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Pesticides decimate transplanted pelicans

One of the most widely publicized ornithological experiments of recent years—restocking of the brown pelican in Louisiana—has met with disaster. More than 300 of the 465 endangered birds imported from Florida since 1968 by the Louisiana Wildlife and Fisheries Commission are dead. Probable cause: pesticides.

The die-off came suddenly and took state wildlife officials, who thought a flourishing colony of nesting pelicans had developed in Barataria Bay off the Louisiana Gulf Coast, completely by surprise. (See "Hang on, pelican!" *Audubon*, November 1974.)

"We had a number of successful nesting years in a row," said Allan Ensminger, chief of the Louisiana commission's Refuge Division, "and there were no indications of any trouble until May and early June, when we began to get reports of dead birds. On June 10th, one of our biologists made an annual check that ordinarily reveals a count of 175 to 200 birds—and could locate only 45 free-flying pelicans. By the end of June," he added, "we knew we had real trouble."

Six of the dead pelicans were sent to Louisiana State University for analysis. Chemists identified seven pesticides, all chlorinated hydrocarbons widely used in agriculture, in the brain tissues. They were endrin, dieldrin, toxaphene, DDE (a "breakdown" product of DDT), BHC (benzene hexachloride), HCB (hexachlorobenzene), heptachlor epoxide, as well as PCBs (polychlorinated biphenyls), a man-made chemical compound.

Most of the birds analyzed contained what experts regard as potentially lethal levels of endrin; only one bird had less than .30 parts per million (ppm), generally considered the lethal dose, and as much as .70 parts per million of endrin was discovered.

Many biologists and environmentalists around the nation, including Dr. Lucille F. Stickel, director of the U.S. Fish and Wildlife Service's Patuxent Wildlife Research Center in Laurel, Maryland, expressed concern over the high levels of endrin and other pesticides found in the birds.

"It looks as if the endrin levels identified in the Louisiana pelicans are sufficient alone to cause death," said Dr. Stickel. "But we also have reason to believe that there is an additive effect produced by all of the pesticides found in the birds. While the birds might have been able to survive a relatively high dose of a single given pesticide," she explained, "the same bird would succumb to a combination of the chemicals in more moderate doses."

In an analysis of the food fish utilized by brown pelicans, the accumulative effect of the chemicals was shown. Endrin turned up in only one species, croaker, but the other fish—anchovy, spot, mullet, ribbon fish, and menhaden—contained traces of DDT, DDD, DDE, PCBs, dieldrin, toxaphene, and HCB, although not all of the fish contained all of these chemicals.

"It's the old food chain story all over again," said Ensminger. "What is a very small amount of pesticide in a fish becomes concentrated as it passes up the food chain to the browns. The poisons

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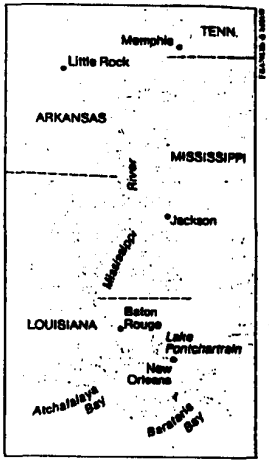
accumulate in the fat of the birds, and in times of stress, such as bad weather or when food is scarce, the pelicans draw on this fat for energy. That's when they die," he concluded.

The original population of brown pelicans, the Louisiana state bird which once numbered in the thousands off the Gulf Coast, died out suddenly in the late 1950s throughout much of its range in the northern Gulf of Mexico. Many authorities blamed pesticides, but because of unusual environmental circumstances, including bad weather conditions and consequent water turbidity, no firm conclusion was reached.

The latest pelican die-off, however, was attributed by the Louisiana Wildlife and Fisheries Commission to endrin and other pesticides coming down the Mississippi River from states to the north, particularly Mississippi and Arkansas. The announcement touched off a flurry of reaction and angry comments from state environmentalists. Les Brumfield, environmental writer for the *New Orleans States-Item*, charged that Louisiana officials were attempting to "pass the buck" in blaming the poisoning on states to the north. The president of Orleans Audubon Society, Frank P. Fischer Jr., also took issue with the commission's version of the origin of the pesticides. Fischer charged that indiscriminate applications in northeastern Louisiana of hard pesticides, including endrin, was the probable source.

When the U.S. Environmental Protection Agency banned DDT in 1972, cotton growers in several states in the South turned to endrin, considered 20 to 30 times as toxic as DDT, to combat the tobacco budworm. Several years previously, endrin had been sprayed extensively on Louisiana sugarcane crops against the sugarcane bore grub, but its use was discontinued when the grub developed a strong tolerance for the chemical. Despite the fact that the tobacco budworm in Louisiana has developed a similar resistance to the endrin, cotton growers in the state still apply it to their crops, as do farmers in Mississippi and Arkansas where it is said to still be effective against the pest.

