

NATURAL BEEKEEPING TRUST GUIDELINES

Introduction

In the United Kingdom, we enjoy one of the most diverse countrysides in Europe. Our land includes chalk meadows, acid heath land and deciduous woodland: the natural habitat of the honeybee. The countryside also contains fruit orchards, vegetable gardens and fields of oil seed rape. Our towns and cities have gardens and parks full of different trees, shrubs and flowers.

The sustainability of much of this 'Garden of Eden' depends on the presence of bees of all types to maintain pollination. The honeybee not only performs the greatest proportion of this vital task but also provides the gift of honey. These feral creatures, whose natural habitat is deciduous woodland, readily occupy the wooden hives we offer them to replicate their preferred abode, the hollow tree.

In the past, man has used hives to protect bees and to facilitate honey collection. Over the last 150 years ever-more ingenious methods of manipulating bees have been developed with the sole aim of increasing honey yields. In addition, honeybees' natural reproduction has been thwarted by artificial breeding of queens. Coupled with the spread of chemical farming methods, monoculture and the resultant decline in biodiversity and loss of natural habitat, this intensive management has led to a serious decline in honeybee health.

Bees have become fatigued, weak and susceptible to disease, and are mostly kept alive with regular medication. Massive bee losses in the USA have contributed to alerting a wider public to the state of the honeybee. Scientific research of honeybees' health rarely addresses the effects of bee husbandry, commercial or otherwise. Most efforts are directed at researching the manifestations of the bees' compromised immune system, rather than the underlying causes.

As the honeybee's survival appears less than certain, growing numbers of beekeepers have felt prompted to search for a deeper understanding of the nature of bee colonies and their intrinsic needs. In 1994 the *Demeter Standards for Beekeeping* were published, after pioneering work on sustainable beekeeping by a group of beekeepers in Germany.

Today, there is an international community of beekeepers exchanging ideas about good practice in sustainable beekeeping. One such initiative is the Natural Beekeeping Trust, which promotes husbandry that supports all the natural life expressions of a bee colony. Husbandry advocated by the Trust is based on viewing the bee colony as a whole and respecting this integrity.

Natural beekeepers make provision for colonies to build their own honeycomb and retain the warmth and scent of the nest environment. They allow colonies to reproduce and rejuvenate through swarming and to overwinter on their own honey. There is mounting evidence to suggest that natural beekeeping makes a significant contribution to improving the health of the honeybee.

The following guidelines outline the main principles of beekeeping as practiced and taught by the Natural Beekeeping Trust. These are, of necessity, 'work in progress'. Living with bees is a process of life-long learning. Anyone who contemplates inviting bees into their life is advised to take every opportunity available to educate themselves about the nature of the honeybee and its needs. Bees are struggling to survive in a natural world whose balance is gravely upset through our ignorance and greed. It is incumbent upon us to discover what the bees need from us to regain their vigour.

MAIN PRINCIPLES OF NATURAL BEEKEEPING PRACTICE

1 Retention of Nest Scent and Warmth

When a natural honeybee colony occupies a hollow space, it seals up gaps with brace comb and propolis and starts building comb. Within this structure the colony will raise brood and store honey and pollen above the brood nest. The bees maintain the temperature of the nest at 35 degrees Celsius by adjusting ventilation gaps, fanning to change air and heating the nest. The resultant environment has antifungal, antibacterial and antiviral properties built up from the beneficial chemicals in propolis and the enzymes and trace elements contained in nectars and honey. Bee pheromones contribute to the unique smell and harmony of each colony. This warm, antiseptic environment will help to keep bees healthy. Every time a hive is opened this environment is destroyed, requiring extra work to rebuild structures and reheat the nest. Brood is cooled and the bees weakened by extra work and stress. Weakened bees will be susceptible to disease. The principle of retention of nest scent and warmth dictates all husbandry in natural beekeeping. Natural beekeepers assist the colony in its efforts to maintain crucial nest warmth and atmospheric conditions, and make due provision to keep hives warm and dry.

2 Comb Building

Making wax and building comb is one of the essential life expressions of the bee colony. It is not acceptable to use pre-formed foundation. Bees may be offered 'starter strips' of wax or wax beads affixed to the topbar to encourage comb building along the bars. The wax used for these must be sourced from a reliable organic source.

3 Maintenance of Brood Nest Architecture

The comb structure built by the colony is an intrinsic part of the organism. It is built to enable the rearing of brood and the deposition of vital stores. The colony constructs the combs in such a way as to enable optimum communication within the hive. Any wilful re-arranging of combs and/or damage to combs places

an undue burden on the colony, which will be forced to re-organise and repair the structure to suit the colony's needs as well as reheat the nest. Combs containing eggs, brood or queen cells are an integral part of a colony's brood nest and must not be swapped between colonies.

