DNA and Developmental Damage from Cell Towers on the Greek Island of Samos: Effects on Insects, Flowers and Vegetables

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"...cells with irreparably damaged genomic DNA will result in cell senescence, cell death, cancer or mutated offspring, depending on cell type and specific biological/environmental conditions."
Panagopoulos et al., 2021[1]

Introduction

A recent paper, 'Human-made electromagnetic fields: Ion forced-oscillation and voltage-gated ion channel dysfunction, oxidative stress and DNA damage (Review) published in the *International Journal of Oncology* by biophysicist Dimitris J. Panagopoulos *et. al*. states unequivocally that electromagnetic radiation from wireless technology damages DNA. This leads to infertility, sterility, mutations and extinctions, and it explains the loss of biodiversity that we are currently experiencing on this planet.

DNA damage from wireless radiation is not a new discovery. It has been confirmed over and over by numerous scientists using a variety of experimental subjects and frequencies. But do observations in the laboratory translate into the same effects in the real world? If these scientists are correct, they must do. In the real world things might be a lot worse, because in the real world we are not exposed to a single frequency or bandwidth but to a whole soup of them, from multiple sources. In the real world, exposure time is not limited to a few minutes or hours per day or week; the cell towers are on day and night. DNA damage from wireless radiation is not a laboratory phenomenon; it is real. We are losing the insects—among them, the pollinators. We are losing the birds. Animals are dying out. We are wiping ourselves out.

The damage to DNA, says Panagopoulos, is being done by the Extremely Low Frequency ELF) components of the wavebands used in wireless communications. For decades, regulatory bodies such as ICNIRP, SCENIHR (EU), the FCC (USA) and others have insisted that the only way wireless technology can cause damage is by heating tissue, and that the power levels which are allowed protect us from being harmed. This is not true for human beings, and these regulatory bodies have never even considered nature.

Is DNA damage from wireless radiation visible? There have probably been DNA-damaged plants, insects, birds, animals, and people since the first generation of cell towers was erected, but would we recognize what we are seeing? A 2003 study[2] performed by a pair of scientists from the University of Thessaloniki, Greece, studied the effects of exposure to electromagnetic fields on mice exposed at various sites around an antenna park. The newborn mice weighed more than normal newborn mice, and they all had extra vertebrae in the posterior sections of their spines, making them longer than normal mice. This is DNA damage. The mother mice, the dams, produced fewer—and bigger—babies with each litter, and after six months they became irreversibly sterile. This is also DNA damage.

A mouse runs by in a field; would you know that its spine is ever so slightly longer than it should be? I wouldn't. Would you recognize that a great tit's eggs are ever so slightly bigger than they ought to be? I wouldn't. A study of great tits[3] found that birds which made nests near power lines laid bigger eggs with a higher volume of yolk and albumen. That too is DNA damage, and this damaged DNA will be passed on, unless the bird becomes sterile as did the mice in the antenna park study described above.

In 2006, Spanish biologist Alfonso Balmori wrote that amphibians were the most seriously endangered creatures on the planet[4], and a great many of them were grossly deformed, with missing or extra limbs. Balmori ascribed this to interference with embryogenesis during development—in other words, developmental damage. This problem began after 1995 in many parts of the world (about the time that mobile phones started to become popular and cell towers started going up everywhere) and Balmori argued that electromagnetic radiation from wireless technology was, at the very least, a major contributing factor. The rate of deformity jumped to 25% in some populations, and such deformities were found even in pristine places such as national parks where pesticides and other pollutants could be excluded as the cause.

DNA damage doesn't always cause deformities. It can affect living creatures in a great many ways, some of them invisible or unnoticeable. Numerous studies have shown that wireless radiation causes both impaired fertility and sterility, but you can't see these with the naked eye; you'd have to autopsy the creature's sexual organs. What we *do* notice is the *results* of infertility and sterility: a decrease in egg-laying or live births; a decline in the numbers of a given population until the species in question becomes extinct. This is what is happening to the fireflies, the bees, the beetles—indeed to all the insects. This is what is happening to the birds and to other, mostly small creatures. The rise in the number of people seeking help from fertility clinics says this is happening to us, too.

Insects and birds are declining rapidly worldwide. It's no good trying to throw all the blame on pesticides or other chemical toxins, because there are still enough places in the world where pesticides and other such poisons are *not* in the environment, such as where I live. If pesticides were the problem, we wouldn't be seeing huge declines in insect and bird populations here, and particularly not in the area where I live. But we do have *one* source of man-man pollution in our environment, and it is both mutagenic and genotoxic: electromagnetic radiation (EMR). We are surrounded by cell towers, and insect, bird and animal populations are plummeting here, too. EMR from the cell towers is causing DNA and developmental damage in insects, plants and other creatures. This damage is becoming, not just visible, but all too obvious.

DNA and Developmental Damage in Insects Observed on Samos, Summer of 2023

When 4G came in, we saw big declines in many species of insects, among them fireflies and certain types of spiders, which seemed to vanish overnight.[5] And it was after 4G came in that in one area of our property we started to see carrion flies with damaged wings. Some of these flies had deformed wings, some had vestigial wings, and some had no wings at all. For generation after generation, they have bred and produced more flies with the same defects. By now, the number of carrion flies in this area has fallen dramatically. See the picture below for an example:

Carrion fly with deformed wings.

