NATIVE STINGLESS BEES SYDNEY
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Steps involved in either transferring your established colony to a new hive or for dividing your established native stingless bees - in Sydney.

Updating /transferring your existing timber hive (outer).

Summary: this is for transferring your established native bee colony into your new timber hive body. This is a good idea if the existing timber on your hive is rotting, or is not able to dry out, or has warped from water.

Alternative actions: if your timber is sound and not letting moisture in, the alternative is to paint and/or seal your hive body. If doing this, be careful around the entrance area in relation to toxins or chemical fume exposure to the bees. You could use regular household paint, timber oil, timber wax/polish, linseed oil, or exterior timber lacquer.

Steps for transferring your native stingless bee colony to a new empty timber hive.

1. Note: The colony must go back into the same location that it was in.
2. The best time to do this is spring – summer on a mild to warm day. Expect bees to crawl and fly on you (and into your hair and face, and ears). If this worries you, wear a net or face cover (even a face mask and ear phones, hat and sunglasses will assist if you don't have a net/veil).
3. Tip: set up a separate table a few metres away to do the transfer 'operation' and lay down plastic for clean down or newspaper to later compost)
4. Tools: ideally a hive tool, but either an old sturdy regular butter knife, or a paint scraper (or similar) – i.e. a metal flat sturdy tool to slot into the middle of the hive and lever apart the two hive boxes. Other items: towel and bowl of water (its sticky).
5. You may also want a clean container with a lid at the ready in case of any spillage of nectar - to save for a taste later. This container may get resin on it, so don't use a 'good' one. The same goes for a strainer if you are thinking about that, it is likely to be covered in resin/wax.
6. Later for clean up of the hands and tools (either turpentine or eucalyptus oil). Disposable gloves (optional but recommended). Scissors or blade for cutting the plastic strap, paper towel and water for wiping down and cleaning, set up your camera (if you are into filming or photographing it).
7. Have your new hive at the ready in the right orientation (note: the entry hole should slope slightly upwards – in the direction it has been posted to you). Open the empty hive on the table (like a book) so that the transfer of the colony can be swift in one step.
8. The 'operation': cut the strap, remove the roof (it is not part of the colony) Note: this may have ants/spiders/cockroaches in it, so have the paper towel ready to wipe away from the top lid of the hive.
9. Wipe the outside of the old hive to reduce dirt/grime getting onto the inside of the hive. Cleanliness is the key.
10. This next step is best done in a deliberate, methodical way with minimal time to reduce exposure of the bees.
11. With everything placed out on the table nearby, mimic/talk through the steps you are about to do without the live bees. Then when you are confident to move the hive:
12. Move the established bee hive colony to the table and place next to the empty open new hive in the same orientation.

13. Open the 2 halves of the established colony hive (using the butter knife or paint scraper). This can be really tricky as the bees will have put resin in every gap to seal up (glue) the hive. Methodically go around each corner to pry open. Once you hear the 'crack' of the resin seal, pry open the hive slowly and look in at what you are breaking apart.
14. Do this part slowly, and be prepared that the brood will be attached – if so, carefully move the top hive half and gently with a small tool like the tip of the knife pull away the attached centre brood sheet, not squashing the eggs too much, but so that it rips neatly. (see figures 3 and 4 below)
15. Importantly: keep track of the hive orientation (front and back: top and bottom). It is ok to turn the top half upside down and place on the table while you work the bottom half, but remember the direction it goes back on.
16. The most fragile part of the hive is the centre brood (all the eggs and the queen) and we have just pulled that open and torn some of the brood. The queen is in there too. So best to try to not damage that centre part of the brood too much. See photos below to familiarize with what you will be looking at in your colony.

Figure 1. Opened hive (like a book) with the new empty hive next to it at the ready.
There is a small ~3mm gap around the outer edges of the hive. There is usually a hard resin tunnel (maze) from the entry to the stores (pollen and nectar). The brood (eggs and queen) is the spherical part in the centre and about the size of a large orange. The glistening nectar can be seen at the bottom of the photo (in the hive). Dip your finger in for a taste if you like, but this is not a honey harvesting exercise, the bees will need their food to restore and rebuild into their new home.

Figure 2. There is a small ~3mm gap around the outer edges of the hive. There is usually a hard resin tunnel (maze) from the entry to the stores (pollen and nectar). The brood (eggs and queen) is the spherical part in the centre and about the size of a large orange.

