

routes from those taken by the young. Without information on the population size of the hermit thrush and additional data from other localities, no one answer can be selected.

#### SUMMARY

1. In Chicago the hermit thrush arrives first in the spring and last in the fall. It is usually not present at the same time as the other hylocichlids.
2. The veery, Swainson's thrush, the gray-cheeked thrush are usually present at the same time during spring migration. In the fall they are spread out more but are still present together over a twenty day period (September 1 to September 20).
3. In the spring some male hylocichlid thrushes reach Chicago earlier than any females.
4. In the fall there is no discernible sequence of arrival of sexes.
5. Immature birds were trapped in the fall in much greater numbers than adult birds, except in the gray-cheeked thrush.

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## A HALF-CENTURY'S CHANGES IN THE BIRD-LIFE AROUND SPRINGFIELD, MASSACHUSETTS

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At mid-century it is appropriate to compare the bird fauna of today with the past 50-60 year period. The comparison is confined to the area of Western Massachusetts, in particular to Springfield and its vicinity. A bird count made in the early 1900's would differ in several respects from one compiled today, and this would hold true whether it was recorded on a winter's or a summer's day. A daily check list then would have shown probably fewer species of birds and a marked contrast in numbers of individual birds, far more of some and a great scarcity of others. Bird-banding data substantiates some of these changes. In addition, a difference would have been observed in the habits of certain birds.

The trend towards an invasion into new territory in the Connecticut Valley by some species and an altered status of others already established in the area, was ably described over twenty years ago by Bagg and Eliot (1937) and has been brought up-to-date by information gleaned from *Audubon Field Notes* (1947-). Since most of the data in the present

article have been obtained from these two sources, distinguished from each other by chronological sequence, only additional references have been specifically cited.

The "Daily field card for the Springfield Region" revised by Eliot in 1960 lists 256 birds, in contrast to 159 species compiled by Mrs. Grace P. Johnson for 1916. In his book "Birds of Springfield and Vicinity," Morris (1901) described 255 birds for the same area in 1901. The figure, 255, for 1901 is misleading for 14 are "accidentals" then and now, and have not been included in the present list; 8 others could be eliminated as they consist of the Passenger Pigeon, questionable identifications and exceptionally rare "chance" records in past history. The Passenger Pigeon was termed "common" near Amherst in 1888; Morris saw his last specimen in 1884, and 1906 marked its last sight record in the vicinity (Mount Tom). For comparison's sake, the three introduced birds, Ring-necked Pheasant, Starling and House Sparrow, have been included in the total for each of the lists. This brings the 1901 figure to 233. Thus 23 species have now been added to the accumulative list for the Springfield (table 1), which with the Cattle Egret record of 1961 brings the PRESENT TOTAL TO 257 BIRDS.\* Of the 74 birds on the 1901 list not reported in 1916 as they were relatively rare for this area, 41 have undergone a change in status. (table 2). According to Morris, the last Wild Turkey was shot in 1852. However, by introducing Turkeys from Pennsylvania into Quabbin in 1960 and again this year, attempts to reestablish them in Western Massachusetts appear most promising.

Regarding the STATUS OF THE THREE ALIEN BIRDS, several Ring-necked Pheasants were imported into the Springfield vicinity at the turn of the century; by that time the 100 Starlings that had been introduced into Forest Park in 1897 had apparently died out but the House Sparrow had become well established following its importation in the 1860's (Morris, 1901). These Starlings were soon replaced by others originating apparently from the colony in New York City. The success of the three foreigners is illustrated by the present population of 140 Pheasants, 9,344 Starlings and 4,033 House Sparrows, figures based on their averages of the 1957-1959 Christmas censuses for the Springfield-Northampton area. Bird-banders are only too well aware of the population explosion of the House Sparrow!

