

Beekeeping Certificate III

Participants Learning Guide

RTE3153A Manage honey bee swarms



Australian Government
**Department of Agriculture,
Fisheries and Forestry**



**Australian Honey Bee
Industry Council**

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What this learning guide covers

This learning guide will help you meet the requirements of the unit of competency:

- *RTE3153A Manage honey bee swarms*

Resources you will need for this unit

- Participants Learning Guide (this booklet)
- Participants Assessment Workbook
- Bee Agskills: A Practical Guide to Farm Skills, NSW Department of Primary Industries 2007 available from <http://www.tocal.nsw.edu.au/reader/tocal-publications/bee-agskills>
- a beehive with active bees
- swarms to be collected
- brood box
- frames or ventilated bee proof box
- ladder
- saw
- bucket
- clippers
- rope
- bee brush
- bee smoker and fuel
- protective clothing and equipment:
 - bee veil
 - bee-proof overalls and gloves
 - steel capped boots/shoes/gaiters
 - sunhat and unperfumed sunscreen lotion.

Introduction to this unit

In this unit, you will learn about:

- collecting a swarm of honey bees
- managing swarming behaviour in a honey bee colony.

Before you start this training you should be confident about your skills to:

- deal with members of the public and owners/managers of the property from which a swarm is being collected
- work independently
- handle bees
- identify signs of disease and pests.

You should know about:

- signs of brood disease and pests
- bee behaviour.



Very conveniently for the swarm collector, this swarm has settled in a box of keepsakes.

Source: Peter Perosh

1. About honey bee swarms

Why do honey bees swarm?

In nature, swarming is a response to the impulse to reproduce and, unless managed, is the natural way that your honey bee colonies will reproduce.

The queen will leave the hive with about half the worker bees to establish a new colony elsewhere.

Swarming usually occurs in early spring through to summer. A thin nectar flow and plenty of pollen to promote brood rearing are the ideal floral conditions that lead to swarming.

Types of swarms

When the old queen leaves the colony with half the workers – this is known as the **prime swarm**.

The parent colony is left with a number of ripe queen cells to produce a replacement queen for the original colony. At times, another swarm will leave the original colony with a virgin queen hatched from these queen cells. This swarm is much smaller and is called a **secondary or after swarm**.

In other cases, the whole colony, headed by the original queen of that colony, absconds the hive. This is often a very small swarm and is called an **absconding swarm**. An absconding swarm can be triggered by starvation, invasion of pests or disease.

What do honey bees do after swarming?

On leaving the original colony, the swarm will cluster as a group on a shrub, a tree branch or a fence.

Prime and absconding swarms headed by an old queen will usually cluster within ten metres of the hive they swarmed from. This is the ideal time to catch them. Swarms headed by virgin queens fly a longer distance and often cluster higher.

Then, bees from the cluster will seek out a suitable cavity in which to set up their new colony. They can find a suitable location within a few hours. The

cluster leaves their temporary resting place with the queen and goes to the new location to set up their new hive.



Honey bee swarm on a house wall and window frame in suburban Sydney

Source: Peter Perosh

At times, a swarm cannot find a suitable cavity and will build combs and remain as a colony in the open.

2. Collecting a swarm

Public health and safety issues

Swarming is very alarming to the general public in residential areas.

Thousands of bees are on the loose and flying in a mass before they cluster on a shrub or enter the cavity of a house. It is common for people to become anxious about the possibility of bee stings.

Why you might want to collect a swarm:

- increase the number of colonies in your apiary
- obtain additional bees that can be used to increase the bees in your current hives by joining the swarm bees up with an existing colony
- provide a public service by collecting swarms causing a public nuisance.

Members of Amateur Beekeeping Associations are keen to collect swarms and provide list of members prepared to catch swarms to police and state agriculture departments and councils.

Risks

If you decide to collect swarms there are risks.

OHS hazards

To some extent, these will depend on where the swarms have settled and may include:

- bee stings
- exposure to solar radiation
- falls from ladders.