4 The Principle of Nadiring

The bees are further enabled to retain nest warmth and scent by the way in which the beekeeper allows for colony expansion when using a stacked hive system. Extra space is provided by placing an additional box *below* the brood box - this is nadiring as opposed to supering. The use of supers is not recommended as bees are artificially induced to work harder when honey stores above the brood nest are removed, not to speak of the extra efforts required to compensate for the cold space created above them. In addition, the creation of empty space within a bee habitat is stressful for the bees, who possess a highly developed sense of space. The repeated removal of honey stores, particularly in the late summer, stresses and fatigues the bees and makes them more susceptible to disease.

5 The Use of Quilts for Warmth Maintenance

To assist the colony in maintaining nest warmth in a stacked hive system it is strongly recommended that a breathable top cloth and 'quilt' be used as an insulating layer between crown board, if applicable, and roof. Suitable materials for this are listed under 'Hives'. It will be found that bees overwinter better and consume less of their stores when provided with an extra warmth layer at the top of the hive.

6 Swarming

Bees naturally reproduce by colony division initiated through swarming. Swarming is the ultimate expression of a good healthy bee colony and is welcomed as such by the natural beekeeper. Colonies preparing for swarming have reached an optimum stage in their development. Swarm prevention measures as routinely practised in conventional beekeeping undermine colony health and are not rooted in concern for the welfare of the colony. Natural beekeepers are encouraged to inform their neighbours and the general public about the importance of swarming for healthy bees. They also ensure that swarms can be dealt with swiftly in order to minimise disturbance. The provision of bait hives can help with this process.

7 Overwintering On Honey

It is of great importance that bees over-winter on their own honey. Depriving the bees of the bulk of their stores and making up the shortfall with sugar feed is not permissible. Only surplus honey collected by the bees in favourable seasons may be harvested, and it is imperative that the likely needs of the colony are

carefully assessed before any honey is harvested. It is also good practice to always retain a stock of the honey harvested (preferably left in the comb) for unexpected emergencies and for young colonies who were not able to build up sufficient winter stores.

HUSBANDRY - SUPPLEMENT TO MAIN PRINCIPLES

Hives

Only hives constructed from natural materials such as wood, straw or clay are suitable for healthy colony development. The use of metal is to be kept to a minimum, eg nails and screws.

Top cloths/quilts must be made of natural, breathable, moisture absorbing materials (wool, sacking, wood chippings etc.) to enable good ventilation as well as heat retention.

Sufficient space must be provided for uninterrupted growth of the brood nest, keeping in mind that bees will naturally draw the brood combs downwards as a dome of honey stores is built above the nest.

The queen has access to the entire space the colony inhabits. The use of queen excluders is not permitted.

Hives must be watertight and free of gaps or holes to ensure a draught-free environment. Some climates may require a top entrance as well, especially in winter. Small crevices and holes will usually be sealed with propolis by the bees as required.

If mesh floors are used, an inspection board or sump should be kept in place. The roof design must allow for the shedding of water in order to keep the colony dry as well as allow good ventilation over crown boards or mouse boards covering quilts. 'Safari roof' designs may be used to keep colonies cool in hot weather.

Hive Paints and Treatments

Materials for the exterior treatment of hives must be ecologically safe and free from insecticides, fungicides and petrochemicals. Linseed oil and beeswax are suitable for hive boxes, natural waterproof paints for roofs. Only beeswax and propolis may be used for interior surfaces.

Recommended methods for cleaning hive parts are mechanical scraping, blow-torching and flushing with boiling hot water and washing soda.

Siting of Hives

Take care to find the right place for the beehive(s) as bees are much helped by a good hive environment. Hives should face south or east for maximum exposure to sunshine, particularly during the winter. Equally important is protection from strong winds, especially from the north and east.

Ideally hives should be positioned in environments affording good polyfloral forage, free from chemical treatments, such as wild flower meadows, organically/ biodynamically cultivated land, uncultivated land or domestic gardens. A degree of seclusion is preferable, as this will help to minimise stress.

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Consideration should be given to colony density to minimise the stress of too many colonies competing for forage in a given area. Excessive colony density also increases the risk of disease transmission. Note: Feral colonies surviving varroa in woodland live about one kilometre apart.

Beehives should not be sited where they can inconvenience neighbours or disturb livestock.

Populating Hives

The aim is to house suitable bees while causing them minimum stress. The following options are available:

- Feral swarms attracted directly into the hive or bait-hive
- Collected swarms from local natural beekeepers
- Nuclei prepared on appropriate bars to suit the intended hive, ideally a mature swarm rather than a split colony.

Colonies should be headed by a local queen adapted to local forage and weather conditions. It is much preferable to obtain bees from natural sources rather than commercially produced nuclei headed by artificially-reared queens. Local bees are adapted to local forage and climatic conditions and fare better.