Bird watching has become increasingly popular. This is illustrated by the upswing in number of both feeding stations and of participants in the nation-wide Christmas bird census, begun in 1900. The first census comprised 25 reports by 27 individuals; the 10th, 145 reports by 200 persons; the 50th in 1949 listed 403 reports by 4,605 observers, and the census of 1958 was made of 572 reports by 7,477 participants. Nevertheless, the increase in observations accumulated in recent years through greater interest in wildlife and more skilled naturalists cannot account solely for the contrast noted in the avian fauna now and fifty years ago. It probably accounts for the increase in number of individuals observed for some species compared with earlier years. The figure for the Black-capped Chickadee in the census of 1948 and 1949 was 403 and 597 respectively, but for 1958 and 1959 it was 894 and 1,366. It may explain in part the presence for example of the Philadelphia Vireo and the Semi-palmated Sandpiper among the 23 additions (table 1).

\*261 if Wood Ibis, Black Vulture, Turkey be included.

TABLE I

*Birds of the Springfield region on the 1960 list, that were omitted from the 1901 list, and their present status*

<i>Additions to the list</i>	Status in 1960
Heron, Little Blue	SV
" Yellow-crowned Night	A
Widgeon, European	A
Canvasback	W
Goldeneye, Barrow's	A
Scoter, Common	T
Sandpiper, Baird's	RT
Dowitcher, Long-billed	A
Sandpiper, Stilt	A
" Semi-palmated	T
" Western	RT
Gull, Glaucous	W
" Iceland	W
" Great Black-backed	W
" Ring-billed	*
" Laughing	A
Tern, Black	RT
Kingbird, Western	Oc
Chickadee, Boreal	Oc
Vireo, Philadelphia	T
Warbler, Brewster's	S
Sparrow, Sharp-tailed	T
Junco, Oregon	Oc

For all tables (1-3): Data obtained from Morris ('01); Johnson ('16), revised by Eliot, 1960.

Abbreviations:—

- A — Accidental
- R — Rare
- Oc — Occasional
- PR — Permanent resident
- S — Summer resident
- SV — Summer visitor
- T — Spring and/or fall migrant
- W — Winter resident
- \* — Records of presence entire year

Sight records of DUCKS, GULLS AND SHORE BIRDS HAVE INCREASED both in number and kind from the 1900's in the Springfield vicinity, for many of them are no longer considered "rare" and others account for the majority of the 23 additions present in the 1960 list (tables 1 and 2). This increase in wildfowl and shore birds may be in part an outcome of laws against shooting and the onset of warmer temperatures with milder winters. Herring Gulls numbered less than 100 in the censuses 20 years ago whereas over 250 were counted during the 1959 census. One of the greatest changes of the past half-century has been the status of the Ring-billed Gull, first recorded in 1928. It has increased tremendously in number and has extended its range, so that it is regarded as common and has even summered here. In 1901 a few Black Ducks were reported as spending the winter in the Springfield vicinity, and the Belted Kingfisher was described as a rare winter visitant. In contrast, between 260 to 800 Black Ducks and two to 6 Kingfishers were reported for each of the last 8 Christmas censuses. Several recent censuses have also included the Green-winged Teal and the Pintail, recorded as spring and fall migrants in 1901 but relatively rare then so excluded in 1916.

