

Chapter 3 Pesticides Run Amok

(Part 3 of an essay on nature and farming inspired by Land Healer, introduced in the blog Revolution in Taliban Alley; Chris Rose. chris@campaignstrategy.co.uk September 2022)

Pesticides became a big issue for the mainstream UK nature conservation groups in the 1960s but they effectively dropped out of it until very recently (see Ch 4). In the interim, farm chemicals ran amok. (In this section I've focused on pesticides but a great deal of damage has also been done by artificial fertiliser, whose effects include loss of insect life as well as plant diversity).

In the 1940s when DDT was regarded as a harmless wonder chemical, a British government scientist [warned](#) it might prove a "blunderbuss ... so haphazard that friend and foe alike are killed". In the 1950s government scientists (the Zuckerman Inquiry) were so worried about the toxicity of organophosphate insecticides that [they proposed](#) that doctors and hospitals should be informed when farms were spraying with them, and users should be licensed. Civil servants however intervened to change this to a voluntary scheme instead of regulation, and ditched the warnings idea, citing in internal memos 'a highly developed sense of social responsibility' among British pest controllers, and rejected 'too much emphasis on administrative control'.

Pesticide use grew and by the mid 1950s the RSPB and BTO [were collecting](#) evidence of large-scale bird deaths in places where arable crop seeds were 'dressed' with organochlorine pesticides. Initially seed-eating birds were hardest hit and then their predators such as Peregrine falcons and Sparrowhawks started dying too. A large number of foxes perished in East Anglia after scavenging birds killed by dieldrin, which like DDT, is an organochlorine insecticide.

In those days the Nature Conservancy (NC) enjoyed access to scientific resources, independence and political influence as a scientific service and was asked by government to investigate. It was replaced by less independent organisations. [1]

Peregrines

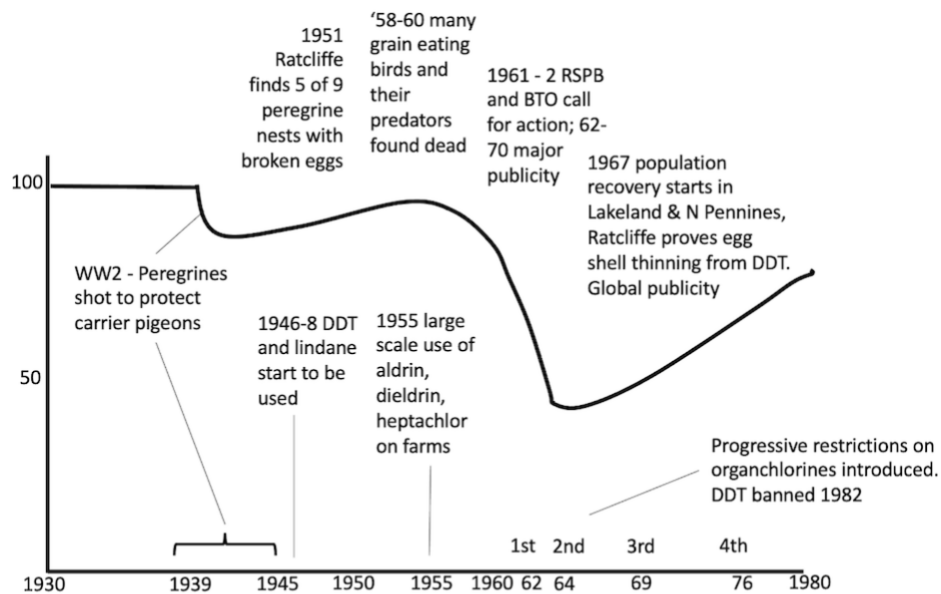
At the NC, Derek Ratcliffe, one of Britain's greatest scientists and naturalists, began a Peregrine Inquiry with the BTO in 1960. The RSPB and the BTO set up a 'Joint Committee on Toxic Chemicals' and published two reports on the threat from pesticides in 1961 and 1962. The second, [Deaths of Birds and Mammals from Toxic Chemicals January-June 1961](#) stated:

... 347 incidents have been received in which it is alleged that toxic agricultural chemicals have been responsible for the deaths of birds. In this report we have considered 324 of these incidents; the remainder being omitted because the evidence appeared inadequate. Of these 324 incidents, 292 were attributed to toxic seed dressings and the remaining 32 to the

effects of sprays and to other applications of agricultural or horticultural chemicals. The total number of reported incidents was thus about four times greater than in 1960

The case of the Peregrine soon became an environmental cause-célèbre and is detailed in Ratcliffe's 1980 book [The Peregrine](#). By 1961, wrote Ratcliffe, it was clear the Peregrine was in 'dire trouble'. It had disappeared from SE England where it previously flourished and across the country, nearly half the territories occupied up to the 1930s no longer had nesting birds. That year Ratcliffe arranged for the first ever analysis of any wild bird's egg for pesticides. It was an addled Peregrine egg from Glen Almond in Perthshire, then remote from any intensive farming. It contained the organochlorines DDT, heptachlor and lindane.

