

Breakfast at Jane's

Dave Leatherman

Audrey Hepburn was a wonderful actress who considered her role in the 1961 Academy Award-winning movie “Breakfast at Tiffany’s” as among her most difficult. In the film this self-described introvert was asked to play an extrovert, Holly Golightly. I think Jane Stulp would say the same about the contrast between her own quiet personality and her recent role as host to hungry birds and bird-hungry birders. During the 2016 Colorado Field Ornithologists Convention, 4–9 May in Lamar, birders paid over 400 visits to her yard!

Generally, those pilgrims were motivated by the hope of seeing eastern migrants and specifically, as luck would have it this year, a gorgeous, singing male Golden-winged Warbler. This taxon by most accounts has a troubled future due to habitat loss and genetic dominance by a relative, the Blue-winged Warbler. Considering both our prospects, each Golden-winged Warbler my aging eyes see takes on increasing significance.

This essay is about a minute creature that sustained the Golden-winged Warbler during its multi-day “Breakfast at Jane’s,” other birds targeting the same food item this spring, and details of how the prey was obtained. The insect, European elm flea weevil (*Orchestes alni*), was this column’s subject in the July 2012 (vol. 46 no. 3) issue of “Colorado Birds.” Like all good food, it is worth revisiting.

By way of review, the overwhelming majority of elms in Colorado are of two types: large-leafed American elm (*Ulmus americana*) and the smaller-leafed Siberian elm (*U. pumila*). Both trees are introduced in Colorado, the American from eastern North America, the Siberian from Asia.

American elm suffered major losses throughout most of its North American range to Dutch Elm Disease (DED), caused by a wilt fungus vectored by various bark beetles. However, due to an aggressive control program here and with the aid of an arid climate not all that conducive to fungal growth, many large-leafed elms survive in this state.

Following the droughts of the Dust Bowl in the 1930s and the Texas drought in the 1950s, Siberian elm was massively planted in Colorado, both east and west of the Continental Divide. This was mostly because they were one of the few trees capable of surviving our tough growing conditions. While not generally considered particularly beautiful or special by standard human value systems, Siberian elm persists in adversity and is the common tree in many parts

of rural Colorado. Somewhat of a “weed,” yes, but what would the streetscapes and farmyards of low-elevation Colorado look like without Siberian elm? And there is no denying their benefit to birds as nesting sites and hosts to edible arthropods.

Three insects commonly defoliate elms in Colorado: the elm leaf beetle (*Xanthogaleruca luteola*), the elm leafminer (*Profenusa ulmi*) and the European elm flea weevil. All are important diet items of Colorado birds in one or more of their life stages.

The elm leaf beetle (ELB) was introduced from Europe multiple times to North America in the 1800s. It was first reported as a pest in Baltimore, Maryland, over a century ago (Drooz 1985). It had spread to Colorado by the early 1900s and in the early years of my career as a tree entomologist beginning in 1974, it was the #1 “phone call insect.” The adult beetles chew round holes in leaves. The larvae skeletonize leaves by chewing the green surface material (chlorophyll) between veins. The dingy yellow-green adults cause an additional problem by coming inside homes to overwinter. For many decades ELB dominated the leaf surfaces of Colorado elms and essentially had that niche to themselves. Likewise, birds learned to utilize ELB larvae and adults in their diets. The elm grove north of the main picnic shelter at Crow Valley Campground near Briggsdale in Weld County has traditionally been full of ELB and many good autumn migrant songbirds have been discovered by birders because of them.