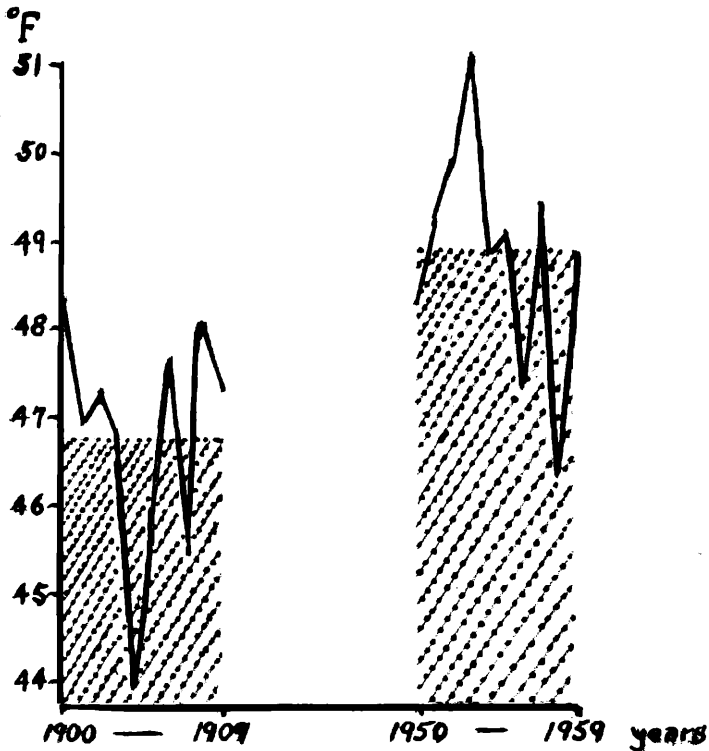


Fig. 1. Temperatures 50 Years ago and Now  
(1900-1909) (1950-1959)

Mean average temperature = —

10-year mean average temperature = [shaded box]

The rise in temperature that has occurred in the last half century for the Springfield area is represented by the graph, the data for which were obtained from the Massachusetts Agricultural Experiment Station (1900-). The mean annual temperature has been plotted for the two ten-year periods, 1900-1909 and 1950-1959. It is apparent that the latter decade shows an overall higher temperature than the former. Similarly the mean average temperature was 46.7° F and 48.8° F, respectively, with the 1950-1959 period being 2.1° F higher than the 1900-1909 one. The average monthly temperature for the same two ten-year periods is consistently higher in the 1950-1959 duration, except for May and September where the figures are approximately identical. Fairbridge (1960) pointed out that the world is now experiencing the first stages of another climatic "warm-up" begun about 1850, and that these "warm-ups" have occurred in the past at intervals of approximately every 200 million years.

TABLE 2

*Present status of birds in the Springfield region recorded in 1901, but omitted in 1916 as considered relatively rare.*

<i>Status unchanged 1901-1960</i>		<i>Status changed from 1901 to 1960</i>	
Loon, Common	T	Cormorant, Double-crested	RSV T
Loon, Red-throated	RT	Egret, Common	RS SV
Grebe, Red-necked	RW-RT, RW	Egret, Snowy (A, Hartford)	SV
Grebe, Horned	T	Goose, Snow	A T
Bittern, Least	RS	Brant	A T
Gadwall	A-RT	Mallard	T *
Shoveller	A-RT	Widgeon, American	RT T
Redhead	RT	Pintail	T T*
Bufflehead	T	Teal, Green-winged	T T*
Scoter, Surf	RT	Teal, Blue-winged	T S
Duck, Ruddy	T	Duck, Ring-neck	RT T
Eagle, Golden	A	Duck, Greater Scaup	RT T, W
Rail, King	A-RS	Duck, Lesser Scaup	RT T
Gallinule, Common	RS	Old Squaw	RT T
Turnstone, Ruddy	RT-A	Scoter, White-winged	RT T
Whimbrel	RT-A	Merganser, Red-breasted	RT T
Sandpiper, White-rumped	T	Vulture, Turkey	A S
Dunlin	T	Hawk, Broad-winged	S S*
Sandpiper, Buff-breasted	A	Eagle, Bald	T *
Sanderling	RT-A	Coot	T T*
Gull, Bonaparte's	RT	Plover, Semi-palmated	A T
Tern, Common	A-Oc	Plover, Golden	RT T
Dovekie	A	Plover, Black-bellied	A T
Woodpecker, Red-headed	RPR-Oc	Plover, Upland	RS S
Tufted Titmouse	A, Oc-Oc	Dowitcher, Short-billed	RT T
Pipit, Water	T	Owl, Barn	A PR
Warbler, Prothonotary	Oc-A	Owl, Snowy	RW W
Warbler, Worm-eating	Oc	Owl, Barred	RPR PR
Warbler, Cerulean	A	Owl, Long-eared	RPR PR
Warbler, Yellow-throated	A	Woodpecker, Pileated	RPR PR
Warbler, Hooded	A-Oc	Swallow, Rough-winged	RS S
Dickcissel	A-Oc	Wren, Carolina	A PR
Sparrow, Henslow's	RS	Mockingbird	RS W*
		Gnatcatcher, Blue-gray	A T
		Shrike, Loggerhead	A T*
		Warbler, Blue-winged	A S
		Warbler, Orange-crowned	A T(W)
		Warbler, Connecticut	RT T
		Warbler, Mourning	RT T
		Cardinal	A PR
		Longspur, Lapland	A W