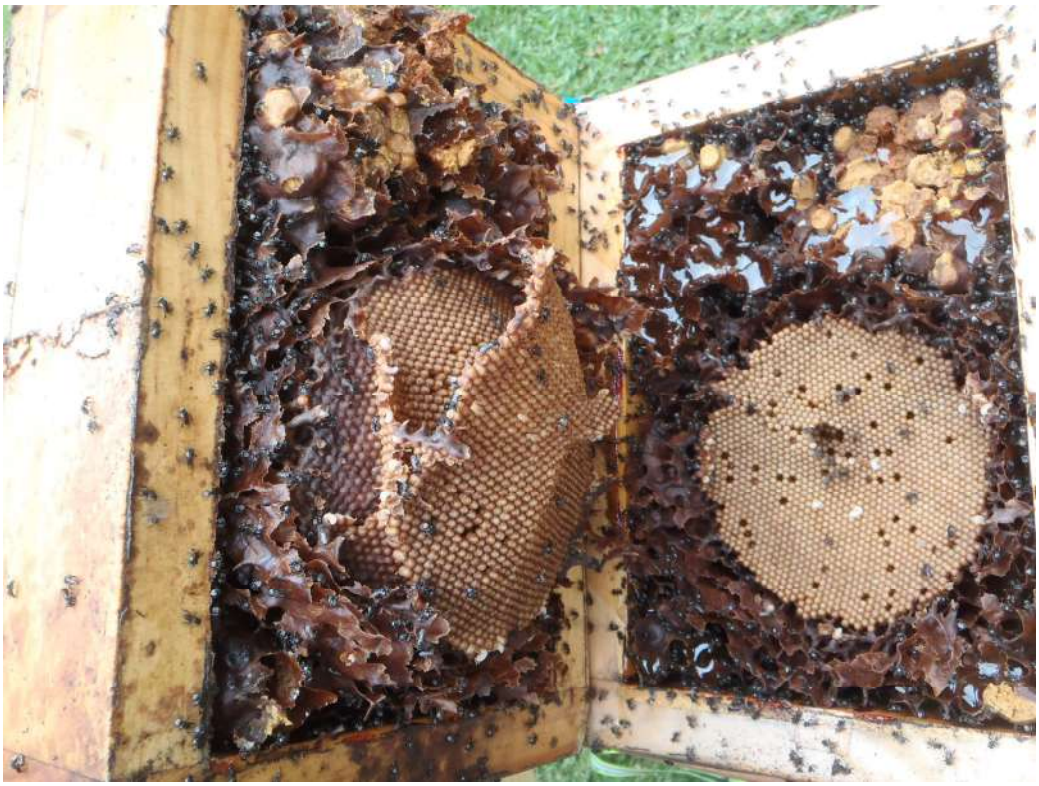

Figure 3. The brood has come away well and quite equally, and there is ample pollen and nectar. The nectar is pooling, which will cause spillage, so this is best poured off into a container with lid put on after (strain later). See the sheets of brood – which need to slightly tear apart sometimes for the hive to be divided.

Figure 4 See the sheets of brood – which need to slightly tear apart and be equally distributed in both halves for the hive to be divided. If you are not dividing and only transferring / updating the outer box, then it doesn't matter if the brood is not equally distributed, just let it fall naturally, and let it find the place it naturally will tear/break.

Figure 5. You might get lucky and see the queen! (can you see her in this photo?) Look for the swollen stripey abdomen. The queen will likely hide as soon as you open the hive. By all means take a photo, but also be swift in the 'operation' to close the hive back up to reduce exposure. Also in this photo (on the left side) is a slightly larger, sealed egg. This is an emergency queen cell.

Figure 6. That's me. New hive at the ready, disposable gloves on. Carefully prying open the hive.

Figure 7 There is a small ~3mm gap around the outer edges of the hive (offset with little pillars they've made). The gap is for airflow, humidity and temperature regulation, and insulation and bee access.
There is usually a hard resin tunnel (or maze) from the entry to the food stores (pollen and nectar). The brood (eggs and queen) is the spherical part in the centre and about the size of an orange.

