

## Best Practices of Beekeeping

Adherence to best practices of beekeeping, from hobbyist to large commercial ventures, play a large part in ensuring the healthy maintenance of apiaries and the safety of the citizens of the County of Hawaii. These are based on bee biology and behavior. Beekeepers will use best practice management to determine the number of hives in the apiary. Each beekeeper shall conduct regular inspections and use appropriate techniques to mitigate nuisance behavior and to ensure the overall health of their apiary.

The following are the most basic, but not inclusive:

1. Placement of apiaries. Apiaries should be situated where the flight path of bees would cause the least disturbance to the surrounding community. Altering flight paths with barriers of six feet have been accepted as adequate in directing the flight of foraging bees.

Hives elevated to 8' or more do not require a barrier.

Hives should also be protected from bright lights at night.

Rationale: When foraging, bees are typically already higher than an average person within a few feet of exiting a hive. By the time they are 10 feet away, they are already thinly dispersed in their search for nectar, pollen and water.

Presence of bee forage resources and knowledge of bee behavior determines how many hives the apiary location can support regardless of zone.

Bees are attracted to lights at night.

2. Provision of water. Bees use water to cool their colony. They can be observed fanning their wings at the entrance of hives to create evaporation of water to cool down their combs. They also use it to dilute and utilize stored honey when there is no available nectar.

Rationale: Having adequate sources of water on site reduces the chance that bees will visit swimming pools, birdbaths, dripping faucets, etc..., to satisfy their need of water and becoming a nuisance. Watering stations such as shallow containers with water plants for landing and drinking, or floating pieces of wood, rocks, etc..., should be accessible and sufficient to support the number of hives present.

3. Prevention of swarming. Swarming is a natural behavior of bees to split off a colony and perpetuate their species. The queen and approximately half the colony will leave the hive in a swarm to establish a new colony. The remaining hive is left with the

means to produce a new queen to regenerate themselves. Contrary to popular belief, a swarm does not gather to seek and attack anyone. They are in self-preservation and self-perpetuation mode. They send out scout bees to find a safe new home while the majority of the colony rests in a temporary landing area, typically a nearby tree.

Rationale: Although this is a benign process, to avoid concern in the neighborhood at the sight of a swarm, observation and good judgement on the part of the beekeeper by splitting a colony in a controlled manner, or by using techniques that reduce the factors triggering swarms, will in many instances prevent swarming.

4. Prevention of robbing behavior. Bees will rob other hives when there is less nectar and pollen available, usually in the fall and winter months, even in Hawaii. Stronger bees will typically prey upon a weakened colony.

Hives that are infested with small hive beetles and Varroa mites weaken bees, leaving them vulnerable to robbing. Also, leaving exposed combs of honey and sugar syrup in the apiary encourages robbing. Robber bees and defenders will fight and sting each other to the death.

Rationale: Defensive behavior in both the robbing bees and defending bees are increased once robbing is initiated. Beekeepers must approach hive with caution. The robbing bees may become a neighborhood nuisance as they seek out sources of food.

Maintaining healthy bees by keeping hive pests at a low level, providing for the biological needs of their bees, and good sanitation practices by beekeepers will go a long way to mitigate robbing of hives by other bees. Prevention is key as there is little a beekeeper can do once robbing starts.

5. Sanitation of abandoned or empty hives. Hives for reuse should be stored in a sealed container, thick plastic bags, or in a pest-proof environment. Hives that are not to be reused should not be abandoned on site, but adequately cleaned and products of the hive disposed.

Rationale: Leaving old honeycomb and honey in hives after the loss of a colony can result in robbing, bringing bees in the neighborhood that weren't previously there. It can also encourage the invasion of pests, such as wax moths and small hive beetles to the area.

These are just a few of the practices of good beekeeping that serve to foresee and mitigate nuisance behavior of bees, and will vary with each situation.