There ought to have been carrion flies, as well as bluebottles and greenbottles, on the corpse of the baby jackal I found late last summer. These flies lay eggs in open orifices to begin the process of decomposition, which however unpleasant, is necessary. We don't know what killed the little jackal, though a spot of blood on one foreleg suggests he might have encountered a poisonous snake. But there were no flies or any other insects buzzing around the little corpse, only a stream of tiny ants making their way to and from the open eyes. Where are these flies? We have seen very few of any of them lately.

Other than sterility, which is invisible to the naked eye, we have noticed four kinds of DNA damage and/or developmental abnormalities to insects where we live: damaged wings, deformity, miniaturization and a marked change in the ratio of males to females. It is not possible to tell DNA damage from developmental abnormality with the naked eye; you would have to take tissue samples and do DNA sequences on them. Both types of damage can produce deformations so bad that the creature cannot breed. But there is one clear difference: DNA damage produces heritable mutations [6]; damage passes on from one generation to the next. The carrion flies which have passed damaged wings on to many successive generations are a good example of DNA damage; the defect has not prevented them from breeding, though numbers have severely declined.

Damage to wings is the most common visible problem in flying insects. It didn't use to be a common phenomenon. Since childhood I have watched many insects hatch and always marveled at the miracle that turns incredibly fragile, crumpled wet balls of tissue into smooth, perfect organs of flight. The miracle almost never failed. These days, it often does. In some cases this defect could be developmental damage. Most insects that hatch with damaged wings do not survive to breed, like the Eastern Festoon butterfly pictured below. There were hardly any of these butterflies last spring, and many of the spring and summer butterflies were altogether missing. Butterflies have declined rapidly since the introduction of 5G on Samos.

Eastern Festoon with severely deformed wings

Among our most common summer butterflies are the Swallowtail and the Scarce Swallowtail. Both of these butterflies are large and pretty, and they love the zinnias that we plant around our vegetable beds. However, the last generation of Scarce Swallowtails that we saw all had wing damage. One (usually the left) of the long tails was incomplete, ending in a point below the wing. One butterfly's left tail, though of normal length, had an area that was so narrow it could not support the white disc at the end, which flopped about as it flew.

Compare the picture of the normal Scarce Swallowtail (below) with the one beside it. I wasn't able to photograph any of the damaged Scarce Swallowtails in the garden, but I did find a dead one which displayed the type of damage I am talking about. The left-hand tail, at the base of the wing near the body, is vestigial. The right-hand wing had a normal tail, which broke off after the butterfly died. It is not a good picture, but the left-hand tail is not broken; it is tiny and deformed.

Normal Scarce Swallowtail (left) versus deformed Scarce Swallowtail (right). Note the tiny tail on the inside of the left lower wing.

We have also seen deformities to scorpion tails. The big one got away before I could photograph it, but I later found a little one (one of its babies?) nearby with the same deformity, which suggests that the trait was passed on. The tails of these scorpions were very small and thin in proportion to the rest of their bodies.

The scorpion on the left's tail is too small for its body. Compare this with a normal scorpion tail in the picture on the right.

Deformity of body parts is not the only kind of DNA damage we are seeing in insects. This past summer two species of insects, swallowtail butterflies and carpenter bees, produced a brood of miniature versions of themselves. The last brood of swallowtail butterflies that hatched contained many butterflies that were much smaller than normal—between half and two-thirds the size of the

normal insect. Unfortunately, I was not able to photograph a normal size butterfly together with a miniature, which is the only way to show how much smaller some of them were. The miniature butterflies did not appear to have any other defects. We have not had any more swallowtails since then (and I think we should have as they usually produce three broods). I wonder what will happen next year.

A normal swallowtail (left) has a wingspan of 6.5-7.6 cm. A carpenter bee (right) is a big insect—2.5- 3 cm.

The other species that produced miniature versions of itself was carpenter bees. Again, the miniature versions appeared to be perfect, but they were between half and two-thirds the size of the normal carpenter bee. They were not a different species. There is a smaller species of carpenter bee, but the edges of its wings are whitish (these were not) and we don't have it here. As with the swallowtails, we haven't had any carpenter bees on this land since, though they should still be around and we have seen one or two elsewhere.

Is this type of damage happening to people too? A neighbor of ours had a baby that was born at eight months (which is considered full-term) and weighed only 900 grams (about two pounds) at birth. "He was so small he fit into one hand," his mother told me. He was initially treated as a premature infant but is now a normal, healthy child—though he is still very small for his age and will probably always be. I don't know if this is happening with other children. I asked a doctor at our local hospital but such statistics, even if recorded, would probably not be collated.

A fourth type of what is likely DNA damage is a marked change in the ratio of male to female insects. We have so few insects these days, and it is impossible to see, in many species, whether an insect is male or female. But we really noticed a difference in the ratio of male to female insects when the Scarlet Darter dragonflies arrived in October. With these colorful insects it is easy to tell the sex: the males are bright red, and the females are greenish yellow. Normally, there are about half males and half females. This year, there were far, far more females than males. One day in particular almost every dragonfly I saw was female; I estimated 100 females to one male.