'Strong representations by nature conservation interests' and 'a large and irrefutable body of evidence' (and a lot of media coverage) persuaded the government Advisory Committee on Pesticides to recommend a voluntary ban on three organochlorines on spring sown cereals from 1962. More evidence and more advisory restrictions followed in 1964, 1969 and 1976. The first signs of a recovery in the Peregrine population came in 1967.



The story of the decline and recovery of Peregrine falcons and the investigation of DDT and other organochlorine pesticides, adapted from Derek Ratcliffe, *The Peregrine Falcon*, 1980

Above: a slow-motion success story for Peregrines against DDT but not against pesticides as a whole. 100 indicates the pre WW2 population level.

However Ratcliffe wasn't finished. In 1967 his research attracted worldwide attention when he revealed that egg-shell thinning caused by DDT had played a critical role in the decline of Peregrines. He had first noticed an unusual number of eggs breaking in the nests of Peregrines, sometimes with females eating their own broken eggs, in 1951. In a remarkable piece of scientific detective work he had examined old eggs in museums and private collections and showed that egg-shell thinning only started after the introduction of organochlorine pesticides. He also established several lines of evidence connecting it to DDT (eventually banned in the UK in 1982).

Partly because Rachel Carson's *Silent Spring* (1962) had been inspired by his original investigations into Peregrines and DDT, this became an iconic environmental story. A side effect was that it also became the *only* story many people knew about pesticides, including conservationists. Seen through this single example, pesticides could seem a problem-solved.

In his 1980 book Ratcliffe pointed out that many birds including Kestrels had still not recovered their "former distribution and numbers over much of the croplands of eastern England" and this was "a fair pointer to a continuing pesticide effect" from other chemicals. He warned against "complacency" and stressed the need for "continuing vigilance". Unfortunately Ratcliffe turned out to be right.

Intensification Fuels Pesticide Use

Getting to grips with intensification and farm agrochemicals was a daunting task and not one many in the conservation groups wanted to take up. Until recently, donors and NGO leaders were not very interested and their supporters had many other concerns – from the 1990s including climate change.

A combination of technical jargon and farming mythology was enough to put most NGO staff off the idea of a campaign. As Peter Melchett [said to me](#) in 2018:

"Farming has managed to be one of those areas which either sends one of its own into politics and government, so it's a NFU representative in government, or, make itself into something which is, mysterious enough for non-farmers to feel they can't venture there"

Take the complexity of pesticide products. In 1961 [there were](#) 127 pesticide products in Britain, based on 14 chemicals. By 1973 there were 461 based on 78, and by 1985 over 3,000 products based on 420 active ingredients.

Although it attracted little sustained public attention, pesticide use was escalating. In the three years after the UK joined the EC and its Common Agricultural Policy in 1973, the area of cereals sprayed against aphids increased 19-fold. Between 1979 and 1982 the crop area treated with insecticides doubled, and that with fungicides, more so.

Intensification fuelled by CAP subsidies created new pest problems which were then met with pesticides. In the 1980s a series of pesticide incidents reported to Friends of the Earth involved spraying against BYDV or Barley Yellow Dwarf Virus. This disease had been little known outside SE England where it was a minor problem. Its range was restricted by the overwinter host of the Bird Cherry Aphid, which required the Bird Cherry Tree. Sowing autumn sown cereals (viable with subsidies) closed the gap between crops to just a few weeks, allowing the much commoner Grain Aphid, which had previously perished for want of an over-wintering host, to start spreading BYDV. The disease spread to the north and midlands. ADAS, the government funded (since privatised) agricultural advisory service, responded by telling farmers to consider spraying (in winter) with organophosphorous and synthetic pyrethroids.

