A Canopy Trap For Horse Fly Control

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Deer flies are already out in large numbers in some parts of the state and it won't be long before horse flies add to the summertime mayhem throughout much of North Carolina. These biting flies (collectively called tabanids) routinely ambush people and livestock, inflicting painful bites and otherwise harassing their victims. Tabanids have also been shown to transmit infectious equine anemia and hog cholera. Anyone who's had much experience with these pests knows that repellents and insecticides are not overly effective. What's left is avoidance (stay indoors) and trapping. Truth be known, avoidance is the most effective method of tabanid control, but who wants to stay in all summer. Traps provide an inexpensive alternative that can at least satisfy our need for revenge against these biting pests. Some types of trap catch tabanids by the thousands, but there's no firm evidence they can markedly reduce tabanid populations in a given area. That's not to say they won't. There just hasn't been a lot of research on the approach. Since horse flies will be the dominant tabanid from June to first frost in many parts of the state, I thought it might be useful to offer plans for the construction of a rigid canopy (Manitoba or pyramid) trap that has been shown to trap a number of horse fly species in large numbers. The trap (Figure 1) also catches a variety of deer fly species. It may be worth the effort to construct some of these traps and place them around the perimeter of yards or pastures. When properly placed (more about that later in the article) the traps will catch horse flies all day long, week after week, month after month. Once placed, all that's needed is to remove dead flies from the collection jar every few days. Successful trapping of large numbers of horse flies ***may*** gradually reduce the overall pressure in a localized area during the course of the summer.

Figure 1: Manitoba or pyramid trap.

The trap design is a slightly modified version of one described in an article published by R. C. Axtell, T. D. Edwards and J. C. Dukes in the *Journal of The Georgia Entomological Society* (Vol. 10, no. 1) in 1975. The trap can be modified somewhat depending on the type of materials available and the ingenuity of the builder so long as the dimensions and contrasting surfaces remain approximately the same. I had suggested a similar but smaller design to horse owners last summer.

The trap frame (Figure 2) consists of four uprights (legs) made from wood (2 x 2 x 84 inches) or 1 ½ inch diameter schedule 40 PVC pipe (84 inches long) and four 57-inch long braces made from 1 x 2-inch wood or 3/4 inch PVC pipe. Cut one end of each of the four legs at a 45° angle. Each end of the braces should be cut at a 45° angle if wood, or notched to fit if PVC pipe. Four 2 x 2 x 2 x 3/8-inch brackets cut at a 45° angle from aluminum channel is recommended for wood construction. The brackets should be attached to the legs 31 inches from the top, and serve as attachment points for the four braces.

A top platform (Figure 3) is constructed from two 9-inch square pieces of ½ inch plywood. A circular hole is cut in each square so that when sandwiched together, the lower square forms a ledge where the collection device (a canning jar with a lid) rests. My preference is for a single 9-inch square of 3/4 inch plywood with a hole diameter slightly smaller than the jar lid so that the jar lid will fit snugly. The simplest collection device consists of a canning jar and a plastic funnel sized so that its narrow end extends into the jar when held in place by the threaded ring of the jar's canning lid. Find the largest canning jar you can lay your hands on to reduce the frequency with which they must be emptied of dead horse flies. Modify the funnel by cutting off a portion of its narrow end. The opening should be large enough to allow horse flies to enter the jar, but not easily escape. More elaborate collection devices are possible, but the jar seems to work reasonably well. Nail or screw four metal brackets (135° angle) at the corners on the bottom side of the top platform. The angle will allow the brackets to extend down and out from the top platform for attachment to the outer side of each leg. Assemble the frame by first attaching the braces to the leg brackets. Then, attach the angled end of each leg to its respective bracket on the bottom of the top platform.

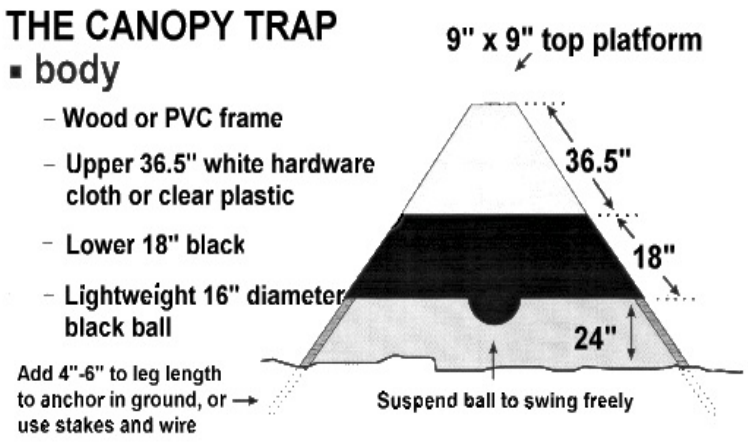

Figure 2: Canopy trap bottom assembly.

