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THE VERNAL MIGRATION OF WARBLERS ON WOLF RIVER, ONTAGAMIC COUNTY, WISCONSIN.

BY F. L. GRUNDTVIG.

Near the village of Shiocton, the Shioc River joins the Wolf, after running parallel with it for about a mile. Between, and immediately bordering these streams, is a tract of lowland, the most of which is annually overflowed during the spring freshets, the water at times rising to a height of over nine feet above the ordinary level. This lowland appears like an oasis in a desert, covered, as it is, with a rich, vigorous growth of hardwood timber, and bordered on both sides by waste swamps extending in each direction for many miles. The timber covering this tract consists principally of soft maple intermingled with many ash, elm, oak and willow trees.

The Warblers, upon their first arrival, preferred the willows and smaller trees to the higher ones; but upon the leafing out of the maples and until the close of the season, the entire strip of hardwood timber lying between the two streams afforded them a congenial resort. After first resting in a row of old willows, the vast throngs of these birds would enter this piece of timber, at the junction of these streams, working leisurely northward until thoroughly dispersed among the higher tree-tops. Only a few went east of the Shioc, whereas many crossed the Wolf, working westward through a low growth of shrubs and bushes

[April

growing along the banks of some ponds and old river courses. My morning and afternoon excursions commenced regularly May 3, and extended down the Shioc, up the Wolf and then westward, through the low shrubs and bushes, continually crossing and recrossing this inner strip of land. Between May 3 and 15 my observations were the most important and exact, for after that date many Warblers, concealed by the thick foliage, must have escaped my notice. Here stormy days frequently favored me, as the Warblers, during high winds, were generally noticed in low bushes, on "wind-falls," old logs, and on the ground. At such times they would often crowd together on banks, facing the wind, possibly anxious to cross, but hardly daring to attempt it. During the first part of May the water increased rapidly in height, until I could with ease row everywhere throughout the timber, and as my presence in a boat seldom alarmed them, I was enabled to follow closely the various flocks as they passed from one tree to another on their journey northward.

Previous to April 30 Dendræca coronata was the only Warbler I noticed. On the 30th, however, a single Helminthophila celata was taken, and the next day, when the wind, after having been northerly for a long while, shifted to the west, several specimens of Mniotilta varia and Dendræca palmarum arrived May 2 the wind changed to the south and a few Helminthophila celata and Mniotilta varia were found intermingled with some of the flocks of Dendræca coronata. May 3, at about sunrise, I took a single specimen of Dendræca pinus; possibly I overlooked it the day before. About this time a gentle rain commenced falling, which continued most of the day. Towards evening thousands of Warblers began to arrive, but owing to the rapidly increasing darkness I was only able to partially examine them. Among the new arrivals I found Parula americana, Dendræca pennsylvanica, blackburniæ, maculosa, æstiva, and Setophaga ruticilla. May 4 Helminthophila ruficapilla. Dendræca virens, and a single Protonotaria citrea were noticed.

On the 5th this migration seemed to be somewhat checked by a violent north wind, but by the 8th, after a whole night of rain, the wind quieted down, and the trees and bushes were once more literally alive with Warblers, so numerous, in fact, as to be apparently all united into one immense flock. Dendræca tigrina and cærulescens were the only new species observed. A cold.

northerly wind again rising, appeared to partially check this vast throng; but May 10, after another hard rain, I noticed them again moving slowly northward. The new species observed during this flight were Myiodioctes canadensis, Dendræca striata, and Geothlypis trichas. The wind once more shifted to the south, and on the 18th I noticed a few new flocks, among which were some Dendræca castanea. May 21 was the only day after the 15th when the number of flocks exceeded those previously observed. The night of the 20th was exceedingly cold, freezing hard in many places; in the morning, a very strong south wind was blowing, and Warblers in innumerable flocks began arriving. Helminthophila peregrina, previously seen but once (May 19), now arrived in large numbers. This immense flight soon ceased, and by May 26 only a few single Warblers were noticed.

The number of Warblers that migrated over this route was simply astounding. Some of the more uncommon eastern species appeared here in large numbers. I found at the least estimate several hundred of *Helminthophila celata*, and to say I observed several thousand of *Dendræca tigrina* would not be overstating it. This passage of the Warblers was really the most interesting of the kind I have ever witnessed. No bird migrations in Europe can be compared with it. The many pleasant hours spent in my boat, studying these graceful creatures, manifold both in species and beauty, will long be cherished among the many recollections of my sojourn in America.

The following is my annotated list of all the Warblers observed, omitting the genus Siurus, members of which were never noticed

in company with the other species.

Mniotilta varia (L.) V. May I two males were taken, not in flocks with other Warblers, but east of the Wolf River. Afterwards I found it usually associated with other Warblers, Kinglets or Titmice, but five were the most I ever counted in any one flock. A few remained to breed. The first female was taken May 10.

