

BIOSECURITY AND PRODUCT INTEGRITY

STANDARD OPERATING PROCEDURE (SOP)

Title: Bee Hive Handling and Safety

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1. Purpose

This SOP information on honeybee hive inspection, collection or maintenance; is to avoid personal being stung by bees and/or physical injury occurring through lifting of hives, swarm collection and hive movement.

2. Application/Scope

This SOP covers the general safety precautions to be observed when inspecting and sampling beehives. It covers the requirements for using the smoker and handling of beehives when conducting maintenance and inspection. A glossary at the end of this SOP explains terminology.

3. Resources/equipment

- A full body bee suit with net facing.
- An operating smoker with fuel as in Hessian or bark.
- Two lighters or matches (one for spare)
- Method of fire control as in fire extinguisher or water
- Hive tools for working the hive
- Sampling material – Traps, bags, mats, bottles and chemical sampling.
- Water – compulsory consumption
- Ice vest – cooling for under bee suit and ice blocks for sting application
- First aid kit with anti histamine tablets.
- Harness and ropes for swarm removal.

4. Warnings

- Try not to swat at the honeybees or make fast movements and move slowly and calmly when working with them as honeybees are attracted to quick movements. Try to walk into a shady area or in among a group of trees when the honeybees are aggressive. Moving among trees and shrubs will brush bees off your protective clothing. If needed get into the vehicle or into a building if there is one close by.
- Dehydration is the greatest risk. Huge amounts of water loss occur whilst fully enclosed in a bee suit. In the NT tropical environment it is the greatest risk that occurs. Rest, adequate fluid intake and body cooling (ice vest) need to be undertaken to avoid dehydration.
- Have prior testing or knowledge to ensure and understand your reaction to bee stings.
- Bee stings are the most common risk and occur despite full protection. Stings should be removed immediately and if stung numerous times should have ice applied.
- Take anti histamines if stung numerous times or if itching/redness occur.
- Falls can also occur if climbing to remove swarms. Ropes and harness should be worn along with the use of cherry picker or other mechanical lifting device

5. Description of activities -General

- It is preferable to open and examine beehives on warm, dry windless, sunny days when forager honeybees are out foraging and avoiding cold, windy or showery days when the foragers are in the beehive. Bees do not fly in bad weather and therefore become agitated when hive bound.
- The lighted smoker should only dispense 'cool' smoke. 'Hot' smoke and sparks only make honeybees angry. By puffing smoke in the beehive entrance and proceeding to each beehive at a leisurely pace permits honeybees time to respond to the smoke. Continue using the smoker when examining the beehive. When honeybees are congregating in an area, disperse them with puffs of smoke.
- Perfumes, hair sprays, colognes, scented soaps and powders, etc. should not be used before handling honeybees as these fragrances may attract or irritate honeybees. Other irritants that can affect their behaviour include pheromones or honeybee venom, crushed honeybees, sweat and the lingering odour of domestic animals (e.g. dogs and horses). Do not wear black or dark clothing, sunglasses and woolly materials.
- Approach the beehive from the side or rear. Inspections should be carried out from the side of the beehive and not from in front of the entrance.
- Use the flat end of the hive tool and pry up the beehive cover a little at the rear; this is needed to break the wax seal in the join. Lift the cover a little and direct puffs of smoke over the top bars of the frames or over the beehive mat (if present).
- Remove the beehive cover and place it upside down in a convenient position near the front of the beehive, but not directly in front of the entrance so as not to obstruct forager honeybees returning to the beehive. Remove the beehive mat (if present) and place on the beehive cover. At the same time direct puffs of smoke between the frames.
- A considerable amount of lifting is necessary when inspecting beehives so correct manual handling techniques must be used. If it is necessary to dismantle beehives for inspection request access to mechanical lifting equipment either from the beekeeper or other team member.

- Every reasonable effort must be taken to avoid being stung. An initial sting can lead to repeated stinging. If stung by a honeybee remove the stinger by scraping sideways along the surface of the skin with a fingernail, credit card or knife. Pulling the sting straight out will force the honeybee venom (poison) into the skin. The sting, if present, should be removed right away since the venom can still be injected for up to a minute after the honeybee detaches from its sting.
- Medications found in the first aid box such as anti-itch cream, antihistamine pills or automated adrenaline syringes (e.g. EpiPen) should help reduce the effects of honeybee stings.
- If honeybees start to attack it is best to walk calmly and quickly back away from the beehive. Smoke may be directed over the protective clothing for additional protection until far enough away from the honeybees.

5. Description of activities - Detailed

Using the Smoker

- The smoker should only be lit on open bare ground free of combustible material, in the back tray of a vehicle or in a fire proof receptacle.
- Observe all fire restrictions when using the smoker.
- Water or fire extinguisher should be carried and located as close as practical to the apiary being inspected. When the smoker is not in use it should be placed in the back tray of a vehicle or in a receptacle. A tight roll of paper should be placed in the smoker nozzle to smother the fire in the smoker after use.
- Ensure that the smoke is 'cool' and the fire is not too hot as 'hot' smoke and sparks only make honeybees angry.
- Use of smoke will help stimulate honeybees to gorge nectar or honey and temporarily disrupt their defensive behaviour to make the honeybees easier to handle during surveillance inspections.
- Never open a beehive unless smoke has been applied.
- Excessive use of smoke may excite and/or irritate the honeybees, causing them to become agitated. Use a little smoke often, rather than too much at once.

