Stopping Bad Bugs at the Border

Twenty entomologists are in charge of identifying foreign pests that threaten the United States

BY JOAN AREHART-TREICHEL

Everett Ford of Baltimore has been hooked on insects for 30 years, collecting them from birds' nests, animal dung, wherever he could find them. His collection includes more than 25,000 neatly pinned and labeled specimens. "It's one of those things where you know what you want to do, and that's it," he declares flatly.

Ford is more than a dilettante collector, however. He is one of 20 entomologists employed by the Animal and Plant Health Inspection Service (APHIS) of the U.S. Department of Agriculture, to identify foreign pests that hitchhike to America on imported animals and in tourists' pockets, and that could threaten American livestock, crops, trees or lumber.

If you doubt the seriousness of such threats, consider these examples of how pests can slip into the United States and do millions of dollars' worth of damage. In 1971 a commercial shipment of pet birds brought Newcastle disease into the United States, triggering an epidemic in the American poultry industry. Since the only way to eradicate the disease is to slaughter infected birds, more than 11 million had to be destroyed. In 1966 a Miami boy caught two giant African snails in Hawaii and brought them home in his pants pocket. Once in the United States, the snails escaped and soon multiplied into thousands. APHIS and the state of Florida have spent half a million dollars eradicating the giant African snails, which can grow up to six inches long and damage foliage, flowers and vegetables.

Recently, 56 larvae of the Mediterranean fruit fly were discovered in figs, pears and peaches hidden in passenger baggage on a flight from Rome. The flies have invaded the United States four times. Each outbreak was eradicated at the cumulative cost to taxpayers of more than $20 million. But if left unchecked, the bug could cause damage to Florida citrus totaling $20 million annually.

Altogether, taxpayers pay $12 billion annually for damage by, and eradication of, threatening insects. And many of these insects are foreign pests that have slipped into the United States.

Thus APHIS has set up an elaborate network to catch and destroy such pests before they do any damage. The network, which includes the APHIS entomologists, works this way. Some 700 quarantine inspectors are located at about 85 ports of air, land or sea entry into the

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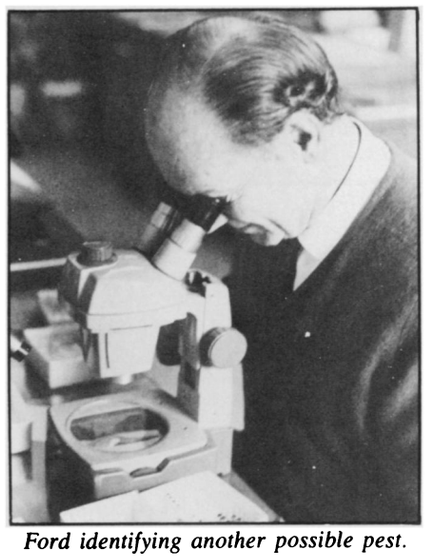
Examining suspect plants brought by ship.



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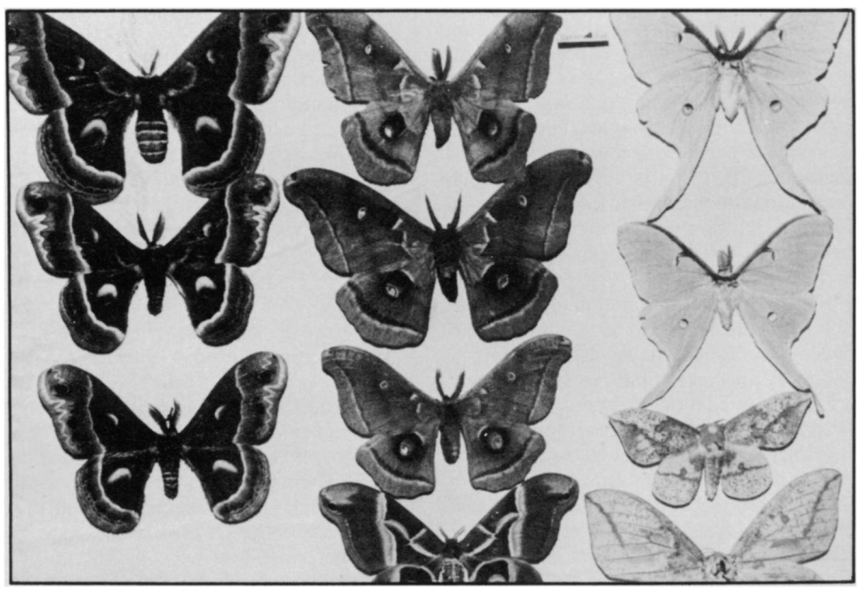
Ford identifying another possible pest.



