

GEORGE WALLACE and the Fight Against DDT

By Kenneth S. Lowe
Editor, Michigan Out of Doors

George Wallace was a low-key, quiet man who was at the forefront in focusing attention on the DDT issue, and he took quite a beating over that," Dr. Gordon E. Guyer recalled not long ago.

"I was on the other side in those days, and I clashed with him, but I feel he was vindicated. People in the State Department of Agriculture thought his data was out in left field, but it was proven he was right. I have the highest regard for him.

Guyer, a former director of the Department of Natural Resources and now a vice-president of Michigan State University and a member of the Natural Resources Commission, was chairman of the MSU Entomology Department when Dr. George J. Wallace was making his startling revelations about DDT and the havoc it was creating.

An ornithologist who taught in the MSU Zoology Department, Wallace was the first person to fight the widespread use of the pesticide in Michigan. The fight took on nasty overtones, and the MSU administration reportedly was under pressure to fire him. He thus risked not only his reputation but his career as well in the fight. Nevertheless, he refused to abandon his cause.

Guyer and the Department of Agriculture weren't the only ones who clashed with



DR. GEORGE J. WALLACE

Wallace over the use of DDT. Not surprisingly, the agricultural and pesticide industries opposed him, along with individual farmers and some of his fellow faculty members at MSU.

"He probably was the loneliest man on campus, and all he was doing was reporting the facts," said Charles Shick of

Okemos, a retired DNR wildlife biologist who had worked at MSU with Wallace before joining the department. "People who should have known better didn't give him the support they should have."

In the end, of course, Wallace prevailed. The use of DDT is now banned not only in Michigan but throughout the United States.

The man who played such a major role in bringing this about was born in Waterbury, Vermont, in 1907. He grew up on a 226-acre dairy farm and orchard in the north-central part of that state. His father, who also was a dealer in farm equipment, died of Spanish influenza in the epidemic of 1918, leaving a widow to raise five sons and two daughters.

Despite the loss of their father, all seven children eventually graduated from college. They were able to do this by staggering their attendance at college in order to have one or more of the brothers and sisters at home at all times to help them

manage the farm. Because of this arrangement, George Wallace did not enter college until he was 21. He chose the University of Michigan partly because of its low tuition, which then (1928) was only \$93 per year. (Wallace paid \$1 a week to rent a room while attending the university.) Altogether, he spent eight years studying zoology at U-M before

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earning his Ph.D. there.

While still in college, he met and married Martha Cooper, a student from Rockford in Kent County.

Wallace's doctoral dissertation dealt with the Bicknell's thrush, a subspecies of the gray-checked thrush, reflecting an interest in birds that he acquired at an early age. (He had begun compiling lists of birds when he was a teen-ager and pursued that hobby throughout his life and in many countries he visited on birding trips.)

To gather material for his dissertation, Wallace studied Bicknell's thrushes at Mount Mansfield in Vermont's Green Mountains. His wife accompanied him while he camped there and conducted his field studies.

Their meager resources did not permit many creature comforts. In his book, *My World of Birds: Memoirs of an Ornithologist*, Wallace wrote, "We found the porcupines quite edible in the absence of steaks, the old ones, even with parboiling, were rather tough, stringy, and flavorless, but the younger ones were fairly good."

After receiving his doctorate in 1937, Wallace returned again to his native state and began his career as a biologist with the Vermont Fish and Game Service.

My chief assignment was a pheasant survey to try to determine suitable locations for stocking," he said.

After only a few months with the Vermont agency, Wallace accepted a position with the Pleasant Valley Bird and Wild Flower Sanctuary in Lenox, Massachusetts, in the heart of the Berkshire Mountains. This was a philanthropic enterprise of a wealthy spinster, and Wallace's duties were many and varied. They included working with birds—keeping records, banding birds, building or repairing (and selling) birdhouses and feeders, and, in off seasons at least, working in a little research and writing.