DNA damage does not necessarily produce mutants. Sterility is the most likely outcome of serious DNA damage, because nature does not want to pass on disadvantageous traits to future generations. And sterility is only evident in the disappearance of species; they cannot breed, so they go extinct. If this is the gauge, then most of the insects we used to have must have become sterile, for most of them have died out and become—at least locally—extinct. We have lost almost all species of beetles, lacewing and other flies, most of the moths (and all the larger moths except for a few humming-bird moths), many butterflies, virtually all wasps and hornets, and many species of wild bees including wild honeybees. There are almost no mantises, no katydids, and very

few grasshoppers and crickets. There are a few slugs, but no snails. There are very few woodlice, earwigs, millipedes, centipedes or silverfish, and very few web-spinning spiders. No species of insect remains unaffected; all species have either declined or vanished altogether, including soil insects such as earthworms (we have only seen two this year) grubs (none) and even ants. When the queens hatched after the first rain, there were very few of these flying ants compared to other years—a few dozen compared to hundreds. Many plants are not being pollinated properly.

Lack of Insects Leads to Low Yields and Crop Failures

Soil Insects

Insects are needed for much more than pollination. Without soil insects such as worms, grubs and certain beetles, the soil becomes poor and plants do not grow as well. Earthworms and other soil insects aerate the soil, so that bacteria can break up plant matter and release nitrogen and amino acids into the ground, which are then taken up by the plants. Without soil insects and bacteria, compost does not break down. We have no soil insects any more. Other than the two earthworms we unearthed in digging up the garden, we have seen nothing at all—no worms, no grubs, no tiny threadlike centipedes, no beetle pupae—that we would normally find as we turn up the soil. We cannot see the bacteria that should be there, but we can see that the earth is becoming sterile. We have had copious autumn rains, after which lots of big night-crawler earthworms would normally surface; this year there have been none.

Electromagnetic fields are killing the soil insects and bacteria underground just as much as they are killing the insects above ground. This happens because the leaves of plants absorb the ambient radiation from the cell towers and release it through their root systems into the earth, which absorbs the charge like a battery[7]. Soil insects can no more live in this charged atmosphere underground than their above-ground counterparts can live in the direct electromagnetic radiation generated by the cell towers. The lack of soil insects and bacteria means crops don't grow well. Farmers try to compensate by adding more and more fertilizer, whether artificial or organic. Farming becomes more expensive as well as less productive.

Pollinators

You never want to believe that things are as bad as they seem. In October, when our male carob tree bloomed, I heard the loud buzzing of hundreds of insects and thought the flowers were covered with bees. But when I went nearer, the buzzing sounded more like the droning of flies, and so it proved. There weren't any bees, except for several bumblebees and a very few tiny wild bees. What appeared to be bees turned out, up close, to be drone flies, which look exactly like male bees (drones, which have no pollen sacks) except for the fly eyes and the fly habit of washing their faces with their forelegs. There were a great many drone flies, and they are pollinators, but they do not pollinate fruits and vegetables and are of little use in the garden. What I thought was a hornet turned out to be a hoverfly (*Volucella zonaria*) and there were a few hoverflies of a species I'd never seen before, with zebra-striped eyes.

We watched the carob day after day, until the blossoms faded and dropped off. Most of the bees are gone—vanished—possibly extinct. As for the drone flies and the hoverflies, the curious thing

about them is that we had seen very few all summer, and we haven't seen many since. They arrived and vanished along with the carob blossoms.

Crop Failures and Low Yields

The lack of bees on the carob tree only confirmed what we knew already, that many species of wild bees which we had even last year are gone. They weren't in our vegetable beds and we didn't see them on the wildflowers, either. Everyone, including us, had problems with pollination this year, and crop yields were way, way down. Normally our summer beds produce a lot more aubergines (eggplants), peppers, tomatoes and melons than we can possibly eat; we give some away and freeze large quantities for winter. This year we barely produced enough for ourselves, despite having extended the beds and put in far more plants than usual. I planted and replanted tomatoes (five varieties, one of which is a local species that is very high-yield), over 60 plants in all. We barely produced enough tomatoes to have a few salads, for many plants yielded no more than one or two tomatoes. The problem wasn't the plants, which produced scores of blossoms. The tomato blossoms were not being pollinated.

The problem of tomato pollination was not confined to us; everyone complained about it. Local market gardeners were forced to give up on outdoor plants and grow them in greenhouses using rented bees. There were very few outdoor-grown tomatoes for sale this past summer, and people in other parts of Greece also reported that outdoor tomatoes were not pollinated. Our peppers (three varieties) and aubergines (white and purple) were pollinated mostly by bumblebees and carpenter bees between April and August, but also did not yield nearly as much as usual. Small wild bees pollinated the melons (about one blossom in ten), but the cucumber blossoms were not pollinated: we got four cucumbers the whole summer. We did get courgettes (zucchini) but these I hand-pollinated. Otherwise we would have had none, as in the past three summers. It was a warm autumn, and we should have had plenty of produce in the garden right through November, but the plants, although still blossoming, were not being pollinated.

