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FIRE STORIES

by M.E.A. McNeil

What Californians know about tornadoes is that they happen somewhere else. Ask anyone: Not here, no way. But tornadoes did come. They were made of fire. They started in the hills above Santa Rosa, about 55 miles north of San Francisco on Sunday night, October 8, 2017 at 9:43 pm with just a spark. It leapt into the dry fall grass.

Not far away, beekeeper Mike Turner went to bed around 11:00. There was a faint odor of smoke in the air, not unusual from a barbecue in his neighborhood of family homes. The weather was still warm. Unusually warm. He checked and saw nothing before he went to sleep.

At about 1:15, he drowsily took note that his clock was blinking. Ok, the power had gone out and come back on. He drifted off; a distant roaring sound could have come from the freeway half a mile away. The roar grew louder. A smell of smoke thickened the air. If he was not completely awake when he stepped onto his porch, he was jolted to see the sky glowing orange.

“Go now!” screamed his neighbor.

Although a dozen big fires burned simultaneously across Northern California, the Tubbs Fire in Santa Rosa “was a very different kind of fire,” according to Ken Pimlott, the director of Cal Fire. “Almost horizontal. It generated so much heat that it created its own circular patterns.” Those vortices of air rose into twisting columns – fire tornadoes. They blew, gyres of flame, unstoppable, igniting wildfires that raged uncontained for nearly two weeks. Their rare occurrence has never been so devastating. They left 44 people dead and 36,432 acres burned. They peeled off roofs, lifted and flipped trucks.

Turner is a gentle, well-liked guy in his early 50’s. He and his wife Deborah run a beekeeping business. They have apiaries in adjacent counties, market their Marin Coastal Bee Honey, extract bees and yellow jackets from walls, teach beekeeping, and manage about 100 colonies for clients.

It was fall honey harvest season. Turner had been working in his rented three-car garage, skimming the wax cappings off of frames full of honey with a hot knife, one by one. It’s tedious, sticky work. He’d finished spinning the honey out of the frames in his stainless steel centrifuge, and, to get every last drop, he’d squeezed oddly shaped comb in a fruit press. That was done. The honey was in buckets, each labeled by apiary location within Mill Valley, San Rafael, Russian River, Rincon Valley, Santa Rosa, Tiburon. His label says, “Know where your honey comes from,” and he’s specific. After all, it’s a taste of place if anything is. Now it was ready to bottle, and orders were coming in.

That night, Turner blindly responded to his neighbor’s warning. The power was off again. In the dark, he put on jeans, a tee shirt and flip flops as Deborah grabbed her wedding rings and her purse. They searched for their black cat in the blackness, and at last, coaxed it with their other reluctant cat into one carrier. Turner locked his door, thinking that soon they’d be back. He’d had his hand on the thick notebook that kept his records, hive by hive, but he left it; they’d be back. By 1:30 am, they had joined a growing number of cars pulled into a closed gas station on the other side of Highway 101, their passengers standing in stunned silence to watch an inferno rage down the hills. They didn’t wait until the fire jumped the six-lane freeway.

An hour later, at 2:30 am, Hector Alvarez woke to his phone ringing. “What fire?” he said.

He is a hard working commercial beekeeper, in his 40s. His grandfather kept bees in Mexico using hollowed logs plugged with adobe. His father kept bees in Mexico, too, but when he worked in California as a migrant laborer, he’d left behind some swarms he’d hived in wood apple boxes in an orchard. When Alvarez came to this country, he found them – full of wax comb built out willy nilly, without frames to guide them. He came across The Sonoma Beekeepers’ Club, and members welcomed him, helped him learn. One offered to transport some of his hives to a pollination customer to get him started. “I didn’t even know about doing that,” he said. Now he manages several hundred hives for honey and pollination. He has two farms and yards where he keeps bees.

That night, he stepped outside and saw orange in the sky, in the direction of his second farm, where all his equipment was kept.

“You can’t come,” his neighbor said. “They’ve blocked the road.”

Alvarez drove as far as he could. Vehicles were evacuating out, in both of the two lanes, so he parked and walked. “At first I couldn’t see the fire,” he said. “It was dark. Then I saw the flames in the hills and heard explosions. It was like a big monster, a fireball from the top of the hill to the bottom spraying everything with fire, going down toward the farm.”

