As Earth Warms Up, Tropical Virus Moves to Italy

By ELISABETH ROSENTHAL

CASTIGLIONE DI CERVIA, Italy — Panic was spreading this August through this tidy village of 2,000 as one person after another fell ill with weeks of high fever, exhaustion and excruciating bone pain, just as most of Italy was enjoying Ferragosto, its most important summer holiday.

“At one point, I simply couldn’t stand up to get out of the car,” said Antonio Ciano, 62, an elegant retiree in a pashmina scarf and trendy blue glasses. “I fell. I thought, O.K., my time is up. I’m going to die. It was really that dramatic.”

By midmonth, more than 100 people had come down with the same malady. Although the worst symptoms dissipated after a couple of weeks, no doctor could figure out what was wrong.

People blamed pollution in the river. They denounced the government. But most of all they blamed recent immigrants from tropical Africa for bringing the pestilence to their sleepy settlement of pastel stucco homes.

“Why immigrants?” asked Rina Ventura, who owns a shop selling shoes and purses. “I kept thinking of these terrible diseases that you see on TV, like malaria. We were terrified. There was no name and no treatment.”

Oddly, the villagers were both right and wrong. After a month of investigation, Italian public health officials discovered that the people of Castiglione di Cervia were, in fact, suffering from a tropical disease, chikungunya, a relative of dengue fever normally found in the Indian Ocean region. But the immigrants spreading the disease were not humans but insects: tiger mosquitoes, who can thrive in a warming Europe.

Aided by global warming and globalization, Castiglione di Cervia has the dubious distinction of playing host to the first outbreak in modern Europe of a disease that had previously been seen only in the tropics.

“By the time we got back the name and surname of the virus, our outbreak was over,” said Dr. Rafaella Angelini, director of the regional public health department in Ravenna. “When they told us it was chikungunya, it was not a problem for Ravenna any more. But I thought: this is a big problem for Europe.”

The epidemic proved that tropical viruses are now able to spread in new areas, far north of their previous range. The tiger mosquito, which first arrived in Ravenna three years ago, is thriving across southern Europe and even in France and Switzerland.

And if chikungunya can spread to Castiglione — “a place not special in any way,” Dr. Angelini said — there is no reason why it cannot go to other Italian villages. There is no reason why dengue, an even more debilitating tropical disease, cannot as well.

“This is the first case of an epidemic of a tropical disease in a developed, European country,” said Dr. Roberto Bertollini, director of the World Health Organization’s Health and Environment program. “Climate change
creates conditions that make it easier for this mosquito to survive and it opens the door to diseases that didn’t exist here previously. This is a real issue. Now, today. It is not something a crazy environmentalist is warning about.”

Was he shocked to discover chikungunya in Italy, his native land? “We knew this would happen sooner or later,” he said. “We just didn’t know where or when.”

It certainly caught this town off guard on Aug. 9, when public health officials in Ravenna received an angry call from Stefano Merlo, who owns the gas station.

“Within 100 meters of my home, there were more than 30 people with fevers over 40 degrees,” or 104 Fahrenheit, said Mr. Merlo, 47. “I wanted to know what was going on. I knew it couldn’t be normal.”

August is not the season for high fevers, Dr. Angelini agreed, and within days of interviewing patients she was intrigued.

“The stories were so similar and so dramatic,” she said. “But we had no clue it was something tropical.”

Hard-working shopkeepers could not get out of bed because their hips hurt so much. Able-bodied men could not lift spoons to their mouths. (Months later, many still have debilitating joint pain.)

From the start, doctors suspected that the disease was spread by insects, rather than people. While almost all homes had one person who was ill, family members seemed not to catch the disease from one another.

They initially focused on sand flies, since the disease clustered on streets by the river.

Canceling their traditional mid-August vacations (in Italy, a true sign of panic), health officials sent off blood samples, called national infectious-disease experts, searched the Internet and set out traps to see what insects were in the neighborhood. The first surprise was that the insect traps contained not sand flies but tiger mosquitoes, and huge numbers of them.

The scientific survey confirmed what residents of Castiglione had come to accept as a horrible nuisance, though not a deadly threat.

“In the last three or four years, you couldn’t live on these streets because the mosquitoes were so bad,” said Rino Ricchi, a road worker who fell ill, standing at the entrance to his neatly tended garden, where mosquito traps have now replaced decorative fountains. “We used to delight in having a garden or a porch to eat dinner. You couldn’t this year, you’d get eaten alive.”

Said Dr. Angelini: “They were treating the mosquitoes like an annoyance. They knew that mosquitoes could spread tropical diseases but they had peace of mind because they knew this didn’t happen in Italy.”

Ravenna immediately set about killing the bugs in the hopes of containing the epidemic. Workers sprayed insecticides and went into each family’s garden, emptying flower pots, fountains and the rainwater collection barrels to remove the mosquitoes’ breeding ground.

By early September, there were no new cases in Castiglione di Cervia. But there were a number of mini-epidemics in the region — in Ravenna, Cesena and Rimini — set off by tiger mosquitoes there. Each was controlled in the same way.
By that point, the doctors had cataloged the patients’ symptoms and tried to match them to mosquito-borne diseases.

“We realized,” Dr. Angelini said, “we were seeing a photocopy of an outbreak on Réunion,” a French island in the Indian Ocean where more than 10,000 people have contracted chikungunya in the last two years. Blood tests confirmed the diagnosis. By summer’s end, home-grown chikungunya had been diagnosed in nearly 300 Italians.

Chikungunya is spread when tiger mosquitoes drink blood from an infected person and, if conditions are right, pass the virus on when they bite again. Tiger mosquitoes first came to southern Italy with shipments of tires from Albania about a decade ago but their habitat has expanded steadily northward as temperatures have risen.

But the doctors were baffled by how chikungunya made its way into mosquitoes in northern Italy since no one in Castiglione di Cervia had been abroad. In the past two years France, especially Paris, has had a number of imported cases of chikungunya, in travelers returning from Réunion. But the disease has never spread in France, because the mosquito cannot thrive there yet.

Eventually investigators discovered a link: one of the first men to fall ill in Castiglione di Cervia had been visited by a feverish relative in early July. That relative, an Italian, had previously traveled to Kerala, India. Chikungunya traveled to Italy in his blood, but climatic conditions are now such that it can spread and find a home here.

Now it is winter in Castiglione di Cervia, near freezing as the sun went down on a recent evening and Christmas lights glowed across the piazza. There are no mosquitoes now.

But dozens of residents still suffer from arthritis, a known complication of chikungunya.

Mr. Ricchi, the road worker, says he still has trouble clenching his fists, and his left ankle has horrible pains. Three people in the town died after getting the virus, Mr. Merlo said, although all of those victims had other illnesses as well.

From the start, townspeople noticed that the very elderly never got the disease. Now it makes sense: “If all you do is walk the 50 yards from your home to the church, there’s not much chance to get bitten,” said Mr. Ciano, the retiree.

But the biggest mystery is whether chikungunya will emerge here next summer. In the tropics, it is a year-round disease, since the mosquitoes breed continually. But the virus can winter over in mosquito eggs, too, and no one knows if there are reservoirs of sleeping eggs in some pool of water in Italy.

With climate change at hand, Dr. Bertollini said, chikungunya will surely be back somewhere in Europe again.