Bee stings

As a general rule swarming bees are very docile. This is because the worker bee gorge themselves on honey before leaving the parent hive so they have food while they are clustering. However, if they cluster for more than two days they can become aggressive.

Diseases and pests

If a swarm absconds, that is the whole colony leaves the hive, it may have been because of disease or pests.

Any swarm may be carrying diseases or pests that you can not see, so all swarms must be monitored as a precaution against diseases and pests.

If you are collecting a swarm to add to your apiary, you must also practice sound biosecurity:

- keep the swarm isolated for three months before placing the bees with your other hives
- regularly check the brood for disease and catch and examine the worker bees for pests and parasites.

Of course, if you find signs of any notifiable pest and disease, you must report this to the appropriate authorities

Litigation

Before going onto any land or entering any property to collect a swarm, make sure you have permission from the land or property owner.

Property damage

Make sure you have the property owner's permission before cutting shrubs or removing anything.

Catching the swarm – a suggested procedure

- Prepare the catching box:
 - It's best to use a brood box that has been used before. Because bees leave odours in used boxes, the box will be attractive to the swarm.
 - Place some already drawn disease-free comb of worker comb and at least two frames of foundation into the box. Prime swarms are excellent at quickly drawing comb foundation.
- Smoke the swarm.
- Shake the swarm into the box or shake the swarm at the box entrance.
- Leave the box with the captured swarm on the location until evening so as to capture the entire swarm. The free flying bees that you didn't catch the

first time will be attracted to the box and all will enter at night fall. You don't have to find the queen.

- If the bees have settled on a thick solid object such as a fence post, you can use a bee brush and brush the bees off the post onto the ground at the box entrance.
- It is easy to smother a swarm in hot weather so you need to be sure this will not occur during transport by moving the box with the entrance open and adding an extra super or having a screen top.
- Beekeepers that catch swarms regularly often have special ventilated boxes so overheating will not occur.
- When you arrive at the new apiary site, smoke the hive entrance and open it.
- It's best to let swarms out after dark to reduce the risk of them absconding.
- Adding a disease free comb of brood the next day reduces the risk of them absconding.
- Practice good biosecurity and keep the swarm isolated from your other hives and regularly check for signs of pests and disease.
- After about three weeks the swarm should be requeened as the queen is likely to be old and may be from a swarming strain.

Using bait hives

With a shortage of cavities in many areas, swarms of bees can be attracted to empty brood boxes that have just combs of foundation and a few drawn combs without honey. These should be placed off the ground for example on shed roofs. The swarm just turns up. If swarms don't turn up, you have to monitor the drawn combs for wax moth and control them.

If the swarm is on a tree branch – some suggestions

Branch within reach of the ground?

- If it's possible to place the box under the swarm cluster, then shake the branch so the cluster falls into the box.

- Put the lid on the box, being careful not to squash any bees.
- Smoke gently.
- The bees that fell on the ground can enter the box through the entrance or you can put the lid on, leaving a gap for the bees to enter through.
- With the owner's permission, you may be able to cut off the branch and carry it to the box and shake the bees into the box or at the box entrance.



Ready to put the swarm into the box

Source: Peter Perosh

Branch within reach by a ladder?

- If a swarm is clustered on a branch and within reach by a ladder, you can climb the ladder with a bucket that has a lid.

- Shake the bees into the bucket by placing the bucket under the cluster.
- Climb down with the lid on the bucket and shake the bees into the box.



This swarm has clustered and built comb high on a tree branch.

Source: Peter Perosh

Branch too high for a ladder?

- If a swarm is out of reach of a ladder, attach a comb to the rope and throw it over the branch that the swarm is clustered on.
- Pull the comb up to touch the swarm.
- The bees in the swarm will cluster on the comb.
- You can then lower the comb to the ground and place in the box.



Beekeepers who catch many swarms may use special catching equipment.

Source: Bruce White

Activity

The following is a suggested way for you to practice catching a swarm.

