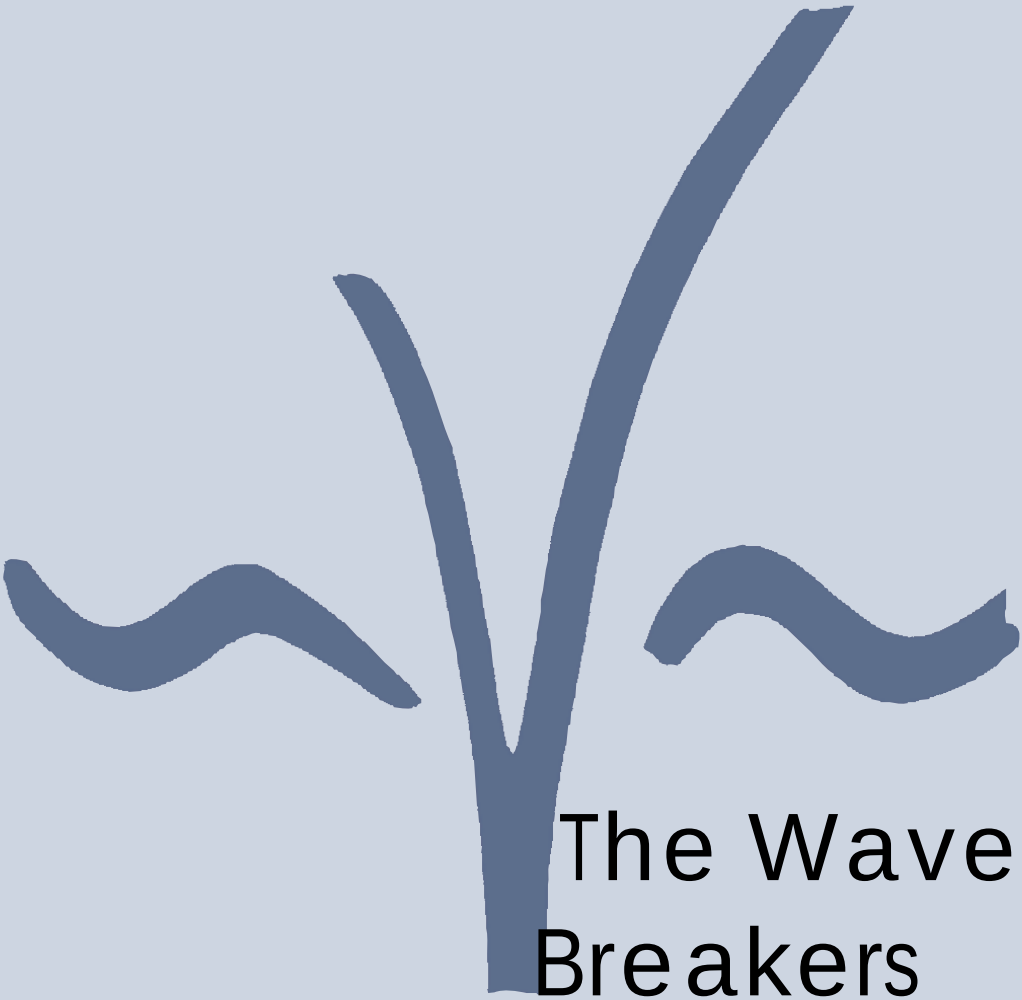

The Wave Breakers

EMFs
– an Environmental Issue

The Wave Breakers
The National Swedish Association Against Harmful Electromagnetic Radiation

The Wave Breakers is a nationwide nonprofit and nonaffiliated association which has been founded to break the ignorant blindness to the speed of wireless society´s frenzied rush toward catastrophic public-health consequences.

The ultimate goal of our association is the adjustment of all electromagnetic radiation to levels that entail neither injury nor discomfort to any person´s health or the overall environment. We would like to be a alarm clock in a world that seems to be fast asleep while the threats against our living conditions loom larger and larger, and all alert reports are silenced to death.

By collecting and disseminating knowledge about risks associated with the dramatically increasing electrosmog, we would like to influence society so that current and future technology be adapted to people´s needs and natural conditions instead of being dictated entirely by large-scale industry`s short-sighted profit interests, which is presently the case.

The more persons who are actively involved in this most urgent environmental matter, the greater our influence will be.

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Content

Welcome!

This pamphlet is the very occasionally issued newsletter of the Swedish association Vågbrytaren, ("The Wave Breakers"). Besides Vågbrytaren members, its intended readers are all of those who, despite not yet having discovered the merits of our organization, have a true interest in making the world a better place to live – for everybody and everything.

During recent years, occasionally (alas, all too seldom!) the press has featured articles that present wireless technology as a possible cause of cancer, sleep disturbances, and other adverse health effects – in humans. They are usually followed by articles about industry-funded (not mentioned!) research, the aim of which is to convince us instead of the harmlessness of cell phone radiation – again for humans! More often, however, radiation is never even discussed.

And yet we know that electromagnetism is one of two fundamental elements in evolution (the other one being gravitation), which means that we are playing with powerful forces indeed. Despite our ability to experiment with electricity and use it in various ways, none of us can claim that he or she actually understands what electricity or magnetism really is.

Could this be a reason why the incredibly extensive electromagnetic pollution of our environment has been allowed to proceed and accelerate in such a dramatic manner without any major protests from the general public?

At every moment, day and night, we surround ourselves with electrical gadgets and wireless technology. Even the few nonusers are exposed, as well as animals and plants. The electromagnetic environment that we now live in bears no resemblance whatsoever to the electromagnetic environment that we and all other life forms had adapted to biologically.

So, how does electromagnetic pollution affect all things living? Does it contribute to, or is it in fact a crucial factor in explaining, the many strange and alarming events that are currently taking place (bees disappear, birds and insects decrease in number and lose their way, trees succumb to disease and die, etc.)?

Of course, we are aware that many synergetic factors interact to explain current environmental problems, but our goal is to ask questions about and examine aspects of these problems that are hardly ever discussed.

Our intention is not to spread fear but to rouse more members of the general public from indifference and call attention to the fact that the picture is calling for completion – urgently.

The moment a person points out any disadvantage of modern communication technology, he or she is automatically considered to be "hostile to technology". But what if this is not true? He or she might actually be showing a true love of life. Maybe those of us who have the courage to face the problems of modern life are the true positivists, exactly because we are brave enough to face the problems, accept their extent, and are convinced that they can be solved? We are not aiming for an evolutionary retrogression, but the question is which way forward we should choose.

It is impossible to cover in a few pages such an extensive and (yes!) scientifically supported topic as electropollution. Hopefully, however, with this pamphlet we will be able to elicit public interest and involvement in what we regard as the most pressing environmental and public-health disaster of our time.

Sonja Fredberg

Tetra/Rakel and GSM Cell Phone Radiation Causes Obesity in Hamsters

Adult male hamsters were exposed around the clock for sixty days to radiofrequency electromagnetic fields at frequencies 383, 900, and 1800 MHz, respectively. The fields were modulated in the same manner as Tetra/Rakel (383 MHz) and GSM (900 and 1800 MHz). The hamsters were exposed to SAR values averaging 0.08 W/kg. (Public exposure safety limits for radiation emitted from a cell phone is 2 W/kg.)

At 383 MHz, exposure caused a temporary significant increase in body weight (culminating at 4 %); at 900 MHz, weight increase was more pronounced (reaching a maximum of 6 %) and permanent. At 1800 MHz, no effect was observed.

(Source: Lerchl et al 2008, J Pineal Res. 2008 Apr; 44 (3))

Disappearing Bees Our Most Serious Alarm Signal?

Of those 200 000 flowering plants that exist on earth, over three fourths are pollinated by bees. So, what happens if the honeybee becomes extinct?

