

## BCOG Bee Report February 2014

I am pleased to report that after the appalling weather recently I saw bees flying in and out of both hives today. It bodes really well for the survival of the bees into Spring. It is too early to be 100 percent confident but the original hive has lots of bees and lots of honey stores and the swarm hive have survived so far without any intervention from me. I decided not to feed the bees this year in line with good natural beekeeping practice.

I learnt a bit more about the physiology of bees recently. The first came from a lecture by Professor Adam Hart FRES entitled 'The Wonderful Smelly World of Ants and Bees' at Thomas Hardy School's community lecture. While describing how ants and bees communicate using pheromones he came up with this fact. One teaspoon of the correct pheromone is enough to allow woodcutter ants to lay a trail right around the earth. Bees will also be using similar strengths of pheromones to communicate in the hive.

Secondly I came across some very high resolution pictures of bees at <https://www.flickr.com/photos/usgsbiml/> and noticed that bees have three additional eyes between their two compound eyes. This started me researching bee eyes.



The large compound eyes on bees have 6,900 tiny lenses called facets. Each of these tiny lenses has its own photosensitive cells. The facets are in groups, each with a special skill : patterns, polarized light, colors, motion.

There are 150 of these groups, called ommatidia, in each eye. Every ommatidia is connected to the optic nerve, and each one has 46 facets. The images from the thousands of lenses join together in the honeybee's brain. Bees have excellent detection of color, polarized light and motion. But seeing outlines and forms is not a strong point.

Also assisting in navigation are tiny, sensitive hairs which grow wherever the facets meet. These hairs are believed to detect wind direction, and allow the bees to stay on course in windy conditions.

Honeybee navigation is further assisted by the **three "simple" eyes** that are located in a triangular pattern between the honeybees' antennae. "Simple" here is not just a description, it is a technical term. Each eye has only one lens. Their only purpose – but a vitally important one – is to allow the bees to use sunlight for navigation. These eyes don't see images but can detect light, especially changes in light. The ocelli help bees escape danger because if something is swooping down to eat them, the shadow created by the predator alerts the bee that something is wrong and gives it time to fly away.

More information at <http://goo.gl/X0BDfH> and <http://goo.gl/L3tylO>