The warmer weather has contributed to the recent northward extension of three RESIDENTS OF THE SOUTH, the Barn Owl, the Cardinal and the Carolina Wren, locally regarded as "stragglers" at the turn of the century (tables 2 and 3). The Barn Owl, like other owls and hawks, has also suffered less persecution from the gun in recent years. Mount Holyoke College experienced quite a shock in 1951 when Barn Owls were discovered raising a family on a balcony of one of the campus buildings (Boyd and Shriner, 1954). In the past decade several nests have been found in this region of Western Massachusetts. First reports of its breeding in the Springfield territory were in the early thirties. Yet about 50 years ago the Barn Owl was unknown so far north except for a rare straggler. There were only two sight records for the state up to the end of the last century; and 1915 marked the first sight record for this region in the present century.

TABLE 3

*Birds of the Springfield Region recorded in 1960 as Permanent Residents or show a trend toward this but whose status was different in 1901.*

<i>Permanent Residents in 1960</i>		<i>1960 Summer Residents and Migrants recorded throughout the entire year.</i>	
	Status in 1901	<i>Summer Residents*</i>	
Duck, Black	T*	(14 of 1901 summer residents that occasionally over-wintered omitted)	
Dove, Mourning	S*	Heron, Great Blue ('01 T, RS)	
Owl, Barn	A	Duck, Wood	
Owl, Barred	RPR	Hawk, Broad-winged	
Owl, Long-eared	RPR	Hawk, Marsh	
Owl, Saw-whet	RW	Peregrine Falcon	
Woodpecker, Pileated	RPR	Killdeer	
Wren, Carolina	A	Phoebe	
Cowbird, Brown-headed	S	Catbird	
Cardinal	A	Thrasher, Brown	
Finch, Purple	S*	Thrush, Hermit	
Sparrow, Song	S*	Yellow-throat	
Bald Eagle	T	Chat, Yellow-breasted	
		Oriole, Baltimore	
		Towhee, Rufous-sided	
		Sparrow, Vesper	
		Sparrow, Chipping	
		Sparrow, Field	
<i>1960 Spring and Fall Migrants that sometimes over-winter</i>		<i>Spring and Fall Migrants*</i>	
	Status in 1901		
Hawk, Rough-legged	W	Goose, Canada	
Nuthatch, Red-breasted	W	Mallard	
Shrike, Loggerhead	A	Pintail	
Warbler, Orange-crowned	A	Teal, Green-winged	
Sparrow, White-crowned	T	Merganser, Hooded	
Sparrow, White-throated	T	Coot	
Sparrow, Fox	T	Warbler, Myrtle	
Sparrow, Lincoln's	T		

The colonization of this state by the Cardinal is recent and has been spectacular. With several occurrences here and in neighboring states, especially in the last ten years, it literally invaded Massachusetts in late 1957. Though it was not known to have bred here up to 1955, in 1958 it nested in several localities in both the western and eastern part of the state and has now been seen in Nova Scotia and Maine. The Carolina Wren is gradually extending its range in a northeasterly direction. From 1918 it has been observed intermittently in the Connecticut Valley, but much more frequently in the last five years. By 1953 it was looked upon as a common breeding bird in Westport, Massachusetts and in parts of Connecticut.

