

Fourth, the tail of *harlani* is decidedly different from that of *calurus*. The latter in its tail always shows its relationship with the Western Redtail, by the larger amount of reddish brown on this member. The tail of Harlan's Hawk shows next to no brown, but only slight traces of it and gray marks *longitudinally* arranged. The tail is also more square than in *calurus*. A peculiar condition was brought out by Swarth and Brooks' investigations, inasmuch as they found one of their specimens, undoubtedly *harlani*, to have only three notched primaries instead of four. Therefore, the conclusion seems to me to be warranted that *Buteo borealis harlani* is entitled to subspecific, if not to specific, rank.

RIVER FOREST, ILL.

TRAILL'S FLYCATCHER IN SOUTHERN MICHIGAN

BY WM. G. FARGO

Until 1927 I had not discovered Traill's Flycatcher (*Empidonax trailli trailli**) breeding in Jackson County, Michigan, which is in the latitude of Detroit. For the past five years I have searched the woods and marshes of this county for nests in general and have always found fairly common: *E. virescens*, *E. minimus*, *Myiochanes virens*, and *Sayornis phoebe* as breeding birds, but until 1927 never *E. t. trailli*.

On June 1, 1927, along a sluggish spring brook, bordered with willow brush, *Cornus*, etc., winding through marshes in the northwest part of this county I saw two *Empidonaces* a quarter of a mile apart that appeared to be *E. t. trailli*. On June 6 I saw one pair of these birds beginning a nest at the same place where one was first seen. This nest was about six feet up in an upright crotch of willow bushes on the creek bank. Going a quarter of a mile down stream I collected a male *Empidonax* that subsequently was identified by Dr. H. C. Oberholser as *Empidonax trailli trailli*.

On June 27, going to the above locality, I found that the nest I saw being started was not completed, but further down the creek I found a nest of *E. t. trailli*, with one of the adults hovering about. The nest was three feet, ten inches above the ground in an upright, multiple crotch of a one-inch elm sprout, and contained three young birds about two days old and two creamy white eggs with cinnamon brown spots in

*In the Ohio Journal of Science, Vol. XVIII, No. 3 (Jan., 1918), p. 85 and following, Dr. H. C. Oberholser points out that the type locality of *Empidonax trailli trailli* (Audubon) was within the range of the eastern form, hence *E. t. alnorum* (Brewster) becomes a synonym. The western form Dr. Oberholser proposes to call *E. t. brewsteri*. In the present paper the change of name thus proposed is used.—W. G. F.

a wreath about the large end, also a few spots elsewhere. One egg measured .49x.72 inches.

This nest, shown in photograph No. 1, appears to be a typical nest of the species for this locality. It was composed of dry grass stems with some cottony material around the top and a bit of fur and feather-down at the top of rim. It was lined with dry grasses and measured $3\frac{1}{4} \times 3\frac{1}{4} \times 3\frac{1}{4}$ inches outside and $2\frac{1}{4} \times 2$ inches inside, hori-

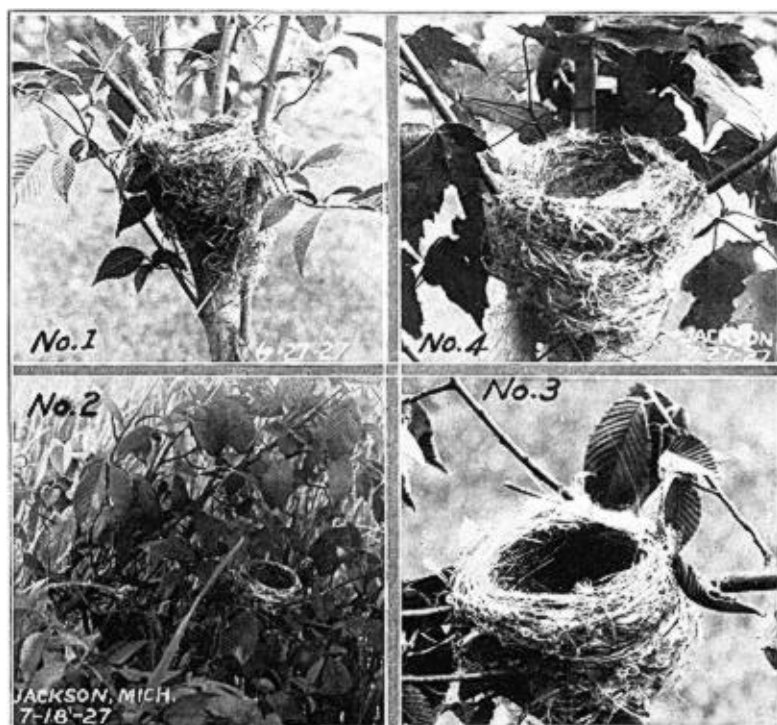


FIGURE 3. Nests of the Trail's Flycatcher, referred to in the text.

zontally. It was well hidden by the foliage of the elm and the five-foot high "blue-joint" grass in which it stood.

