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## DDT: Behind the Scare Stories

By Michael R. Fox Ph.D., 9/3/2007 1:14:01 PM

On Aug. 21, 2007, in the *Hawaii Reporter*, a Mr. Todd Shelly took issue -- <http://tinyurl.com/2dftm5> -- with earlier materials I'd written about DDT and related subjects. Curiously and inappropriately, he applies his personal template of politics to his versions of me and the issues of DDT.

It is a simplistic template that requires the belief that Democrats are good; Republicans are bad, end of story. His template failed him immediately since in the case of DDT, one of the major players supporting the DDT ban was William D. Ruckelshaus, the first Administrator of the Environmental Protection Agency (EPA), and a liberal Republican. He also was appointed by President Nixon. Scientific fraud is not limited to the political left, although Ruckelshaus was a member of the Environmental Defense Fund (EDF) and showed great deference to them.

For more than 35 years there have been literally thousands of pages written debunking the DDT scare in all its components. For any number of reasons including the inconvenience to the anti-DDT activists, the media, and many policy makers, little of this literature ever gets mentioned let alone discussed. As an ex-green and an ex-Democrat, I have learned from a high-tech career that hard-nosed science and engineering are some of the last features to be considered by the greens and their numerous political friends. The driving force for them is loyalty to the cause, while truth is expendable and ignorable.

Hard nosed science doesn't play favorites nor guarantees popular outcomes. Like it or not the DDT ban, which withheld life saving disease protection for hundreds of millions, has led to the cause of deaths of 10s of millions, and permanent non-fatal injuries to hundreds of millions. This horror has been actively promoted and defended by the greens and is just one of the awful legacies of the green movement.

For those not familiar with the DDT issues the big picture begins with the fact that DDT is a man-made chemical, which had been used in tonnage quantities since its introduction in the mid-40s. Its heaviest uses were from 1946 to 1960. It was and still is a very effective agent in the control of insect borne diseases. DDT was shown to be very effective in the control of many diseases, not only for mankind but for diseases in food crops and forest trees.

DDT had been discovered in 1874 but not patented as a contact pesticide until 1940 by Dr. Paul Muller of Switzerland. By 1946, DDT was recognized as one of the most effective disease preventing chemicals ever known to mankind. Muller was awarded the Nobel Prize for his life-saving efforts in 1948. The literature of the times was full of praise for DDT, its life saving, food-crop saving, and tree saving properties, and its development by Muller.

Some of the diseases controlled by DDT included typhus, plague, malaria, yellow fever, sleeping sickness elephantiasis, leishmaniasis, river blindness, Oroya fever, other fevers and dysentery (transmitted by domestic flies). Many kinds of animals were protected by DDT from envenomization and parasitism by arthropods. It also killed blood-sucking parasites of birds, thereby reducing deaths from avian malaria, encephalitis, and Newcastle disease. It also prevented the deaths of hundreds of millions of forest trees, by killing the caterpillars of the gypsy moths, Tussock moths, and other forest insects. In killing insects which destroyed crops, food shortages have been minimized and food prices held relatively affordable.

Millions of trees were lost during the infestations of the gypsy moth and Tussock

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moths. Greens predictably opposed the use of DDT to save these trees. Political correctness and loyalty to their causes must never be challenged. The same crowd which once refused to save trees now supports saving the trees, the planting of trees, without embarrassment, without noticing the double standards.

The National Academy of Sciences stated in 1970: "To only a few chemicals does man owe as great a debt, as to DDT. In little more than two decades DDT has prevented 500 million deaths from malaria that would otherwise have been inevitable."

At the behest of Ruckelshaus the EPA DDT hearings in 1972 were conducted over a period of months. More than 9200 pages of testimony were received from about 150 scientists. The judge appointed to conduct the EPA DDT hearings was Edmund Sweeney. After the hearings and findings of fact, Judge Sweeney wrote (April 26, 1972): "DDT is not a carcinogenic, mutagenic, or teratogenic hazard to man. The uses of DDT (under the regulations involved here) do not have a deleterious effect on fresh water fish, estuarine organisms, wild birds, or other wildlife. The evidence in this proceeding supports the conclusion that there is a present need for the essential uses of DDT."

Ruckelshaus did not attend a single day of the hearings and according to his assistant, did not even read the transcript. He overruled his own judge's recommendations, and single-handedly banned DDT.