Another contributing factor to the establishment of the Cardinal and the Carolina Wren as residents is the unprecedented abundance of feeding stations operated by bird enthusiasts inspired largely through the activities of the Audubon societies. Bird lovers are now aware that maintenance of such stations not only affords unbounded pleasure to the individual, but also ensures the successful over-wintering of numerous birds. Two additional southern species that may soon join their ranks are the Mockingbird and the Tufted Titmouse. Of the four southern passerines, the Mockingbird has been the most venturesome, and over a long period of time, but without exhibiting any steady advances north until the last ten years. Sporadic over-wintering and breeding reports for Massachusetts date back to the last

century. In 1957-58 it successfully over-wintered as far north as Maine, and recent nesting records include Rutland, Vermont, 1955; and in 1958, Hartford, Connecticut, and several, which included two broods, in Eastern Massachusetts.

Up to 1929 the Titmouse had been reported only four times in Massachusetts. The extension of its range commenced around 1940, and in 1953 it became established in southwestern Connecticut. Since 1954, it has been seen in the Springfield vicinity annually and, except from June to August, throughout the year, and in increasing numbers. It reached Vermont and Maine in 1957, and 1958 marked its first nesting record for Massachusetts. The 60th Christmas bird census, 1959, for the Springfield-Northampton districts listed two Carolina Wrens, two Mockingbirds, 21 Cardinals and four Tufted Titmice, and for the Greenfield area which is farther north, one Mockingbird and two Cardinals. According to Mr. Eliot, the Greenfield newspaper of December 22nd, 1959 mentioned Titmice at two places in Franklin County and one in Vermont.

Birding on a winter's day is likely to prove far more fruitful now than in the early 1900's. The NUMBER OF RESIDENTS HAVE INCREASED by 12 over 1901. (table 3). The Black Duck, Mourning Dove, Cowbird, Purple Finch and Song Sparrow were formerly summer residents though all but the Cowbird were reported as occasionally present in the winter, too (Morris, 1901). Their counts for this area in the 60th Christmas 1959 census totalled 260 Black Ducks, 360 Mourning Doves, 943 Cowbirds, 75 Purple Finches and 283 Song Sparrows. Mrs. J. R. Logan at her station in Granby banded 33 Mourning Doves and 118 Purple Finches in December 1960 and January 1961. This change in status again is accounted for by warmer winters and, in the case of the seed-eaters, by well-supplied feeders. Very recently Cowbirds have been observed in great flocks haunting bare fields and cowbarns rather than feeders in early winter, simulating the Starling habit. The winter avian fauna is also often augmented by over-wintering summer and transient visitants as illustrated in table 3. This list does not include the Robin, Meadowlark and others that were described as rare winter residents in 1901. The trend towards over-wintering increased markedly in the 1950's. The figures in the 1958, 1959 censuses were 57, 20 Robins; 45, 29 Meadowlarks; and as examples of those described as summerers and transient migrants in 1901, 6, 14 Field Sparrows and 28, 114 White-throated Sparrows. Some 31 summer residents have been observed in recent winters compared with 14 in 1901, and 7 transients (Canada Goose, 4 ducks, Coot, Myrtle Warbler) have been recorded throughout the year (table 3). These, with the three winter residents that may be seen on occasion in all seasons, bring the total bird population that may occur ALL-YEAR-ROUND to 33 in 1901 as against 70 in recent years. Not included in these figures are the Mockingbird and the Tufted Titmouse, nor the occasional individual that fails to fly south and may get listed in the Christmas bird count, for example the Woodcock in 1949, 1959 and the House Wren in 1953.

