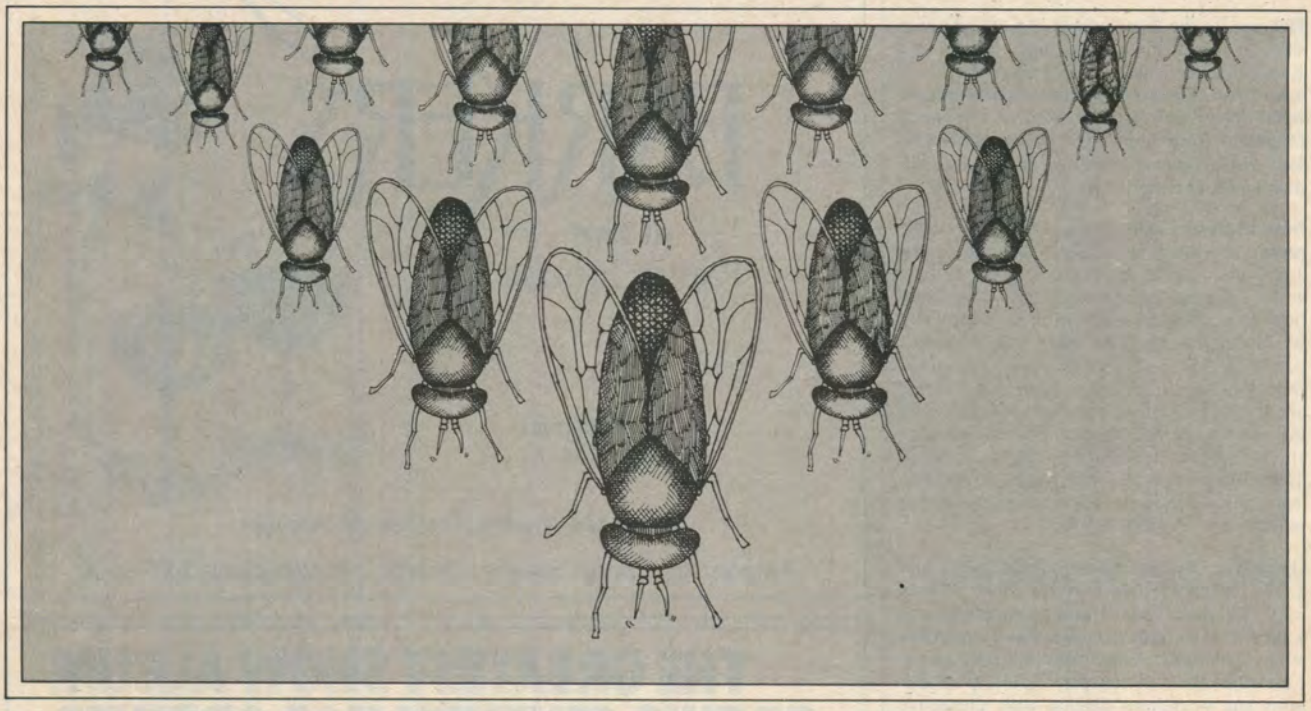
AT RANDOM

By John Sedgwick

Invasion of the Greenheads



In the summer of 1968, a strange pall has settled over the North Shore town of Ipswich, long famed for its broad, sandy beaches, its large, airy cottages, and its gracious Yankee mien. Tourists, who once came in droves to frolic and sun themselves on the seashore, now take one look at the place, scurry back to their cars, and head for safer strands. Crane's Beach and Plum Island are deserted. Ipswich houses, which used to sell as soon as they were put on the market, now don't sell at all, at any price. Mail carriers either complete their routes at the crack of dawn or leave their mail at the post office, telling citizens they can come and pick it up for themselves. Orchards go untended. Dairy farmers put their cattle out to pasture only in the dead of night. Carpenters and house painters have packed it in until September. Nobody wants to go outside.