A major alleged danger to birds was that DDT or a metabolite DDE was the cause of egg shell thinning in a large number of bird species, leading to elevated mortalities of young and a declining population. There are dozens of natural causes of egg shell thinning, but among the zealots DDT was the only one. And that one turns out to be false. Anyone who has raised chickens knows a major cause of egg-shell thinning, and that is dietary calcium deficiency. It results in the formation of a thin rubbery egg shell. Furthermore, birds such as chickens sensing a calcium deficiency will sometimes eat their own softened eggshells.

Among other causes of egg shell thinning are: age---older hens have thinner shells on average; embryos of fertilized eggs will consume calcium from the shell (and cause thinning) as the embryo develops skeletal tissue; stress from noise, fear, or excitement will also cause thinning as will numerous diseases. Additional causes include dehydration, temperature extremes, decreased illumination, and intrusion of humans and predators. One does not need to contrive DDT as a cause of egg shell thinning, it happens quite often from natural causes.

Shelly does not provide any valid information challenging my assertions that bird populations increased during the times of DDT use. There is plenty. Comparing the Audubon Society's bird counting data between 1941 and 1960, nearly all bird populations increased during this time of heaviest DDT use. In the case of robins, they increased 12-fold. Rachel Carson, author of the infamous book, Silent Spring, whom Shelly defends, lied when she said "Like the robin, another American bird seems to be on the verge of extinction. This is the national symbol, the eagle".

No only did the robin population increase 12-fold during this period of heavy DDT use, the eagle bird count had also increased 4-fold from 197 to 891. The Audubon Society bird counts showed increases, some of them major increases in more than 2 dozen types of birds during the time of this DDT use. These included ducks, pheasants, quail, doves, egrets, sparrows, bluebirds, and more, including a phenomenal 150 fold increase in blackbirds.

There were many attempts in many laboratories to replicate the alleged egg-shell thinning by DDT in a variety of bird populations. Some of these tests included feeding with dietary DDT (and metabolites DDD and DDE) at levels many times higher than could be expected from exposures in the field. Professor Joseph Hickey of the University of Wisconsin testified at the 1972 EPA hearings that he could not kill any robins from overdoses of DDT for the simple reason that they passed it directly through their digestive tract and out with the feces. There is a great deal of similar testimony and articles in the literature.

### More Stresses

There was a huge uproar about the troubles of the brown pelicans of Anacapa Island off the coast of southern California. Environmental lore has it blamed on

DDT. There had been an outbreak of the serious avian disease Newcastle's disease which impact reproduction by forming misshapened thin-shelled eggs. With the DDT being blamed for nearly all bird maladies of the time, the major Anacapa pelican problems with Newcastle disease were not mentioned again. Nor were the rats on the island mentioned and neither the population of feral cats. Instead biologists devoted their efforts convincing the public through a sympathetic media, which believed that DDT and only DDT was the cause of thin shells and low reproduction rates among the brown pelicans.

Furthermore fish and game biologists landed helicopters on the island repeatedly, chased nesting bird, harassed them, shot them on their nests, prevented them from breeding for 3 summers, collected many pelican eggs, and one of the biologists actually sat on old pelican nests. Now this is clearly man-made stress created at the hands of biologists, and a very likely cause for more thin-shelled eggs. But the resulting disappearance of pelicans was blamed by the biologists on DDT. Such was the arrogance of some biologists. U.S. Fish and Wildlife spokesman R.B. Finley later wrote a retraction of this explanation of pelican disappearances to Congressional House committee chairman W.R. Poage.

### **Other Birds**

As the findings of the EPA hearings showed there were no deleterious effects found in fish fowl, or other wildlife. This is not to say, however, there were no attempts to report such deleterious effects. There were a number of such attempts, but thorough studies of them were found to be of the poorest scientific quality.

Mr. Shelly's reference 8 is a good example. Mr. Shelly did not provide the authors' names and title of the paper. The main author was R. G. Heath, et al, and the article was entitled marked DDE Impairment of Mallard Reproduction in Controlled Studies, Nature 224, 1969, 47-48. This was cited by Mr. Shelly as evidence that there were deleterious effects in mallard ducks caused by DDT and DDE (a metabolite of DDT). The researchers were attempting to measure the survival rates of ducklings in groups fed differing amounts of DDE and DDT. Among the findings they claimed to have observed up to a 75% reduction of hatchlings per hen. On its surface these 4 year research results seem compelling. It is one of the most popular papers cited by the anti-DDT crowd.

