

Beekeeping at 'The Duchy Nursery' Lostwithiel.

Working with the native bee to maintain local biodiversity



The Duchy is working with Rodger Dewhurst of Gwonen Apiaries, a member of a small group of dedicated local beekeepers who's aim is to conserve the native black honeybee of Cornwall as part of the B4 Project. He chose 'Gwonen' for his business name as it is the 'Cornish' for honeybees.

Rodger has kept bees for over 40 years and got his first hive from the Lizard Peninsula in 1972. He specialises in breeding the native Cornish black bee and selects for their disease resistance, especially to Varroa, as well as their distinctive local characteristics and has received international recognition for his work.

The B4 Project aims to establish breeding lines of these native bees selecting from the best stock available. Here at the Duchy Nursery a mating site has been set up for producing these rare native bees.

The Southwest's unique peninsula characteristics, its stronger prevailing winds and maritime climate have all contributed to shaping this bee and its adaptations to the local environment. It is these Cornish bees that reside within the Duchy, where these characteristics are most developed. The native black honeybee of Cornwall is distinct from other bees that occur elsewhere in the UK and even within the county local variation occurs.

The Cornish native bee is dark, almost black, typically slightly smaller, is able to fly in cooler conditions and known to forage in light mist and sometimes drizzle. They can be found regularly flying in the winter when other bees are still in their colonies, thereby providing much needed pollination of a variety of winter flowering plants and bringing top-up supplies of pollen and nectar to the colony.

It shares other specialist adaptations with its native cousins, such as being more hairy, thereby helping them keep warmer in colder conditions and for collecting pollen. It is more robust, lives longer, has an ability to store lots of pollen for when weather is poor and adjusts colony behaviour to match the prevailing weather conditions.



Varroa and Disease Tolerance

When Varroa arrived in the early 1990's, Rodger expanded his stock of native bees to ensure they were preserved. He also examined how they were responding to the parasite and observed that the bees were adjusting their behaviours to deal with the pest by **Grooming** more frequently to get rid of the mite. They were also **Biting** with their mandibles to remove and damage the mites during that grooming often killing the mite or severely damaging it and where brood had become infected with the breeding mites they were removing it known as **Hygienic Cleansing**. That led to the establishment in 2002, with Dr James Kilty, of the Cornwall Bee Breeders and Bee Improvement Group, specifically aimed at conserving the native bee and breeding for Varroa tolerant traits using an evolutionary adaptation approach to selection.

This research led to a presentation of his Rodger's work at the SICAMM Conference in Versailles University in 2006 for which he received the Josef Stark Scholarship Foundation Award for his Conservation Work in 2008.

The Mating Apiary

The Mating apiary has been specially selected for its topographical and local features being in a sheltered location surrounded by large trees. The bees located at the Nursery are also encouraged to produce additional Drones, (male bees). Virgin queens mate on the wing, so you cannot control who they mate with. There are tens of thousands of queens of other strains of bees imported each year, keeping the native bee pure is very time consuming dedicated and hard work.

Working within the confines of nature, especially the weather means nothing is certain. Other beekeepers unwittingly create problems by not understanding the implications of importing bees or the impact it has on breeding programmes.



New virgin queens are produced by selecting a breeder colony and grafting young worker larvae, less than a day old, into specially prepared artificial queen cells. These have been lightly smeared with royal jelly and the nurse bees then continue feeding these as queens, with only royal jelly giving them up to 2500 times the amount they would feed a normal larva. These have to be kept warm at between 34 and 37 Celsius, which is why the bees tightly cluster round them passing heat through their bodies to the cells

These are then incubated by the bees until they are due to emerge at 16 days and placed carefully into mini breeding hives which have been primed before with bees. The virgins emerge into these mini hives and after some orientation flights and decent weather will mate and start laying eggs, typically after two weeks. Rodger is rigorous in his selection of these new queens and can expect to produce 10 times as many queens to get the best one. He will often let the bees decide which queen they want by putting several in a hive and seeing which one is most popular. These mated queens are tested for several brood cycles for their characteristics before being placed into full hives to produce their liquid gold and to continue their lines.

The future?

Rodger recognises the importance of this work and is humbled by the bees determination to get on with life and deal with problems, most of which man has created for them, through loss of habitat, agro-chemical use pesticides and the importation of bees and associated diseases. Now more than ever the bees need our help and with the careful selection of stock and expanding the breeding programme, the B4 beekeepers will ensure these bees survive. But this is also about finding out the details of what makes this bee so special, which is why the group have received some Heritage Lottery funding, to analyse the specifics of the DNA. Privately commissioned research by the group has already proven that the bees in Cornwall are genetically unique and their DNA is different to many other types resembling almost that of a sub species.

The B4 Project, will back up their research with practical demonstrations of the Cornish bee's unique qualities and are pleased to be working with a number of institutions, organisations and business to further these aims, such as Paignton Zoo, EDEN, Heligan Gardens, Paradise Park and of course the Duchy of Cornwall.