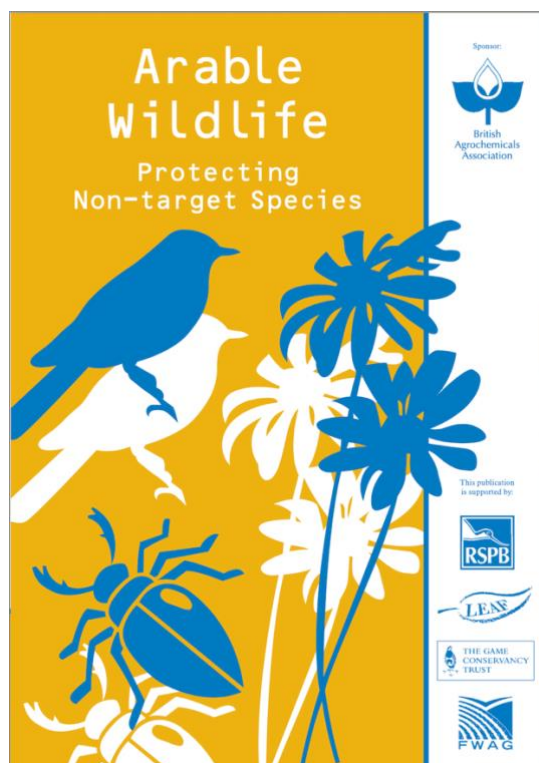
After the gradual return of Peregrines to many areas, conservation groups also had some success with reintroducing otters, which had also been hit by organochlorines (numbers are now falling again). The Sparrowhawk population which crashed in the 1960s due to egg-shell thinning and organochlorines, increased rapidly from the 1970s to the 1990s (it has also subsequently started to decline).

By the 1980s and 1990s the Otter and the Sparrowhawk cases fitted into the Peregrine-pesticide “success story” narrative. This reinforced a general impression among conservation groups that pesticides were, essentially “yesterday’s problem”.

The FoE pesticides campaign of the early 1980s had rattled the Ministry of Agriculture and BAA because of the public reaction to spray-drift and other cases of direct exposure. Highly visible aerial spraying was stopped – it was said that a Cabinet Minister and his family were sprayed while enjoying Sunday lunch in their garden.

From the 1980s to the 2010s, mainstream nature groups rarely challenged the government and industry view that once organochlorines had been banned, the worst effects of pesticides were in the past. The agrochemicals industry, which is intimately interlinked with the conventional farming industry in the UK, began to speak positively of Integrated Pest Management along with improved, less damaging chemicals and techniques, and conservation groups and farmers united in advocating ‘good advice’, ‘guidelines’ and a ‘duty of care’.

A “Full Recovery”



A 1997 booklet [Arable Wildlife: Protecting Non-Target Species](#) was published by the BAA, the British Agrochemicals Association, with the endorsement of the RSPB, the Game Conservancy and LEAF. It stated [my emphasis]:

‘The popular perception of pesticides is largely based on the events of the past rather than the successes of the present. There is no doubt that the drive to increase agricultural output in the post-war years led to an over-reliance on some techniques – the use of pesticides among them. Some of the basic principles of good farming were abandoned and mistakes were made. For example, the use of certain organochlorine insecticides in the 1950’s indisputably caused the deaths of many birds, including top predatory species that fed on them, through accumulation in the food chain. This resulted in declines in the populations of peregrine falcon and sparrowhawks, for example. These species fully recovered in the 1980s when these chemicals were withdrawn and less toxic, less persistent alternatives were introduced’.

It added reassuringly, and wrongly:

*‘... pesticides today are developed to increasingly demanding specifications for user, consumer and environmental safety. As a result, **the days of direct effects of chemical pesticides on non-target vertebrate species are long past.** The crop protection industry has made **great progress in developing products that are less toxic, less persistent and therefore less of a hazard to users, consumers and the environment ...**’*

and

‘Nevertheless, even with modern pesticides, there is a duty of care not only to use them correctly (a legal requirement) but also responsibly by integrating their use with other management methods. These guidelines indicate how this can be achieved’.



The BAA subsequently dropped mention of chemicals when it changed its name to the Crop Protection Association in 2000 and to the Disney-esque ‘Croplife UK’ in 2021.

Even in the 1980s many in the farming industry knew this comforting picture was false. I remember visiting a family of arable farmers deep in the Lincolnshire fens who were so concerned about the health effects of agrochemicals they were (carefully) using, that they would not eat their own crops. Around their farmhouse were fields where they grew untreated vegetables for their own consumption.

One of the few nature conservation organisations with the skills and resources to investigate the effect of chemicals on wildlife was the [Game Conservancy](#) (although mainly

interested in conservation of birds that were shot for sport). It played a crucial role in showing that the elimination of cropfield 'weeds' by herbicides contributed to the progressive extinction of Grey Partridges from many areas, because the insects their young needed in turn depended on 'weeds' such as knotgrass. Its researchers [also](#) discovered that some fungicides also act as unintended insecticides.

Insurance Spraying

One factor in the growth in chemical use on farms was that 'insurance spraying' or spraying 'just in case' a pest outbreak appeared, became standard practice.