Many people here depend on their summer gardens, and low yields or outright crop failure means that they won't be able to afford to eat properly, because the price of fruits and vegetables has skyrocketed. Oranges, which are produced locally, used to cost half a euro per kilo. (One euro is approximately equal to one US dollar or one pound sterling.) Once we saw them for sale at three euros a kilo, and they were rotten because no one was buying them.

In the supermarkets, what are normally outdoor crops—tomatoes, cucumbers, peppers and aubergines—are clearly hothouse products, and cost accordingly. Onions have skyrocketed, and we have seen them for as high as two euros a kilo; they used to cost 30 cents. There has obviously been at least one crop failure in Greek onions, because for months the only onions available were imported from India, which has never happened before. Our own onion crops failed three years running; we no longer try to grow them. This summer, the television reported that the aubergine crop failed in Thessaly, where most of the commercial ones are grown. This was blamed on excessive heat, but it has not happened before; aubergines are a hot-climate vegetable and high temperatures have never affected ours.

Relatives who are olive farmers in central Greece did not attribute the failure of the aubergine crop to heat; it was just as hot where they live. They have always grown their own summer vegetables and this year everything failed except peppers, which were unusually small. Worse, the olive crop

has failed everywhere in Greece this year. This is a major issue as Greece produces a lot of olive oil. Much of it is sold to Italy, where it is bottled and sold as Italian olive oil. My relatives, who have several thousand trees, told me that this year they produced so little oil that they are going to keep it all for their own use, as they expect the price of oil—already 10 euros a liter—to double or treble, especially if the crop fails next year as well. A single mature olive tree tree should produce 200 kilos of olives, which translates to 45-50 liters of oil. A thousand trees should produce at least 45,000 liters of oil. This was not a poor harvest; it was a disaster.

Why did the olive harvest fail? It cannot have been the weather, because the weather is not the same all over the country. Samos and the eastern islands, for instance, have a totally different climate from central Greece, and northern and western Greece are different again. But olives are pollinated by small, insignificant-looking moths, and moths are becoming extinct. My relatives in central Greece tell me that there too, most of the insects have vanished. Birds are vanishing too. They used to scatter seed for a flock of chaffinches that visited them daily; now they get only two or three birds.

It was also reported on Greek television that this year's almond crop failed. Pesticides were blamed for killing the bees, but almonds have no pests, and every local garden center I asked at told me that almonds are never sprayed. In any case, no one would spray a tree when it is blossoming; fruit is only sprayed after it forms and binds to the tree. I think the almond crop failed because of a lack of pollinators. We have five almond trees, there are many more in our neighborhood, and there are no almonds on any of them, though they blossomed normally.

We didn't see many figs for sale this year, and local fig trees, including ours, produced few if any figs. But figs are pollinated by wasps, and there are no wasps to speak of. Wasps are in even more trouble than bees. Most species appear to be extinct, and we have only a few digger wasps. There were almost no hornets this summer, either. People in other parts of Greece have also noticed the lack of wasps and hornets. Without these insects, there will be no figs in future, and no onions or garlic either. Bees do not pollinate onion or garlic flowers: wasps and hornets do. How will we get along without these essential—and nutritious—foods?

The pollinators are dying out, and the specter of mass crop failure looms a lot larger than anyone wants to think about. Maybe for a while we can subsist (if we can afford to) on hothouse plants pollinated by captive bees. But the electromagnetic fields that increasingly surround us can also penetrate the glass walls of a greenhouse; there is no guarantee that captive bees will survive either. Nor can all crops be grown indoors, even if we were to cover the countryside end to end in greenhouses. Without pollinators, we will starve.

Wild bees are vanishing much faster than managed honeybees, but bee-keepers are increasingly encountering problems of all sorts with their hives. On the island of Ikaria, which produces pure thyme honey that is reckoned by connoisseurs to be the best in the world, honey production fell to one-fifth of usual volume this past summer. Honey production has also plummeted on Samos. This is a serious economic blow to the bee-keepers, but it ought not to be surprising. Both islands have full 5G coverage, and studies have shown that electromagnetic fields confuse and disorient bees in many ways. The thyme plants on Ikaria may also be affected by the EMFs. On Samos, which produces mostly pine honey, the pine bark adelgids, a type of beetle that lives on pine trees and exudes a sweet liquid which the bees turn into honey, have been vanishing very fast since 5G was introduced.

I spoke to a bee-keeper in central Greece whose family have supplied mine with honey for over sixty years. His own honey production has fallen by forty percent, and he told me that figure applies to the whole of mainland Greece. Honey is another major crop in this country; Greek honey is exported all over the world.

Wildflowers

Crops aside, wild plants are also not being pollinated, and we will have increasingly fewer of them as time goes on. There can be no doubt that electromagnetic radiation from cell towers is affecting pollination. This autumn, my husband and I were struck by the pattern of pollination in arbutus plants on the mountain where the nearest cell tower is located. Arbutus are large bushes whose fruits (two kinds, called mountain strawberries and bear-berries) are bright red and easily spotted from a distance. There are a lot of these plants on the mountain, and none of the bushes that lie in the beams of the cell tower have been pollinated; they have no fruit. But below the dirt road leading up to the cell tower, the mountainside falls away steeply, and the cell tower beams cannot reach these plants. These have been pollinated, and have fruit, and there are also small birds in these areas—and only these areas. Unfortunately, there aren't many shadow areas of this kind, where cell tower beams can't reach. The mobile phone companies have done everything they can to ensure wireless coverage is complete.