The Junco was considered as a transient, though a few wintered in Springfield; now it is a winter inhabitant with over a thousand observed in 1959 and 1,598 in 1960 censuses. Many of them have been banded in winter by the writer since 1950, e.g. 12 were banded in a two-hour period January 7, 1951, some of which were retrapped that April. Mrs. Logan this last winter banded 90 between December 1960 and January 1961.

The Fox, White-crowned and White-throated Sparrows are some of the other transients that have recently spent the winter in increasing numbers (table 3). They were represented by 7, 2 and 114 individuals respectively in the 1959 census. The survival during cold spells of all over-wintering birds that typically are in the south for the cold weather is greatly dependent on abundant feeding stations.

A bird count in the winter may be greatly augmented by ERRATIC INVASIONS from the northern territory and by occasional western stragglers such as the Black-backed Three-toed Woodpecker from the north and the Oregon Junco from the west. Scarcity of food in the north probably accounts for the mass irruptions of irregular winter visitors: a low in the cycle of lemmings and hares brings an incursion of Snowy Owls and Goshawks every 4 or 7 years; a poor cone or berry crop brought the huge inroad of Pine Grosbeaks in 1951-52 and of Evening Grosbeaks in the last 15 years in the Connecticut Valley.

The extension of the range of the Evening Grosbeak is phenomenal. Its invasion in 1946 resulted in 23 being banded at Arcadia Sanctuary in Northampton and Easthampton on May 8, 9 and 10. Five were observed May 15; the final record of one bird was made on May 20, 1946 (Mason and Shaub, 1949). In 1947 four stations in the valley banded 490 Grosbeaks between January and May. According to Mary S. Shaub, Editor of "Evening Grosbeak News," in recent years, especially 1951-1957, "The species has become a regular winter visitor, but with no progressive increase in flock size. In this same period, southern penetration has been more frequent and more widespread." There seems to be a correlation between the numbers reported and the natural food supply, fewer individuals being either observed or banded when large natural food supplies were present throughout the wooded areas occupied by the species. Its nesting records now embrace Hampshire County, Massachusetts. Thus the present status of the Evening Grosbeak is in marked contrast to its status at the turn of the century, for the 1901 publication referred to states: "With the exception of the winter of 1889-90, this bird was never known to appear in this vicinity or elsewhere in New England." It states further: "At that time (1889-90) there was a large incursion from the northwest into the eastern states, and specimens taken at Agawam, Brimfield, and Amherst."

Abundance of cones, seeds and berries is associated respectively with flocks of Pine Siskins, Redpolls and Cedar Waxwings. The highlights of the 1959 census included an exceptionally large number of Redpolls, namely 2,222, and the spectacular appearances of 12 Boreal Chickadees and 146 Red-breasted Nuthatches for this region. The Lapland Longspur is no longer regarded as accidental and it is a companion of the Horned Lark. The Christmas bird censuses of the last 10 years verify the growth that has occurred locally in the winter avian population due undoubtedly to a combination of a warmer climate in conjunction with more bare ground free from snow, and a wealth of well-stocked feeding trays.

BIRD WALKS IN THE OTHER THREE SEASONS OF THE YEAR may also prove more rewarding in some respects than 50 years ago. There may be a trend among some birds, grackles for example, to ARRIVE EARLIER IN THE SPRING. In the FALL it is a thrill to see sandpipers such as Baird's, Red-backed and Western (table 1), or an abundance of Golden Plovers as occurred in October, 1958. During past SUMMERS many persons whose birding has been con-



fined to New England have experienced the joy of adding to their avian life list through sighting southern dwellers for the first time. The Turkey Vulture (table 2), according to Howe and Allen, had been sighted only 12 times in New England up to 1901 (Forbush, 1927). Bagg and Parker (1951) noted that since 1930 it "has become, on a very small scale, a regular spring migrant near Mt. Tom, and, in recent years, a possible summer resident in the vicinity of Quabbin Reservoir." They also suggested that the warmer climate, and the increase in deer population and in highway mortality of wildlife, accounted for the extension of its range. This trend has continued in the last decade; Eliot (1961) states that "The east side of Quabbin is now "headquarters" in Massachusetts for Turkey Vultures . . . two reached there as early as March 9." The more southerly Black Vulture even has been sighted in this state in the last few years. Construction of turnpikes with the accompanying slaughter of small mammals by speeding traffic undoubtedly is an encouragement to these scavengers.