17. The bees naturally build a small ~3mm gap around all sides (vertical and horizontal) of the hive, and offset with little resin pillars that they have created, and there is usually a hard resin entry tunnel.
18. If you are transferring the colony into a new outer hive, then we need to run the knife around all the vertical edges. The idea here is to lift up the entire bottom half and place it in the new hive. Yes, bees will be crawling across a lot of this and you'll get some casualties (which is why it is only advisable to do this with a strong and thriving colony in spring – summer during warm, dry weather).
19. Free up all the sides (with the butter knife) the same way you would with taking a newly baked cake out of a cake tin.
20. So the base will also be slightly attached – so carefully use the knife to lever the whole colony mass (nectar, pollen, brood and all) put the knife vertically down and lever gently in several of the side gaps to carefully detach the whole colony mass.
21. Then use the knife and your hand to lift up the whole colony mass and transfer swiftly across to the new hive. Push it down gently as the top half will need to fit too, but do not squash or disturb the brood (egg mass) as much as possible (that is the precious part –(the bees will be able to fix up most of the pollen/nectar that has been squashed).
22. At this time - You may elect to draw the flying bees away from you by temporarily putting the new filled up bottom half over in the original position – which is also pretty amazing to see all the forager bees that have accumulated there who will be very excited and confused to see their hive back (or at least half of it for now).
23. Then we move onto the top half of the hive.
24. Repeat the same steps to move the colony mass (nectar, pollen, brood and all) and into the top half.
25. The next step is to join the two filled up halves together (in the same orientation as the colony was before). and paying very careful attention to the brood lining up and **not** squashing the brood. Do this back at the

table (i.e. bring back the filled new bottom half if to your 'operation' table, that is if you had moved that bottom half temporarily to its original position).

26. Make sure both halves match back up and push the two timber boxes together. It is important that the boxes are completely meeting (no gaps). Make sure all timber edges are aligned as this is how they will stay (the bees will glue every join back up from the inside again.
27. Place the new roof on, and place your new hive back in the exact same location.
28. The bees will need about 30 minutes or so to 'calm back down'.
29. Make sure that all spillage, honey, nectar, resin etc. are cleaned up and not on the outside of the hive, else this can attract predators (ants, cockroaches, syrphid flies and bembix wasps) which can detrimentally compromise the hive.
30. Clean up the 'operation' table – don't leave the residue. If newspaper was used, this can be put together with nectar spillage, resin etc) into the worm farm or compost bin).
31. If you notice honey spilling out of the hive, wipe clean the outside, place several layers of news paper (or plastic) under to catch, and swap over every 12 hours or the next day till it stops. This spillage will stop in a day or two as the bees will 'fix up' the broken parts of the hive with the wax they produce and resin they collect. Keep wiping the outer box with water wet cloth.
32. Monitor the hive for bee activity in and out of the entry. Note: the bees may elect to close off the entry for a few days or a week. If you don't see bees after say 5 days (if good and warm weather), then gently poke a small hole through the entry to 'remind' the bees of the outside world. (something like a coat hanger or skewer works and insert say no more than 4cm (be careful not to squash a bee waiting in the entry). This would be the same instruction for any hive in good warm weather (over 18 degrees) if you don't see bee activity (i.e. bees flying in and out). They won't naturally be flying out in the rain or colder weather under 18 degrees Celsius.

Dividing or propagating your hive to create 2 colonies.

Summary: this is for well-established and thriving native bee colonies with plenty of food stores (nectar and pollen) with the intent to create 2 colonies. Some people refer to this as splitting.
Be ready for: if your hive is not ready, it is crucial that a decision is made to close the hive back up and not divide at that time. (see below for ways to check and decide).

Instructions:

1. First: Work out a suitable location for your new hive and have this ready and prepared. If you are planning to drive your divided hive to a new location (more than 1.5kms away), then fold up a paper towel to create a 'plug' and insert into the entry of the new hive, and make up another paper towel 'plug' ready to plug up the entry of the existing hive. Also have a strap or string to tie the hive that you are transporting (so that it doesn't shift in transit) and have a box or tarp or similar in the car (in case of slight spillage of nectar).

Figure 8. Paper towel 'plug' (refer description above).

2. Follow the tools/equipment and set up steps 1 through to step 16 above.
3. Now you have opened up the hive. Make sure to keep track of the orientation of each half (top: bottom and front: back).
4. Don't skip this step: Check that the brood is a decent size (i.e. the size of a medium to large orange), and check that both halves of the hive have about the same amount of brood in each half. If not: then I recommend you close the hive up and put back and leave for a month or more until proceeding. At this time, take a photo to refer back to so you can compare both halves at a later date. Both halves will also need to have good pollen and nectar stores (food). If not, don't divide and then when you close up and clean up, it is a good idea to weigh the full hive and record the weight and date, so that you can check next time if it has put on weight (i.e. more food and pollen stores and a larger brood size will mean a more robust and thriving hive) and better chances of surviving the division. Weighing is much less intrusive than opening up the hive each time. I recommend checking monthly in spring and summer if you are planning on dividing. Or elect to try again next year. See images on the next pages to see examples of strong and weak hives to help this decision making process for your hive.

Figure 9. Photo above. this hive did not have enough brood and stores in the top half, so it could not be divided (apologies for the blurry photo).