My relatives in central Greece complained to me last year about a lack of dandelions, the leaves of which are a popular food. We still have dandelions (numerous species) on this land but there is a definite lack of them on some parts of the island. I don't expect that we will have them much longer, though, because they too are not being pollinated. Dandelions are mostly pollinated by very tiny wild bees, and we haven't seen any on the flowers, though I have seen a few drone flies. There are very few dandelion clocks (a sign that they have been pollinated and gone to seed) and most of the flowers just wither and die.

This past spring there were far fewer wild orchids than usual. Many of the little orchids are called "bee orchids" because they attract various wild bees. The smaller number of orchids means there weren't many bees. The cyclamens bloomed through October and November, and they too should have attracted bees, but there weren't any bees. My husband and I saw only one bumblebee on the cyclamens, and we think it was the same bumblebee. Virgin's bower, a clinging vine that produces beautiful white bell-shaped flowers, grows everywhere in this area; the blossoms ought to have been covered in bees, but there were none. The anemones are blooming but they too are not attracting pollinators. Nor are the yellow shamrock flowers. There were no bees on the heather on the hillside this autumn, and there are none on the flowering rosemary bushes in the same area. I expect next year we will see far fewer orchids, dandelions, cyclamens and other wildflowers than we had this year.

Even our wild fennel plants, which grow in profusion, were not pollinated properly this year. Fennel seeds are sweet and tasty, somewhere between caraway and anise, and many people use them in baking. More importantly, they are the food for a great many wild birds, mice and other creatures, and in autumn it used to be a common sight to see flocks of chiffchaffs perched on the fennel plants, pecking away at the seeds. This year, the wild fennel produced perhaps a third as many seeds as usual, and there are very few chiffchaffs. Our pines were always full of these little birds in winter; this year there are hardly any.

DNA Damage to Plants Observed on Samos, Summers of 2022 and 2023

Both wild and domestic plants are being affected by electromagnetic radiation. We have seen a number of effects on vegetables and flowers suggesting that plant DNA is also being harmed. There appear to be numerous categories of harm: 1) the plants themselves are not growing as well as they should, and produce small fruits; 2) the plants are growing much taller than they should; 3) the flowers are deformed; 4) the fruits are deformed; 5) the fruits exhibit abnormal pigmentation; 6) the skin or rind of the fruits is thin and burns on the side exposed to the sun; and 7) the fruits do not produce viable seeds.

In our summer garden, many plants simply did not grow very well. Pepper and aubergine plants should become several feet (a meter or so) high and quite bushy, but most of the new plants we put in (some started from our own seed and a few bought from a local garden center) remained small and spindly. After six months, they looked as if they were a month old. Peppers and aubergines will live and produce for a second year, and most of the vegetables we had this summer were from plants we kept over from last year. On none of the plants were the vegetables very big (nowhere near as big as they should get), and many of them were deformed.

Conversely, zinnias and wild fennel grew much taller than they should have. Zinnias should be about a foot (30 centimeters) high, but this year they grew to triple that height. Wild fennel should grow to 5-6 feet (160 cm.-2 meters) high, but this year they were half as tall again, rising to 9-10 feet (3+ meters). No one has ever seen wild fennel plants get so tall.

The zinnias had deformations as well, some of which they exhibited last year. Since this year's flowers grew from last year's seeds, it looks as if damaged DNA from last year was passed on to the next generation. Many of the flowers grew huge centers, and many produced a second, smaller set of petals after the first flower started to fade. Some flowers produced double blossoms, and another produced a true freak: two blossoms growing out of the same deformed stalk.

The zinnias in the picture on the left have unnaturally enormous centers, with a few petals that should not be growing on them. The purple zinnia in the picture on the right has developed a second flower on top of the first flower —another form of the extra petals present on the orange zinnias.

The picture to the right exhibits a type of damage called fasciation, where two (or more) flowers emerge from one flattened, deformed stem, as if the stems were fused together.

It wasn't just our garden flowers that showed DNA damage. Both last year and this year, on the south side of the island, we found tassel hyacinths that were tremendously deformed, and spread over quite a large area. One of the deformed flowers was so abnormal we could only recognize what it was by its leaves and color.

Compare the three pictures below. The first (left) shows normal tassel hyacinths. The second (middle) shows a malformed, but still recognizable, tassel hyacinth. The third (right) shows a tassel hyacinth so deformed it was only recognizable by its color, leaves, and the fact that other tassel hyacinths were growing nearby.



DNA damage is also showing up in tomatoes, peppers and aubergines. Again, there are several sorts of defects. One is a tendency to produce a growth on what should be a smooth fruit, which I think of as "a nose". You can see this on the pictures of the aubergine and the bell pepper below. I don't have a photo of a tomato with this defect, but it is so common that I have seen many tomatoes in the market which have a small extra growth (it really does look like a nose) up near the stalk. Tomatoes, peppers and aubergines are all related; this may be why they exhibit the same kind of damage from exposure to EMR.