Fig. 1. Elm leafminer larval mines in American elm in mid-summer at Grandview Cemetery, Fort Collins. Photo by Dave Leatherman

Elm leafminer is another species introduced from Europe with an interesting history in Colorado. My early personal experience with it accrued almost entirely as a defoliator of American elm. Of late, it has expanded its activities to include Siberian elm. This species is in the group of stingless wasps that go by the common name of “sawflies.” Sawflies are flylike and get their name from the serrated egg laying organ of females. The blackish purple female elm leafminer lays her eggs in late spring along the central vein of an elm leaf. The resultant larvae make individual mines that radiate out from the main vein at roughly 45-degree angles, each mine bounded by major secondary veins. The resultant pattern looks like rather straight, wide, brown fingers coming off both sides of the main vein (Fig. 1). In my experience, few primetime migrants on the move extract the larvae from these mines because these birds are

mostly gone by the time the mines become conspicuous. Our nesting birds DO get them in late spring/early summer when the larvae drop out of the mines to the ground to pupate and transform into adults. I have seen species like robins and grackles readily chicken-picking larvae from sidewalks and other bare surfaces that make the fallen larvae findable.

But what about “Breakfast at Jane’s”? European elm flea weevil (EEFW) is an Old World insect first reported in the Northeast of America in 1982 (Cranshaw 2006). It rather quickly spread to the Midwest, but its westward spread seemed to stall for decades (Drooz 1985). For unknown reasons, its march resumed and it was first reported from Colorado in my Fort Collins yard on 4 July 2006. Upon arriving here rather unexpectedly, quietly, and in huge numbers, it displaced ELB. What!?! That is like a baseball team other than the New York Yankees dominating the American League. But dominate they did. No doubt the chant “Flea Weevils Rule!!!” could be heard throughout the crowns of Siberian Elms if you had freakish hearing like Mark Peterson, Duane Nelson, and Ted Floyd.

In another twist of the soap opera that is our natural world these days, EEFW suddenly disappeared and we began to see a resurgence of ELB. This is perhaps the result of the lowlands finally getting much-needed rain the past two summers, but the mechanism for how these species shifts occurs remains a mystery. In yet another reversal of prominence, now in 2016 EEFW is “back.” As we all know, every year in Colorado is different and the word “typical” usually does not apply to anything involving the weather or natural organisms.

The EEFW winters as a tiny weevil in the soil and leaf litter under elms (see photos at various online sites). These weevils hop when disturbed, thus the descriptor “flea” in their common name. Shortly after the leaves come out in spring, the weevils fly up and lay eggs along the leaf margin, just a few per leaf. The eggs hatch and the larvae make meandering, ever-widening mines that usually terminate in a blotch near the leaf tip. A complete mine is a brown, somewhat oval area near the edge of the blade that on close examination shows a narrow meander where the freshly hatched larva began its feeding track (Fig. 2). Most of the feeding activity of the larval weevils within the mine takes place in late April and May. Pupation is within mines, with adults emerging in early summer. Adult weevils feed on leaves all summer, riddling them with nearly round holes. The jumpy adults are sought at this time by early fall migrant birds including Chipping Sparrows and Townsend’s Warblers. In late summer and autumn the weevils go to the soil for overwintering.

Many spring migrant birds have figured out elms are worth checking. One of the three defoliators mentioned above is usually present. In the case of EEFW, by keying in on the brown “defect” of mined leaves, a tiny morsel is usually available at the time of spring migration. Heavily infested trees can have weevil larvae in nearly every leaf (Fig. 2A). Despite their tiny size, apparently the effort to get them out of their hiding places within mines is worth the effort.

I watched the Golden-winged Warbler for a couple of hours on 5 May 2016



Fig. 2. Individual Siberian elm leaf showing mine with European elm flea weevil larva within (dark object in center). Photo by Dave Leatherman



Fig. 2A. A Siberian elm heavily infested by European elm flea weevil showing multiple dark leaf mines. Lamar Community College Woods. May 2016. Photo by Dave Leatherman