The Louisiana commission's claim that the pesticides were originating out of state is in part based on the fact that currents sweeping past the mouth of the Mississippi River flow to the west into the area of Barataria Bay. Since there appears to be no significant eastward



movement of water along the Louisiana coast, reason Ensminger and other state biologists, the pesticides must have come from the Mississippi River mouth.

"Most of our cotton land, where endrin would be used, is located in the northern portion of the state," says Ensminger. And while it would seem that there may be a heavy runoff from the area into the Mississippi, he says, "Geologists and others have assured us this is not the case because the river is leveed the entire length along there." Ensminger believes that the bulk of the endrin applied to the Louisiana cotton crop drains westward into the Atchafalaya River basin. "This is considerably west of our colony of birds in Barataria Bay," he noted.

"However, there was very heavy application of endrin on both Arkansas and Mississippi cotton crops in 1973 and 1974," according to Ensminger. "These areas do drain directly into the Mississippi, and we think that is where the bulk of this endrin is coming from."

Although state wildlife officials claimed they had no warning of impending danger to the brown pelicans, there was a large die-off of white pelicans earlier in 1975. While the deaths, which numbered close to 100, were first attributed to migratory "exhaustion," chemical analyses revealed high concentrations of pesticides, particularly endrin.

Fines light as a feather

Over a five-year period, at costs well in excess of $5,000, federal wildlife agents accumulated evidence of the illegal sale of feathers of bald and golden eagles by self-proclaimed Indian expert Joseph Nichols of Cincinnati, Ohio. The first government purchase of illegal feathers from Nichols was in Illinois by an undercover agent assigned to follow the Indian pow-wow circuit. Nichols later sold eagle feathers to other agents in Ohio.

In April, three federal game agents, a U.S. marshal, and a local police officer confiscated several thousand eagle feathers and other illegal wildlife items from Nichol's Jo-Ro-Jen Gift and Leather Shop in a Cincinnati suburb.

In July, Nichols pleaded guilty in U.S. District Court in Cincinnati. He could have been given one year in jail and a $5,000 fine. Instead, Judge David S. Porter fined Nichols $1,000 and then suspended $500 when Nichols promised that he would not do it again.

Earlier this spring, U.S. Fish and Wildlife Service agents in the West were stunned by the decision of U.S. District Court Judge Fred H. Winner in the case of Pierre G. Bovis. Arrested in possession of several thousand dollars' worth of eagle feathers, Bovis entered a guilty plea. The judge refused to accept it, whereupon Bovis shifted to a plea of *nolo contendere*, or "no contest." Judge Winner then fined him $200 and suspended the entire amount. In addition, he ordered the agents to return to Bovis all of his confiscated feathers as well as the seized automobile in which he was caught transporting the illegal items.

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State authorities initially claimed the pesticide levels in the birds were the result of lack of restrictions in Mexico and Central America, where many of the birds spend the winter. But the Wildlife and Fisheries Commission is now reevaluating that conclusion in light of the brown pelican disaster.

Despite the brown pelican die-off, Louisiana went ahead with plans to import an additional 100 birds from Florida. In early July, these birds were released in Barataria Bay near the survivors of the previous transplants.

Ensminger justified continuing the transplant program by saying it was of vital importance "that we have these birds as a monitor for our environment," adding that the pelicans act as a "sort of early warning system to tell us when the environment is getting in bad shape." He also noted that eqdrin, unlike DDT and some other pesticides, does not remain in the environment for long periods.

Some environmentalists question the wisdom of putting yet more endangered birds into a pesticide-laden environment. "At the very least," said Orleans Audubon Society's Fleshes, "the commission should move the birds east of the mouth of the Mississippi where they will have a chance. It seems thoughtless to place the new birds right where they are certain to die everytime we get a fresh load of pesticides down the Mississippi."

In midsummer, the commission was considering moving the birds east out of the flow of the Mississippi but, "We couldn't put them in an isolated spot without having them supervised," Ensminger said, "particularly for the first two months when they must be hand-fed." He further noted that the commission had spent close to $100,000 on the pelican restoration project and moving the colony would cost a good deal more.

No matter how blatant the environmental damage, every outcry against pesticides in Louisiana is generally met with thunderous opposition from agricultural—and political—interests. Agriculture is a very large industry in Louisiana, and the state's governor, Edwin Edwards, led an unsuccessful fight earlier in the year to have the federal ban lifted so that cotton growers could spray their crops with DDT.

"Already we have had numerous fish kills, the seafood industry—including oysters and shrimp—is in a steady decline, New Orleans drinking water has become a national joke, and now we have lost our state bird again," said one embattled Louisiana resident. "I wonder when the people of this state are going to wake up."

—BILL WINN