An aubergine and a tomato with an extra growth like a large nose. On the pepper it looks more like an elephant's trunk.


Another type of defect, which we have seen on aubergines and also on tomatoes both last year and this, is that these usually single-lobed vegetables produce two lobes, like Siamese twins. Our next-door neighbor produced a number of double-lobed tomatoes.

A very strange defect was that one type of pepper plant (a sweet red pepper, like a pimento) produced orange peppers. Not all the plants did this, but one plant produced only orange peppers, while others produced some orange peppers and some red ones. I asked around, but nobody had ever seen an orange pepper of this type. Nor had anyone seen purple aubergines that turned a dull green. Some of the white aubergines also had a distinct greenish tinge. All these abnormally-colored vegetables tasted quite normal, but no market gardener could have sold them to the public. I showed a green aubergine to my neighbor, and she opined that it was poisonous.

Left: Purple aubergine with green skin.

Right: The red peppers on the right have normal pigmentation. The orange peppers on the left are abnormally-colored.

Since the aubergine is a relative of deadly nightshade, it is not a pleasant thought that DNA damage might indeed turn them poisonous. At the time, I laughed at my neighbor's reaction, but now I wonder. We had a very wet autumn/early winter, and mushrooms and toadstools grew in profusion everywhere. A lot of people here collect edible mushrooms, and many are quite knowledgeable about distinguishing poisonous from edible varieties. This year, though, a great many people were poisoned by the mushrooms they collected, and some people were so sick they were sent to Athens for life-saving treatment. Now people are being warned not to collect wild mushrooms at all. People are being told that "there is something in the environment this year that is making the mushrooms poisonous".

It is very hard to imagine what that "something" could be. This is a Greek island. There is no industry here to spew poisons into the environment; there haven't been any nuclear accidents that I know of; the volcanic ash from several eruptions (Siberia, Iceland and Italy) may be responsible for the warm, wet weather we had earlier this winter but isn't poisonous to plants. The only poisonous thing in the environment is cell tower radiation, and that certainly causes DNA damage.

Is it possible that a DNA-damaged mushroom could produce toxins that would make it poisonous to eat? Could a garden vegetable related to a poisonous plant, or whose leaves or sprouts are poisonous, become poisonous to eat if its DNA is damaged? Green potato skins and potato sprouts, for instance, can contain enough arsenic to kill a man. What if a DNA-damaged potato itself contained arsenic? You might die from eating it, because you wouldn't know.

Another effect of electromagnetic radiation on fruits and vegetables is that they can become less nutritious. A recent study of tomatoes[8] showed that EMR affected the vitamin and antioxidant content of these fruits. They also developed thinner skins, as ours have (see below) which would affect storage. We may not be getting the vitamin and mineral content we should be from fruits and vegetables we eat these days.

For the past two summers, many tomatoes, some peppers and some melons developed a very thin skin or rind on the side that was exposed to sunlight. The tomatoes and peppers literally blistered in the sun, while the melons became tear-shaped, and there was no flesh on the inside of the thin spot in the rind. Again, no market gardener could sell such fruit.

The melon pictured on the right has developed a thin rind on its upper side, causing it to become tear-shaped. The thin area has turned brown where the sunlight burned it.

I believe that all the abnormalities in garden plants described above is DNA damage. For one thing, these types of damage have occurred two years running, in plants grown from the seeds of previous plants. For another, deformity is a not-unusual consequence of DNA damage, and damaged DNA is passed from one generation to the next until the damage is so bad that the plant (or any other living thing) becomes sterile and unable to reproduce. Also, many other people on Samos, including market gardeners who grow their vegetables on different parts of the island, with different soil conditions, are also seeing deformed fruits and vegetables, and with the same types of deformities.

I correspond with a woman in Japan who has also photographed DNA damage in flowers and vegetables[9]. If you look at the pictures she has taken, you will notice that some of the deformities she photographed in Japan are the same ones we are seeing here on Samos, half a world away. She has also shown me pictures of damaged vegetables that look just like ours: double-lobed aubergines and tomatoes with “noses”.

The pictures in the article were taken almost 20 years ago, and the DNA damage occurred near cell towers (base stations). It is very alarming that this same sort of damage is now occurring in areas that are *not* near cell towers, because it shows how much more electromagnetic radiation there is in the environment. After all, although we are surrounded by cell towers, most of them are quite far away, the nearest being 3.5 kilometers (2 miles) distant. This year, Japan also reported poor summer crops (attributed to climate change by the media even though temperatures in Japan do not rise above 40 degrees Celcius). Another woman in Japan told me that none of her husband’s watermelons were pollinated this past summer.

A friend in Thailand who writes to me about how fast the insects are disappearing there has seen serious deformities in a frog and a house martin. The frog had five legs (exactly the kind of damage Dr. Balmori describes) and the bird, which was a chick in a nest below his window, had thickened, deformed wings. It couldn’t fly and it died. The lack of birds and insects in Southeast Asia is so acute that in some places there is no chirping, no hum, and no birdsong. One morning, when my friend was staying at a hotel in Penang, Malaysia, he sat outside listening to what he thought were birds and insects—until he noticed that all the sounds were only coming from one corner of the

garden. He went to investigate and found a stereo speaker from which these sounds were issuing. Without the recording, there would have been only silence.

