Pesticide-free Honeybee Extermination

Note: Please follow all safety precautions outlined in hand-out titled "Honeybee Safety". In addition, exercise good judgment when assessing whether a particular hive infestation will require a professional exterminator licensed by the Office of Pest Control Management to use regulated pesticides.

Swarms Are Not Hives

A ***swarm*** is a fully exposed group of bees on a tree or structure that is on its way to a future home and has not yet moved into an internal cavity and/or constructed combs. It's size can vary greatly – anywhere from a fist size to that of a large watermelon in more rare cases. In some cases swarms will build comb that is fully exposed to the elements. However, 95% of the time they establish a hive in an enclosed cavity. That is, once they all agree on which cavity will make the perfect home for them. Swarms tend to be easier than established hives to relocate, and the risk and intensity of stings is greatly reduced but not completely eliminated.

A ***hive*** is an established colony of bees entering a space through a small hole or crack. Although in some cases a hive can be exposed to the elements (i.e. on wax combs hanging from a branch or roof overhang), a hive has begun to build wax combs and raise larva. They will not "move on" any time soon, and will defend their young and stored honey. While swarms generally sting very little (if at all), established hives that are not regularly managed for temperament by a beekeeper can protect their space by stinging in varying degrees depending on their population and genetic disposition. Each hive is different and you should assume that it has the capacity to defend itself vigorously. Always keep yourself and pets clear from the hive entrance.

When To Use a Professional Extermination

- Hive demonstrates significant defensive behavior – following, bumping, and stinging without provocation up to 20 feet or more from hive entrance.
- Proximity of hive to public spaces or public utilities is too close (within ~100ft or less).
- Structure cannot be relocated safely or in a timely manner.
- Hive is too difficult to reach or access using standard tools/methods.

Challenges Presented Due To Locations/Structures Used By Honeybees

- Fully exposed hives (ie. under soffit overhangs): These are the easiest to relocate or exterminate.
- Block Walls: Present the major challenge of locating all access points, and the material must be broken into to remove combs. These situations are best dealt with by repeated plugging of entrances over a periods of weeks, or using an exterminator licensed to apply a far reaching atomized or gaseous pesticide.
- Stick and Stucco: Supporting/structural studs, electric/plumbing, or other things must be located. Drywall is easily opened and repaired. Stucco material on the outside requires a special blade, so going in from drywall side is best. Plugging escape routes (cracks) as much as possible during extermination is recommended.
- Soffit overhang: If the hive is concealed the bottom board can be removed, yet caution needs to be exercised to plug escape routes back into roof space over living areas, or by working quickly from the back of the hive towards the entrance.
- Bird hole vent to attic space: If full access cannot be gained to the attic space, these situations are best dealt with by using an exterminator licensed to apply a far reaching atomized or gaseous pesticide.
- Sheds: Typically hives will be found under plywood floors of sheds, which can be cut open to access the hive.
- Mobile Homes: Typically hives will be found being built just under insulation down from the plywood underlayment and joists. Climbing under the mobile home is uncomfortable and working upside down presents challenges, but once the insulation is removed the hive can be sprayed with a surfactant to suffocate the bees.

- Irrigation/Electric Boxes: The primary challenges here are the combs being built around fixtures and wiring. Again a surfactant can be used to suffocate the bees while taking care to not damage the surrounding wiring/fixtures.
- Trees/Saguaros: Unless one is prepared with a chainsaw and permission to damage potentially protected or valuable landscape vegetation,. Otherwise, the only option is a time-consuming live trapping of the colony over a period of several weeks by a beekeeper.
- Earthen or rock crevices: Earthen crevices containing a hive can be submerged with water containing significant amounts of a surfactant and then collapsed if the extent of the cavity is known. These situations are best dealt with by using an exterminator licensed to apply a far reaching atomized or gaseous pesticide.
- BBQ Grills/Dresser Drawers/Vehicles/Equipment: In some cases these can be screened and moved at night to a safer location away from residents where a cut-out or extermination can take place. If the hive cannot be moved, be prepared to move quickly as opening these structures can lead to immediate damage to brood combs and cause bees to become defensive very quickly.