Follow each step and repeat the whole process until you are confident that you can catch a swarm under similar circumstances.

1. Remove the queen from a hive and put her in a queen cage and place it on a pot plant.
2. The hive that you catch the queen from – move it sideways, put a pot in its place to tie the queen cage onto..
3. Shake some bees from the hive onto the pot plant.
4. Wait for the released bees to cluster with the queen (this is your 'swarm').
5. Catch the 'swarm' and place it back in the hive.
6. Return the queen to the hive (make sure you release her from the cage!) and place the hive back in its original position.

3. Managing swarming behaviour in a honey bee colony

Catching a swarm used to be the main way beekeepers increased hive numbers. If you have empty hive boxes, it is a low-cost way of getting a new colony.

However, with modern beekeeping practices such as grafting, rearing your own queens and feeding bees to increase worker numbers, allow your colonies to swarm is counter-productive. Swarming reduces the honey crops from the hive, and a strain that swarms may have the undesirable trait to swarm to excess.

Without swarm management, including stock improvement, every colony may swarm, leaving the parent hive weak and of little value for producing honey.

Signs that swarming is about to happen

Signs you need to recognize include:

- queen cells built on the lower edges of the comb
- queen reduced in size as she stops laying so she can fly with the swarm.
- field bees cluster inside the hive and at the entrance with their sacs full of honey in anticipation of swarming, rather than flying out to forage
- hive overcrowded with worker bees
- older queens are more likely to swarm than younger queens
- colonies with plenty of drones are more likely to swarm as they cause congestion in the hive brood nest.

Preventing swarming

Prevention or control of swarming is essential to achieve success in beekeeping.

An important step in preventing swarming is reducing the congestion in the brood nest. You can do this by removing frames of sealed brood to other colonies that are weaker, replacing the combs with drawn worker combs or

frames of comb foundation. Make sure the colony is healthy before transferring brood.

- Some combs of brood maybe transferred to the super from the brood chamber this will draw up some of the nurse bees out of the bottom brood box reducing congestion. Replacing the combs in the brood nest with worker cell drawn combs or foundation this given the queen more room to lay.
- Removing surplus frames of honey in the brood nest and extracting them replacing them with drawn worker combs or foundation.
- Moving colonies to a honey flow can also reduce swarming if the nectar is thick. Thin nectar encourages bees to swarm.
- Swap the position of strong and weaker colonies. The field bees will strengthen the weaker hives from the strong ones as they will be taking in pollen and nectar the bee's wont fight.
- Removing bees from the brood combs and remove them to add to weak colonies in another apiary or make up more colonies on another site so they don't return to the original hive
- If brood nests are congested in the swarming season just adding a super of comb foundation or drawn comb will not relieve the brood nest congestion it may make it worse as more bees will be required to maintain the 35^{0c} brood nest temperature.
- Control of drones by ensuring your brood combs are mainly all worker cells so as to reduce the number of drone cells available for the queen to lay in. Drones congest the brood nest so creating the risk the colony may swarm.
- Keep queens young and of a strain that is less likely to want to swarm by requeening colonies every year. If bees are keen to swarm it is not a good idea to requeen. Wait till conditions change when swarming is not an issue then requeen.

- Destroy swarm queen every seven days by shaking the bees off all brood combs and finding the cells is a very labour intensive and no guarantee the hive won't swarm.

Final activities and assessment

Now that you have completed all the activities in this Learning Guide, take some time to collect swarms, preferably with a more experienced beekeeper.

When you are ready, you can complete the assessment tasks that are listed in the Participants Assessment Workbook for this unit of competency.

Useful references

Bee Agskills: A Practical Guide to Farm Skills, 2007, NSW Department of Primary Industries

The Bee Book: Beekeeping in Australia, 2nd edition, 2005, Peter Warhurst and Roger Goebel, Queensland Department of Primary Industries and Fisheries available from <https://www.publications.qld.gov.au/>, or phone 1800 801 123.