It's the greenheads.

Think of a fly, a big one—up to three-quarters of an inch long—with a bright green head and a long, sharp beak. Imagine that it is half-crazy to drive that beak into your flesh and suck your blood. Imagine that its bite actually takes a chunk out of you, raises a welt, and hurts like a bee sting. Imagine that a swarm of these insects descends on you, so many you can't get away from them, so many you can't slap them all when they land on you, so many you can hardly breathe for fear you'll suck one into your lungs.

Now you know what the Ipswich greenheads were like in the summer of 1968. Nowhere in the world are the greenheads as bad as they are around Ipswich every summer, although until 1968 the town managed to go about its usual business in greenhead season.

Beaches are particularly hard hit; the entire coastline from Gloucester to Seabrook, New Hampshire, is affected. Since greenheads need moisture to survive, they head for the beach at precisely those times that humans do—on hot, windless, sunny days from the middle of June until the middle of August. And they find wet, scantily clad humans particularly enticing. Local residents have learned to stay away from the beaches during the bug season. "You just don't go out," said the Rowley town clerk, Warren Grover. "Or if you do go out, you dress for the greenheads just like you'd dress for rain or snow. You cover up. There's one good thing, though. From late spring to early fall you can't see a door-to-door salesman anywhere around here." But many out-of-towners have yet to catch on. At Plum Island once, a woman became hysterical when she was swarmed by greenheads as she came out of the water. She had to be carried to her car wrapped in a blanket.

It was in that horrendous summer of 1968 that Larry Uhrich, then a twenty-seven-year-old local high school teacher, made his one and only breakthrough in the war he has been waging against the greenheads for thirteen years now. For a while it seemed as if he had them licked, but it doesn't look that way anymore.

Representatives from Ipswich and six other coastal communities that were similarly afflicted had banded together that summer to tell Uhrich he had to do something about the damn greenheads. At that point, Uhrich had been working on the greenhead problem for around three years under the auspices of the North Shore Greenhead Control Project, a tiny organization (annual budget: $6,400) that had been in operation on and off for thirteen unsuccessful years. Begun in 1955, the Greenhead Project had fought the flies its first seven years by spraying the salt marshes where they bred with DDT twice a summer. The program worked. There were fewer greenheads. Gradually, the clammers began to notice there were

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Illustration by Lisa Sullo

fewer clams as well. Local residents reported their pets were getting sick. In 1962, the DDT program was scrapped, and the Greenhead Project itself was shelved indefinitely.

Interest in greenhead control waned for a few years until 1965, when residents asked to have the Greenhead Project reactivated. Robert Spencer, then superintendent of the county Mosquito Control was put in charge. Some citizens wanted him to start spraying DDT again, but Spencer was against it. Still, he didn't know how else to control the pest he calls "the most obnoxious and vicious creature I know." That's when he hired Lawrence Uhrich, the Masconomet High School biology teacher, to look into the problem.

Uhrich was supposed to find out, first, where the flies came from and, second, how they could be stopped. He quickly discovered that greenheads bred on just about every square foot of the 50,000-acre marsh along the North Shore. They couldn't be isolated. Then, for two years Uhrich looked into the greenhead's yearlong life cycle to discover at what stage of its development the insect was most vulnerable. A member of the horsefly group, the greenhead (or *Tabanus nigrovittatus*) develops from an egg into a larva (maggot) and then a pupa (chrysalis) before emerging as a green-headed, gossamer-winged fly. To his chagrin, Uhrich found that at every stage the insect is practically indestructible.

Uhrich guessed that the greenheads would be most helpless when they were still in their eggs, and he was probably right. Trouble was, he couldn't find the eggs anywhere. In 1959, a researcher at Bridgewater State University had produced—or rather gotten a greenhead couple to produce—a single egg mass in his laboratory: several inch-long rows of tiny black eggs, laid side by side on a blade of cord grass like so many strings of baby pearls. Uhrich has looked everywhere in the salt marsh cord grass, even pulling up roots and scraping away earth, in his search for inch-long rows of tiny black eggs, but even now, after ten years, he hasn't been able to find anything that fits that description.