Opening the Beehive

- It is preferable to open and examine beehives on warm, dry windless, sunny days when forager honeybees are out foraging and avoiding cold, windy or showery days when the foragers are in the beehive.
- Undo the beehive fasteners (if present) to allow the beehive to be opened.
- Correct manual handling techniques should always be used and damage to the beehive kept to a minimum.
- Approach the beehive from the side or rear. Inspections should be carried out from the side of the beehive and not from in front of the entrance.

- Use the flat end of the hive tool and pry up the beehive cover a little at the rear; this is needed to break the wax seal in the join. Lift the cover a little and direct puffs of smoke over the top bars of the frames or over the beehive mat (if present).
- With the smoker, direct puffs of smoke into the beehive entrance so that the smoke circulates inside the beehive. Give the honeybees adequate time (about a minute) to gorge nectar and honey before opening the beehive
- Remove the beehive cover and place it upside down in a convenient position near the front of the beehive, but not directly in front of the entrance so as not to obstruct forager honeybees returning to the beehive. Remove the beehive mat (if present) and place on the beehive cover. At the same time direct puffs of smoke between the frames.
- Use a puff of smoke to remove the bees from the top of the hive before replacing the cover.

Beehives inspections

- Ensure you open the bee hive and remove the cover as previously mentioned.
- Separate the frames by using the flat end of the hive tool and pry between the ends of the top bars of the frame. Using the hook end of the hive tool and lift under the ends of the top bar of the frame. Gently ease the frame out by holding the ends and lifting up.
- Separate one of the side frames next to the beehive wall and the adjoining frame. Carefully remove the frame from the beehive and place near the opposite front corner of the beehive, again not obstructing forager honeybees returning and in a position where any honeybees crawling off the comb will find their way back into the beehive. Remove the second frame in, if the outside frame is hard to remove due to the amount of burr comb present and the frame can be easily damaged. Direct puffs of smoke into the cavity between frames, since honeybees may fly directly out and sting.
- By removing the frame it allows room for manipulation of the remainder of the frames. Separate the remaining frames and remove independently from the box to inspect the combs. Failure to separate frames will result in honeybees being rolled and crushed as each frame is being lifted out and this will cause the honeybees to become angry and there is a risk of being stung.
- Honeybees should be shaken from each frame to allow a clear examination. By taking the frame at each end and giving it a sharp downward movement with an abrupt stop as low as possible over the gap provided by the removal of the first frame allows a large number of the honeybees to be shaken back into the beehive. Shaking off the honeybees on to the ground in front of the beehive is not recommended. Care should also be taken that the queen honeybee is not shaken off during the shaking process and left outside the beehive.
- Consult with the beekeeper when doing inspections. Brood inspections should only be as long as necessary to inspect the brood frames.
- Honeybees should not be removed from frames by tapping the frames onto the top of other frames or the edges of the beehive.
- Direct puffs of smoke around the top bars the honeybees remain manageable.
- Reassemble the beehive back to its normal position and close it up. Smoke should be used to direct and move any honeybees that might otherwise be squashed when the frames and beehive cover are returned to their position. Care should also be taken not to squash the queen honeybee. Always smoke the entrance of the beehive again after reassembly of the beehive.

- The beehive fasteners (if present) should be done up securely.
- Identify the beehive with a marker pen to indicate it has been inspected.

Extinguish the Smoker Fire

- Smouldering smoker fuel and ash should be placed in a small hole in the ground and water poured over the contents. Ensure it is thoroughly soaked and not a fire risk before covering with soil. A tight roll of paper should be placed in the smoker nozzle to smother the fire if it is unsafe to empty the smoker (e.g. during strong winds).

GLOSSARY

Apiary: Location of the beehives used in surveillance.

Bee hives: One or more boxes to house bee colonies.

Brood box: Bottom box of the hive that contains the queen and bee brood.

Burr comb: Extra wax build-up the bees produce underneath the lid and on the inside of the hive walls.

Comb: Comb is a wax production that bees add to the wax foundation to store either honey or brood.

Frames: A wooden or plastic frame with 3 wires to hold a foundation of wax for bees to use as a base to build comb.

Fuel: To be used in the smoker can be dry grass, paper or Hessian.

Hive tool: A flat metal tool usually with a flat end and hook end.

Hive box: Wooden boxes used to hold frames for bee colonies.

Honey super: Top box/s of a hive above the queen excluder that bees use to store honey.

Smoker: A metal body with bellows and barrel for the burning of fuel to create smoke for use in subduing bees

Queen: The only fertile egg laying female with a larger abdomen than the other bees.

Queen excluder: A thin metal or plastic separator that is in between the brood box and honey supers, to keep the queen excluded to the brood box.

Wax foundation: Flat sheets of bees wax, with imprints of cells for the bees to build upon to make comb.