Quoted from the home page of the Swedish Department of Agriculture:

> **"The Bee Is Indispensable to Our Food and to the Ecological Systems**
> Bees and bumblebees are highly instrumental in the pollination of cultivated as well as wild plants. The economic value of pollination, although difficult to assess, is estimated to exceed the tenfold value of the honey. This means 1 - 5 billion Swedish crowns in Sweden alone. Globally, approximately one third of all food consumed is entirely dependent on pollinating insects, and approximately 85 percent of the pollination is performed by honey bees.
>
> The honeybee, however, does much more for us besides produce honey and pollinate plants that we cultivate. The role of the honeybee and other pollinating insects is crucial for sustaining ecosystems and their functions. The value of these so-called ecosystem services is far greater than the value of the pollination of cultivated plants itself: We are talking about, e.g., air oxygenation, climate stabilization, and water circulation in the plant-air-ocean cycle."

The first reports came from the U.S. Later, it appeared more or less simultaneously over the whole world: the great bee death, referred to as Colony Collapse Disorder (CCD). And it appears to be accelerating.

In Europe, the Americas, Asia, and Australia, entire bee colonies abandon their hives, leaving them completely empty or with the queen all alone with abandoned larvae. Where do they go? Nobody knows, because they leave no trace. One beekeeper expressed it thus: "It´s as though a huge vacuum cleaner had descended from heaven and just swept them away." [1] One bee expert remarks: "If the bees had disappeared because of some threat in their surroundings, they would not have left without the queen".[2] And then there have been educated guesses: mites, viruses, pesticides…

In my opinion, however, we do know, but it is a most inconvenient truth, and it is being concealed at all costs, because the telecommunications industry is the

golden-egg laying hen of our day and age, and thus our golden calf. Or our holy cow. The bees are disappearing because of the new communication technology.

The Unique Significance of Electromagnetic Forces

It is not possible to understand what is currently happening without first becoming aware of just how important electromagnetic forces are for all life forms on Earth. Early on in evolution, nature (or whoever it was) chose to use electromagnetic signals to convey information rapidly and across great distances, information needed by animals and plants for their life processes.

In all living creatures, such signals are used for directing and controlling vital functions, within the body itself and in communication with its surroundings. The magnetic field of the Earth directs the movements of migratory birds, fish, etc. Electromagnetic signals are thus part of the foundation for all life forms [3].

These signals exhibit a couple of extremely useful characteristics. They travel fast (at the speed of light), and reach everywhere, thereby providing all creatures with immediate access to the information. This is what renders the system so useful – and so vulnerable. Yes, vulnerable, because obviously we cannot protect ourselves from something that is present everywhere, constantly. This is the flip side of the coin. Probably then, trying to manipulate such a force is not an especially intelligent idea. However, this is exactly what modern wireless technology is doing. It utilizes these very forces, and distorts them.

Natural vs. Artificial Fields

So, what happens when natural electromagnetic signals are mashed or distorted by large numbers of much stronger signals, signals which in addition exhibit completely different characteristics than their natural counterparts? Well, logically, something ought to happen. What I am speaking of now is constantly varying pulsed (on-off-on-off) and modulated (reshaped) signals. Such signals do not occur naturally; they can be generated only by using modern digital technology. They are used in such diverse applications as cell phones (by now, there are several billions of them) and military systems of extremely powerful transmitters in different locations all over the Earth, the most powerful being HAARP in Alaska. Possibly, this could explain why the first reports of vanishing bees came from the U.S.

The Earth's magnetic field is something that we all know of. Some of us have used it when navigating with a compass. This magnetic field varies in intensity,

but its direction is constant. Therefore, we know that the compass needle always points to the north. That is, *as long as no other magnetic field comes along and interferes with it, causing the needle to spin or point in the wrong direction*. However, like me, you may not have thought too much about what else that field is used for.

Nowadays, we know that the Earth's magnetic field is of fundamental importance to many life forms. Migratory birds, bees, fish, and many other animals, even bacteria living deep down in the sediment under the oceans orientate themselves by using the Earth's magnetic field. These animals have their compass built into their bodies.[4]

I was especially curious about the bee. After all, how does it find its way back to the hive? And what about that dance that I had heard of?

The bee's nervous system reads the geographic position and time of day by registering the direction and strength of the magnetic fields as well as the angle to the sun. However, when stronger man-made magnetic fields are present, this no longer works. Instead, the bee disappears from, avoids or is confused by (whichever word one prefers) artificial magnetic fields.

One of many anecdotic accounts confirming that this is indeed what happens, is the one about the man in England who bought a beautiful old house. There was only one problem: thirty bee colonies that also considered this to be their home. Twice, firms were solicited to exterminate the bees, but getting rid of them proved to be completely impossible. "They were everywhere", says the owner. "In the shower, in the windows, in the lamps. It was actually quite dangerous. You could be walking around barefoot at night, and the whole floor was covered with them."

However, when he installed a wireless broadband (WiFi), something unexpected happened: The bees vanished as by magic and have not returned since then.[5]

The following e-mail message from Australia tells the story of what happened when a cell phone tower was erected in the neighbourhood. "Pesticides are not used. Despite this, the number of bees has decreased during the last three years. I've noticed this since the new cell phone towers were erected. The bee tree used to be full of bees, thousands of them every year. Within three years, their number had decreased to a couple of hundred last year, and this year NOT A SINGLE BEE.
Sincerely, George (Australia)".[6]

The Ingenious Dance of the Bee

As already mentioned, it is the Earth's magnetic field that helps the honeybee find its way home to the hive. But that is not all; if the bee finds flowers containing nectar, it will show its hive mates the location of the food. It does this by performing a dance choreographed by the Earth`s magnetic field and the sun's position in the sky. In the dark of the hive, the dance conveys to the other bees the distance and direction to the food.

If the food is located close to the hive, the bee will dance in a circle. If, however, the food is to be found further away, the dance will be significantly more intricate. The bee will first move along a straight line, then back along a semicircle, then once again along the straight line and back again along a semicircle in the other direction. The exact *distance* is conveyed through a series of extremely rapid swaying motions (200 - 300 per second) that the bee makes with its body as it moves along the straight line. The faster the swaying (i.e., the higher the frequency), the greater the distance to the food. The sways generate electromagnetic fields that can be measured.

Rapid vibrations of 200 - 300 Hz (vibrations per second) are produced by the sways. The vibrations are registered in the bodies of the other bees; this is how the `knowledge` of the location of the dining room table is established in the population of the hive. Some cell phone transmitters use the same frequencies as the bees. Consequently, hives within the transmitter ranges will be subjected to such vibrations, which are likely to be registered by other bees as well.

The *direction* to the food and its position in respect to the sun are communicated in the dance by an angle between the line to the food and the solar angle. (Of course my description here contains only the simplest characteristics of a much more complicated system.) So, what happens when powerful artificial electromagnetic fields convey completely different 'information'? [7]

I am filled with awe when I realize just how ingeniously this system is engineered. The same kind of awe always fills me as soon as I learn something a little more in depth about how nature creates and sustains life. And I think to myself: WHEN WHEN WHEN will arrogant man realize that he should work with nature, not *against* it?

Biological Clocks and Magnetite

Bees need to read the time of day, since some flowers open up at certain specific times. Like humans, animals have internal biological 'clocks' in their nervous systems.

(So do flowers – how else would they be able to stay on time? Also the mechanism whereby the flowers open is directed by electromagnetic signals. So, let's face it: We can't do without them.)

The bee is sensitive to small variations in the Earth's magnetic field (down to approximately 26 nT)[8]. If the strength of the magnetic field exceeds that of the Earth by a factor of ten, the bees will start to swarm away from the hive.