In the south part of the city of Jackson is located Ella W. Sharp Park containing 530 acres, where on June 30, near a ditch leading from a cat-tail marsh I found my second nest of Trail's Flycatcher. This nest was $3\frac{1}{2}$ feet above ground in cornus bushes (*C. paniculata*). These bushes make a dense group in the interior of which the nest was hidden. It was on top of a nearly horizontal ascending branch about three-eighth inch in diameter and contained four typical eggs.

I was attracted to the locality by an adult *Empidonax* feeding in the vicinity. This nest was quite similar in appearance and materials to those of the Yellow Warbler and Goldfinch, but as stated it was on a nearly horizontal branch cradled by rising twigs. No grasses were visible, it being made of gray plant fibres.

The third nest I found on July 10, 1927, in a small scrubby elm on the banks of a sluggish grass-filled creek, twenty feet wide, some two miles southwest of the nest in the Park. The elm scrub was immediately on the creek bank and the nest in plain sight on a half inch descending limb three feet out over the water and less than two feet above the water surface. It contained one egg similar to the others described. One adult was hovering along the opposite bank of the creek.

Visiting this nest again eight days later I found a young bird that must have left the egg a week before, and as before one parent was hovering about. This nest is shown in photographs Nos. 2 and 3.

On July 22, 1927, three miles east of the Park along a bush bordered stream in a broad open marsh I found an *Empidonax* having the brownish back of *E. t. trailli* hanging about a certain spot and soon located an empty nest eight feet up in a bushy red maple some thirty feet from the creek bank. This nest in an upright crotch, was of the size and form of the nest first described, but contained less grass and more plant fibres. This nest was visited again on July 27 and the bird was in the immediate vicinity as before, but the nest was empty and seemed too fresh and clean to have raised a brood. It was too large for the nests of either Goldfinch or Yellow Warbler, neither of which nor other birds likely to have built the nest were seen here. This nest is shown in photograph No. 4.

During June and July, 1927, I found *Empidonaces*, usually in pairs located in definite "territories" in a total of seven different localities in Jackson County. Two specimens submitted to Dr. Oberholser were identified as *E. t. trailli*. In nearly every instance it was possible to observe the birds in such light and close distance as to be reasonably certain that the color of the back was not the *greenish* brown of *E. virescens*.

In this region the habitat of *E. virescens* is quite different from that described above for *E. t. trailli*, the former nesting in the forest and invariably building a thin-walled basket-like *pensile* nest. It is true that *virescens* sometimes builds near a stream bank but those nests I have found were never out in open marshes but on the contrary on higher ground whether near a stream or not.

It is well known that *E. t. trailli* breeds abundantly in Ohio and there are several old records of its breeding in Michigan, particularly in the southeast corner of the state and in the southern two tiers of counties. (See Barrows' "Michigan Bird Life," page 404).

After the young left the nests it was noted that but one adult was seen about the nest area in any of the Jackson County localities. Two Traill's Flycatchers thus collected proved to be adult males. This would point to the fact that the female and young leave the nest locality as soon as the latter are able to travel, while the male parent lives in his "territory" until the end of July or later, and he is almost certain to be found in a rather restricted area, say of two hundred feet along a stream.

JACKSON, MICHIGAN.

A THEORY OF HOW THE TURKEY VULTURE FINDS ITS FOOD

BY WILLIAM BREWSTER TABER, JR.

Having read Mr. Lewis' "How Does the Turkey Vulture Find Its Food" in the WILSON BULLETIN (Sept., 1928, also published in the Oct. 1928, *Auk* under the title "Sight and Scent in the Turkey Vulture"), and Mr. Leighton's article on the same subject in the *Auk* (July, 1928), it seems pertinent to contribute the results of an experiment which I made to test the food finding faculties of Turkey Vultures, and to advance what I believe is a new theory of just why it is easier for a Turkey Vulture to find its food by *sight* when the food is rotten and of a particular offensive and foul odor than when it is fresh.

First, let me describe an experiment which convinced me that vultures do not find their food by scent and that sight is their only means of discovery, and then I shall give some observations which led to the before mentioned theory.

In the late winter of 1926, while trapping Crows, I caught a Turkey Vulture. Thinking that it would serve as a call bird for Crows, I kept it for several weeks and during that time repeated Darwin's experiment with Condors (Voyage of the Beagle), which led him to believe that vultures find their food by sight alone. During this period the vulture was kept at night, and likewise during the days when I did not use it as a call bird, in an old empty chicken house. It inhabited these quarters for more than two weeks before the experiment was made, and had been fed there many times, so that the effect of these artificial conditions was reduced to a minimum. The first procedure was to whet the bird's appetite. This was done by supplying it with no other food than water for a period of sixty hours. It showed no signs