When the sanctuary ran into a funds shortage during World War II, its trustees elected to keep it open to the public only from May to October and granted Wallace a leave of absence to work in a local war plant. He had spent nearly five years on the sanctuary staff, and when employment in a war plant failed to materialize, he and his wife returned to Michigan in search of another job.

"A ray of hope for a position in the Michigan Department of Conservation [now the Department of Natural Resources] developed," Wallace recalled, "but I lacked the residency required by the Civil Service, so I took an interim job at the University of Michigan hospital—washing glassware in the pathology laboratory—until the position in the Game Division of the Department of Conservation became

available in April [1942]."

The Game Division job was at the Rose Lake Wildlife Experiment Station, a game wildlife management area near East Lansing operated by the department under the direction of Dr. Durward E. Allen, a distinguished biologist who became a crusader for enlightened wildlife management.

Wallace remained on the Rose Lake staff only from April until late September when he accepted a position on the faculty of MSU. It was the beginning of an association that was to last for 30 years, 28 of them devoted to teaching ornithology.

Wallace remembered that the college position was not an immediate blessing, however. After six years of postdoctoral experience in three states, he noted, he was starting a new life as a beginning laboratory instructor at \$1,800 a year.

During his first years at MSU, when the nation was in the throes of World War II, he was pressed into service as a geography instructor for students preparing for military service. His wife, who was a mathematics major, entered the math program at MSU and continued teaching in the Mathematics Department for many years after the war.

During the first postwar rush of students, I assisted Professor J. W. Stack on ornithology field trips," Wallace wrote.

Then in 1948 he gave up teaching to become the full-time director of the newly organized museum. I inherited the bird courses and kept them until retirement, except for one sabbatical and one consultantship year. Wallace is remembered as an outstanding teacher.

In the course of his teaching, he coauthored a textbook, *An Introduction to Ornithology*, with Harold D. Mahan, director of the Cleveland Museum of Natural History. He also wrote several monographs and over 100 articles for ornithological journals.

Wallace also found time to serve 30 years on the board of the Michigan Audubon Society and six years as editor of its magazine, the *Jack Pine Warbler*. The society rewarded him with an honorary lifetime membership.

During his years as a professor, Wallace kept extensive records of bird numbers on MSU's 5,000-acre campus. In the spring of 1955, he noticed a dramatic decline in the numbers of robins there. More significantly, he found alarming numbers of dead and dying robins on campus.

Spraying for Dutch elm disease had begun on the campus in a small way the previous year. This fungus disease, which came to the United States from Europe around 1930, causes trees to die. Elm bark beetles spread the disease by carrying spores of the fungus from diseased trees to

healthy trees.

Spraying on the campus was expanded in 1956, and the city of East Lansing, home of MSU, began adding pesticides to the environment with programs to control house flies and mosquitoes the same year.

What happened next was unforgettably described by Rachel Carson in *Silent Spring*, the classic volume published in 1962 that greatly inspired the environmental movement of the 1960s and 1970s.

At first [Wallace] suspected some disease of the nervous system [of the birds], Miss Carson wrote, but soon it became evident that, in spite of assurances of the insecticide people that their sprays were harmless to birds, the robins were really dying of insecticidal poisoning. They exhibited the well-known symptoms of loss of balance, followed by tremors, convulsions, and death.

Several facts suggested that the robins were being poisoned, not so much by direct contact with the insecticides as indirectly, by eating earthworms. And earthworms are the principal food of robins in the spring.

Wallace and Dr. Roy Barker of the Illinois Natural History Survey were able to prove that earthworms ingested DDT from elm leaves. The pesticides from the earthworms accumulated and concentrated in the bodies of robins. Miss Carson reported that consumption of as few as 10 large earthworms contaminated with DDT could prove fatal to a robin.