How, then, is it possible for the bee to sense magnetism? The answer is that its body contains magnetite (Fe_3O_4), which is a substance that contains iron. (It is found in many animal species, including the human brain – maybe in all living creatures? Maybe no species is independent of the magnetic fields?)[9] Magnetite is, thus, susceptible to magnetic fields. However, because this mineral is extremely sensitive, even minute interferences from other magnetic fields should then, logically, cause problems by affecting the dance of the bee so that it conveys faulty information to the other bees.

The fact that the bees disappear without a trace could well be explained by their magnetic navigation system being destroyed or confused by artificial magnetic fields. In fact, this is a very plausible explanation for the Colony Collapse Disorder. However, there is more to it, as we shall see below.

The Immune System Has Broken Down

Besides the disappearance of bees, other strange phenomena are appearing. Bees now suddenly exhibit a new kind of pathology. They are affected by many different infections simultaneously, a phenomenon hitherto unknown to bee experts. "Until now, we have never seen so many different viruses together. In addition, we have found fungi, flagellates, and other microorganisms. This diversity of pathogens is puzzling." (van Engelsdorp, 2007)[10]. "It is indeed alarming that the death of the bees has to do with symptoms that have never before been described." (Cox-Foster, 2007)[11]. The bees' immune systems have obviously completely broken down. A bee expert, who had dissected thousands of bees, commented: "It's virtually impossible to find a single bee that looks healthy"[12].

Strange Behaviors

As though what has been presented above were not enough, one has also seen that bees have started to behave in strange ways. Beekeepers have observed bees that suddenly and for no apparent reason start to seal off their hives with propolis. The behavior as such is inherent in the animals and thus not new. However, bees have previously sealed off their hive only at the onset of extreme

cold, when the hive has needed extra insulation to prevent the colony from freezing to death. Now all of a sudden this is happening at normal temperatures. The sealing results in a lack of oxygen in the hive, which the bees try to compensate for by fanning their wings. However, in a hive that has been too well insulated, fanning instead results in overheating, which in turn causes the beeswax of the honeycombs to melt and the whole colony perishes[13].

A researcher, who is himself a beekeeper, tells about new behaviors in his bees: ”I observed a pronounced restlessness in my bee colonies (originally about 40) and a strong increase in the tendency to swarm. (---) The bees did not build their honeycombs according to the frame structure but, rather, randomly. In summer, colonies collapsed for no apparent reason. In winter, the bees would fly out despite snow and temperatures below freezing, and they froze to death close to the hive. (---) The problems started when several transmitters were put up in the immediate vicinity of my hives. “(Ruzicka 2003)[14]

When animals start to behave in a completely new manner, it is a sure alarm signal that something in our environment is fundamentally wrong.

Studies on Bees

A host of scientific studies has been done on bees and their behavior. Therefore, we know quite a bit about how artificial electromagnetic fields affect them. Because of their crucial importance for many crops, e.g., in vast American plantations, it is economically interesting to do research on them.

In the United States, beehives are transported on trucks to enable them to pollinate the enormous amounts of plants that grow in the gigantic monocultures of almonds, avocados, fruits, etc. Once one type of plant has been pollinated, the same bees are driven off to another monoculture to do the same job there. The plants of one monoculture bloom more or less simultaneously and therefore need pollinating at the same time. This is the way man often cultivates, but it is not according to nature. Nature’s way is to let a variety of species grow all jumbled together, blooming and being pollinated each at a different time, so that bees can find new sources of nourishment in their surroundings throughout the season. One of the many reasons that monocultures are so vulnerable is the dependency on huge numbers of bee colonies at the same time.

Possibly, the bee is the most studied animal species in this respect. The bee is sensitive in several different ways to changes in the magnetic field. This is why I dare to claim that we actually know that modern communication technology is a major culprit, in fact probably the major culprit.

In a number of studies in the 1970s, bees were subjected to electromagnetic fields of different frequencies and the results studied. At frequency 50 Hz (and power density 110 V/cm), the bees became restless and moved about so much that the temperature inside the hive rose significantly. At this point, bees started to sting each other to death; apparently, their system for telling friend from foe had broken down. Also, they extracted their larvae from their cells. Furthermore, bees that had just arrived at the hive left again, and the old bees began to seal off the hive. Other frequencies yielded other effects. The bees would, e.g., start to flutter their wings in new ways or would disappear from the hive[15].

During the 21st century, researchers at the Koblenz-Landau University in Germany have done several studies where they subjected beehives to different frequencies from, e.g., so-called DECT phones (digitally enhanced cordless telephones), and studied the effects on a number of aspects of bee behavior. For instance, an increased swarming tendency and a slowing down of colony development were observed. The bees definitely exhibited a dislike of DECT phones – when such a device was included in experiments, hardly any bees returned home[16].

Life Sustaining Rhythms

Like humans and other animals, the bee lives its life according to certain diurnal rhythms, which regulate various bodily processes (so-called circadian rhythms). To maintain these rhythms, cryptochromes are essential. Cryptochromes are substances that react to specific frequencies of sunlight (blue-green). They convert light energy into chemical energy, which in turn drives the animal's biological clock. (Cf. the photosynthesis of green plants, where the plant chlorophyll converts sunlight into chemical energy, thereby enabling the plant to grow.) The cryptochromes continually "measure" the amount of light, which of course varies diurnally. This process is an important factor in maintaining the circadian rhythms, which regulate the amount of various substances in the body, wake and sleep, and of hormone production (including melatonine, a sleep hormone). Like magnetite, cryptochromes are sensitive to magnetic fields[17].

So, obviously, many processes essential for life are directed by substances that react to (and consequently are dependent on) the Earth's magnetic field.

The Essential Nitric Oxide

Have you ever heard of nitric oxide? Chemical formula NO, for those of you who are familiar with this. For a long time, I believed this was 'only' an air pollutant. Since then, I have learnt why it is so exceptionally important. Nitric oxide (also

referred to as nitrogen monoxide) is a gas and a so-called free radical; in nature, it is used for regulating vitality, even in such primitive creatures as bacteria[18].

Nitric oxide is necessary and beneficial for all of us, but only if the healthy concentration is not exceeded. This holds true for bacteria, bees, birds, human beings, etc. Many studies have shown that electromagnetic fields affect nitric oxides, but the mechanim was not known – until quite recently. It turns out that the enzyme (NAFH) that is involved, is highly sensitive to (you guessed it) electromagnetic fields from cell phones[19]. The consequence is a cellular imbalance with excessive amounts of free radicals, referred to as oxidative stress. (This is what we are trying to counteract by eating antioxidants, a hot topic these days.)

Injuries are inflicted in such essential functions as energy metabolism and the immune system, i.e., injuries to the cells, which are the very building blocks of life.

Because the processes mentioned here all involve substances sensitive to magnetic fields, they may all be disturbed by artificial magnetic fields.

Smoke Screens

Yes, smoke screens are used (as was previously done with tobacco, asbestos, and various toxic substances). A flagrant example is the report *Massdöd av bin* ("The Great Bee Death"), Report 2009:24 from the Swedish Department of Agriculture. It dismisses the entire body of scientific evidence above mentioned as improbable, using only two (!) references (which is all the more remarkable in a 178-page publication which in other argumentation uses large numbers of references). One is an article in the Swedish beekeepers' newsletter without any scientific references at all, the other is a book that does not discuss any of the mechanisms that I have described here. An excerpt from the report:

> *4.4.1 Improbable Causes of the Great Bee Death*
> Some causes have been excluded as possible causes of the great bee death. Electronic interference is thus an improbable cause since no correlation has been found between the position of colonies in relation to cell phone towers and site of losses (Kristiansen, 2007; Jacobsen, 2009).

That's all. My comment: You obviously cannot take into consideration only one type of radiation source, in this case cell phone towers, as there may be several present at the same time. The correlation "not found" has obviously not

even been looked for, since the report includes no such references. The only thing that is mentioned is that also areas without cell phone coverage exhibit loss of bees. My objection here is that those areas may well have had other radiation sources, such as those used in military activities, which are often clandestine. This paragraph is obviously written with the purpose of removing an uncomfortable possibility.

