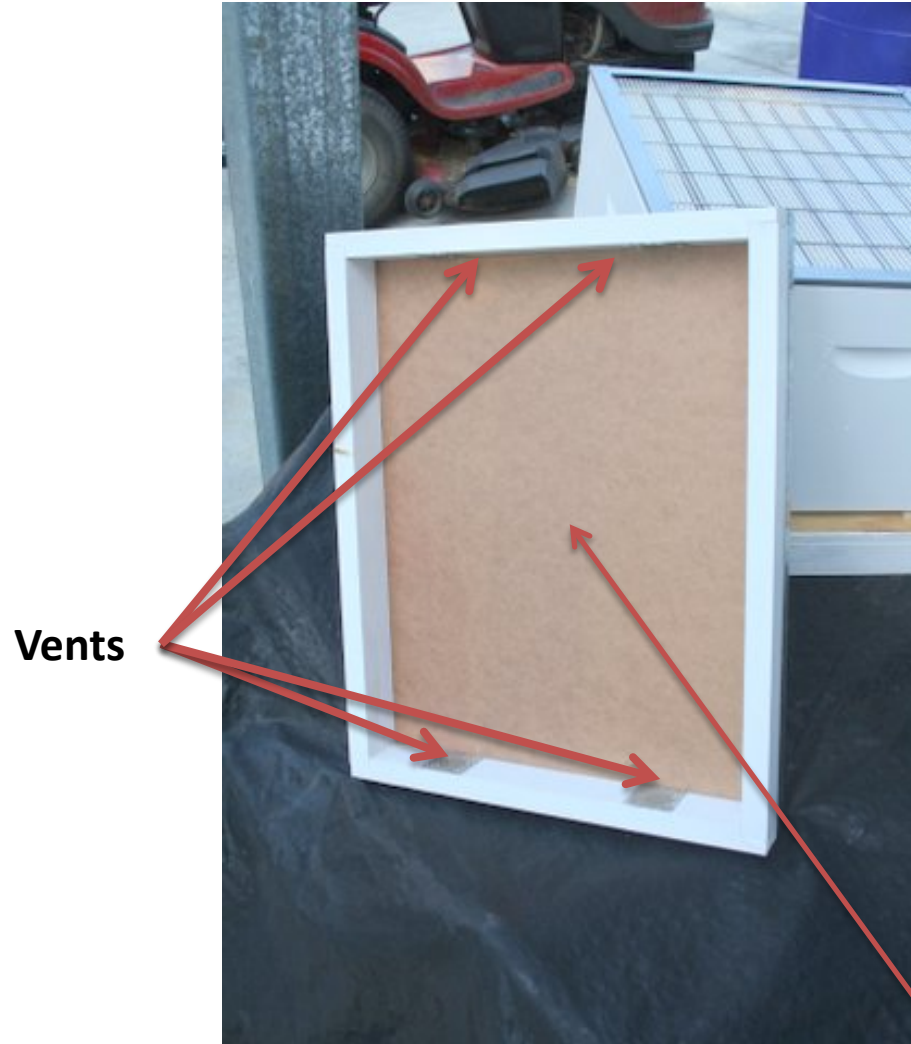
Queen excluder

Brood Box

Bottom board



Bee hive components - Lid with vents



The inside of the lid should also be painted



Bee hive components - Assembled hive



Completed Hive

Hive _ a man made domicile or container in which a colony of bees has been established.



Hive secured using Emlock

**Adjustable
Emlock strap for
securing hive**



Types of *Langstroth* hive boxes



Nucleus hive box
Holds 5 frames and is used to
form a new colony



8 frame hive box
Lighter, smaller and easier for
older apiarist



Standard 10 frame box
Can weigh 35kg to 40kg when full

Construction of hives

Good beekeeping practices include regular inspections of brood and honey combs in all hives for honey bee diseases and pests. Proper inspections are impossible when hives do not have beeswax combs held within removeable frames.

The Code requires beekeepers to only keep hives that have easily and individually removable frames.

In cases where hives don't contain moveable frames, the Code empowers apiary inspectors to order beekeepers to transfer the combs to moveable frames or destroy the bees.

The Act does not stipulate dimensions for hives and frames. However, almost all beekeepers use the 8- or 10-frame Langstroth full-depth hive.

**This presentation has been prepared by the
Gold Coast Regional Beekeepers Inc.
with assistance from:**

- **Australian Honey Bee Industry Council (AHBIC)**
 - **When Bee Foundation**
- **Department of Agriculture, Fisheries and Forestry (DAFF Apiary Unit)**
 - **Queensland Beekeepers Association (QBA)**
 - **Be Aware**
 - **Department of Primary Industries NSW (DPI)**
 - **Plant Health Australia assistance from: (PHA)**