"But," she wrote, "Wallace has significant records which point to something more sinister—the actual destruction of the birds' capacity to reproduce. He has, for example, records of robins and other birds building nests but laying no eggs, and others laying eggs and incubating them but not hatching them. We have one record of a robin that sat on its eggs faithfully for 21 days and they did not hatch. The normal incubation period is 13 days. Our analyses are showing high concentrations of DDT in the testes and ovaries of breeding birds.

The analyses were conducted by Richard F. Bernard, a graduate of the University of Maine, who came to MSU for advanced work. Working under a grant from the U.S. Fish and Wildlife Service, he undertook the difficult and costly task of analyzing the many dead birds found on campus.

Miss Carson reported that Bernard's analyses strongly supported the concept that the delayed but lethal effect on the young birds follows from storage of dieldrin in the yolk of the egg, from which it is gradually assimilated during incubation and after hatching.

Despite Bernard's findings, some remained skeptical of the link between DDT

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and the bird mortality. "There were still denials from agricultural, chemical, and administrative offices that DDT was responsible for bird deaths," Wallace stated, "but Dick's meticulous analyses . . . and feeding experiments with sparrows almost (but not quite) laid such denials to rest—and possibly kept me from being discharged from the university for insisting that DDT was causing avian mortality."

Wallace added, "Understandably, my involvement with pesticides made me unpopular among some segments of the college community, but I also had staunch supporters, including Congressman John Dingell, who intervened in my behalf when there were threats of my dismissal because I had testified [about DDT] on his committee in Washington, D.C."

This assertion was supported by Dr. Charles F. Black of Okemos, another retired DNR wildlife biologist, who was quoted as saying following Wallace's death that the findings of the ornithologist and his graduate assistants that DDT was harmful to birds "were substantiated later with more refined methods. But, at the time, the people in the Michigan Department of Agriculture who were defending pesticides, tried to get him fired. It went all the way to the U.S. Department of Agriculture, but Congressman Dingell came to his defense. Dingell said if George was fired, heads were going to roll in Washington."

Dr. Harold Prince of the MSU Fisheries and Wildlife Department came to know Wallace as the ornithologist was nearing the end of his days at the university. "He bore the scars of his earlier environmental fights, and those would surface every once in a while," Prince told me the other day. "He was somewhat bitter toward the interest groups who opposed him."

Wallace retired from teaching in 1972 and moved to a woodland retreat near Grayling. He died March 8, 1986, at the age of 79.

Today a Pesticide Research Center, an establishment for protecting the environment against toxic chemicals like DDT, functions on the MSU campus as if in ironic tribute to the memory of a man who fought against the poisoning of the environment—and won.

MICHIGAN OUT-OF-DOORS



IN CONVENTION HERE — There were more than 200 members of the Michigan Audubon Society registered for the 58th annual meeting of the organization held in Alma last weekend as area members served as host committees. Inspecting one of the displays at the registration desk set in Dow Science building lobby area, left to

right, Mrs. Lester Eyer of Alma, head of convention publicity; Eugene Kanaga of Midland the 1962 MAS president elected Saturday; Mrs. Lillian Early of Alma, registration chairman; Dr. Lester Eyer of Alma, general chairman; and Clarence F. Blanck of Alma, also registration chairman.

MAS Takes Stand On Use Of Poison

The Michigan Audubon Society at its 58th Annual Meeting held at Alma College on Friday and Saturday not only presented a varied program showing some of the scientific studies, the artistry, and the technical ability of some of its members but also adopted two resolutions strengthening its stand for conservation of our nation's natural resources.

Members present for the meeting, which took place Friday and Saturday on the Alma College campus, supported the previous stand against any and all exploitation of publicly owned areas designated for hunting, sanctuary or park use, pointing particularly to oil well drilling. Also supported again was the stand against mass use of poisons in the killing of insects which also is harmful to birds and other wildlife, asking that further research be made and better control of pesticide programs be observed.