"If I Were Commissioned to Eradicate the Bee …"

To live its life, the bee depends entirely on interaction with electromagnetic forces. Its entire ability to perform its work is completely devastated by fields from wireless communication, and we are now starting to see the result. Therefore, what is said in the following quote seems perfectly logical.
"Being a physicist and natural science teacher, I'd like to say that if I were commissioned to create a mechanism for eradicating the bee from this planet, I'd suggest a communication system that uses pulsed microwaves that penetrate nature anywhere and everywhere on the planet. There is absolutely no place for the bees to escape from such microwaves" (Barrie Trower, 2008)[20]. Exactly. So, is this what we want?

We are facing a threat that appears to be more imminent than even the climate changes but also infinitely easier to do something about – if only there is a will. After all, the only thing we need to do is turn off the wireless systems that are causing it all.

Gunilla Ladberg

"Two bees or not two bees, that's the question."

Bertil Lindberg

"All truths pass through three stages: First, they are ridiculed. Then, they are violently opposed. Finally, they are accepted as being self-evident."

Schopenhauer

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Horses Adversely Affected by Radio Waves

Horses grazing close to an FM/AM transmitter in Ouruhia, New Zealand, became tired and irritable, and their thyroids became swollen. Blood tests revealed lymphocyte changes. When the horses were moved to another area, however, their health returned to normal (including blood values).

Around the transmitter, behavioral disturbances such as aggressiveness, irritability, and lack of energy were also observed in bulls, dogs, and cats.

http://canterbury.cyberplace.co.nz/ouruhia/

Birds in Flight at Risk

> *Birds are of great importance to man as well as for the whole ecosystem. For instance, their significance for the economy cannot be overemphasized – bird watching generates billions through excursions, magazines, books and nature experience travels. This is the way many people get in touch with and learn about nature.*

To feed the birds at the bird feeder in the winter, to anticipate the return of migratory birds in the spring, to study them and listen to their singing provides many people with great joy and enhanced quality of life, which also impacts positively on our health.

Birds, like many other animal species, are however decreasing in number. According to a study published by the National Academy of Sciences, an estimated twelve percent of current bird species will be extinct by the year 2100.

Scientists believe that the decline in number of both species and individuals is a serious alarm signal to our planet of upcoming problems, as birds are instrumental in the distribution of seeds, pollination, and insect control.[1]

No Birds Eat the Berries

Two farms with berry plantations in similar areas in western Massachusetts were examined. On the one, which has no cell phone towers, abundant evidence of wildlife was found (e.g., migratory as well as breeding birds, bats, large and small mammals, and insects, including bees). On the other farm, where a cell phone tower had been erected next to the berry plantation, hardly any evidence (such as excrement, tracks or feathers from wildlife) was found. There, the berries remain on the bushes uneaten by birds and insects – nor are the ripe berries that have fallen to the ground eaten by turkeys, foxes or other wildlife.

Source: Report "U.S. Fish and Wildlife Service Concerns Over Potential Radiation Impacts of Cellular Communication Towers on Migratory Birds and Other Wildlife – Research Opportunities.", 2007 http://www.c-a-r-e.org/pdfs/ay%202007%20Washington%20DC/Manville%20DC.pdf

One in eight bird species, one in four mammalian species, and one in three batrachians are threatened by extinction. Moreover, the extinction rate for all species is expected to increase significantly over the next fifty years, according to the Swedish daily paper Dagens Nyheter.[2]

The decrease in number of birds is undoubtedly due to a number of synergistic factors. Possible factors under discussion are climate effect, deforestation, air pollutants, pesticides, GMO crops, and attacks by pathological organisms such as viruses, bacteria, fungi, and parasites.

A factor that is hardly ever mentioned in these discussions is the effect of the very rapidly increasing levels of electromagnetic fields and radiation, e.g., artificial microwave signals from wireless communication such as cellular telephone technology. Research seems to indicate, however, that birds are highly sensitive to this new type of environmental pollutant.

Commissioned by the American Congress, the U.S. Fish and Wildlife Services issued a report in 2007 on the great bird death: figures soaring around 50 million fewer birds than normal and a significant correlation with the number of cell phone towers in each of the areas described.[3]

Behavior

The house sparrow lives close to people and is therefore a good indicator of changes in our environment. Two researchers of the Belgian Institute for Research on Nature and Forest, Joris Everaert and Dirk Bauwens, counted the number of male house sparrows and measured the radiation at 150 locations during the 2006 breeding season. They found fewer male house sparrows in locations with higher levels of cell phone radiation.[4]

On 40 occasions, between October 2002 and May 2006, the Spanish biologist and environmental researcher Alfonso Balmori counted the number of house sparrows in 30 locations in Valladolid, Spain. In each location, radiofrequency radiation within the frequency span 1 MHz to 3000 MHz was also measured. He observed a general decrease in the number of house sparrows during that period and fewer house sparrows in places with higher levels of radiation.[5]

Dr. Balmori has found that certain bird species leave areas that are subject to high radiation levels. When the radiation from transmitters is turned off or lowered, the birds return.[6]
Dr. S. Vijayan, head of the Salim Ali Centre for Ornithology and Natural History (SACON) in India, is one of many who have observed a decline in the number of house sparrows.

Transmitters Removed – Birds Returned!
The mayor of Druz, Israel, decided to remove all cell phone base stations following more than 200 cancer diagnoses in the village. The birds disappeared from the village when the transmitters were put up: Upon removal, the birds returned!

Source: http://omega.twoday.net/stories/657843/ http://omega.twoday.net/stories/900299/

He says: "A number of studies has been performed on the correlation between increase in electromagnetic waves and decrease in number of house sparrows. A positive correlation has been found between them."[7]

Dr. Vijayan also points out that house sparrows disappear from areas where cell phone towers have been installed. He says: "My feeling is that it probably affects their central nervous system."

Research confirms that microwaves from cellular telephone communication technology affect several kinds of nerve cells (neurons) in the nervous systems of birds, and that this effect has nothing to do with heating (so-called nonthermal effects, i.e., biological effects other than those generated by the heating of tissue exceeding 1 degree Celsius. Note that there are no legally binding public safety limits whatsoever for nonthermal effects, because existing research has been deemed too incomplete to establish such limits.)[8]

In England, the number of bird species normally found in densely populated areas has declined parallel to the expansion of cellular telephone technology. The house sparrow population has decreased by 90 percent (!) Since 2002, it has been on the list of endangered species. In 2004, it had completely disappeared from the city, according to the Institute of Science in Society (ISIS). A new cellular telecommunications system, UMTS/3G, was introduced in England in 2003; at the end of 2005, the number of cell phone users in Great Britain exceeded 65 millions.[9] According to ISIS, "there is ample evidence that it really is the long-term exposure to radiation from cellular telecommunications technology, especially from 3G, that is killing the birds."

According to reports in recent years, the house sparrow has disappeared from Brussels and Dublin; this tendency is also found in Dutch cities.[10, 11, 12] The Swedish television program Mitt i naturen (a nature program) confirmed that the house sparrow has become an increasingly rare guest at bird feeders, and that nobody have any idea why.[13]

The National Research Council of Canada (NRC) conducted a number of studies on nonthermal effects of microwave radiation in the 1960s[14], before the telecom industry took control over research. The Canadian studies showed changes in EEG patterns, flight behavior, and other signs of stress such as the production of sounds and bowel movement. In one study, parakeets chose a nonexposed feeding machine over an exposed one. The exposure levels used in the trials varied between 0.2 µW/cm2 and 360 µW/cm2, i.e. a mere fraction of current public safety limits.