He spent the rest of the night defending his place. With his tractor, he tilled in a blackberry patch on the edge of the property. He put out flying sparks and embers. “By sunrise I was thinking the fire would come,” he said. All he could do was park his equipment by a vineyard next door that was still green. “I couldn’t focus.” Suddenly, about 5 am on Monday morning, the wind switched direction to the south, away from the farm. The fire stopped not 400 yards from his fence, turning to ravage others.

Lizanne Pastore expects some wind, but not like it was and not so early in the season. She has two small apiaries at the 40 acre vineyard that she and her husband farm, Old Hill Ranch in Glen Ellen, south of Santa Rosa. Early that Monday morning of October 9, the wind kicked up so fiercely that she drove out to check some hives. She keeps rocks on the covers until her last hive inspection of the year, which would not be for weeks, the end of each October. At that time, she straps each one down against the winds that normally come later in the year.

She arrived at her apiary to find the rock weights blown off the hives and the covers scattered far. She scrambled to find them. She replaced the covers and strapped the hives to their stands – the wind blowing so hard she embraced a hive to keep it upright.

“I was so focused that I didn’t realize the smoke,” she said. “I looked up, toward the northeast, and saw orange.” A blaze above the hills was punctuated with booming flashes of blue. A diagonal wall of flames was coming down the mountain, half a mile away. It was time to gather the animals and leave.

When Alvarez phoned to check on another bee yard, one in Sonoma, he was relieved to hear that the bees were ok. On Tuesday he took his truck to move them. The road was blocked by a Highway Patrol woman. He explained. He pleaded to no avail. “By the next day, Wednesday, the fire came. I was hoping that they survived, but I could see on the news, and there was a big orange cloud of fire. It was frustrating. I had time to rescue the bees, a whole day. The people wouldn’t let me in the road. I tried.” Hector Alvarez lost all 60 strong, healthy colonies in that yard.

Lizanne Pastore, with her husband and nephew, came back through neighbors’ properties with a truck loaded with buckets of water. They cleared brush and put out spot fires -- efforts that did not save their office, shop and guest house. But they, and the greenery of their vineyard, saved their house.

Afterward, she went back to her apiary. “I broke down crying,” she said, “It was scorched everywhere around it and a hive miraculously survived.” She discovered a beehive sinking into the ground, still alive, with a tree root burning underground below it.

Mike Turner found his bee yards had survived, some within a quarter mile of the fire line. Then he went back to his burned-over house site “just to stand there and stare.” He’d thought at least to salvage some metal, especially some specialty tools he uses for fitting the metal tops on hive covers. He found that the temperatures had been so extreme that metals had all become brittle. A stack of iron frying pans was welded together. He found coffee cups with the glaze melted; a ceramicist friend told him that would have taken 3000°F. A stone façade around the front door had collapsed through the garage wall and crushed his extractor. He found wry humor in that, since the stainless steel was already a flimsy shell. “Insult to injury,” he said. There was nothing but a charred ruin. In the ashes he found a small ceramic crèche.

Alvarez, still unable to get into his burned bee yard, was told that there were some bees still flying. To the notion that colonies of bees abscond with smoke, he said, “I don’t believe that. There’s no way they can leave. Maybe if the fire came in the day, it is only foragers left.”

Although it is widely believed that honey bees escape fire by absconding, observation by researchers concludes, with Alvarez, that they do not. The belief likely comes from the fact that bees gorge on honey before natural swarming or absconding in order to sustain them as they resettle. But a laying queen is too heavy to fly. It takes many days for bees to prepare their queen to swarm, diminishing her feed and running her on the comb until she is fit to take wing. It is a suicide mission to leave without her.

If there is any consolation that a colony would be incinerated, its end would be swift. Fire reaching a hive, which could be two wood boxes high – three, even more if the honey has not yet been harvested -- would ignite the thin wood frames inside. Even if the frames are plastic, the wax is highly flammable. It would readily catch fire, melting at around 145°F and coming to a flashpoint as it nears 500°.