In 1997 Graham Harvey, a writer for *Farmers Weekly* and script adviser for *The Archers*, published his excoriating critique of intensive farming called [The Killing of the Countryside](#). In it he describes how in chasing ever higher yields to maximise subsidy payments led farmers onto a 'treadmill' of ever greater pesticide use to avoid losses to pests. In 1994 conditions were right for the Orange Wheat Blossom Midge and an outbreak was feared:

'A few brave farmers withheld sprays in the belief that larvae - feeding insects like ladybirds and rove beetles would mop - up the pest naturally . But with so much already invested in the crop – the rent and bank borrowings on the land plus the cost of inputs like seed and fertiliser – most farmers were not prepared to take the risk . Instead they sprayed with insecticides , and in particular the organophosphate compounds chlorpyrifos and triazophos. In the single month of June a total of 750,000 acres were sprayed . As a result the midge infestation was brought under control , but the damage done to wildlife was incalculable'.



Wheat on Cotswold arable land most likely converted from pasture, near Rollright, Oxfordshire

Not much had changed between 1994 and 2016, if Mark Cocker's account in his book [Our Place](#) is anything to go by. He describes accompanying Jake Fiennes, who was judging a competition for arable farmers, in 2016. Fiennes asked them one by one if they had sprayed that season against the same Orange Wheat Blossom Midge mentioned by [Harvey](#) two decades earlier. They all had. Only afterwards did he reveal that there was no need as there was no infestation that year.

Despite the 1997 claim by the BAA and others that “direct effects of chemical pesticides on non-target vertebrate species are long past” Jake Fiennes recalls in *Land Healer* (pp 76 -8) how in the 2000s he mercy-killed brown hares he found “writhing in agony” after they ingested paraquat, which was then widely used as a ‘dessicant’ on arable crops. They were: ‘not being killed deliberately [but were] simply unintentional casualties of careless, economically driven chemical farming’.

In 2018 Peter Melchett, himself a Norfolk farmer and then Policy Director of the Soil Association, told me about farmers doing insurance spraying because private sector advisers feared they might get sued if they advised to ‘wait and see’, and crops were then hit by pests.

Hidden In Plain Sight

The chemical war on nature hid from the public in plain sight. The likes of Harvey and Fiennes knew what is going on but they were few and far between. Although fields were visible they just looked green, and for most people bright green just signalled “ok”. To any passer by or local resident, what was happening on farms was no more understandable than what was going on behind the walls of an industrial manufacturing plant. They had to rely on intermediaries such as NGOs, regulators, academics and government bodies to know what was happening. Few of those knew, and many of those who did, had other priorities, or reasons not to want to alert the general public.

By default, from the 1980s to the 2010s, with sporadic attention from Friends of the Earth and WWF, it was mainly left to small groups like the Soil Association (SA), Buglife and particularly PAN UK (Pesticides Action Network), along with the sometimes self-funded efforts of individuals like Dave Goulson from Sussex University, to expose the environmental impacts of agricultural chemicals in the UK.

It’s not that the establishment NGOs did nothing at all about pesticides. They continued to point out problems, especially with the ‘old’ chemicals. In 1987 [for example](#) the RSPB told a House of Lords Committee that levels of aldrin/dieldrin in Kingfishers which had fallen, had now risen back to those of the 1970s, while 14 dead Grey Herons found on the River Avon near Evesham had lethal levels of organochlorines.

However those herons were first spotted by canoeists [who informed Pete Riley](#), an organic farmer and voluntary local Friends of the Earth campaigner. He collected and sent them to the RSPB for investigation. The official explanation was that the chemicals leaked from an old sheep dip. In fact they were still being used. The enterprising Mr Riley purchased a drum of DDT near Evesham after it was ostensibly ‘banned’, enabling FoE to put national pressure on the government to improve it’s enforcement.



[Pete Riley](#) in 2011

This small example illustrates how you need a network of people with some practical familiarity with agricultural or other pesticides, and the confidence to challenge local users or officialdom, to actually campaign effectively. Some people did, including organic and other farmers and growers, local GPs, gamekeepers, 'river men', and agricultural Trade Union representatives but they were scarce among the membership or staff of groups like the Wildlife Trusts and RSPB. They and the NT also had no organised campaign networks, and a lot of office staff expert in 'policy' but not campaigning. Their main arguments against intensive farming were more likely to be economic than toxicological.

Encouraging News

From 1990 the UK the weight of pesticide applied to UK crops each year started to fall. In addition the global pesticide industry had also been busy finding ways to get their product better targetted, to reduce 'run off' into water supplies (pesticides in drinking water was the focus of a UK FoE campaign [in the late 1980s](#)).