Plumage and Flying Ability

Early on, researchers in Canada found that a bird's feathers act as receiving antennas (dielectric receptors). Birds that had been plucked of their feathers while anaesthetized did not react to the radiation until the twelfth day when the feathers started to grow back. Researchers' conclusions: "The results show that microwave radiation has a negative effect on birds' flying ability, comparable to that which has previously been observed in cage birds."[15, 16]

The Canary Bird that Recovered

The canary bird that lives with Mr. H. in Nijkerk in the Netherlands had not sung in nearly eight months. He pecked himself and shed his feathers. The day after the cage had been protected from the radiation from a GSM base station fifty meters away, the bird started to produce sounds again and has even trilled a bit. Ten days later, he is perched proudly on his twig and is no longer shedding any feathers.

The cage remains in the same spot in the living room but is shielded with a fine metal mesh with aluminum foil on the bottom of the cage. The bird now sings often, and a few days ago he was even heard singing early in the morning. He is cared for in exactly the same way as before, and his regained health can only be explained by the reduction in radiation from the GSM base station (neither a DECT phone nor a wireless computer network is used).

Shielding precautions reduced radiation levels inside the cage from approximately 3000 µW/m² to approximately 0,5 µW/m² at frequency 1800 MHz.

Source: http://www.free-press-release.com/news/200508/1124090371.htmlPage 20

Also Dr. Alfonso Balmori has observed changes in plumage, brooding, and flight.[17] He describes the plumage of birds exposed to microwave radiation as generally discolored and without lustre. This was observed in domestic birds such as peacocks as well as in wild birds such as titmice, other tits, and house sparrows.

He points out that "damage to the plumage is the first sign of weakening or disease in birds, since feather damage is a sure indicator of stress."

In his research, Dr. Balmori has found certain areas referred to as "silent areas" that are polluted with high levels of microwave radiation (>2 V/m) and from which previously breeding birds now have disappeared. Also, in those areas, a number of deformities have been observed in magpies: damaged plumage, motor impairments (limping and deformed feet), partial albinism and melanism (dark spots), especially on the sides. Lately, Dr. Balmori has observed a growing number of cases of partial albinism and melanism in birds (house sparrow, black bird, and magpie) in Spanish cities.[18]

Orientation and Navigation

Birds use several methods to find their bearings, and one of them is to use the very weak static magnetic field of the Earth.

A study by Ritz et al[19] showed that robins were able to navigate according to the magnetic field of the Earth. The ability, however, became severely impaired when extremely weak, alternating electromagnetic fields were added. Electromagnetic signals 500 times weaker than the field of the Earth, at frequencies between 0.1 and 10 MHz caused the birds to become completely unable to sense the Earth´s magnetic field. This is the frequency range used for data transmission in most mobile communication systems such as cell phones, DECT phones, and wireless networks (WLAN/WiFi).

It is therefore reasonable to assume that the increased use of wireless communication devices may be a major contributing factor to the clear inability of birds and certain other animals to navigate by using the Earth's magnetic field.

Many animals, including birds and bees, are also able to navigate by using the position of the sun. To do this, however, they need an internal clock that compensates for changes in solar position throughout the day. Research suggests that also the biological clock may be disrupted by magnetic fields,[20] and thereby also this ability to navigate is disrupted.

The Carrier Pigeons that Disappeared

In July 2004, Malmö Carrier Pigeon Club released 2000 pigeons from the town of Ljungby, Sweden. But 1500 of them lost their way in flight and were unable to find their way home to Malmö city. Was the reason atmospheric disturbances or was it the 3G telecommunication towers that confused the pigeons? No description of consequences for the environment exists for the telecommunications net.
(Source: The Aftonbladet editorial, May 22, 2006, Tommy Hammarström.)

For more information on birds´ navigating, see *http://www.mastsanity.org/health-52/research/269-the-birds-the-bees-and-electromagnetic-pollution-by-dr-andrew-goldsworthy-may-2009.html*

Breeding

According to one study, storks close to cell phone towers failed more often in their breeding: 40 percent of stork couples with nests within 200 meters of a cell phone tower ended up with no offspring. Of stork couples with nests exceeding 300 meters in distance from a cell phone tower, 3.3 percent ended up with no offspring. Couples that tried to breed within 100 meters of a cell phone tower had difficulties even building a nest, and were passive in their behavior [21].

According to repeated scientific studies on hens´ eggs, cell phone radiation may kill 75 percent of exposed eggs. According to a study conducted by Professor Yori Grigoriev, former head of the Russian Radiation Protection Commission (RCNIRP), irradiating hens´ eggs with a cell phone held at a 10-centimeter distance causes nearly a five-fold increase in embryonal death. The Russian study clearly confirms the results of three experiments, each with sixty eggs, conducted by a French research team at the University of Montpellier, France, headed by Dr.Youbicier-Simo [22].

Research shows that electromagnetic fields and radiation may interfere with the reproductive ability in birds (Balmori 2005, Balmori 2007, Doherty et al 1996).

The Birds Have Disappeared

"I live in an old church village with a 16th-century church, probably most noted from the Ingmar Bergman movie "The Seventh Seal" in which Death plays chess.
The center of the village features a tall building with 3G antennas operated by three telecommunication companies and located in the immediate vicinity of five schools. The birds no longer sing in the morning – all house sparrows and all other small birds that used to be heard in the shrubs and trees around the house and residential area are now gone. The doves no longer land on the roofs of the tall buildings, something they used to do before the introduction of the antennas."

Anne-Marie George, Täby Kyrkby, outside Stockholm. Excerpt from a letter to the editor, published in the environmental weekly Miljömagasinet, August 2009.

"Several studies have shown that electromagnetic radiation has a negative effect on birds´ ability to lay eggs", says Professor Dennis Hensaw of Bristol University, U.K. [23]

There is also research that suggests that electromagnetic fields may yield what appears to be positive effects. For instance, exposing sparrow hawks (Falco sparverius) caused increased fertility, egg size, embryonal development, and number of young birds able to fly, but a decease in number of successful hatchings (Fernie, Bird et al 2000, Fernie, Leonard et al 2000).

A Canadian study in domestic hens (Leghorn) showed an increase in egg production for the trial group with 13.7 percent during exposure. (It had initially been identical for both groups). The mortality for the exposed colony doubled in comparison with the control colony. [24]

These results are closely consistent with a number of other plant and animal studies that have revealed that electromagnetic fields may produce stress reactions, which in the short term may seem advantageous, but in the long run, at low exposure levels, may result in exhaustion and other undesirable effects (Sharma 2010, Roux 2007, Tkalek 2007, Beaubois 2007, Aksenov 2007, Kalinin 2005, Sandu 2005, Tkalek 2005, Lerchl 2000, Adang 2008, Yurekli 2006, Lai 2004).

Feed

Reports from around the world, including Finland, tell of an alarming decline in the number of insects and small animals, which in turn leads to food shortage for certain birds.

"Electromagnetic radiation is a prime suspect for causing the weakening of the immune system of insects, which in turn make them more susceptible to, e.g., viral diseases. Small animals and insects are believed to be the first creatures to be affected by microwave disruptions, because their smaller body size permits the waves to penetrate more readily", says biologist Ulla Mattfolk.[25]

Another factor that contributes to feed shortage may be modern forestry. Previously, branches and twigs were left in the forest, which is advantageous to a number of insects. Nowadays, however, such materials are used for biofuel instead.

Habitats

Studies of the effects of EMFs on plants confirm observed correlations between tree injuries and increased radiation levels.[26, 27, 28] Injuries to forests in Stockholm county show a renewed upward trend, which closely correlates to the deployment levels of telecommunications technology. Moreover, the spontaneous thinning out of the crowns of spruce trees is rapidly approaching the record levels of the acidification of the 1980s.[29] As many bird species depend on trees and other plants for nest-building and food-searching, this constitutes yet another threat against their natural habitat.