There were some 208 registrations for the two-day meet which was under the direction of Dr. Lester Eyer of Alma as general chairman. A variety of items were touched in the programs offered

and the election of officers took place at the Saturday business session which resulted in election of Eugene Kanaga of Midland as president for the coming year, William Freeman of East Lansing as vice-president, Monica Evans of Kalamazoo as secretary and Miss

Martha Lengemann of Imlay City as the treasurer. The retiring president, Robert S. Butsch of Ann Arbor, presided at most of the sessions.

The local committee provided a number of displays and exhibits in the lobby of Dow Science building on the college campus where most of the sessions were held and those present had meals served at Van Dusen Commons on the college campus. It was the first time such convention had been held in Alma and attracted Society members from all sections of the state.

1962

CONSERVATION: THE MENACE OF DDT

By JOHN K. TERRES

A former field biologist of the Soil Conservation Service, United States Department of Agriculture, John K. Terres, has edited Audubon Magazine, official publication of the National Audubon Society, for ten years. An ardent conservationist, he helped to save a primitive coastal area at Island Beach, N. J., from destruction. He is author of many conservation articles and several books.

AN alarming report by Dr. George J. Wallace in the January-February, 1959, issue of Audubon Magazine showed that in five years, intensive DDT spraying had virtually eliminated robins on a 185-acre tract of Michigan State University at East Lansing. Most of the spraying had been done for the control of elm bark beetles (which transmit Dutch elm disease from tree to tree) and for mosquito control.

One of the astonishing discoveries was that earthworms accumulate DDT in their bodies after feeding on the fallen leaves under the sprayed trees. When robins ate the earthworms, chiefly in the spring following the year of spraying, they accumulated DDT in their bodies sufficient to kill them. Not only were robins on the sprayed tract killed, but the few survivors ceased to produce young in 1957 and 1958.

Toxic Effects

Dr. Wallace, a professor of zoology, reported that more than 140 kinds of birds in this country are now believed to have died from insecticidal poisoning, and there are twenty-seven cases of complete, or nearly complete, reproductive failure in wild birds due to toxic sterility or other causes.

Conservationists are showing increasing concern over the possible sterility or indiscriminate killing of birds and other animals resulting from the massive spraying of insecticides for the control of bark beetles, the fire ant, gypsy moth and other insects.

At the twenty-fourth North

Lethal Effects on Birds Reported in Audubon Society Magazine

human beings and wildlife. This session will be held tomorrow afternoon.

HAWKS AND OWLS

A tribute to the progressiveness of our state legislatures and conservation departments, backed by farmers, sportsmen, and other conservationists, is their increasing awareness of the usefulness of our birds of prey and the need for their protection. Recently Massachusetts and New Jersey passed laws which made them the twelfth and thirteenth states, respectively, that now protect all species of hawks and owls.

Fifty years ago or more, scientists studied the food habits of birds and other animals, and concluded on the basis of what they had eaten at a particular time, that they were either good (for man) or bad. Our relatively new science of ecology has taught us that to get the whole truth, we must examine the food habits of a hawk, owl, or any animal, in its total relation to its environment. Thus, we have learned that certain hawks and owls, once considered bad, are highly useful, even to the animals that they prey upon. If this seems a paradox, one needs only to read a book of animal ecology to discover that all animals are useful to nature in some way, and that each occupies an important, and possibly unique place in its environment.

PACIFIC WILDERNESS

Conservationists, headed by Justice William O. Douglas, have proposed an alternate highway route to preserve the isolation of a last wilderness area along the Pacific Coast of Washington. The threatened strip of primitive ocean beach extends about fifty miles from Cape Alava, Wash., on the north, to Queets on the south. It was added to Olympic National Park in 1953, and includes one of the last extensive ocean shores, in its natural state, in this country. Conservationists believe that a

Justice Douglas said, "We want to show that the new road ought to go around the east side of Lake Ozette, and not use up this stretch of wilderness seacoast. We are not fighting the road. We see why it is needed. We can have the road and a stretch of wilderness seashore both."