Bad Seeds

For the past couple of years, Chinese farmers have been complaining about "bad seeds"; they say that the seeds the government supplies them with either do not grow or produce poor crops. It makes no sense that any government would deliberately give its farmers poor-quality seeds, but something is definitely wrong.

We are having similar problems on Samos. Two years ago, a market gardener I know had to replant her spinach crop three times before it germinated. We have been unable to grow spinach from bought seeds, though we've tried three years running. The seeds just won't grow. It seems we're not alone; this year, none of the market gardeners are selling spinach. We've had similar problems with bought beet seeds as well as with peas and green beans; few of the seeds germinate, and the plants don't grow well. I think there are two problems: both are connected, though in very different ways, to electromagnetic radiation.

Our own seeds, saved from plants that we have let go to seed, have not always done much better than bought seeds. Last year we planted bought cauliflower seeds and saved broccoli seeds: neither germinated. This problem too appears to be general, since few of the market gardeners are selling broccoli this winter and cauliflowers are also hard to find. We grew chard last winter from our own seeds that were several years old—saved before we had so many cell towers around us—and had a good crop, but the new chard seeds from last spring's crop were much smaller than the old seeds. We planted the new seeds this autumn and only a few germinated; we had to replant using the old seeds. Last spring we left several beets to go to seed, but they produced no seeds at all; they weren't pollinated.

This past summer, a very ominous problem developed: many peppers and aubergines did not produce usable seeds. A fruit is, after all, a seed-pod, and a ripe fruit should contain well-developed seeds. I had trouble finding enough peppers from which to collect seeds for next year, as most of the seeds in all three varieties of peppers were small, black, shriveled and obviously unusable. Many of the aubergines we cooked had no seeds at all. Other aubergines have gone to seed (they change color when this happens, from purple to brown, or from white to yellow) while still tiny (usually they grow big first). I won't know until next spring whether they have produced usable seeds, but I deeply suspect they haven't. The tomato seeds I saved were also smaller than normal. I don't know if any of the seeds from this past summer will germinate next year, or what sort of plant they will produce; the peppers and aubergines grown from last year's seeds have not done well.

What is going wrong? If the electromagnetic radiation from the cell towers is damaging the plants and the soil they grow in, it is not surprising that seeds should also be affected. Nature does not want to pass on damaged DNA, so the seeds from DNA-damaged plants will not grow, or the plants that grow from them will not thrive and the fruits will exhibit deformations. It is also possible that the failure of seeds to germinate is developmental damage caused by EMR in the environment and in the soil itself. Neither possibility bodes well for the future.

We generally use seeds saved from our own plants. Commercially bought seeds, on the other hand, are business; someone makes a living selling them, and if they don't grow the business fails. If irradiated soil is preventing seeds from germinating, it doesn't matter whether the seeds are saved or bought. However, there may be another problem with bought seeds.

The problem may be that seed businesses are trying to protect seeds from pests and fungi by irradiating them with EMR[10]. A number of frequencies are used for this purpose. One of them is 2,450 MHz, which is the same as Wi-Fi, and the same as a microwave oven. I have read of experiments in which some seeds were watered with water that had first been microwaved, while others were watered with normal tap water. The seeds watered with the microwaved water did not grow. If microwaving water can have this effect on seeds, microwaving the seed itself is surely a bad idea.

Irradiation with various frequencies may protect seeds from mold, fungi and insect pests (EMR is actually being used here *as an insecticide,* so why would anyone assume it will *not* harm insects?) but it also irradiates the seeds. Thus they might not germinate or grow well, or they might produce damaged crops.

Many crop failures or poor crops are attributed to weather conditions such as drought, heat or too much rain. But is weather the only problem? How were the seeds stored? Has anyone studied the effects of irradiating seeds (or fruits which contain seeds) in terms of germination or crop quality, or are we just assuming that this is a safe thing to do? Even when seeds are not deliberately treated with electromagnetic radiation, they are often sold from shops where the Wi-Fi is on all the time, as at our local garden shops. That means that we are, willy-nilly, buying irradiated seeds. And I cannot believe this is not affecting the seeds.

The Importance of Insects

It is impossible to overstate the importance of insects. We need insects for pollination, for good soil quality, and for decomposition—for compost heaps, for wood to rot, to dispose of feces and corpses. As the insects vanish, so do other creatures that depend on them. Here on Samos, I have noticed a huge decline in lizards of all sorts, including geckos and chameleons, all of which live on insects. Bats have also declined hugely. Hedgehogs, which are snail-eaters, are locally extinct. As the insects vanish, the food we humans need becomes harder to grow. When the insects are gone, we too will starve.