Swarming, Making Increase and Breeding

Ideally, colony numbers are increased through allowing the bees to swarm and making arrangements for swarms to be collected and re-housed. Where circumstances do not allow this, swarms may be anticipated through creating an 'artificial swarm', keeping in mind that such divisions must be carried out at the right time, that is just before a natural swarm would be due. Only then can the procedure be carried out without harming colony cohesion. The right time is judged by non-interventional observation of colony activity during spring time. Multiple intrusions aimed at finding swarm cell are not acceptable, and it must be remembered that artificial swarming splits do not entirely replicate the natural swarming process and are therefore a substandard replacement.

Artificial queen rearing through grafting etc. is unacceptable as is instrumental insemination of virgin queens. Commonly used 'swarm prevention measures' such as clipping the queen's wings, cutting out queen/swarm cells and culling of queens to replace with new queens are not permissible.

Uniting colonies

Uniting is acceptable when bees have little chance of survival. This may be before autumn when weak colonies have insufficient reserves. Colonies found to have lost their queen may likewise be united with another.

A colony to be united with another should be checked for signs of foulbrood disease. The uniting of colonies for the purpose of increasing honey production is not acceptable.

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Taking Surplus Honey

A box of honey comb may be taken off the hive in autumn after the main flow. This must never include brood. It is imperative that sufficient honey is left in place over the brood to sustain the colony over winter. If necessary, the hive should be weighed and the quantity of stores calculated. If in doubt, don't take any.

It may be preferable to postpone taking honey from the bees until the spring flow. Conscientious beekeepers will err on the side of caution when removing bees' stores for their own use. They will also ensure that a quantity of honey is retained at all times to allow for feeding back if weather conditions would leave the bees exposed to starvation. Honey should never be taken from colonies in their first year.

Feeding

The underlying principle is that bees should be nourished by their own honey and pollen, preferably from polyfloral sources which have been shown to aid the maintenance of the bee's immune system. It is not acceptable to replace honey stores with sugar syrup.

Where feeding is required in winter or early spring to prevent starvation honey from the same apiary should be used. If this is not possible, fondant (made from white cane sugar – ideally organic, and containing 20% honey (stirred into the cool but not set mixture)) is an acceptable emergency alternative.

A swarm, late in the season or hindered by poor weather, may be assisted in its comb building by feeding 1kg of white cane sugar syrup two days after hiving if honey is not available. In either case the mixture should contain at least 20% honey and about 10% chamomile tea and a pinch of salt to aid bees' digestion.

The use of honey from unknown sources is inadvisable as it may contain diseasepromoting organisms.

Bee Health

It is easier to promote good health than to cure disease. A colony should be able to maintain health and combat bacteria, pests and viruses from its own resources. We aim to promote bee health and vitality by providing the best hive conditions possible, supporting the bee in its natural activity and minimising husbandry related stress.

It must be left to the beekeeper's discretion whether or not to adopt a 'no treatment regime' regarding varroa, as practised by increasing numbers of natural beekeepers, as there is a risk of colony loss.

Beekeepers with only one or two colonies might wish to make a progression from 'treating' to non-treatment. Acceptable substances for treatment are formic acid, lactic acid, and oxalic acid, whilst herbal essential oils such as lavender and thyme can be used, at the appropriate dilutions, as preventative measures.

It is the beekeeper's duty to ensure that conditions inside the hive and in the wider environment meet the bees' needs. This applies to individual husbandry choices as well as apiary sites, number of hives, distance between apiaries (always be mindful of the likelihood of drifting and consequent spread of disease), competition for forage (remember that other pollinators such as bumblebees and butterflies need food, too) and - importantly - the variety of forage available.

Monitoring/Inspection of Colonies

Routine inspection and monitoring is essential in order to gain early warning of disease. Anyone who keeps bees has a duty to educate himself about bee diseases, some of which are notifiable by law.

Regular attention to colony behaviour will give indications when all is not well. In the event of opening the hive the inspection will be graduated in response to observed indications. Frames and unfixed topbars may be removed for the purpose of close inspection. Boxes with fixed comb can be tilted in alignment with the lie of the comb and the lower surfaces inspected. The use of a mirror can help with this. The condition of the colony may also be assessed during harvest when a box is removed. The box may then be dismantled and all combs inspected.

Importance of Observation

The state of the colony will be assessed by experienced, regular observation of bee activity at the hive entrance. There is no substitute for regular and patient observation throughout the active season. Indications may be gained by sight, hearing or smell.

'Reading' the hive debris at the entrance or on a removable floor board is a skill acquired over time and will give meaningful indications of colony condition/activity. It is helpful to provide light-coloured paving

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slabs or similar surfaces in front of hives to monitor the debris that bees throw out. A twice yearly routine inspection may be carried out (one of these could be conducted by a Bee Inspector), but apart from these, hives should be opened only when there are indications that something is wrong.

Our experience shows that serious health problems are less likely to occur in the context of husbandry methods that are orientated to the colony's needs as opposed to the beekeeper's. These guidelines have been developed in this spirit and will be augmented and refined as we learn from others of goodwill, and - most importantly - from the bees themselves.