Larvae he can find. One-and-a-half-inch-long, wormlike creatures with breathing tubes at one end and a pair of pincerlike jaws at the other, the greenhead larvae are tough as nails. Uhrich tried organic phosphates, chlorinated hydrocarbons, and other poisons on them in small test plots out in the marsh. The larvae were unharmed; the marsh was wiped out.

Actually, the only thing that works against a greenhead larva is another greenhead larva. They are furious cannibals. Put fifty in a dish and pretty soon you'll only have one—a big fat one. This explains why out of three hundred larvae born every season per square meter of marshland only eight survive to become

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greenhead flies. (Eight greenhead flies per square meter may not seem like so many. But 50,000 acres make a lot of square meters and, consequently, a lot of flies—around two billion.) Unfortunately, Uhrich knows of no way to provoke these larvae against their brethren still further.

Like the larvae, the pupae are tough little critters. Inactive (the pupa stage is primarily one of rest before the insect's final, exhausting metamorphosis) and encased in a leathery cocoon, the pupa is both hard to find and hard to kill.

That left the adult greenhead for Uhrich to reckon with. Frankly, it had him stumped. When he undertook the project, Uhrich knew very little about greenheads; two years later, in 1967, he was (unofficially) one of the world's foremost authorities on the insect, but he still had no idea how to control it. He was still toying with the idea of chemical larvacides when he chanced on a newspaper article entitled "How to Catch a Greenhead Fly." The article told of a Maine entomologist named Robley Nash who had devised a fly trap to cut down the greenhead population in Maine's Reid State Park. Uhrich and his boss, Spencer, drove up to Reid posthaste.

Nash's fly-catching contraption turned out to be nothing more than a hollow, pyramid-shaped plywood box. About two feet high, the box was mounted on stakes and open at the bottom; it had a small hole at the top that was capped with an inverted mayonnaise jar. The flies flew in the bottom, walked up to the top, climbed through the hole, and were trapped in the jar. They didn't have the sense to climb back down the way they had come, but instead buzzed frantically about the jar trying to get out. Finally they exhausted themselves and died. Very neat. Nash said the trap caught hundreds of flies a day.

That was good, but it wasn't good enough for Spencer and Uhrich. They would have to catch flies by the thousands just to make a dent in the North Shore greenhead problem. Uhrich took some plywood, some screening, and Nash's idea to the garage at the Mosquito Control headquarters in Rowley to see if he could build a better fly trap. Pretty soon, he had it. For Nash's pyramid he substituted a tentlike structure of screening material with a slit along the ridge, and he eliminated the mayonnaise jar by encasing the whole thing in a two-foot plywood cube with a screen on top and stakes at the bottom. He set it out in the marsh the next summer and—lo!—flies went for it like crazy. The discovery couldn't have come at a better time, for that was the summer of '68.

Uhrich ran tests all that summer and the summer after that. He had to figure out what color to paint the traps, how far

off the ground to raise them, and other details. He also had to wait until there was enough money in the Greenhead Project budget to pay for mass-producing the traps. Finally, when the North Shore's bug-plagued citizens had just about run out of patience, Uhrich announced that he was ready. In June of 1970, he had four hundred two-foot cubes—painted a glossy enamel black and raised two feet off the ground—placed around the edge of the marsh.

Greenheads flocked to them by the thousands. Uhrich figured each trap was collecting about fifteen thousand flies a week. Out of a population of two billion, that still left quite a few greenheads around, but in 1970 mail carriers made their deliveries, construction workers stayed on the job, real estate sales stabilized, and tourists returned to the beaches.