Immune systems

Tree disease and death are frequently attributed to viral and fungal attacks such as ash bud disease and greminella fungus on pines. However, it seems relevant to ask whether these attacks rather could be secondary and caused instead by a weakening of the plant´s immune system.

An extensive research survey on possible effects of EMFs on the immune system by Associate Professor Olle Johansson at the Karolinska Institute, Sweden, was published in 2009. He writes:[30]

"Is the immune system really designed to tackle these 'allergens' which have not existed before but are now being invented, manufactured, and used? Is it probable that the immune system, through some incredibly intelligent leap in the evolutionary process, possesses that capacity? Is it even remotely probable? Of course not."

Research show that an immune system subjected to stress may increase a bird´s sensitivity to bacterial, viral, and parasite infections (Fernie & Bird 2001). Since 2008, the greenfinch has become the victim of high mortality caused by the Trikomonas parasite[31]. In this case, too, it is valid to ask whether one of the causes may be weakened immune system.

How Are these Questions Handled by the Authorities?

In its periodical Miljöaktuellt of February 2007, the Swedish Environmental Protection Board reported on Dr. Balmori´s study on storks:
"Balmori´s results are in agreement with previous and similar studies, and his conclusion is that electromagnetic radiation constitutes a risk factor for several bird populations."

However, following this statement, the Swedish Environmental Protection Board has not broached the subject again.

The Swedish Radiation Safety Authority (SSM), issues an annual report entitled *"Recent Research on EMF and Health Risks"*. Under the heading "Effects on the Environment" in the reports from both 2007[32] and 2008[33] , they write:

"Due to the continued lack of quality research data on relevant species, data are insufficient for identifying how a single exposure-limiting rule would suffice to protect all species in the environment from electromagnetic fields (EMF). Similarly, insufficient data prevent assessment on whether environment rules should be the same or radically different from those appropriate for the protection of public health. Research within all frequency ranges is urgently needed."

In other words, the Swedish Radiation Safety Authority does not know whether our public safety standards are sufficient to protect the environment, including birds. So, how has SSM handled the question? Has SSM, in its 2009 annual report, called attention to the risks involved in subjecting all biological life forms to such a large-scale experiment of around-the-clock-exposure of the environment, which the rapidly increasing levels of artificial electromagnetic radiation constitute? Have they called attention to the fact that the statutory precautionary principle is not being applied? Have they blown the whistle to call attention to the fact that birds are subjected to very high radiation levels when flying or staying close to telecommunications base stations?

No, not at all. In its 2009 report, SSM has instead removed the wording and opted not to mention anything at all about environmental effects.

The sun is the predominant source of naturally occurring radio frequent radiation on Earth. The World Health Organization (WHO) has estimated the natural radio frequent background radiation from the sun to 10 millionth of a Watt per square meter.[34] By comparison, the public exposure limits that SSM defends are 4.5-10 Watts per square meter (yes, whole Watts!)[35], which just shows how tremendous is the increase of radiation levels on our planet.

Staffan Ulfstrand, evolution biologist and retired professor, comments on possible effects of changes in radiation environment:[36]
"We are talking about changes that take place over decades or possibly centuries, and at least 'larger' organisms are not able to adapt genetically that fast to drastic environmental changes".

'Larger' organisms include birds and other animals such as Homo sapiens.

Ann Rosenqvist Atterbom
certified mycology consultant and ornithologist

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Cell Phone Radiation Kills Fly Eggs

In a study, researchers at the Department of Biology, University of Athens, Greece, have observed cell death in more than half of the eggs of fruit flies that had been exposed to the radiation from a cell phone.
(From an article by Mona Nilsson in Miljömagasinet, December 1, 2006)

Living Forests or Tower Forests?

Our association Vågbrytaren ("Wave Breakers") continually refers to the European Environmental Agency report "Late Lessons from Early Warnings". It features an evaluation of a massive number of twentieth-century environmental and health crises. The reason that we keep talking about this report is that it so clearly shows that authorities and others responsible are always the last ones to react to dangers. The first reactions always tend to come from an alert public, and it may then be a long time before the authorities take action.

This is important to keep in mind, as it is more comfortable to believe that we are being cared for by vigilant and responsible experts and authorities who want to protect us from all harm. However, the state of the matter has not changed since the issuance of the aforementioned report ten years ago. It is still alert citizens and uncomfortable researchers who issue the warnings but are ignored until the catastrophe is over us, at which point everyone starts to run around in a panic and shout for help.

By now, many of us have become aware (at least to some extent) and now take seriously climate changes, chemical threats, dangers of GMO, nuclear waste, and much more. However, it is still difficult for many people to see what is possibly the most imminent threat of all.

Changes to the Premises of Life

During the last hundred years, and especially the decades around the new millennium, the electromagnetic environment of the Earth has changed dramatically. There is reason to take this change very seriously, as we have begun to understand that electricity is the condition for life itself.
Through an infinite evolutionary process, all life forms have adjusted to the Earth´s electromagnetic field, to the electric discharges that take place during thunderstorms, to visible light, and to the minute cosmic background radiation.

Today, however, the more and more predominating amount of electromagnetic radiation that surrounds and permeates us is created by man. So, if you subject

living organisms to an amount of radiation that is incredibly much stronger than what they have adjusted to, a radiation which, in addition, is of completely different type than the naturally occurring radiation, what happens?

This is a question that most people do not want to ask today, but we have to. After all, history has shown that we cannot rely on someone else to do it.

The Trees Are Dying

First of all, we can open our eyes, look around, and notice the signs that something is happening.

A whole forest of towers has grown up during the last twenty years. Could it be that this will be the only type of forest that will remain in the future?

A walk along the intensely irradiated main streets of any major city will show trees in poor health. A large number of them are injured, dying, or already dead. What is the reason?

A more or less environmentally minded person will undoubtedly reflect (and rightfully so) upon the fact that our environment is so laden with a host of different pollutants that diseased trees seem to be a completely natural consequence. A closer look at the trees, however, reveals a number of extraordinary phenomena.

The trees are dying from the top downwards, instead of from the roots upward which is the natural process. The injuries of the crowns often have a shape which exactly coincides with how the main lobes from nearby cell phone transmitters hit the tree. Since many tree species are affected in the same manner, we cannot be talking about species-specific diseases. Rather, the crucial factor seems to be the proximity to base stations for wireless communication technology.

Documented observations have found a clear dose-response correlation. This means: The greater the radiation intensity, the greater the injury. [1]

In their inspection of oak trees in more than one hundred locations, the Forestry Commission in the U.K. has found a distinct correlation between diseased trees and proximity to tall transmitter towers. Also here it is observed that the trees start to die in the same unnatural manner, i.e. from the top downwards. Microwave radiation seems to affect the trees´ internal electro-osmotic and hydraulic processes. Very simplistically described, the trees´ circulation of fluid is disrupted.[2]

Plague Strikes Ashes

Today, nobody can contest the fact that hardly any place remains unexposed to this type of artificial radiation, at least not in Sweden. This of course leads to some speculations. Many of us have noticed, e.g., that there are trees of all kinds, even in the countryside, that look strange, especially in the vicinity of transmitters for telecommunications and WiFi. In addition, many people have noticed that raising healthy garden plants and keeping potted plants alive has become increasingly difficult.

Currently, the worst epidemic having ever stricken a specific species of tree is rampant among ash trees in Sweden. The cause of this ash bud disease is considered to be fungal. However, a hitherto unknown stress factor[3] which is a contributor to its devastating proportions is also under discussion. This unknown factor could well be the radiation from modern wireless technology. According to some studies, the stressing effect of radiation weakens the immune system.

Plants and Radiation

General observations are valuable for capturing the overall, general view of ongoing processes. Another way of looking at things is the focused, detailed, scientific way. The latter is very important for attaining a deeper understanding. However, if we allow it to be the sole mode of observation, we turn ourselves into victims of the experts´ tunnel perspective and lose, not only the overall view, but our own powers at observation as well.