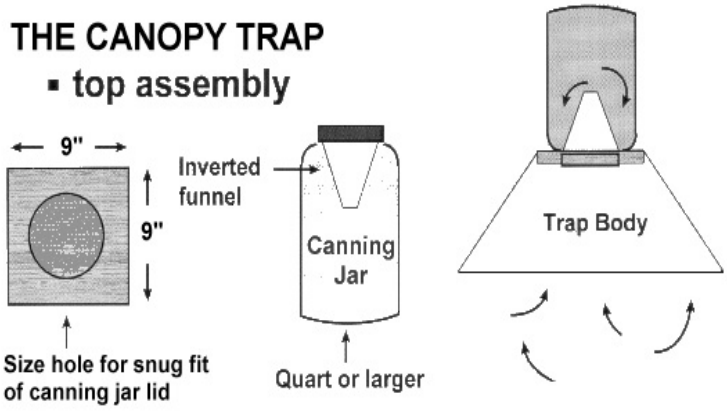

Figure 3: Canopy trap top assembly.

The sides of the canopy trap are attached once the frame is assembled. Each side consists of a trapezoidal piece of light colored (white is preferable) hardware cloth (screen) or clear plastic. The dimensions of each trapezoid will be 9 x 54.5 x 62 inches (top x side x bottom). A single piece measuring 36 x 54.5 x 248 inches may also be cut by my calculations, unless there is some secret tailor's measurement I don't know about. The latter approach will limit the amount of stapling, tying or gluing needed to attach the cloth, but may make it more difficult to align. Once the cloth is attached, the bottom of the canopy will be about 5 feet square and about 2 feet above the ground. Each of the legs may be attached to stakes driven into the ground for greater stability. Alternatively, the legs may be cut 4-6 inches longer and buried to that depth when the trap is placed.

The last two assembly steps are important. First, paint a wide band onto the bottom 18 inches of the canopy sides. A black, high gloss exterior enamel is recommended. Black plastic may also be used. The high contrast created by painting the bottom of the trap black is a key part of its attractiveness

to horse flies. Movement is also important in attracting the horse fly's attention, and may be added to the trap by using nylon twine to suspend a black-painted ball from the top platform of the trap. The twine should be only long enough to allow the ball to extend below the bottom of the canopy by ½ to 2/3 of its diameter. A 16-inch diameter beach ball works well for this. I have also seen black-painted, gallon milk jugs (use two) work well. The suspended device must be light enough to be kept in motion by a light breeze. This last addition is not absolutely necessary, but will increase the effectiveness of the trap.

A few words about placing the traps are needed. Tabanids typically rest and hide on low hanging vegetation such as brushy shrubs and tree limbs. Once a host is within a 10 or so feet of their hiding place, the hungry female tabanids use visual cues. They launch themselves toward high contrast targets (cattle, horses and people) moving through open areas (pastures or trails). This is what the canopy trap is designed to mimic. It is helpful to walk or ride 10 to 20 feet inside the perimeter of a yard or pasture and note where horse fly activity seems to be most severe. These areas may indicate fly ways or concentrations of resting horse flies. Place traps at these locations. Small areas may need only one or two traps. Large pastures may require more. Watch the traps closely after they have been placed. If the catch doesn't seem very large (25 or fewer horse flies a week), try moving the trap to a new location. It may take several moves to find the best location(s). Of course, another possibility for poor performance may simply be that the species of horse flies in your area are not strongly attracted to this type of trap. Different species of horse fly are active at different times of the summer as well. By way of comparison, this trap collected an average of 189 lined horse flies (widespread in North Carolina) and 143 black striped horse flies over a twenty-four-week period. Other species were trapped in greater or lesser numbers. The black horse fly, for example, was trapped in very low numbers (an average of 8) at the salt marsh locations used in the study. The champ, a salt marsh tabanid called *Tabanus nigrovittatus*, came in at 1308. It should be pointed out that the trap didn't catch only one species at a time. One trap placed where lined, black striped and salt marsh horse flies were active caught 2261 of these flies. This amounts to about 95 horse flies per week.

One final note. There are at least two commercially available traps available. One, the Horse Pal, is a small canopy trap design that's available from: Newman Enterprises, 4552 Poygan Avenue, Omro, WI 54963-9619. This trap is considerably smaller than the one described above, but is just as effective. It's diminutive size also suggests that the above trap can be downsized and still be an effective horsefly trap. That's something to think about if you intend to build your own.

The second commercially available trap is a much different design. Called the Epp's trap and is available from Farnam (P.O. Box 34820, Phoenix, AZ 85067-4820).