Warmer temperatures and better protection are associated with the northward spread and increase in numbers of some birds of ponds and streams. The most striking southern invasion was of the herons and egret in 1929 phenomenally surpassed in 1948. The Little Blue Heron (table 1), now a summer visitor, was first recorded for the Connecticut Valley in 1907. Also absent from Morris's list (1901) is the Yellow-crowned Night Heron, an accidental visitor. Its first nest in Massachusetts was discovered in 1928, and it over-wintered on Cape Cod in 1954-55. The Common Egret has become a more frequent summer visitor since the 1900's. An accidental visitor, the Snowy Egret was first sighted for this area in 1935; its inclusion in the 1901 list was a mistake as it was based on a specimen collected near Hartford, Connecticut. Rated as transient visitor by Morris (1901), the Great Blue Heron not only breeds in the Springfield region but some are even able to withstand the winters (table 3). If the northward extension of large waders continues, the sight of a Louisiana Heron or a White Ibis may not be a surprise, for the Glossy and Wood Ibises have already been sight-recorded for the Valley, and as of May, 1961, the Cattle Egret. Both east-west and postbreeding northward migrations have been discussed by Berger (1961) in his book "Bird Study" in which he points out the importance of bird-banding in the study of migration.

Passerines have also been involved in this northward spread; the Prairie Warbler is now well established as a summer resident among the scrub oaks. Since the middle of the 1940's the Yellow-breasted Chat has been seen regularly in the early part of or throughout the winter particularly at feeders, and Mr. Eliot reports that one was observed at Quabbin Dam from January 25 to March 5 of 1960 (personal communication). The Blue-gray Gnatcatcher was considered an accidental visitor to the Valley around 1900 (table 2). Its first spring record occurred in 1939 and several fall sight-records were noted in the 1930's and 1940's (Eliot, 1948). Since its spectacular influx through southern New England in 1947, it has become a rare but regular spring transient to the area; Mr. Eliot noted that a pair built a nest in Bloomfield, Connecticut in 1959. The Louisiana Waterthrush has changed from an occasional to a regular nesting warbler; in the 1950's its breeding range extended to northeastern Massachusetts and as far north in New Hampshire as New Hampton. Another previously

accidental visitor is the Blue-winged Warbler, which has been appearing more frequently and since 1932 became established as a nesting bird (table 2).

The BREEDING RANGES of other passerines have also extended into this part of New England. A former chance visitor, the Golden-winged Warbler is today a regular summer resident, and as a result of its breeding territory over-lapping that of the Blue-winged, the Brewster Warbler is now present (table 1). The northern nesters, the Hermit Thrush, Savannah Sparrow and Northern Water-thrush, occasionally nested in the Springfield area. Beginning about 30 years ago, they and the Canada Warbler extended their breeding range so that they now nest regularly in certain localities of the Connecticut Valley. In contrast, the Parula Warbler has changed from a rare breeding bird to a transient visitor with the disappearance of *Usnea* moss, an essential in its nesting material.