Fig. 3. European elm flea weevil larvae and one pupa (upper left, developing wing pads evident). Extraction by the author of these larvae with an insect pin took about two hours. Photo by Dave Leatherman

and, as usual with studying food acquisition by birds, was impressed with the ingenuity and skill directed at this particularly difficult task. While certainly not a precise estimate, my guess would be larvae were being pulled from leaf mines at

the rate of 5–10 per minute. To see just what the larvae looked like and to get an appreciation for what was involved in getting at them, I took a branch of infested leaves home to Janeal Thompson's kitchen (don't tell her). There, with good lighting, no wind, an insect pin dissection tool, and a glass of iced tea, I was a Golden-winged Warbler wannabe. I am humbled to say that what took me two hours to obtain (Fig. 3) took the little bird less than two minutes! But I learned something that enabled interpretation of recent field observations and photographs. The easiest way to get the larva out from each mine was to slice the surface of each mine along one edge with the tip of the pin. Then, one surface of the mine could be peeled back and the larva within easily seen and pulled out. What I kept seeing clearly in the field and photos was use of a foot by the

warbler while it fed. Once a mine with a telltale dark blob in the middle of a pale brown mine was in its sights ("locked on," if you will), the bird held its position on a small branch with one foot and raised up the other foot to the mine. I do not have a viral video to prove it, but I strongly believe the slitting of the mine was carefully executed by a claw, and then the very sharp bill peeled it open and

nipped the larva, all in one deft motion (Figs. 4 and 4A). Being blown away by this probably qualifies me for ridicule (at best) on Main Street in Lamar as “easily amused,” but too bad, boys.

Further observation this spring has led me to believe that not all warblers are attracted to EEFW-infested elms, or at least have not mastered the techniques necessary to make the effort to obtain them worth it compared to the things they historically/instinctively know how to find. Yellow-rumped Warblers, for example, only rarely seemed interested in elm leaves this spring. Ditto for Orange-crowned Warblers. Other warblers that did seem interested were a Blue-winged at Tempel Grove, Northern Parulas, and Yellows. Had our experiment included all 50 or so North American warblers, my prediction would be interest in EEFW would have fallen out along generic lines.

Additional species that were clearly feasting on EEFW this spring in southeastern Colorado were Lazuli Buntings, Indigo Buntings, Rose-breasted Grosbeaks, Black-headed Grosbeaks, Pine Siskins, American Goldfinches, House Finches, and House Sparrows. Interestingly, the finches, unlike the methodology of the warblers, tended to just bite into the entire mined area and pull out a bit of “salad.” Sort of like the seafood Caesar salad I like down at the bistro, within the greens were bits of protein. In the case of the birds and elm leaves, the protein was in the form of weevil larvae and pupae. After obtaining some practice at checking infested leaves, those fed upon by finches tended to have a big bill-shaped “V” chomped out of the tip and very little to no brown mined areas showing (Fig. 5).

This story is one that will surely continue to change and evolve. It involves a mix of native and introduced birds, introduced trees, and introduced insects. Clearly birds are opportunists capable of figuring out most of the hands we and Mother Nature deal. Native plants and native insects normally work best for native birds, but a world featuring a predominance of such interactions seems increasingly elusive. In the interim, as birders it behooves us to simply try and figure out the real world, as messed up as it is. By so doing, maybe we can slowly skew things back in the right direction with more intelligence than we would if simply not paying attention to anything more than checklists.

Meanwhile back at Stulp Farms, I am sure the lucky kids of Jane and John Stulp found breakfast inside their home to be a nurturing experience. Outside in the yard, the birds seemed to agree.

LITERATURE CITED

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Fig. 4. Golden-winged Warbler using foot to assist removal of a European elm flea weevil larva from elm leaf at the Stulp Farms yard on 5 May 2016. Photo by Janeal Thompson



Fig. 4A. Golden-winged Warbler at the moment of European elm flea weevil larva removal from an elm leaf at the Stulp Farms yard on 5 May 2016. Photo by Janeal Thompson

Fig. 5. Leaf infested by European elm flea weevil showing V-shaped notch at leaf tip where an unknown bird, probably a House Finch, removed in one bite most of the mine and the larva within. 5 July 2008, Fort Collins. Photo by Dave Leatherman