News also came of 'systemic' insecticides which spread inside a plant and so would only affect 'target' insects, and could be applied to the seed in smaller amounts before planting. This sounded like a huge improvement on spraying which created vast amounts of pollution (sometimes only 1% of the spray ended up on the target). These announcements were much repeated by farming and agrochemicals groups and reported in the media. It all sounded very encouraging.

The Splatometer

To be fair the RSPB did attempt to find ways to engage the public in support of its significant output of policy work on agriculture, both in the UK and in Brussels. One of its most inspired ideas was the 'Splatometer', invented by its then Head of Marketing, Karen Rothwell. In the late 1990s she was looking for ways to connect people's personal experience of nature with the consequences of industrialised farming.



A 2004 edition Splatometer grid sent to RSPB members

In a 2015 retrospective [Warnings of the Splatometer](#), her husband Phil Rothwell, who had worked on agriculture policy at the RSPB, explained that she:

‘organised a number of focus groups to test opinion and seek triggers help us energise and popularise the CAP reform campaign that we in RSPB ran at the time. We wanted to find a way to motivate the public to think about the impact of cheap food and agricultural management on wildlife ...

... one participant stood out in capturing, in a sentence, a very graphic example of his experience of the countryside. He was in his sixties and from High Wycombe. He professed to have been a cyclist all his life. He said that biggest difference between cycling in his youth, and cycling in the 1990s was that he could now cycle through country lanes with his mouth open and not have to swallow or spit out insects as he recalled doing 50 years previously’.

The original ‘Splatometer’ was a sticky grid attached to a car number plate to capture insects which the car collided with. The journey details and resulting ‘record’ of dead insects was then analysed by computer. Launched in [2003](#), the Splatometer project was repeated in 2004. About 40,000 drivers took part and found an average of only one squashed insect every five miles, far fewer than many older drivers remembered from the 1960s when journeys were interrupted by having to clear dead insects from the windscreen, and perhaps why the 2004 system did not require a computer to count insects. The Splatometer was described by the RSPB as ‘a citizen science public engagement device’ but it could have been a great campaign tool.

RSPB

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WELLS-NEXT-THE-SEA
Norfolk
NR23 1LA

BIG BUG COUNT

1-30 JUNE 2004

Count bugs for birds with the RSPB

Why are some of our birds declining? Help us solve the wildlife puzzle

Birds such as swallows, house sparrows and the spotted flycatcher depend on insects. Many of the birds and the insects they eat are declining and we don't know why. The Big Bug Count will help us to understand more about insect numbers.

Just use the enclosed 'splatometer' to help you count the bugs on your vehicle number plate. Please don't make a special journey for the Big Bug Count.

When can I do the Big Bug Count?
Any days or nights in June 2004. If you have access to the internet, fill in as many forms as you like on our website (there is a printable table to download for you to record multiple journeys). Journeys of between 20 and 80 miles are best, preferably in dry weather.

How do I take part in the Big Bug Count?
Before you start your journey, wash and dry the central area of your car's front number plate. Set the milometer to zero or make a note of the reading. Note your start time (using the 24-hour clock). At the end of your journey park in a safe place to count any insects within your splatometer grid.

Type of vehicle (please choose the category that best describes your vehicle)

☐ conventional car ☐ sports car
☐ lorry ☐ van
☐ sports utility 4-wheel drive/off-road vehicle
☐ multi-passenger vehicle/people carrier

Date of count (DD/MM/YY)

Start/end time (please use 24-hour clock eg 0935)
Start: End:
If it rained (even slightly) during your journey, please tick here ☐
Distance travelled (in miles)
A: Start point Tick if home address ☐
Place name
County
Postcode (if known)
The ideal journey is between 20 and 80 miles. If you did not drive straight from A to B, please tell us where you drove to in between (up to two places). This will help us to determine your route more accurately.

Place 1
Place name
County
Postcode (if known)

Place 2
Place name
County
Postcode (if known)

B: End point
Place name
County
Postcode (if known)
Road type used (tick more than one box if applicable):
☐ single track ☐ 2-lane (A or B roads)
☐ dual carriageway/motorway

Number of splats
(please estimate the total number of insects within the splatometer grid - enter zero if there are none)
The results of the Big Bug Count 2004 will be summarised on our website in September and in our membership magazines. If you would like us to send you a thank you letter, please tick this box ☐

www.rspb.org.uk/bugcount

Please enter the eight-digit number printed below if you fill in the form on our website:

57925699

When you have completed your form, please return the whole sheet by 23 July to: The RSPB, Freepost NAT 15594 Bedford, MK42 0BR

Please note that, for safety reasons associated with roads and cars, children can only take part with adult supervision.