Uhrich added two hundred more traps the next summer, bringing the total to six hundred, and the greenheads became even less bothersome. Local residents were so pleased with the traps that they objected strongly if Uhrich tried to move them away from their houses to test a new location. Some people drove jeeps out to the marsh and filched traps to put around their swimming pools.

Why do greenheads go for black boxes? Uhrich doesn't exactly know. He guesses that they are attracted to the heat absorbed by the paint. That's why the glossy enamel black is so effective. (Uhrich has since modified it to a slightly less effective dark green because marsh-lovers found the black unsightly.) Yellow, by contrast, doesn't work at all.

Actually, male greenheads don't go for either yellow or black. They don't go for the traps, period. Only females do. But this is just as well, for only females bite. They bite in order to obtain a supply of blood with which to nourish their eggs. Uhrich figures the females are particularly sensitive to heat as a way of locating a blood meal, and this heat sensitivity leads them to the warm surfaces of the fly traps. In effect, the greenheads mistake the dark boxes for humans.

What Uhrich is unable to explain is just why the insects would want to climb *inside* the traps. He guesses that a greenhouse effect on the interior works to excite their heat sensors, but other researchers have shown that, because of the open screen on top, the temperature is no higher inside than out. Some have suggested that the flies are attracted inside by other flies, but that doesn't explain how the first flies got there. In any case, once inside the dark box the greenheads climb, as do all insects, toward the light at the top, through the narrow slit, and are caught.

The fly counts inside the traps have diminished every year since 1970 and were down last year to five thousand per week per trap. Superintendent Spencer, among many others, takes this to indicate a decline in the total greenhead population. Spencer feels that before long, greenheads will be a thing of the past.

Uhrich, however, wonders if the traps are cutting into the greenhead population at all. He fears that the drop in the traps' annual yield indicates a decline in the traps' effectiveness. In his Darwinist view, the greenheads are developing what he calls "genetic, behavioral avoidance" of the traps. Simply put, every year some insects choose not to go for the traps. Consequently they survive to bequeath that trap-avoiding instinct (whatever it may be) to their offspring. As the trap-seeking greenheads die off, the trap-avoiding greenheads replace them. Result? A decreasing yield in the traps, but a steady population of greenheads in the marsh.

As for the widespread impression that there are fewer greenheads around than in 1968 and 1969, Uhrich admits that there has been some decline in the nuisance level, but attributes it largely to a downswing in the greenheads' natural population cycle. Also, he says, people feel better about the bugs now that they think that something is being done about them—the placebo effect. Even when the traps have been broken into by kingfishers, so that the greenheads that fly in can fly right out, people insist that the traps not be taken away. Says Uhrich: "They tell me it's doing one heck of a job. But if they think they're getting the effects, what the heck."

Uhrich figures that he can reverse the decline in the traps' effectiveness by varying them slightly. Laboratory tests have shown that greenheads that won't go for a trap that is two by two on a side will go for one that's one by four. But he has discarded the idea that the traps can ever do away with the greenheads: greenheads are not lured by the traps until after they've laid their first eggs. The females apparently don't need a blood meal for that first batch, only for subsequent ones (they lay as many as four), so it isn't until after that first batch that they go on the prowl for blood and end up in the traps.

Strange as it sounds, even if Uhrich could eliminate the greenheads, he wouldn't want to. For Uhrich has found other insects lurking in the marsh that are currently being held in check by the greenheads. Say good-bye to the greenheads and you'll be saying hello to something even worse—deerflies. The greenheads at least confine their biting, for the most part, to people's ankles. Deerflies go for the head. Uhrich has evidence that the deerfly population has risen since he put out the greenhead traps.

The most we can hope for, then, is that Uhrich can manage to put limits on the greenhead population by trapping flies as they leave the marsh. If he cuts back on the number of greenheads too severely, we'll only have worse problems. So everyone should be grateful: the North Shore greenhead, one of the world's most vicious biters, is here to stay. □