Illustration by Christine Fusco

Hey!

You've Got to Hide Your Smokes Away!

meet the beetles

by Frank Seltzer

Eager to relax after a rough workweek, you kick off your shoes, find the remote, and head for your humidor. As you look around inside, you suddenly spy something. It looks like… a little hole in one of your cigars, and one word ricochets through your head: *beetles*! It is what cigar enthusiasts, manufacturers, and retailers fear the most. Beetles. Now what? Left unchecked, they can turn your stash of tobacco treats into *tobacco dust*. The tobacco, or cigarette beetle—also known by its scientific name, *Lasioderma serricorne*, is the scourge of the tobacco industry, and, as cigarmaker Manuel Quesada of MATASA puts it, "at the top of our list of Ten Things Most Wanted to *Go Away Forever*." But go away they won't… at least not of their own free will.

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By the time you notice the holes in your cigars, adult beetles have burrowed out, ready to start a new cycle.

Photo by Frank Seltzer.

The *Lasioderma* beetle has been around for literally thousands of years. We don't know exactly when they started annoying people, but some bodies of beetles were found encased in resin in the tomb of Egyptian King Tutankhamen... and he died way back in 1323 BC. David Mueller, president of Insects Limited, a pest-control company, says that they've probably been around even longer. "Most likely, these guys have seen the dinosaurs come and go," he says. "At one point, they were probably wood eaters, like their cousins, and then found flowers and eventually evolved into tobacco eaters." So, much like the perennial cockroach, the tobacco beetle is with us to stay.

They are tiny creatures—about one-tenth of an inch long—but they have voracious appetites and they are truly prolific, *especially* if they get into a humidor. The average adult beetle lives about a month and likes to fly around at night. Like most bugs, they're attracted to light. On their nightly flights, males are always on the lookout for females and, once found, the female beetle can lay up to 100 eggs inside your cigars. These beetles really like compressed leaves, which give them more potential food. The eggs hatch in a week to ten days.

And then... the destruction begins. The eggs form larvae, which don't like the light but *love* tobacco. The larvae, about three-sixteenths of an inch long, creamy-white, and covered with hairs, feed on the cigars for five to ten weeks. After gorging itself, the beetle goes into the pupa stage for a couple of weeks before the adult comes out—literally; the holes you see in your cigars are the result of the successful completion of the life cycle as the adult beetles burrow out, ready to start a new cycle.

The whole process from egg to adult is about two to three months. In warmer climates, it's common to have up to six generations overlapping. In the southern US, according to Mueller, researchers have documented four generations overlapping. "So if you figure 100 eggs from the first pair, then four generations each with 100 eggs, you could have well nearly 100 million bugs." That adds up to a lot of damage.

Not Just Cigars

Cigarmakers, retailers, and smokers aren't the only ones worried about the little buggers. For certain museums, the *Lasioderma serricorne* is public enemy number one. Dr. Debra Trock runs the herbarium at the California Academy of Sciences and has the sixth-largest collection of dried plant specimens in the country—nearly two million of them—making for a lot of beetle food. "Once they get started, they are just like cockroaches. What you see is just the tip of the iceberg," she says. "If you see even one, there are a lot more you are *not* seeing."

Museums are constantly on the lookout for the nasty critters because not only will they eat their plant specimens but almost anything else. Trock found that beetles had drilled little holes in, and were munching on, the stuffed birds. Dr. Rudolf Scheffrahn, a professor of entomology at the University of Florida, says that the cigarette beetle is a common pantry pest throughout most of the world. He adds that, almost contrary to its common name, the beetle larvae will feast on more than 100 different items including flour, dried fruits, cereals, cocoa, coffee beans, herbs, spices, nuts, and even dry dog food. Outside of the

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pantry, they go for potpourri, dried floral arrangements, prescription drugs and pills, furniture stuffing, and even bookbinding paste! University of California Riverside's Dr. Michael Rust, also a professor of entomology, states that, unlike its cousin the drugstore beetle, *Lasioderma serricorne* has evolved to the point where it can survive, and even thrive, on the nicotine found in tobacco.

So where do they come from? Simply? *Everywhere.* Mueller has documented cases where large beetle populations live outside in Richmond and Louisville, where tobacco has a long history. Others, he notes, could come from anything in a house, from dried flowers to tea bags to spices (they can live on cayenne pepper and nicotine so pretty much *anything* is fair game). In museum settings, Trock has seen cross-contamination from food kept in workers' desks, even though it was in plastic bags. If you go to a museum, she advises, please leave your food, cigarettes, or cigars outside.