Instead of citing merely the reference, as Shelly does, some people actually do read and analyze these papers. The Heath data showed that among the two control groups of mallards (those which did not receive DDT), there was a 69% variance in ducklings. If the tests were properly designed there would be little variance in the control groups. This is a huge variance, a stunning flaw, and less than the variance found in the test groups.

It is obvious in these types of experiments that when the variance between the control groups is greater than among the test groups, something fundamentally wrong. Often it can be the presence of unknown factors controlling successful egg hatching and duckling survival.

Other findings included the fact that the control groups (the ones again with no dietary DDT) had 17 percent fewer fertilized eggs than those given DDT. While this statistic would seem to indicate that DDT improves egg fertility rates and mallard survival rates, I wouldn't rush to publish this finding to Nature Magazine quite yet, even if more plausible. Thirdly, the birds in the control group had 45% greater embryonic mortality than the mortality in the test birds, making this an amazingly bogus study, probably ignoring other major factors other than DDT. It did not prove that DDT caused harm to the ducklings at all, but instead it appeared to improve their survival rates. That finding as in all such studies would need other scientists to replicate the results. In fact many replications of the DDT-eggshell thinning theory were attempted with many birds and were unsuccessful. Such thinning was not demonstrated.

This study in the words of scientists Claus and Bollander, Ecological Sanity, p.407, "Fundamentally, what we have here is a four-year long experiment which failed disastrously."

The failure is much great than first appears. The first failure obviously is the research paper itself, where the analyses didn't pass muster of basic science. The second failure was the peer review process at Nature Magazine which

approved the article. The third failure is with the editors of Nature magazine who decided to publish this article. When such science magazines publish erroneous science research findings (there are several), it creates a great deal of mistrust in those interested in scientific issues. (For example, Nature Magazine recently published the "Hockeystick" chart of the last 1000 years of global temperatures.

This has also been recently shown to be fraudulent (<http://tinyurl.com/awwvva>). These are well known problems for decades with a number of science journals, apparently driven by the politics of the authors, editors, peer reviewers and other principals. To compensate for this persistent problem, before one cancels his subscription, is to get behind the titles of such papers, and actually read and understand the dense content.

Shelly's reference 20 also did not provide the author's name nor the title of the article. It was written by David Peakell of Cornell University in Science Magazine (Science 168:592-94, 1970). It was entitled "DDT-Induced Inhibition of Avian Shell Gland Carbonic Anhydrase: A Mechanism for Thin Eggshells." The findings in this article had been thoroughly discredited by 1972 by at least 5 major research teams. As stated above there are many causes of shell thinning without contriving the cause as DDT.

### More about Eagles

It is also a matter of history that many birds were nearing extinction before the introduction of DDT, for a variety of reasons. In 1921, Ecology Magazine stated that bald eagles were "threatened with extinction". From 1917 to 1952 Alaska paid more than \$100,000 for bounties on about 115,000 of those great birds. A.C Bent wrote in the U.S. National Museum Bulletin (1937, 167:321-349), "The bald eagle probably nested at one time over much of New England, but there are no recent authentic records of its nesting in the three Southern states of New England. This was 8 years before the introduction of DDT.

For decades the raptors were shot on sight, bounties offered for their shooting, for being seen as a nuisances, vermin, and threats to game birds, a more common source of food in the '20s, '30s, and '40s.

The DDT-bird mortality scandal has been riddled with a variety of junk science, faulty chemical analyses (such as detecting DDT in museum birds which died before the use of DDT), weak and non-existent practices of good statistics, biased editorial practices, not to mention ad hominem attacks. Large amounts of such supportive evidence have been suppressed and ignored.

From the graves of tens of millions who have died of diseases easily controllable with DDT, yet withheld on the basis of dubious science, and mean-spirited anti-human agendas, millions of Africans and Asians would appreciate a serious reviewed of the data. In fact some of the African black leadership now are demanding exactly that. It's an uphill fight for them when so many in power are driven by the paramount force of loyalty to their cause, when the truth has been uniformly expendable.

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