Parula americana (L.) Bp. May 3 two females were taken. The next morning a few others of both sexes appeared in the other flocks, no more than three being noticed together; but in the afternoon they were quite numerous. May 5 I noticed these Warblers in small flocks by themselves, but during the next few days they were rather scarce. Between the 12th and the

17th they were again quite numerous, but the very next day none could be found. After the 18th only a few were noticed. June 23 I found a nest of this species containing eggs.

Protonotaria citrea (*Gm*.) *Bd*. May 4th I found among a flock of Warblers that were flitting about in some low bushes, a handsome male of this species, now in the collection of S. W. Willard, West De Pere, Wisc. It arrived in company with *D. coronata* and *D. blackburniae*.

Helminthophila chrysoptera (L.) Bd. Two males of this species were taken May 15th and one on the 18th. The next two days it appeared singly in the different flocks, but the 21st both sexes arrived in quite large numbers, only exceeded by Dendræca striata, H. peregrina, and D. maculosa. It apparently nested in thickets in a low, wet place, but continued search failed to reveal its nest.

Helminthophila ruficapilla (Wils.) Bd. I first discovered this Warbler May 3, when five were noticed in some low shrubs. The 5th I found it intermingled with many of the other flocks, and the 6th it rather outnumbered its bush associates, but from the 6th to the 9th only a few were seen. The 10th it was quite numerous everywhere, and increased in number until the 12th, when it was only exceeded by Setophaga ruticilla. After this date it was rather scarce along the rivers, but still remained quite numerous in the swamps, where it apparently nested, although no traces of a nest could be discovered.

Helminthophila celata (Say) Bd. April 30 a female of this species was taken on a meadow east of Wolf River, in company with a single D. coronata. After May 1 I found both sexes quite common, still associating more or less with D. coronata. The last one was observed May 9th. Coues, in his "Key to North American Birds," describes this Warbler as "never ashy about the head," and also gives the size as being the same as that of H. ruficapilla. This, however, differs from my experience, as many of the specimens were very ashy about the head, while all of them were larger in all proportions than H. ruficapilla. From a large series of specimens of both species, I have carefully compiled the following measurements, giving both extremes in each case.

H. celata, Length. Extent. Wing. Tail.
$$H.$$
 celata, $5-4\frac{7}{8}$ $7\frac{3}{4}-7\frac{3}{8}$ $2\frac{1}{2}-2\frac{7}{16}$ $2-1\frac{7}{8}$ $H.$ ruficapilla, $4\frac{5}{8}-4\frac{5}{16}$ $7\frac{3}{8}-6\frac{15}{16}$ $2\frac{1}{9}-2\frac{3}{8}$ $1\frac{3}{4}-1\frac{5}{8}$

Helminthophila peregrina (Wils.) Cab. May 19 a single male was taken by S. W. Willard in a thicket east of Wolf River. The 21st both sexes were very numerous, ranking in numbers with D. striata. After this the number diminished somewhat, but the species was still quite common until the 27th, when it suddenly disappeared.

Dendræca æstiva (Gm.) Bd. A single male was taken May 3. The 4th it was noticed intermingled with many flocks, and on the 5th it outnumbered all its associates. May 14 they were everywhere unusually abundant, exceeded in numbers only by S. ruticilla and D. pennsylvanica. They breed here abundantly. The first egg was found June 2. May 12 I shot a male that had the crown curiously striped with several rich orangebrown marks.

Dendræca virens (Gm.) Bd. Several males were noticed May 4. After that date and until the 22nd it was occasionally seen in the other flocks, May 8 being the only day it was quite common. The 7th, 9th, and from the 13th to the 18th, none were noticed.

Dendrœca cærulescens (L.) Bd. May 8 a few males were seen; the numbers then gradually increased until the 11th, when the first females were noticed. May 12 none were observed, but after that date it was occasionally seen until the 23rd. May 31 a single male was noticed.

Dendræca coronata (L.) Gr. The first specimen was taken April 5; single ones were also taken the 10th, 12th, 14th and 18th. April 21 the first flock arrived. From this date the number increased rapidly. April 30 other Warblers were found intermingled throughout the flocks, and by May 8 the number was quite insignificant; from the 9th to the 20th only a few single ones were observed. Undoubtedly this species was the most abundant of all the Warblers.

Dendræca blackburniæ (Gm.) Bd. The arrival of this Warbler was indeed very singular. The first one, a male, was noticed May 3. The 4th, 5th, and 6th a few were seen, but the 7th none were to be found; the 8th, however, enough of them had arrived to far outnumber the other Warblers then present, but the very next day not one was seen. Excepting the 16th and 17th, it was noticed each day from the 9th until the 23rd, when it disappeared.

Dendræca striata (Forst.) Bd. May 10 a few males arrived, but no others were noticed until the 18th. The 19th and 20th a few were seen; the 21st they became quite numerous, and from the 22nd to the 24th they outnumbered the other species. On the 25th, however, the numbers were exceeded by those of D. castanea, but the flocks continued quite numerous until after the 27th, after which date only a single straggler was noticed, on June 5. The first female arrived May 21.