Insectivore birds are declining very rapidly, and this past year we saw many fewer flycatchers, shrikes, bee-eaters, hoopoes, swifts, swallows and martins than we used to have. There were no night-jars at all. Insectivores on migration don't stay long these days, because they can't find enough to eat. Most garden songbirds are insectivores, and I fear the day when we will no longer wake up to the songs of robins, blackbirds, song-thrushes, black-caps and other warblers. If wild plants aren't pollinated, the seed-eaters such as chaffinches and goldfinches will perish too.

There is another, mostly overlooked reason why we need insects: they are *beautiful*. Imagine a world with no bright butterflies or moths, no jewel-like beetles, no fireflies or glow-worms, no colorful dragonflies or damselflies. Imagine that you will never again see the perfection of a spider's web glistening with dew or rain-drops. We need beauty in our world, and insects are the jewelry that adorn nature.

Can Wireless Technologies and Nature Coexist?

Many people, even some quite prominent scientists who believe that wireless technology is dangerous, believe that we can make wireless technology safe if power levels are lower. They argue that no technology, once invented, has ever been rescinded, that wireless technology is not going to go away and that the best we can do is compromise by finding power levels we can live with which will do minimal harm to ourselves and nature.

Of course, governments insist that the power levels which are currently allowed *are* safe for us and for nature. Others, who believe that current power levels aren't safe, believe that identifying biologically safe power levels would enable us to keep this technology without killing ourselves and the planet we live on. A recent letter in *Environmental Science and Technology Letters* called "Addressing Wildlife Exposure to Radiofrequency Electromagnetic Fields: Time for Action"[11] begins well by pointing out that wireless radiation is killing wildlife and calling for much stronger measures to protect nature, but concludes "This would enable a future in which wireless technologies and wildlife can both flourish." Excuse me, but this is the usual "More work needs to be done; more funding is needed" nonsense.

We *already* know EMR is dangerous, in the same way that we know cyanide is dangerous. Nobody would suggest that we experiment with every species on the planet to determine how much cyanide each creature can tolerate before it keels over. So why does anyone think we need to experiment with insects, birds, amphibians, fish, plants, animals etc. to determine the lowest tolerable dose of EMR for each species? And then what? Would we lower ambient radiation levels to accommodate those species which are least tolerant of EMR, or would we decide that we can do without those species? This approach doesn't work. The simple fact is that neither cyanide or EMR belong in the environment.

Are there biologically safe power levels that would protect every life form on this planet? Effects on living creatures have been found at levels far too low for wireless technologies to operate, down to the nanowatt and picowatt range[12], so the answer is no. I think we must choose: wireless technologies *or* nature. And since we can't live without nature—wireless technologies cannot feed us—we *must* choose nature if we want to survive.

"Eat While You Can"

A few weeks ago, a young Greek woman in her early twenties told my husband that the motto of Greek youth today is "Eat while you can." This smartphone-addicted generation (they have never known a world without wireless technology) doesn't know *why* their world is going so wrong, but they do know that it *is* going very badly wrong, and they fear for the future. They fear that one day there will be no food, and they are not wrong.

If cell towers are responsible for the mass decline of insects including pollinators, and if EMR is affecting the soil itself, clearly cell towers do not belong in the countryside where farmers are growing crops. In Greece, which is over 70% mountains, most of the arable land lies on the coastal plains and inland plateaus. Unfortunately, the main highways also run along these areas, and the highways are well-served with cell towers along their entire length. This could explain why crops are failing here, and it does not bode well for the future of food production in this country. The

Greek islands also suffer from a high concentration of cell towers because connectivity is assumed to be essential to tourism. However, the islands also produce many agricultural products.

The fact is that cell towers are all over the countryside, in every country, and that highways served by these cell towers run through farmland on every continent. We appear to be prioritizing wireless connectivity over agricultural production, and this is a huge mistake. With growing numbers of 4G and 5G satellites orbiting around the earth as well, and now cell towers in space, where is nature supposed to flourish and food supposed to grow? We are threatening our own survival.

If there are no pollinators to pollinate plants, if the plants are so damaged by electromagnetic radiation that they cannot even produce normal seeds, and if the soil itself is unable to support life, we are going to starve. At first, it will be a question of higher and higher prices, as less and less food is being produced—this is already happening, and it is bad enough in itself. But if we do not get rid of all wireless technology, and very soon, there may come a day when no food at all can be produced, and every species including us will die.

I know this sounds bleak; I mean it to. I believe that we are rapidly arriving at a tipping-point where we will not be able to halt the insect declines, where the surviving insects (if *any* survive) may all have damaged DNA, as will the plants that produce food, as will every creature of the air, sea and land. That will be the end of the world as we know it, and of us. We are not separate from the ecosystem; we are part of it.

I want to scare you; *I* am scared to death. I especially want to scare you if you are a member of a government somewhere and have the influence to change the course we are traveling on, a course of more and more dependence on wireless technologies that are killing this planet and killing us. We *must* get rid of this technology before it is too late. And it is nearly too late.

Panagopoulos *et al.* say in their conclusion to their 2021 paper[1]: **"When an organism is constantly under O[xidative] S[tress] due to a totally new cytotoxic agent such as human-made EMFs, no protective mechanism, evolved in the billions of years of biological evolution to protect from natural (non-polarized) EMFs/radiation or isolated hazardous events, can be effective enough."**

Why aren't we listening?

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