Justice Douglas is chairman of the Olympic National Park Ocean Committee (described as a "watchdog committee"), which is under the auspices of the Olympic Park Associates. The opposition to the coastal highway is backed by the Federation of Western Outdoor Clubs, The Wilderness Society, The National Parks Association, and others.

PORCUPINE MOUNTAINS

Conservationists won a victory over mining interests in Porcupine Mountains State Park, Mich., when the Bear Creek Mining Company withdrew its application to lease 988 acres of the park for copper mining. The company sought permission to work in the 58,000-acre public tract, described as the last remaining wilderness area in the Middle West. The mining application aroused vigorous protests from outdoor groups in Michigan and throughout the country. Gerald E. Eddy, director of the Michigan Conservation Department, recently recommended that the lease be denied.

BOUNTIES ENDED

In the long history of game management in this country, the bounty system, or money paid for the scalps of predatory birds and other animals, has always been subject to fraudulent claims. Also, bounties paid have not controlled the predators, and have not helped the game species in the long run because predators are rarely, if ever, a major factor in the decline of game. Many states, some of them long ago, gave up the ineffective and wasteful bounty system. The Montana Fish and Game Commission has rescinded an order which formerly made matching funds available to sportsmen's organizations for a payment of

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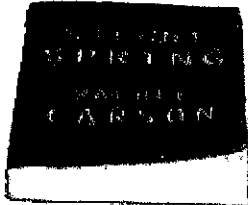
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Environment: Dying to Be Heard

Sunday, May 27, at 8 p.m.
on WKAR-TV

May program focuses on environment.

The life and work of MSU ornithologist Dr. George J. Wallace are featured in **Dying to Be Heard**, the first documentary in a periodic series titled **Environment**, and premiering Sunday, May 27, at 8 p.m.

The video project is inspired by an article in *EJ Magazine* by Jim Detjen, Director and Chair of the Knight Center for Environmental Journalism at Michigan State University.

The program will be aired on the 100th birthday of the late Rachel Carson, a date celebrated nationwide by environmentalists.

A Student Production

Shot and co-produced with the help of Michigan State University students in various locations around the MSU campus last fall, the documentary directed by instructor Lou D'Aria focuses on the challenges that Wallace, a professor in zoology at what was then Michigan State College, had to overcome to prove the damaging effects of DDT on MSU's robins and other wildlife.

Wallace's work played a major role in the eventual banning of the pesticide. It was his -- and his students' -- research that was cited in Carson's landmark book, *Silent Spring*. The Knight Center documentary is a historical look into Wallace's groundbreaking research.

A Collaborative Effort

Some of the birds that Wallace and his students collected for study are today housed in the collections of MSU'S museum. Much of the story is told by MSU professors Dr. Richard Snider, Dr. Jim Bingen, and former MSU president Dr. Gordon Guyer. Snider remembers that the robins were dying in great numbers were all over the campus... "They would just shake and then plop over dead," he recalls.

D'Aria refers to the robins as "collateral damage...damage from a forgotten war, it was a war against nature." Snider had been a student working with Wallace at the time and recalls the personal and professional criticism heaped upon the professor for his research. It wasn't until a young Congressman, John Dingell, threatened to withhold federal funding for Michigan State University unless Wallace's theories were appropriately recognized that he gained the respect he deserved and his message was heard.

"Wallace did it through Rachel Carson," says Snider. "She quoted him all the time until her death."

Not long after Wallace's death, MSU's Dr. Gordon Guyer presented Wallace with an honorary Ph.D. It was accepted by one of Wallace's daughters. Today the University honors Wallace with a scholarship in his and his wife's name.

"The wonderful part of the story is that we were able to involve students not only from journalism and telecommunications, but the College of Music as well as fisheries and wildlife. All but one student worked for no credit," says D'Aria, adding they also