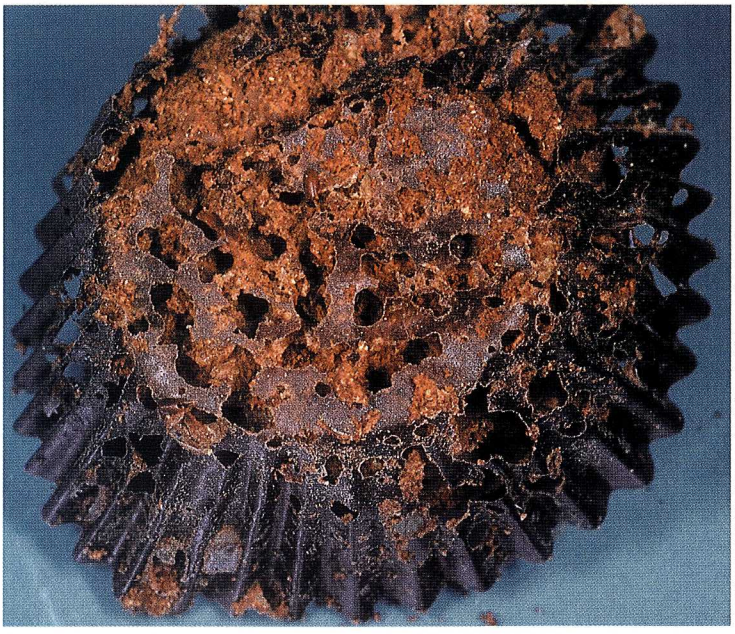
Trock says museums use pheromone traps to monitor their facilities, but adds that "trap" is actually a misnomer. While they *do* catch the male beetles looking for mates, these traps only indicate that there is a pest problem; they are more of a monitoring system than a controller. Mueller, whose company makes the pheromone traps, agrees they are only an early warning system. Prevention is a better way to go.

Temperature Is the Key

Studies show that temperature and humidity definitely affect beetles' life cycles. The new Cal Academy building has a special HVAC for its herbarium and Trock's goal is to keep both the temperature and the humidity down—temperature around 65° and the humidity in the fifties. The research says that, at 64°, all eggs will die within six weeks and that larvae won't even develop at any temperature below 62°. According to Drs. Trock and Rust, 70° and 70 percent humidity are ideal... *for the bugs.*

But just above 71° is where things really begin to take off—literally. Mueller says the bugs have to fly to mate, and he has documented when they fly. After experimenting with temperatures, he found that the tobacco beetle would begin to fly at 71.5°. At 70°, he reports, the adults never fly. However, the larvae do feed and pupate into adults, but they do not reproduce. On the warmer side, at 80°, the bugs really go nuts. Because most thermometers in houses, and especially in humidors, aren't particularly accurate, Mueller advises trying to keep your cigars cooler and a little drier, citing that 65° and 65 percent relative humidity is safer, since it gives you a margin of error.

The fact that beetle outbreaks in humidors are fairly rare is a testament to the success of the cigar industry, considering the tropical temperatures in the places that cigars are made. Quesada says the number-one priority in manufacturing cigars is cleanliness. "A clean factory goes a long way in controlling the spread of *Lasioderma*," he says. The second part, according to Quesada and La Aurora's José Blanco is a well-defined monitoring and fumigation program. Most factories use phosphine (PH_3), which kills all stages of the bugs. Mueller confirms that phosphine is an excellent fumigant that really penetrates the tobacco with virtually no residue (less than .01 parts per million) and, because it is inorganic, it does not attach itself to the carbons in the tobacco. Freezing the tobacco also supplements this program. MATASA, for example, freezes its tobacco in Miami, once the cigars arrive through customs, to -20° Fahrenheit for seventy-two hours. "In the premium handmade factories, all of these methods are used in weekly, monthly, and quarterly programs," Quesada adds.



Somewhat contrary to its name, the tobacco beetle gorges on a diverse menu, including (but not limited to) chocolate, some dog foods, dried floral arrangements, prescription pills, and even bookbinding paste!