Registered charity no 237076 31-0991-03-04

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The 2004 Splatometer kit mailed out to RSPB members. I don't know if the RSPB had a campaign progression in mind at the time but the blurb sent out to members with the cardboard Splatometer grid states 'Many of the birds and insects they eat are declining and we don't know why'. Given the well-established escalation in pesticide use it seems a strangely neutral statement from an environmental organisation, and the Splatometer in itself was hardly likely to establish the exact causes, aside perhaps from insect road casualties. Other Splatometer type surveys have found the same sort of results [2].

The Wake Up

Over the last few decades rising public concern about the disappearance of 'common' wildlife began to re-ignite interest in what role chemicals might play in the disappearance of birds and insects.

Similar memories to that of the Splatometer Cyclist inspired journalist Michael McCarthy to give the title [Moth Snowstorm](#) to his book on the "Great Thinning" (loss of wildlife abundance) in 2015. It refers to the lost experience of seeing a 'blizzard of moths' picked out by car headlights at night, a sight that was normal until the late 1960s.

McCarthy, who is a keen fly-fisherman and fan of Mayflies, had his interest piqued in 2006 when the group Butterfly Conservation and scientists from the Rothamsted Research Station published a report on disappearing moths. Since 1968 Rothamsted had been running a network of light traps to monitor moth populations and the scientists had been puzzled by a collapse in the 'striking beautiful' and once very common Garden Tiger moth, around 2001. In McCarthy's words, analysis of the network's data produced "astounding" results: Britain's moth population was "in freefall":

“Wholly unsuspected ... the position was even worse than that of the birds, the wildflowers, and the butterflies ... of 337 species examined, two thirds were declining: 80 had declined by 70 percent or more, and 20 of these had gone down 90 percent”.



Donna Rainey @donnarainey4 · Jul 27

Garden tiger [#moth](#) outshining many of our [#butterflies](#) with it's flamboyancy. [#teammoth](#)



18

36

466



The declining Garden Tiger Moth – tweeted by @donnarainey in 2022

As Environment Correspondent of *The Independent* McCarthy had already been writing about the disappearance of Britain's archetypal “common bird”, the House Sparrow. The London *Evening Standard* carried a report about the decline and extinction of House Sparrows in St James's Park in London, in 1999. Sparrows in that area were famous among naturalists and conservationists because Max Nicholson had counted them in Kensington Gardens from 1925 to 1995. Nicholson had done more than anyone else to set up the UK conservation movement, and played a key role in establishing the Nature Conservancy, WWF, the BTO and the RSPB, and channeled money into the Wildlife Trusts.

His work, taken up by others in his old age, showed a long slow decline, until “numbers fell off a cliff” in the 1990s. The loss of the iconic London House Sparrow attracted much speculation as to its causes, and helped gradually refocus attention of conservationists on the fate of ‘common’ species, and the human influences behind them. There is still no definitive explanation for disappearing House Sparrows but global alarm bells were rung when one of the new classes of ‘solution’ chemicals was discovered to be anything but a solution.

Neonics

Neonics (neonicotinoids) are now widely known as ‘bee killer’ insecticides but until the 2000s they were just an obscure new technology, one of the promisingly more efficient ‘systemic insecticides’.

The [first 'neonic' was introduced](#) in Japan by chemical giant Bayer in 1991. Its use was almost immediately followed by a dramatic crash in zooplankton and the fish which fed on them in Lake Shinkai but Neonics were soon in use in Europe and many other countries.

In 2001 a French researcher Luc Belzunces found neonics were highly toxic to bees. While in the short lab studies used in testing pesticides they killed fewer bees by immediate acute exposure than the older chemicals they replaced, the neonics were [4,000 times worse](#) in killing bees through chronic exposure over time. News of neonic-related problems spread across Europe's bee-keeping community, and into the media.

In 2009 the small UK group Buglife, along with the Soil Association, Plantlife, the Bumblebee Conservation Trust, the Grasslands Trust and the Edinburgh Entomological Trust published a [report](#) on the dangers of neonics to bees, bumblebees and other species. It called for an immediate 'precautionary suspension' of neonics in the UK.

Also that year a group of concerned bird and insect scientists [met at](#) 'Notre Dame de Londres, a small village in the French department of Hérault, as a result of an international enquiry amongst entomologists on the catastrophic decline of insects ... all over Europe', and issued 'the Appeal of Notre Dame de Londres under the heading "No Silent Spring again".