Method Pro's and Con's

- Plugging/Sealing – Can be problematic if multiple trips cannot be made to ensure all access points are being plugged. Use any material that cannot be chewed or degraded by moisture. A liquid nails or 1/8" screen wire mesh can work well.
- Suffocation (Sulfur, Surfactants, Chemical Fumes): Honeybees breath through pores along the sides of their abdomens, which once coated by something like soapy water (surfactant) can suffocate them within seconds to minutes. Care must be taken to coat as many bees as possible while looking for bees that may be rushing to hard to reach, dark parts of the hive as they try to escape. Typically a large portion of bees rushing towards a dark part of the hive, or a group of bees resting away from the damage, will contain the queen. Repeated applications to these masses of bees will be necessary to reach the queen who may be protected in the center.
- Burning: In rare cases a hive may be burned if fairly isolated and the surrounding structure need not be saved. Poisoning: This is not recommended unless using a regulated pesticide. Honeybees are very adept at evading "bug bombs" or a things like Raid. In addition, a good amount of poison must be used to account for unknown escape cavities within the hive.
- Live Relocation – Vaccum, Cut-out, Trap out. These methods are used primarily by beekeepers who sometimes use the hives for honey production or other things. They require a fair amount of training/skill/planning, and can be very time consuming.

Assessing Safety Risks and Mitigation

Risk to people, animals, and employees can be minimized by advance notifications or warnings that an extermination is going to take place. Signage and barricade or ribbons can be used to direct foot traffic around and away from the location.

Other strategies to maximize safety are:

- Time Of Day: working towards the early or later part of the day, minimizes the number of honeybees flying. During the majority of the day a good percentage of the population can be out foraging for resources. These foragers can augment the part of the population skilled at defending the hive. Conducting extermination at daybreak or sundown minimizes the number of bees that could potentially sting those in the area that may be unprotected.
- Work in Teams: Working with a partner is not only safe, it helps to make the work faster and less stressful. While one is working to conduct the extermination, the other can keep an eye out for potential problems around the extermination site.
- Efficient/Planned work: Make sure things like tools, and trash cans are set up and readily available. You do not want to be searching for these items in the middle of an extermination when the focus needs to be working as quickly as possible.

Checklist

Bee suits	13 gallon trash cans or 5 gallon buckets
Duck tape or canvas leggings	Trash bags
Smoker	Saws-All and/or circular saw
Fuel/lighter	Pry bar
Hive tools or paint scrapers	Head lamps/flashlight
Spay bottles	Cardboard
Dish soap	Signage
2-3 gallons of water	Caution Tape
Paper towels	Scissors

Proper Clean Up and Disposal

When possible scrape cavity and remove as much wax/honey residues as possible. Excessive open honey can attract numerous bees and other insects from the area for a few days.

Leave the entire cavity exposed, or seal it off completely with no cracks or holes leading to it larger than ¼".

Prevention

Retrofitting – devise better ways to design appurtenances and facilities that exclude honeybees from setting up a hive. Use stronger 1/8" wire mesh over bird soffet holes, seal off cracks or holes leading into irrigation boxes, and seal off any possible access underneath storage units.

Education of the public is also necessary, both to reduce unnecessary fears, but also to minimize instances of direct contact with honeybees. Homeowners should be made aware of how prevent honeybees from entering their home, what to do if they encounter a hive, and

Partnering with beekeepers: Relocating a swarm helps beekeepers to participate with the public and other beekeepers on a regional level to select for preferred honeybee characteristics – such as temperament – that are appropriate for our desert circumstances and backyards. The holy grail to mitigating hazards involving honeybees is to target their behavior by propagating hives with docile temperaments. Hives with docile temperaments are headed by queens that have mated with drones from all hives within a 5-6 mile radius. The more we can increase the concentration of drones with docile parentage, the more we can minimize dangers related to unplanned interactions with unmanaged colonies of honeybees. Those who do not want manage hives, yet are trained to remove them might be able to distribute swarms (future hives) to local area beekeepers before they establish.

Depending on accessibility, it can take a minimum of 20 minutes to relocate and/or destroy a swarm, 1hr to destroy an established hive, or 3 hrs to safely relocate an established hive.