Figure 10. Definitely not enough food stores. Note enough brood in the top box either. This hive needed to be closed up and left for another year at least to build up their pantry (food stores of pollen and nectar).

Figure 11. Brood not big enough. This hive cannot yet be divided as it will struggle to rebuild. Close it up, record its weight and leave it for 2 months to see if it has built up.

Figure 12. As a comparison to the previous photo: The brood in the centre is the diameter of a medium to large orange. If the brood mass is not as big as a medium to large orange, and more like the size of a lime, then it is best not to divide it at this time. Close it up, record its weight and leave it for 2 months to see if it has built up. This brood

is big enough and has equal distribution of brood and food stores.

Figure 13. Empty new hive next to the established colony on the table at the ready. Note: the brood on this hive has not come away equally, so will not be suitable for dividing at this time, but may be in a few weeks (if seasonally suitable i.e. spring – summer).

Figure 14 This brood is big enough and has equal distribution of brood and food stores across both halves. The brood on the left (which is the bottom half of the hive) has the 'advancing front' (which is the newer eggs and is likely where the queen is residing/laying. This will likely be the stronger hive after dividing.

5. So the next step once you have evaluated that your colony is strong and thriving, work out which hive will go to the original position and the new location. If you are transporting your hive, and have your paper towel plugs (refer point 1 above), then plug the entry of the hive you elect to transport (to keep the bees from escaping back to their original location).
6. Clear debris from the edges with your knife (that could hinder a nice neat seal of the boxes coming together). Tip: if you have a little of the bee resin available, manipulate it like clay onto the inside of the new hive entrance, as the bees will be able to utilize this wax/resin to re-create their entry and it will be helpful to make the entry smaller temporarily whilst they set up their defenses after being divided. I like to create a little ring (donut shape) around the inside of the new entry – still leaving an opening, but a bit smaller. It also helps send out pheromone of the hive.
7. Put your new box on top of the original bottom hive.
8. Put (flip) the top original hive onto the new empty bottom hive. Make sure the front is facing the front.
9. You now have 2 hives, each with half of the colony in each, and each with a new half box.
10. Make sure both hives are pushed together tightly for a good seal.
11. Strap together the hive that is to be transported (if transporting).
12. Place the roof on and put the divided hive that you elected to put back into the original position back, and if it was plugged, remove the plug. There will be lots of bee activity at the original location.
13. The next few days and weeks will be critical to monitor both hives. The population has been effectively divided, so their defenses have been halved and they will need time to re-establish and build up. The bees in in the new location will also need to geolocate and also work out where their food stores are for foraging.
14. Note: There will always be a risk of the division not working and this can be for so many different reasons, including short and long term weather and seasonal patterns, location, bee genetics, colony strength. For FAQ;s and Troubleshooting, I have put some other information sheets together at the below links

Figure 15. Just after dividing or after opening the hive, the forager bees will be very excited to be reunited with their hive back in the original position. This activity will calm down after about 30 minutes.

Hive size:

The hive size is compatible with the native stingless bee hives known as the OATH (*Original Australian Tetragonula Hive*) which was developed by Tim Heard, Queensland Entomologist of Sugarbag bees and author of "The Australian Native Bee Book" (which I highly recommend).

- the hive width is 200mm).
- The hive length is 250mm (+ roof overhang).
- The hive height is approx.: 300mm with roof.

Other dimensions of the hive:

- The approx. width of the hive at the eaves is: 280mm (widest part of hive)
- The height of the hive at the eaves is approx. 210mm (the pitch of roof approx.100mm above that)
- The overhang at the back (of the roof) is only about 22-25mm (this allows for easier mounting against a fence/wall / on L brackets). The length of roof ridge line is approx. 350mm.
- The base plate is about 22mm thick

More information and links

The following link is to .pdf documents with images that I have written to assist with the installation and troubleshooting as well as instructions on how to divide an established native stingless bee colony and transfer over to a new outer hive body – for *Tetragonula carbonaria* (Native stingless bees) in Sydney, coastal locations. Other regions will have different parameters and tolerances.

ELKE Native Stingless Bee Information Pack, FAQ's, How to install/locate - Sydney Elke Bees - Elke Haege Landscape Architecture + Consulting Arborist

220226_Elke_Native Bees_information sheet
220226a_Elke_Native Bees_How to install_getting set up
220226a_Elke_Native Bees_Troubleshooting and FAQ

Here is a link on my website of a 12 minute video of me showing and explaining the different parts of a Native Stingless Bee Hive (care of: the Randwick Sustainability Hub)

Here is a recording of Dr. Tim Heard (entomologist) workshop on Native Bee Hive Management (42mins).