In the Netherlands, toxicologist [Henk Tennekes](#) realised that the cellular-level action-mechanism of neonics was cumulative and similar to chemicals he studied as a cancer researcher. His 2010 book [Disaster in the Making](#) linked widespread contamination of water with neonics to the disappearance of insects and dozens of insect-dependent bird species in the Netherlands, UK and other countries. (Video [here](#) including discussion of human health effects).

Tennekes warned of an impending "environmental catastrophe" as bird and insect populations crashed, ending his book: "data presented here show that it is actually taking place before our eyes, and that it must be stopped". This amounted to announcing that Rachel Carlson's seminal warning in [Silent Spring](#) was actually happening, when it had been widely assumed to have been averted.

Mainstream UK conservation groups initially seemed to ignore Tennekes, who came from 'outside the tent' of their policy community, and when he sent a batch of his books to the RSPB it was said that he received little or no response.

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The index page from Tennekes' book Disaster in the Making (2010)

In 2011 I was researching what became FoE's Bees Campaign (which called for a ban on neonics) and asked the RSPB about Tenneke's research. I was told that their head of research was 'monitoring the science'. Rumour had it that RSPB had decided not to take on the government (pro-neonic) and the pesticides industry. Another reason for the RSPB's equivocal response may be that it was using neonics on its own demonstration Hope Farm, which was not organic but deliberately designed to pass muster as 'conventional', only optimised for birds.

When asked about this in 2013 the farm manager replied that 'it's not yet clear whether neonicotinoids are causing declines of pollinators in the wild. We've set out our views here: www.rspb.org.uk/.../Neonicotinoids_and_bees_RSPB_position_tcm9-327906.pdf and we're keeping this policy under review as more evidence emerges', adding 'we do intend to phase out use of neonicotinoids'.

In 2014 a multidisciplinary international team of 30 scientists (including Dave Goulson from Sussex University) analysed 1,121 published peer-reviewed studies on neonics spanning the last five years, including the industry-sponsored ones: the [WIA](#) or *Worldwide Integrated Assessment Of The Impacts of Systemic Pesticides on Biodiversity and Ecosystems*.

It [emerged](#) that 'neonics' or neonicotinoids, did not stay in the plant as planned but quickly got into soil, water and even in the flowers of hedgerow plants. Moreover they were persistent (lasting as much as a year in woody plants and over 1,000 days in soil) and very

toxic to ‘non-target’ insects. They damage the breeding success, navigation and health of bees.

A Change In Awareness

Neonics massively raised awareness of both the public, media, and eventually the conservation groups, to pesticides in general. By 2015 the weight of pesticides applied in the UK had [fallen 48%](#) compared to 1990 but this obscured the fact that the treated area almost doubled. It wasn’t that new arable fields were being sprayed but the intensity of chemical treatments had increased.

In 2017 the SA [presented evidence](#) to a medical conference showing that the amount of pesticide ‘active ingredient’ (the chemical with killing power in the pesticide product rather than it’s liquid ‘carrier’) had grown six to eighteen times over, on the British staple crops of wheat, potatoes and onions. In effect the pesticides load was getting bigger. The SA also highlighted the ‘cocktail effect’: the increased ecological and health effects arising from exposure to a mixture of chemicals, whereas all the official testing looked at just one at a time [[subsequent report](#)].

The SA said: ‘far from a 50% cut, the increase in active ingredients applied to these crops range from 480% to 1,700% over the last 40-odd years’. The *Daily Mail* [covered](#) the Soil Association findings. The NFU [responded](#), repeating the claim that ‘the overall amount of pesticides used on British produce has halved since 1990’.

In truth their toxic potential had massively increased, as described in the scientific paper [Rapid rise in toxic load for bees revealed by analysis of pesticide use in Great Britain](#) by Dave Goulson, Jack Thompson and Amy Croombs which in 2018 chronicled the use of pesticides on horticultural and arable crops from 1990 to 2015:

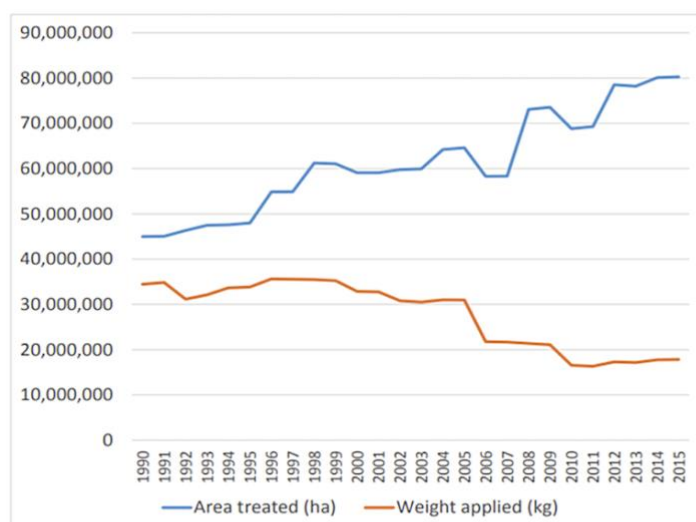


Figure 1 Area of crop treated (blue line, hectares) and mass of pesticide applied (red line, kilograms) from 1990 to 2015. The total area of crop remained approximately constant at 4.6 million hectares. In 1990 each hectare of cropped land on average received a total of 7.5 kg of pesticide active ingredient delivered in 9.8 applications. By 2015 each hectare of land received 3.9 kg of pesticide in 17.4 applications.

Full-size DOI: 10.7717/peerj.5255/fig-1

Above: declining weight of pesticide but increasing intensity – from Goulson, Thompson and Croombs

The 2018 study by Goulson, Thompson and Croombs mentioned above calculated that:

The total potential kill of honeybees ... increased six-fold to approximately 3×10^{16} bees, the result of the increasing use of neonicotinoids from 1994 onwards which more than offset the effect of declining organophosphate use ...

[10^{16} is a quadrillion (10,000,000,000,000,000) – I don't think there are that many bees in the UK]

And despite various qualifications:

'these data suggest that the risk posed by pesticides to non-target insects such as bees, other pollinators and natural enemies of pests, has increased considerably in the last 26 years'.

In other words, things had got much worse, not better, since 1990.



Six Spot Burnet Moths on Field Scabious at Courtyard Organic Farm

Following campaigns by FoE and many others, neonics were effectively banned for agricultural use in the EU in 2018, although farming groups lobbied against that, and since the ban have repeatedly lobbied for exemptions.

In 2018, Peter Melchett, who had been a Council Member of the RSPB as well as Executive Director of Greenpeace and Policy Director of the SA, and before that the Chairman of Wildlife Link covering all the nature NGOs, expressed his frustration at the way major groups had stood by:

“we’ve had 70 years of people standing and watching, pesticides obliterating wildlife and insects and birds from our countryside. In some cases, knowing it was happening and saying it didn’t matter because you were saving the rarities, that was the argument when I was on the RSPB Council ...

[for] “birds like skylarks, corn buntings and tree sparrows ... it took nature conservation a long time to get that right. Of course it involved a change of focus from “we’re here to protect the rare and beautiful and amazing” which we [RSPB] did brilliantly but also it was a problem of confronting real power, and upsetting everybody including themselves, because they were all eating stuff which was killing birds. They didn’t want to think about that”.

One of the RSPB’s own field-researchers helped study 25 farms in a project which [later confirmed](#) (2020) that wild birds consumed large amounts of neonics from treated seed. During the study a Yellowhammer and a Tree Sparrow were also seen to be exhibiting symptoms of acute nerve-poisoning. Another study involving the RSPB found significant contamination of farmland game birds by neonics.



Peter Melchett at Courtyard Farm 2018

(Read more of the interview with Peter including his views on RSPB and neonics [here](#)).

Note

[1] The NC was established with a Royal Charter and had the status of a Research Council. It was then absorbed by [NERC](#) and split away as the Nature Conservancy Council, before being broken up and be replaced by progressively less independent bodies, which in England have been English Nature and now, Natural England, with Scottish, Welsh and Northern Irish equivalents.

In the 1960-70s government environmental research enjoyed a status un-matched until Margaret Thatcher's brief convictions about Climate Change in the 1980s. Established in 1961 Monks Wood Experimental Station had twenty ecologists working on the impact of pesticides and in the 60s and 70s [was visited](#) by VIPs such as Prime Minister Harold Wilson and HRH the Prince Charles.



Solly Zuckerman, Tony Crosland, (a young and inquisitive) Amie Cooke and Harold Wilson listen to Don Jeffries discussing the effects of pesticides on peregrines.

[At Monks Wood](#) 1970

[2] UK Splatometer surveys have since been run by [Kent Wildlife Trust](#) in 2019 and [Buglife in 2022](#). A more structured study on 1,375 journeys along two transects in Denmark recorded insects on car windscreens between 1997 and 2017. It found declines of 80% and 97%, and parallel declines in the number of Swallows. It seems very likely that climate change is also [reducing](#) the abundance of insects, so the effects of pesticides (and nitrates from fertiliser pollution) and climate change are probably additive, if not multipliers.