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Some of the moths in Ford's enormous collection: 25,000 and growing.

APHIS

Crates are split open in search.

United States. With the help of U.S. customs officials, the inspectors check passenger luggage for unwanted pests. The inspectors probe airline and seagoing cargo and the crates and wood in which the cargo is packed. If ships' freezers contain meat or fruits that might harbor dangerous pests, inspectors seal the refrigerators while the ships are in port.

Sometimes the inspectors are able to identify threatening insects, but when uncertain, they turn the bugs over to Ford or another APHIS entomologist. The entomologist examines questionable pests through his microscope and compares them to specimens in his collection. If he cannot identify the pest, the specimens are sent to specialists at the Museum of Natural History of the Smithsonian Institution in Washington.

What kind of threatening insects do entomologists find? Ford replies: "Some of the dangerous pests I've identified include *Cordylomera spinicornis,* a woodborer found in logs imported from the Ivory Coast; *Phoracantha semipunctata,* a woodborer found in packaging around machinery imported from Argentina; *Cossus cossus,* a moth found in crates around marble being shipped from Italy. This moth attacks hardwood trees in southern Europe and could survive in the United States. Then I've identified several species of bark beetle that have already gotten into the United States that probably helped spread Dutch elm disease. And there are many others. . . ."

How do Ford and the other APHIS entomologists know which foreign insects are threats? "It comes with experience," Ford says. "Only about 20 percent of foreign species are harmful to our economy in some way."

If the entomologists, or inspectors, identify a foreign pest as harmful, APHIS then requires the materials that contain them to be burned, fumigated or destroyed in special garbage disposals. Cargo fumigation must be arranged by shipping agents and paid for by exporters or importers of the cargo. Needless to say, the inconvenience of fumigation, and the cost, which can run into thousands of dollars, are hard on agents, exporters and importers. But APHIS argues that such precautions are essential. Last year, APHIS found six million pieces of cargo contaminated with threatening pests and in need of fumigation.

Such widespread contamination probably won't abate soon, as commerce between the United States and developing countries increases and as international travel becomes more frequent. Even now Ford is adding three or four new foreign specimens to his collection each month. And last month APHIS entomologists got together for the first time in eight years to compare specimens and to make sure all threatening foreign pests are on the APHIS "wanted" list.

If "bootlegged" bugs should manage to slip through the APHIS quarantine network, however, there is still hope for the American economy. Some foreign insect species cannot adapt to conditions in the United States. "First you have to have a male and female," Ford explains with a smile. "Then you have to have the right host material for the species to feed on, which may not exist here. And then if insects get loose in a big city, like Baltimore, they have to have enough sense to fly or crawl to the country." □

How scientists aggravate the problem

Although scientists and science educators ought to be especially sensitive to the dangers of smuggling foreign pests into a country, they are sometimes the worst offenders. For example, a naturalist brought the gypsy moth to the United States a hundred years ago. From 1968 to 1971, the moth destroyed a million oaks, 39,000 eastern hemlocks and 8,000 white pines in the Newark, N.J., watershed area alone. Several years ago, APHIS inspectors intercepted a number of university students attempting to smuggle plants into the United States. The inspectors were disturbed to learn that the students' professor had asked them to bring back plants from the Orient without declaring them. He wanted them in their natural state—pests and all.

And even if scientists receive permission to bring foreign pests into a country, the insects can cause problems, even while under scientific scrutiny. In Brazil, a geneticist planned to cross the aggressive, but hardworking African bee with gentler, but lazier European strains to produce the perfect honey-producing bee. Before the hybridization occurred, 26 swarms of African bees accidentally escaped, mated with native bees, flourished and spread. The offspring, known as the Brazilian honeybee, are aggressive and vicious—precisely the opposite characteristics the geneticist sought. The bees have killed 10 Brazilians and numerous livestock. They are currently conquering the rest of South America, and APHIS officials fear they might migrate into Central America and threaten the United States and the American honey industry.

"It's important that we get cooperation from scientists and science students since they often deal with plant pests that are exotic and dangerous," says King Lovinger of the APHIS Information Division in Washington.

—*J.A.*