Cigar retailer Lew Rothman agrees. His distribution facility in Burlington, North Carolina, has an industrial-sized freezer that can accommodate a fifty-three foot container. "We freeze at 30° below zero for seventy-two hours, which is way below the necessary temperature," he reveals. "But I always like to play it safe."

One common myth about cigars and beetles is that cellophane helps keep them in check, or at least inside the infected cigar. This is simply not true. According to Trock, cellophane and even plastic storage bags barely slow the bugs down; the only thing she has *not* seen them eat through is metal. Mueller agrees, recalling that he's seen beetles zip right through cellophane and even lay their eggs in the folds of the protective covering.

What Can You Do?

Throw out your cigars and start over? Quit smoking? *Move?* Not necessary.

First: *don't panic.* There are several ways to get rid of these creatures at home, and all involve temperature. If your cigars are kept at 64° or cooler, the eggs will die in six weeks. So, a cool home in the winter may not only save energy but could save your cigars as well. But cold is not the only answer.

"Freeze 'em or fry 'em," Mueller says, going on to explain that, while the beetles like warm temperatures, they don't like it *hot.* "The proteins in the beetles start breaking down at 104° Fahrenheit and then they start going nuts," he says, adding that an easy way to deal with an outbreak in the summer is to seal your cigars in a black trash bag and set them outside in the sun for a few hours. "If the bugs get to 120°, they are dead in about two to four hours." However, the University of Florida suggests it may take up to sixteen hours at that temperature, but only one hour at 190° in the oven. Mueller believes that that is chasing zero or, put another way, killing every single bug, though, most times, a 95 percent kill is good enough.

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(Intrigued, I staged a totally unscientific experiment in my oven at 190°, which showed no apparent damage to the two cigars I used. The oven did severely dry them out, however I suspect that heating them outside on a humid summer day at a lower temperature might turn out better.) Manuel Quesada believes that, for consumers, the best debugging method is freezing the cigars, since heating dries them out.

Much of the recent research on killing these pests has been performed by Japan Tobacco. A 2005 report shows a 100 percent kill of all stages at -20° Centigrade (or -4° Fahrenheit) in one hour. The trouble is, most home freezers don't get quite that cold and, because cigars are rolled, it may take a while longer to get the inner layers (where the bugs are) down to that temperature. So, the best way to start is to figure out how long the project will take. First, get a freezer thermometer to find out how cold your freezer is. Most consumer refrigerators with freezers run anywhere from just under freezing to around 0° Fahrenheit. Purdue University offers a rule of thumb: if your freezer does not keep ice

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Photo by Matthew Pinkerton.

So where do tobacco beetles come from? Simply? *Everywhere.* The bottom line on bugs? Always remember the old adage about an ounce of prevention.

Photo by Matthew Pinkerton.

cream brick-solid, your freezer is above its recommended temperatures of between 0 to 5° for long-term storage.

Next, place your suspected cigars into a plastic storage bag. Try to get all the air out (this is important; you don't want ice or condensation to form—some even recommend double bagging just to be safe). Then stash them in the freezer.

Now the time becomes critical. According to Japan Tobacco, at 32°, it could take nearly two months to kill them all. If your freezer is set to 23° Fahrenheit, leave the cigars in the freezer for twenty-one days. If the freezer is 14°, then five days should be fine. And, if the freezer is 5°F, just three days should be enough. Remember, the caveat is that the *inside* of the cigar needs to reach that temperature. Japan Tobacco points to the Cooperation Centre for Scientific Research Relative to Tobacco (CORESTA) research, which shows that, at -9° Fahrenheit, all beetles in a bale of tobacco are killed in five days. Japan Tobacco's research shows that all exposed bugs, larvae, and eggs die within an hour at -20°C (or -4°F), so one to two days at that temperature should be able to kill any bugs in the innermost layers of the cigar. Remember, you can always go longer or colder to be extra safe—just be on the lookout for condensation or ice.

After the freezing stage is complete, *slowly* bring the cigars back up to room temperature. The easiest and safest way to do this is to put your bagged cigars into the refrigerator for a day. Then, give them a day sitting out in room temperature. And, while you are bringing the infected sticks back, use that time to clean out your humidor. Empty out any dust and vacuum the inside to get rid of any eggs that might still be in there.

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The bottom line on bugs? Remember the old adage about an ounce of prevention—and *never* let your cigars get even one degree above 70. ***CM***