FACTSHEET: POLLINATORS, CELL TOWERS AND ELECTRICITY

BEES, WIRELESS & EMFS

Pollinators at Risk

The biodiversity of insects is threatened worldwide. Mounting scientific research indicates that non-ionizing electromagnetic fields (EMFs) act as a harmful stressor to insects.

EMFs: An Environmental Pollutant

Cell towers and 4G/5G network antennas emit radiofrequency (RF) radiation and high voltage powerlines emit extremely low frequency (ELF). Both are types of EMF which scientists consider an environmental pollution impacting wildlife.

Ambient EMF levels are increasing in wildlife habitat due to the large-scale proliferation of cell towers, 5G "small" cell towers and electrical equipment in national parks, farmland and ecologically sensitive areas.

Experts Call For Protection

Hundreds of independent scientists are calling for protective policies to reduce environmental EMF exposure due to the growing scientific evidence linking exposure to a range of harmful biological effects.

Defending Pollinators

Government accountability is needed. Outdated EMF regulations were not designed to protect honeybees or wildlife. Environmental agencies should update regulations and EMF mitigation measures are urgently needed to safeguard pollinators, especially in ecologically sensitive areas.

SCIENCE: HARMFUL IMPACTS TO BEES

Higher EMF levels are associated with decreased diversity and abundance of insects. While studies are ongoing, a significant body of peer reviewed scientific research from around the world has documented adverse impacts to:

1. Colony Strength
2. Immune System
3. Behavior
4. Homing Ability (ability to come home)

5. Physiology
6. Reproduction & Fertility
7. Queen Bee Egg Laying
8. Orientation

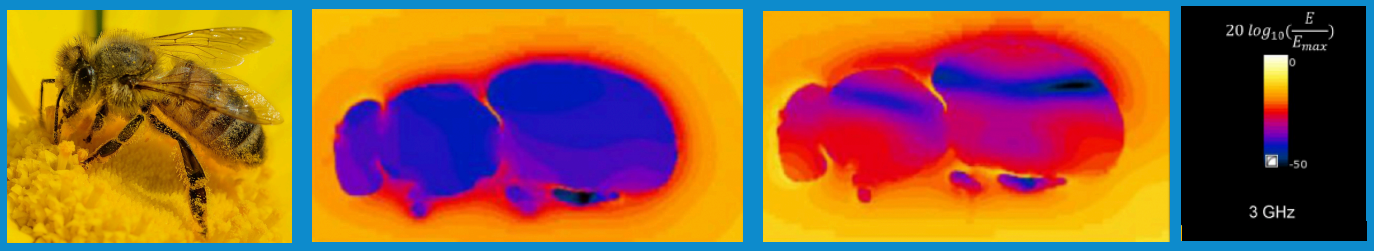
RF = radiofrequency
EMF = non-ionizing electromagnetic fields including RF and ELF

"Electromagnetic radiation should be considered seriously as a complementary driver for the dramatic decline in insects, acting in synergy with agricultural intensification, pesticides, invasive species and climate change."
– Alfonso Balmori (Wildlife Biologist) in "Electromagnetic radiation as an emerging driver factor for the decline of insects" published in *Science of the Total Environment* (2021)

"There is enough evidence to indicate we may be damaging non-human species at ecosystem and biosphere levels across all taxa from rising background levels of anthropogenic non-ionizing electromagnetic fields (EMF) from 0 Hz to 300 GHz."
– Levitt et al. in "*Low-level EMF effects on wildlife and plants*" published in *Frontiers in Public Health* (2023)

BEES AND INSECTS ARE UNIQUELY VULNERABLE

Research Finds Higher Exposures into Insects From 5G's Higher Wireless Frequencies Even When the Power Remains The Same



Honeybee | Exposure at 2 GHz | Exposure at 24 GHz (5G)

Lighter colors represent higher exposures. Images are from wireless frequency exposure simulations in the published study *"Exposure of Insects to Radio-Frequency Electromagnetic Fields from 2 to 120 GHz"* published in Scientific Reports by Thielens et al. (2018).

Higher Frequency = Higher Exposures to Insects

New technologies such as 5G will run on higher frequencies from 24 to 40 GHz. Published studies have found that exposure to the higher frequencies of 5G and new networks will result in significantly higher RF absorption into the bodies of bees and insects. The higher frequency EMF waves resonate with the smaller size of the insect to increase exposures, even when the power levels are the same.

A Regulatory Gap

Despite research reviews finding the majority of studies show effects to insects, environmental agencies have no research evaluation, EMF monitoring, wildlife impact surveillance, or risk-assessment process in place to ensure current or future wireless radiation and EMF levels are safe for pollinators and wildlife.

Impacts To Habitat

Numerous studies have found effects to plants from non-ionizing EMF, including adverse biochemical changes and direct damage to tree canopy. The impacts to both the physical health of the insect as well as their habitat add to the numerous environmental stressors faced by bees and pollinators.

"Our study provides conclusive evidence of detrimental impacts of EMF on honeybee's pollination behavior, leading to negative effects on plant community."

— Molina-Montenegro et al. in the study "Electromagnetic fields disrupt the pollination service by honeybees" published in *Science Advances* (2023)

RESEARCH ON INSECTS, WIRELESS AND EMFS

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