# WILDLIFE AND WIRELESS: POLICY IS NEEDED TO PROTECT FLORA AND FAUNA

**Escalating levels of wireless RF* radiation from the proliferation of 4G and 5G telecommunication antennas pose serious risks to wildlife and the natural world. Accumulating research studies have found numerous adverse effects at levels much lower than the Federal Communication Commission (FCC) legal limits for cell tower emissions.**

## No Safety Standards

The FCC's federal exposure limits were designed for humans, not wildlife. "Safe" levels of RF exposure for wildlife and plants have never been developed by any scientific or government entity.

### Serious Regulatory Gaps

There is no federal agency measuring or monitoring the current levels of RF in the environment, monitoring the scientific research or gathering data on wildlife impacts from wireless infrastructure.

### No Environmental Review

There has been no review of the environmental impact of the 5G infrastructure buildout which the FCC states will require 800,000 new wireless "small" cells.

### Higher Exposures

Birds, insects and other airborne species fly, nest and perch close to transmitting antennas. "Small" cells and cell towers emit plumes of RF radiation which can greatly exceed FCC limits, even at 10 to more than 40 feet away from the antennas. Yet these emissions are "legal" because telecom compliance tests *for RF only consider areas inhabited by people.*

### Pollinators at Risk

5G networks will include higher frequencies — submillimeter and millimeter waves — which studies have found uniquely absorb at higher intensities into the bodies of bees and insects. Studies on bees have long linked cell tower frequencies to increased stress, decreased honey production and altered pupal development.

### Damage to Tree Canopy

Trees are being cut down, aggressively trimmed and their roots disturbed to build "small" cell infrastructure. A ten-year field study found damage to trees after years of RF exposure from cell antennas.

**The need for regulatory action is urgent. Immediate steps must be taken to reduce environmental levels of RF and develop safety standards to ensure wildlife and their habitat are protected now and in the future.**

***"In addition to its impact on humans, radiofrequency radiation poses harmful effects to flora and fauna."***

*— Natural Resources Defense Council Amicus Brief in EHT et al. v the FCC*

*RF = radiofrequency

# PEER REVIEWED SCIENCE ON FLORA, FAUNA, WIRELESS AND NON-IONIZING RADIATION

### Adequate Science To Trigger Regulatory Action To Protect Wildlife

A landmark research review by U.S experts of over 1,200 studies on the effects of non-ionizing radiation to wildlife entitled "Effects of non-ionizing electromagnetic fields on flora and fauna" published in *Reviews on Environmental Health* found adverse effects at very low intensities, including impacts to orientation and migration, reproduction, mating, nest, den building and survivorship. (Levitt et al., 2021)

"A review of the ecological effects of RF-EMF" published in *Environment International* found RF had a significant effect on birds, insects, other vertebrates, other organisms and plants in 70% of the studies. Development and reproduction in birds and insects were strongly affected. (Cucurachi et al., 2013)

The research review "Electromagnetic radiation as an emerging driver factor for the decline of insects" published in *Science of the Total Environment* found "sufficient evidence" of effects to insects, including impacts to flight, foraging, feeding, short-term memory and mortality. (Balmori, 2021)

A 2022 Oregon State University study investigated the long-term behavioral effects to zebrafish from short-term exposures to 5G's midband 3.5 GHz. The researchers found "subtle but significant abnormal responses…that suggest potential long-term behavioral effects," and they concluded, "Overall, our study suggests the impacts of RFRs on the developing brain, behavior, and the metabolome should be further explored." (Dasgupta et al., 2022)

### U.S. RF Exposure Limits Unchanged Since 1996

The U.S. has the most lenient rules regarding allowable emissions from cell towers. Many countries, such as Italy, Switzerland, Israel, China, Russia and India, have environmental RF limits 10 to 100 times lower (more stringent).

India dropped its RF limits to 1/10th of U.S. limits after an Inter-Ministerial Committee set up by the Ministry of Environment and Forests reviewed the research on birds, bees, plants and animals and found the majority of studies *showed impacts*.

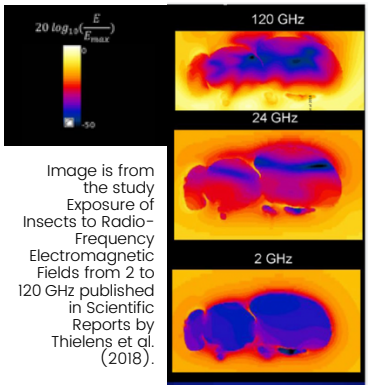


Image is from the study Exposure of Insects to Radio-Frequency Electromagnetic Fields from 2 to 120 GHz published in Scientific Reports by Thielens et al. (2018).

This is an image of the normalized electric field strength (dB) into a Western Honey Bee at various wireless frequencies. It shows that as the wavelengths are higher (as will be used in 5G) the absorption in the bodies of insects also increases, even when the power is the same.

**Norway Maple Tree, Damaged by Cell Antennas**

Image: Tree Observation Guide by Helmut Breunig 2017 .

***"The electromagnetic radiation standards used by the Federal Communications Commission (FCC) continue to be based on thermal heating, a criterion now nearly 30 years out of date and inapplicable today."***

— U.S. Department of the Interior letter that details studies showing impacts to birds from cell tower radiation.

***"The Federal Communications Commission also completely failed even to acknowledge, let alone respond to, comments concerning the impact of RF radiation on the environment."***

— U.S. Court of Appeals for the D.C. Circuit Ruling in EHT et al. v. FCC

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