Nevertheless, viewed together, the scientists´ findings regarding the effects of electromagnetic radiation on plants are as horrifyingly convincing as the studies of the effects on humans and animals.

In 1971, a thought-provoking study was conducted by a research team in Texas. They examined the feasibility of killing weeds by using microwave radiation. Several species of plants and weeds were subjected to a rather brief exposure of radiation at 2450 MHz (which is close to the frequencies used by e.g. Blutetooth and microwave ovens). Some species proved to be very sensitive. Sprouting seeds and young plants exhibited the most severe injuries[4].

Calling to mind previous experiences from weed control (using, e. g., phenoxyacetic acids such as Hormoslyr and Agent Orange) and the resultant devastating damages to the ecosystem will maybe make us more prudent. Weed control certainly sounds convenient and harmless, but plant extermination may be a more accurate term – how does it compare?

If radiation is able to kill weeds, is it not reasonable to assume that it affects a whole lot of other things as well? One of the studies that show exactly this was conducted by a Croatian research team on the plant Lemna spirodela. It was exposed to electromagnetic fields at 400, 900, and 1900 MHz [5]. It turned out that different types of fields produced different effects. Modulated radiation (which is the type used in modern wireless communication technology) had a significantly stronger effect than nonmodulated radiation. Despite some variation in effects (depending on exposure duration and frequency), it was clear that longer-term exposure usually had a seriously growth-hampering effect.

Today, longer-term exposure (actually, chronic exposure is a more accurate term) is the norm, basically everywhere. The question then arises: At what point exactly do we reach that general exposure level which renders such types of alarming studies worthless, as it is no longer possible to know how plants normally grow and develop because everything is continually exposed to radiation?

All Life Is Now Put Under Stress

In his book The body Electric, Dr. Robert O. Becker wrote:
"All life pulsates in time to the earth, and our artificial fields cause abnormal reactions in all organisms. Magnetic reversals may have produced the "great dyings" of the past by disrupting biocycles so as to cause stress, sterility, birth defects, malignancies, and impaired brain function. Human activities may well have duplicated in three decades what otherwise would have taken five thousand years to develop…" [6]

He wrote this already in 1985, i.e., before the massive increase in electromagnetic radiation in our everyday surroundings which the wireless technology revolution entailed.

Keeping Dr. Becker´s words in mind as we go back to the study on Lemna spirodela might help to see my point. The important point, then, is that the researchers observed different types of stress reactions in the exposed plants: Oxidative stress as well as nonspecific stress reactions, especially from anti-oxidative enzymes. Please note that the radiation used in the experiment was so weak that it did not result in heating, i.e., its effects were nonthermal.

Stress is also the topic of a French study from 2007 [7]. Tomato plants were exposed to cell phone radiation at 900 MHz and 5V/m for 10 minutes. The plants exhibited a significant increase in stress reactions similar to those associated with

physical injury, e.g., when a leaf is crushed or the stem is dented. This means that the tomato plants register the radiation as harmful, but it is hard to believe that it is all a figment of their imagination!

A stress reaction in a plant may not sound too serious. After all, the term ‘stress’ is often used in the sense of everyday stress, meaning ‘just a bit too busy’. However, in the context above, the term is highly alarming. A stress reaction causes the plant to activate its defense mechanisms. These mechanisms rapidly activate processes of reparation and are only intended for use in case of acute injury. Therefore, it is not hard to imagine what will happen if they are constantly activated during constant exposure to microwave radiation.

Naturally, in the long term such a reaction is detrimental to any organism.

Sublime Interaction

Today, we possess a deep scientifically-based knowledge of how incredibly intricate the interaction is between and within all life forms. We also know that all this subtle and sublime interplay takes place through electromagnetic impulses and currents.

Certainly, nobody is unaware of the simple physical fact that electromagnetic fields affect each other. Yet, we seem to have difficulty realizing that a radical increase and total change of the exposure of all living organisms to this kind of radiation actually changes the premises for life.

Experiments with lima beans showed that growth was stimulated at extremely weak exposure, 0.000 000 002 $\mu W/cm^2$, and impeded at 0.0027 $\mu W/cm^2$, which is also very weak [8]. Note: compare this with the recommended public exposure safety limit for 3G radiation from transmitters at 1000 $\mu W/cm^2$.

In another study, a Hungarian research team subjected Robinia-tree plants to three levels of daily exposure to weak radiofrequency electromagnetic fields at 400 MHz (rather close to the 450-MHz frequency of the former NMT system, which is now used by Ice Net, the broadband that covers the entire country including the most remote areas). Different groups of plants were exposed for different periods of time: one, two, three, or four hours. The two-hour group exhibited a distinct increase in chlorophyll levels. The other groups exhibited a logarithmic reduction of chlorophyll levels in relation to exposure time. [9]

In Teheran, cell cultures of tobacco plants were exposed to magnetic fields. The results showed that the antioxidative defense system of plants may be injured by magnetic fields.[10]

These were just a few examples of how plants are affected by the electro-pollution that covers the Earth today. There are many more examples. Instead of listing them, however, let us explore in even more depth the premises of growth.

Microorganisms Are Injured

For a long time, chemical agriculture has acted as though the whole purpose of soil is to anchor the roots of the plants. The consequence of such a view is depleted soils and foods lacking in nourishment. Those of us who are actively environmentally conscious know, however, that the humus layer is a living and dynamic world, full of microorganisms and other existing creatures which interact to produce favorable growing conditions. So intimately interlinked are plants and soil that the soil may be viewed as part of the metabolic system of plants.

When we look at what happens to plants in the microwave fog, it is especially interesting to also find out what happens in the soil.

Because researchers at Punjab University in India had determined cell phone radiation to be by far the most predominant kind of radiation in metropolitan areas, they decided to examine how this radiation type affects the microorganisms in the soil in the vicinity of towers.[11]

Samples were taken at 150, 200, and 300 meters from the towers, and at three different depths: at ground level, slightly more than 1 meter in depth, and 1.5 - 1.9 meters in depth. The result was the microorganisms clearly had been injured by the radiation. This meant that growing conditions deteriorated close to the tower. What happens over time to the microorganisms at significantly weaker yet continual radiation further away from the towers is something we can only speculate about at this point. There is, however, reason to fear that weaker radiation yields the same effects as stronger radiation but after a longer period of time.

Conifers

We started our discussion with trees, and it is to them we now return. So, how do conifers react to radiofrequency fields?

A study on dwarf pines, silver spruce, and coastal pines showed that (not surprisingly) in exposed groups, chlorophyll levels decreased and mortality rate exceeded that of control groups by 200-300 percent.[12]

But, surely, radiofrequency fields cannot be such a big deal? After all, the radio has been around for so long, which is what the Swedish Radiation Safety Agency is careful to point out (and does not mention that modern digital radiation is of a completely different kind, but that there actually has been an alarming increase in the incidence of cancer, and other serious diseases, since the introduction of FM radio in the 1950s).

Two Latvian studies have examined the health status of pines close to a radio transmitter. [13, 14]

At the time of the studies, Skrunda radio station had existed for more than 20 years. Pines growing close to the transmitter were observed. One study showed premature aging of pine needles, despite the relatively low exposure level.

Also, statistically significant correlations between tree growth and levels of electromagnetic fields were observed. Examination of annual rings showed that the decrease in growth began at the same time as the Skrunda radio transmissions started, and that it continued throughout the whole period up until the beginning of the study. Other possible environmental factors were considered as well, but turned out to be dismissable.