At flashpoint, Alvarez’s bee yard would have detonated into 60 roaring chimneys, the boxes still intact, blackening until they caught, too. Turner photographed the remains of four beehives at a winery – only squares of white ash remaining on the ground.

Greater consolation is that three quarters of native bees nest in the ground, and a recent study indicates that most of those with shallow nests, like some megachilids, might survive fire, and deeper nesting bees could even be safe.

It is worth noting a behavior of the wild Cape honey bee, *Apis mellifera capensis*, a South African cousin to the European honey bee kept here *Apis mellifera*. By creating a propolis firewall, it survives regular brush fires. Propolis consists of tree resins collected by bees; they are antibiotic, produced by plants to protect new shoots. European honey bees in the wild coat the insides of their hives with propolis. Because this gummy substance makes beekeepers' hives more difficult to manipulate, the propensity to collect it was largely bred out of them before its antibiotic advantages were understood. Beekeepers now more often encourage it as a prophylactic, but its fire retarding properties are unexplored.

Just as a colony of bees functions as a body, a superorganism, the same bee club that helped Alvarez get started has responded to this disaster as one. The first night of the fire, some members, now called The Sonoma County Beekeepers' Association, met in a taskforce -- even as they had packed their cars and turned them toward exit routes in anticipation of their own evacuations.

"We had already built the bridges," said Christine Kurtz. The 450 member SCBA is divided into geographic groups called clusters. "We have smaller communities of beekeepers who know each other socially, have been into each other's hives. We're doing this all together."

Over a terrifying week they learned that 15 beekeepers in the group have suffered total loss of home and outbuildings from the fire. Many others, like Turner, also returned to the ruins of both home and workplace. In addition, 20 lost their hives and many beekeepers in the group lost their equipment.

"People told me they said good-bye to their bees when they evacuated," said Kurtz. They could not transport the hive boxes. "Some colonies looked like an angel enveloped the hive. Fire marks all around but the hive untouched and others destroyed."

Replacements for burned-out beekeeping equipment have been donated by bee suppliers. The lost apiaries will be replenished from a bee sharing program already in place to promote local stocks.

The ongoing problem will be forage. "You can't believe your eyes," said Kurtz, looking over the charred landscape. "Not a tree." SCBA has an active group of about 100 gardeners, not all of them beekeepers, who propagate and distribute pollinator plants.

For some forage plants, the fire can even have been helpful. These plants, called pyrophytic, benefit from different components of fire. Some species need heat to germinate seeds, some depend on the chemicals in smoke, some take advantage of the openings fire creates, and some appear only after a fire and remain dormant until the next one.

Naturally occurring fires, lit by lightning or volcanic activity, have always been part of the earth's ecosystem. American Indians regularly burned underbrush. Those selection pressures have resulted in some plant adaptations toward survival or reestablishment after fire.

One group of forage plants common to the Tubbs Fire area that are adapted to sprout and grow rapidly after a fire is chaparral. Many in that group, like ceanothis (*Ceanothis L.*), a large genus of nitrogen-fixing shrubs, have heat-resistant seeds that break their dormancy with fire. Ceanothis even has leaves that are coated with flammable resins that fuel fire, an adaptation to aid its seeds that need intense heat to germinate. Fire-resistant roots also help it re-sprout after a burn.

Other fire-adapted chaparral plants favored as bee forage are manzanita (*Arctostaphylos* species), chamise (*Adenostoma fasciculatum*), and scrub oak (*Quercus acutidens x*).

Some forage trees, such as eucalyptus (*Eucalyptus globulus*) and the Australian banksia tree (*Banksia marginata*), have seeds that are completely sealed with resin that require the heat of fire to melt. Seeding or planting will come long behind a tedious and sometimes toxic cleanup.

For now, the focus is on helping with relocation and necessities. Like peace of mind. "There is something calming about the bees," said Kurtz, talking about working a hive. "You're completely with the bees, and there's this extraordinary moment. A moment when everything disappears. It's what bees can bring to people in adversity."

"People miss their bees," she said, like the woman who had lost her bees in the fire who called, asking Kurtz to go into a hive with her. "We're doing this all together."