Dendræca castanea (Wils.) Bd. May 18 five males of this species appeared in a large flock of other Warblers. The number gradually increased, and May 23 it was only exceeded by D. striata. May 25 it outnumbered them all, but the day following none were seen. The females first arrived May 25.

Dendræca pennsylvanica (L.) Bd. A small flock arrived May 3, but none were noticed again until May 8, when several others were seen. The number gradually increased, and May 12 it was only exceeded by Setophaga ruticilla. May 14 it outnumbered them all; from this date, however, the flocks gradually decreased, although many remained to breed. The first egg was taken June 3.

Dendræca maculosa (Gm.) Bd. May 3 a single male arrived. May 5 a few were found in the other flocks, but none were noticed again until the 9th. A few were seen during the following days, but from the 13th to the 17th none were noticed. On the 18th, however, this Warbler rather outnumbered the other species then present, and continued very numerous until May 24. The last were noticed May 25. Two males, shot May 5, had the black of the head not continuous with that of the back but plainly interrupted with clear ash.

Dendræca tigrina (Gm.) Bd. May 8 quite a number of males arrived, scattered through the different flocks, and the next day large flocks arrived, in numbers almost equaling Setophaga ruticilla. They remained quite numerous, and on May 12 it was only outnumbered by S. ruticilla, D. pennsylvanica, and H. ruficapilla. May 13, however, only a few were seen, but May 14 large numbers again appeared; afterwards only a few were noticed, mostly females. May 17 and 18 none were seen, and for several days only one or two were noticed, the last one, May 25. The first female was seen May 9th. Several males taken had spots on four pairs of tail feathers.

Dendræca palmarum (*Gm.*) *Bd.* Perhaps this Warbler ought not to be included, as it was seldom seen in company with the rest, but generally noticed in the grass and in low bushes instead of in the trees. The first was seen May 1, but it was not very common until the 8th; the greatest number were noticed between this date and the 12th.

Dendræca pinus (Bartr.) Bd. May 31 I shot from out of a flock of D. coronata the first specimen of this Warbler, a female. Afterwards I noticed them in many flocks but seldom found a flock composed entirely of this species, four or five being the most I have ever seen together. After May 6 it was very scarce, the last one appearing May 12, which was indeed a very peculiar specimen. It proved to be a female, with only the upper tail coverts olivaceus, the back and the head being entirely gray, there was no trace of a superciliary line, and below it was sordid whitish. Size, 416, 216, and 2. In fact, all of the specimens of this Warbler I examined were smaller than the measurements given in the "Key."

A peculiar male specimen had three pairs of tail blotches.

Geothlypis trichas (L.) Cab. This Warbler was always noticed over wet, swampy places, it preferring the low bushes and shrubs to the higher trees. The first was seen May 10, but they were not very numerous until the 18th, when both sexes appeared. They breed everywhere throughout the swamps.

Myiodioctes pusillus (Wils.) Bp. This Warbler was very rare in this section, only a few males being found. Two on the 12th were the first observed; the 14th I noticed one, the 18th, two, the 22nd, one, and the 23rd, four, but not together; the 24th, 25th, and 28th one was noticed each day. Always found in bushes in low, wet places.

Myiodioctes canadensis (L.) And. The first was seen May 10, two on the 11th and two on the 18th. The first was seen May 10, two on the 11th and two on the 18th. The 19th, however, it was very numerous, exceeded only by D. maculosa. The 20th it easily outnumbered the other species and remained quite numerous until the 22nd. The last two were observed May 31.

Setophaga ruticilla (L.) Sw. May 3 I noticed a single female; the 5th, a pair; the 8th, three males in different flocks, and the 9th I found them very numerous. After this date and until the 15th, they rather outnumbered the other species, when the number rapidly diminished. I found it breeding here very abundantly, the first egg being taken the 3rd of June.

THE COMMON NAMES OF AMERICAN BIRDS.

BY ERNEST INGERSOLL.

The Thrush family—here regarded in its broadest sense, for the sake of convenience—does not present a wide range of vernacular synonyms except in respect to two or three species, nor are these difficult of explanation.

The word Thrush is very old, appearing in substantially the same shape—the u sound having superseded an older y or ö—in the Icelandic and Anglo-Saxon languages. I believe that the origin of the word was a reference to the throat, or in other words to the singing powers of this family, whose voice is probably their most notable trait; and this view is strengthened when it is remembered that the old German word drozzá coming from the same root as our English throat gives drossel in modern German as the word for "throat," "throttle," and also for "thrush." Under Thrasher I shall adduce a further argument. From the earliest times, then, the Thrushes have been considered preëminently the song-birds of the world.

Taking up the list in regular order, the first to present itself is Turdus mustelinus. Its common names are: Wood Thrush, Wood Robin, Swamp Robin, Swamp Angel (Adirondacks), Bogtrot (South Carolina), Alondra del Monte (Mexico). All of these evidently refer to its habitual forest-resort and its Thrushor Robin-like (for frequently these words are confused) character. The terms Song Thrush and Grive des Bois Flute (Canada) point to the striking music of this bird, the French literally meaning "the flute-voiced Thrush of the woods." Referring to