

Orientation and Navigation of Bees may be disturbed by man-made electric, magnetic and electromagnetic fields.

The conclusion of research of other scientists and of my own research results in the following six-point-statement:

1. The integuments of bees (and bird feathers) have semiconductor and piezoelectric functions. This means they are transducers of pulse modulated high frequency microwave-fields into an audio frequency range. Several constructions of the integument work like dielectric receptors of electromagnetic radiation in the microwave region.
2. In the abdomen of bees are definitely found magnetite nanoparticles.
3. Magnetite is an excellent absorber of microwave radiation at frequencies between 0.5 and 10.0 GHz through the process of ferromagnetic resonance. Pulsed microwave energy absorbed by this process is first transduced into acoustic vibrations (magneto acoustic effect).
4. It was demonstrate that free-flying honeybees are able to detect static intensity fluctuations and ultra low frequency magnetic fields as weak as 26 nT against the background earth-strength magnetic field.
5. Magnetic field (MF) bursts at a frequency of 250 Hz oriented parallel to the field-lines of the earth magnetic field induce unequivocal 'jumps' of misdirection of up to +10°.
6. The magnetic induction levels today in the environment are in the extremely low frequency range usually between 0,001 and 170 μ T; in the high frequency range between several nT and several μ T. So these levels are commonly higher than the threshold of sensibility of bees to variations of magnetic fields.

On balance, the consequence of all this investigations is that orientation and navigation of bees may be disturbed by man-made technical communication fields.