

Wood Pewee builds with green leaves.—In May, 1951, at Nashville, Tennessee, I observed a Wood Pewee (*Contopus virens*) building a nest on a horizontal fork of a hackberry tree at a point about 25 feet from the ground and 12 feet from the trunk. The nest was level with, and about 15 feet away from, a second story window of a house so that details could easily be observed through binoculars.

At 4:30 a.m., May 19, 1951, I began careful observation. The builder, presumably the female since the mate sang at intervals nearby, brought materials at the rate of three or four trips a quarter-hour. She worked from a sitting position inside the partially constructed nest for one-half to one minute at a time. Soon she made a short flight to an elm, returned immediately and deposited a *green* leaf on the outside top rim of the nest. The leaf adhered fairly securely and during subsequent visits to the nest the bird worked her bill and chin over the leaf, shaping it to the contour of the nest. The green color of the fresh leaf was distinct against the gray of the nest. The bird continued to build but did not bring more green leaves. During the latter part of the observation period she shaped fine, branched straws into the inside of the shallow, cup-like structure.

At 6:50 a.m., a Blue Jay (*Cyanocitta cristata*) appeared at the nest, looked it over inside and out, then began to peck and pull the nest apart. The material held together as if caught in an elastic matrix, but the jay pulled until the nest was dislodged from its foundation. The adherent materials, attached at only one point to the limb, hung from it like a bedraggled streamer.

By late afternoon the nest had fallen to the ground. I was surprised to find a chief portion of the body of the nest composed of *green* leaves. All the materials clung together shapelessly but general relationships were recognizable. The lining was incomplete; the outside covering appeared to be started only at the base; the central lamination or body of the nest seemed to be essentially complete. Upon separation six types of materials appeared: (1) fine branched seed plumes of grass; (2) coarser weed straws; (3) small strips of shredded bark and one or two small pieces of hard bark; (4) bits of lichen; (5) green leaves; and (6) web silk. The straws, bark, and lichen could be separated from the web but the green leaves and the silk were inseparable and established a felt-like consistency within the wall of the nest. The seed plumes were probably all from blue grass. They formed the incomplete lining. The few coarser stems outlined the foundation. The lichen was fixed on the outside, largely at the base where the nest was attached to the limb. Most of the green leaves were those of elm. Other green material included two complete leaves of white clover, two grass blades, a grass stem, and one or two leaves—probably hackberry. Green leaves comprised about a third of the material of the uncompleted nest. The fine downy-pubescent of the elm leaves seemed to afford a particularly good surface for the adherence of the spider web.

The only other observation I have made on the inclusion of green leaves in nest material by a Wood Pewee was exactly a year earlier. I saw a pewee carry a green leaf to a 1950 nest located about 20 feet from the 1951 nest. Only one deposition of a green leaf was observed, but detailed observations were not made. The green faded and was covered over as building continued.

Bent (1942. *U. S. Natl. Mus. Bull.*, 179:269) quotes Bendire's description of "a single well-preserved apple leaf" lying "perfectly flat and exactly in the center and bottom" of a well preserved Wood Pewee's nest. No mention of green leaves or other dried leaves is made. Of other flycatchers, Bent (*op. cit.*: 72, 138, 255-256, 262, 305) cites five which use dried leaves as building material.

Among species which commonly use green leaves in their nests are the Mississippi Kite (*Ictinia mississippiensis*), Red-tailed (*Buteo jamaicensis*), Red-shouldered (*Buteo*

lineatus), Swainson's (*Buteo swainsoni*), and Broad-winged (*Buteo platypterus*) hawks, the Purple Martin (*Progne subis*), and the Starling (*Sturnus vulgaris*). The hawks (Bent, 1937. *U. S. Natl. Mus. Bull.*, 167:65, 151, 185-186, 223, 240) variously use green leaves as lining material, around the rim, or in the nest with the young. Purple Martins (Allen and Nice, 1952. *Amer. Midl. Nat.*, 47:622) often line a nest with green leaves and may continue depositing green leaves during egg-laying and incubation. Starlings (Kalmbach and Gabrielson, 1921. *U. S. Dept. Agri. Bull.*, 868:10; Laskey, personal communication) may use green leaves dispersed throughout the nest or as lining, or they may deposit them in a nest cavity before the nest is begun.—KATHERINE A. GOODPASTURE, 408 Fairfax Avenue, Nashville, Tennessee, January 13, 1952.

Notes on some songs of a Pine-woods Sparrow.—In April, 1950, in southwestern Georgia, we recorded on magnetic sound tape the recital of a Pine-woods Sparrow (*Aimophila aestivalis*) who displayed considerable variety in his songs. The bird occupied a portion of a three-acre tung grove which was surrounded mainly by pine forest. He appeared to have several singing stations; one was in a tung tree near the edge of the grove, and there we placed our microphone while we sat by the recorder, some 300 feet away. The bird's activities were as variable as his songs; he did not consistently use the same twig in our tree as a song-perch. Sometimes he sang only three or four times before flitting away; sometimes he sang a dozen or more times. Each song lasted about 2½ seconds, with about 12 seconds' pause between songs. We recorded on several successive mornings, between 6:30 and 8 a.m. for a total of about 15 minutes' singing time, although much of the recording was marred in various ways.

In general structure, the songs usually consisted of a single long note, followed by five to nine notes uttered rapidly—almost a trill, the two parts of the songs being about equal in length. Rarely, the long opening note was omitted entirely. Our bird displayed surprising ability to produce different "song types" or "song patterns" each of which, however, maintained the major characteristics of the "family theme"; that is, every song could be recognized easily as belonging to a Pine-woods Sparrow. Although variations in the structure of the song were noted, his principal changes in the species song pattern were in the pitch of the two parts of the songs. The opening note sometimes was higher in pitch, occasionally of the same pitch, and sometimes of lower pitch than the second part. Sometimes the pitch of one portion of the song would differ but slightly from the pitch of the same portion of a preceding song. Usually the pitch of the opening note remained uniform; more rarely, the pitch of the opening note would change slightly; occasionally, this type of pitch change was displayed also in the second part of the song. The major changes in the structure of the songs usually occurred in the second part of the song, these including variations in the number of notes and their tempo; there was occasionally an apparent slurring or gliding in pitch, giving the impression of double notes.

In the great majority of our recordings, this bird repeated each song pattern twice before changing to another pattern. Occasionally he gave a song pattern only once, then changed to another pattern; more rarely, he gave a song pattern three times before changing to another pattern.

In clarity and sweetness, the recital was similar to that of the Field Sparrow (*Spizella pusilla*); however, the individual Field Sparrow usually confines himself to just one particular variation of his family "song pattern," whereas this Pine-woods Sparrow, in comparison, seemed capable of producing an almost endless variety of patterns.—JERRY AND NORMA STILLWELL, R.F.D. 2, Fayetteville, Arkansas, August 2, 1952.