Summary

In August 2009, Ann Rosenqvist Atterbom made a very interesting compilation of peer-reviewed and published studies on the effects of electromagnetic fields on plants and plant material.[15]

Her conclusion was that, of all published reports, 66% had found a negative effect, 11% a positive effect, and for 23% no conclusion was possible. Of reports on radiofrequency radiation, 78% found negative effects, 1% positive effects, and 11% no conclusion possible.

It is important to keep in mind that even positive effects are a sign that our intense use of electromagnetism affects the very basis for life and that we really should think carefully about what we are doing and how we do it.

The various types of negative effects found in the studies had to do with cell membranes, calcium levels, chlorophyll levels, antioxidative defense mechanisms, decreased germination, chromosome damages, stress responses, reduced growth, premature aging, and mortality.

This is highly consistent with some effects observed in humans and animals: penetration of the blood-brain-barrier, calcium leakage from cells, increased production of free radicals (i.e., oxidative stress), other types of stress responses, effects on the immune system, damage to the genetic code, exhaustion, and confusion.

What Should We Do About This?

What can we do as responsible and environmentally aware persons? To use cable-based communication technology instead of wireless is of course an environmentally positive action. In addition, we must dare to face the fact that electromagnetic pollution is a major problem. Therefore, we need to become more knowledgeable and start an active debate – just like we do when it comes to other urgent issues. We must dare to be uncomfortable, even to ourselves. We have the ability and we must because no one else is going to do it for us.

While we hesitate, the trees are dying.

To cite Dr. Robert O. Becker again: "Somehow these dangers must be brought into the open so forcefully that the entire population of the world is made aware of them...These energies are too dangerous to be entrusted forever to politicians, military leaders, and their lapdog researchers."

It is our responsibility to do this despite the convenience of wireless technology.

Sonja Fredberg

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Pigs Miscarried

In Casaveija, Spain, a telecommunications antenna was installed. After some five years, some farmers started to suspect that the reason for the high incidence of miscarriages among the pigs was the antenna, located 50-100 meters from the pigs. In the spring of 2005, the antenna was removed. The problems immediately stopped.

Source: Balmori, A: Electromagnetic Pollution from Phone Masts. Effects on Wildlife. Patophysiology 16 (2009) 191-199

Observations Conducted on Milk Cows

We take the liberty to use the following story from the more than ten year old but still most interesting Ouruhia report from New Zealand.

"A recently publicized study discovered a significant increase of micronuclei in the red blood cells of cattle grazing on a farm near a transmitter. This is a sign that the exposure has genotoxic effects. (Balode 1996)"

The study originated when a farmer asked a veterinary clinic for help because he had had great problems with his milk cows for a year. The farm is located close to a transmitting tower. The problem with his animals began after several telecommunication transmitters had been added to the preexisting TV antennas.

Because the farmer and his family had begun to have serious health problems at the time of the transmitter installation and no medical tests were able to reveal the reasons for these problems, the farmer concluded that the high-frequency electromagnetic fields from the transmitters must be the cause of the problems affecting his family and cows.
"Many of the effects and health risks discussed are similar to effects of chronic stress" (Blank 1995, Smith 1996.)

Besides obviously stress-related problems such as miscarriages with no apparent cause, fertility disruptions such as a tendency towards irregular cycles and diminished lactation (which are symptoms that have already been observed in herds grazing close to high-voltage transmission lines, Burchard et al 1996), the following abnormalities were observed in exposed animals:

1. Most cows of the herd had conjunctivitis with a continual flow of tears, wet cheeks, and itching (some cows continually rubbed their eyes against objects in the barn and against other cows).
2. Several animals rubbed their heads against the chest of neighboring cows and turned their heads in the same direction (away from the transmitter).
3. One cow exhibited a typical stress behavior in dragging herself forward and backward while she kept swinging her head to and fro (weaving).
4. Teeming cows and cows that had stopped lactating, having the possibility to graze close to the farm, grazed for only a few minutes before they sought 'shelter' from the tower behind a shield.

5. Cows that had calved a couple of times rapidly became weak. When such cows tried to get up, their legs shook and over time they had increasing difficulties getting up. Their weakening progressed, and they ended up dying after only a few weeks.

An autopsy of a four-year-old cow that had died all of a sudden showed that the cause of death was sudden cardiac and circulatory arrest with no known cause.

From the end of 1995, then, the herd succumbed to a large number of losses and behavioral disturbances. Surviving animals recovered after having been moved. However, when moved back to the farm, they fell ill again.
Source: http://canterbury.cyberplace.co.nz/ouruhia

Radiofrequency Radiation Causes Mutations

A young researcher, 15-year-old Donna Thomas of Broadneck High School, Annapolis, Maryland, USA, was awarded a prize for her research at the Intel International Science and Engineering Fair in 2005 in Phoenix, Arizona.

She had discovered that radiofrequency radiation from cell phones, DECT phones, and radar causes mutations in banana flies.

She exposed five generations of banana flies to radiofrequency radiation and counted the number of changes seen in the wings of the flies. She also examined the chromosomes of the fifth generation and compared them to a nonexposed control group.

It turned out that 5 percent of exposed banana flies exhibited mutations. The equivalent number for the control group was 1.5 percent. In addition, the changes in the exposed flies were hereditary, which was not the case with the changes in the control group. The mutation took place at lower radiation levels than those emitted by a cell phone or the base station of a DECT phone.

Sources:
1. Baltimore Sun, May 8, 2005,
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Cell Phone Pollution Contributes to Decrease in Frog Population

Recently, Alfonso Balmori published a study in Electromagnetic Biology and Medicine involving his examination of how tadpoles react to cell phone radiation at a level way below recommended safety limits in Sweden.

Tadpoles were placed for two months in cages on a balcony facing a house with base stations at its roof (which is not an unusual exposure by today´s standards). Living conditions were identical except that one cage was a Faraday´s cage, thus providing protection against the radiation.

The tadpoles in the protected cage developed normally, while the unprotected ones exhibited serious behavioral disturbances. 90 percent of the unprotected tadpoles died, whereas the corresponding number for the protected cage was 4 percent.1

Compare this to an observation made by Paul Doyon, a couple of years ago. At the time, he lived in an area of Japan that had neither cell phone coverage nor television reception. He noticed an abundance of frogs of all kinds. To verify what he suspected, he armed himself with a microwave meter and took off on an excursion. The result of this clearly showed that where cell phone radiation was comparatively strong, frogs were absent, whereas they abounded in areas of low radiation intensity, as already mentioned.

Source: Grodor dog av strålning från mobilmast (Frogs died from Radiation from Cell Phone Tower) by Mona Nilsson, Miljömagasinet (Swedish environmental weekly) number 34, 2010

Dogs and Cats

In his office, veterinarian Christian Métraux has observed a large number of cases of disease, directly caused, or complicated, by radiation from DECT phones or wireless networks.

One of his cases was a cat that had received a bite wound in its paw. It turned into an abscess, which was operated on. The cat was also treated with an antibiotic. A few weeks later, the cat had to be operated on again. The veterinarian suspected that the cause was resistant bacteria, but laboratory tests showed nothing.

He then advised the cat´s master to remove all DECT phones from his home, which he did and the cat recovered immediately.

Another case, among many similar ones, was a horse that recovered completely from chronic paralysis in one leg when the DECT phone was removed from the nearby dwelling-house (a DECT phone has a range of 50 - 300 meters).

A big mixed-breed dog broke out in a rash along with sudden paralysis in its hind leg. Three weeks prior to this, a wireless network had been installed in the house. Following the veterinarian´s advice, the dog´s master removed both the WLAN and the DECT phone, whereupon the dog rapidly recovered.

Source: Vonarburg, B:"Macht der Elektrosmog Hund und Katze krank?" http://sc.tagesanzeiger.ch/dyn/wissen/umwelt/832675.html

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The ultimate goal of The Wave Breakers is the adjustment of all electromagnetic radiation to levels that entail neither injury nor discomfort to any person´s health or the overall environment.