Changes have also occurred in the observed FREQUENCY OF CERTAIN BIRDS in addition to the increase in population of the three IMPORTED BIRDS, Ring-necked Pheasant, Starling and House Sparrow. The CLEARANCE OF WOODLANDS was followed by an influx from the west of birds of the pasture — Horned Larks, Water pipit, Upland Plover, Loggerhead Shrike and Dickcissel (table 2). As regards Horned Larks, as many as 40 to 200 were observed each month by members of the Holyoke Bird Club between October 1958 and January 1959. The joint Christmas bird census of Amherst, South Hadley and Northampton yielded 270, 78 and 398 Horned Larks in 1958, 1959 and 1960. The transformation of RURAL INTO URBAN AREAS and the resulting increase in thickets and ornamental trees have been accompanied by an upswing in numbers of Rose-breasted Grosbeaks, the Yellow, Chestnut-sided and Prairie Warblers. Of breeding species in 1901, the following were considered rare — Wood Duck, Killdeer, Mourning Dove, Pileated and Hairy Woodpeckers, Tree Swallow and House Wren — whereas the Bob-white and the Bluebird were common. The situation is now reversed.

Beginning about 50 years ago, people were encouraged to set up BIRD BOXES, and these to a large extent have been responsible for the improved condition of the Tree Swallow and the House Wren, which had suffered considerably from the House Sparrow's invasion. Wood Ducks, depleted like the Killdeers by hunters in the early '40's, did respond most successfully to the erection of thousands of nesting boxes coupled with the Massachusetts law prohibiting the shooting of them. However, since the withdrawal of this protective law in 1951 and lessened interest in the maintenance of these boxes, the population of Wood Ducks has decreased in this state, certainly in some areas (Mason, '52). Although typically a summer resident, 7 Wood Ducks were reported in the 1959 Christmas count at Springfield. The growth of DECIDUOUS TREES has improved the woodpeckers' situation; around 100 Hairy Woodpeckers were counted in the census of 1959 and 167 in the census of 1960 for the Springfield-Northampton territory. The recovery of the Pileated (table 2) is also due to better ADJUSTMENT TO CIVILIZATION, for it shows less fear of man and now frequents fairly well-populated areas of suburbs such as Forest Park in Springfield. The popularity in recent years of MAINTAINING FEEDERS has not only attracted many birds to over-winter, but it probably accounts for the upswing in numbers of Mourning Doves, Blue Jays, Cowbirds, Grackles and other seed-eaters and omnivores over the years. The Blue

Jay transformed from a shy forest bird to a more metropolitan dweller numbered 908, 826, 1546 in the 1958, 1959 and 1960 Christmas counts compared with 119 and 220 in those of 1948, 1949 for this area. This last year 146 Bluejays were banded at the station in Granby between May 1960 and June 1961.

The Bob-white is now absent in many parts of the state. Since 1900 it has suffered not only from over-harvesting by hunters, but the severe winter of 1903-04 reduced its numbers by 90 percent. Subsequent hard winters and the summer droughts of 1952, 1953 have added to its plight as well as changes in farm practices such as reduction of cover by the use of wire in place of wood for fences. According to Griscom (Dennis, 1958), a single adverse condition produces only a temporary setback in abundance of a particular bird, which is remedied typically within a five-year period; a COMBINATION OF TWO OR MORE DISASTERS, one of which is man-made, results in a permanent decline in population.

Currently the Bluebird is tragically low in numbers; 325 reported for 1959 and only 116 for 1960. Wallace (1959) suggests that the serious plight of this species in Michigan is due to the severe winters of 1954-55 and 1957-58 in its winter quarters, namely Florida, decreased favorable habitat, competition with the House Sparrow over nesting sites, and insecticide poisoning, especially from the fire ant programs in the south. Additional factors contributing to the loss of land birds, especially insectivores, which has occurred at an alarming rate in recent years, include storms during migration, the 1954 and subsequent hurricanes, adverse spring and summer weather. Hazards particularly for warblers during fall migration on cloudy nights are sky traps — elevated lights and edifices, television towers and ceilometers. The cold and wet of June 1903, May 1948 and June 1959 caused a high avian mortality particularly affecting the swallows, Nighthawks and Chimney Swifts.

The FLUCTUATION IN NUMBERS of certain birds parallels the incidence of specific pests, for example the Rose-breasted Grosbeak thrives on the potato bug. The unusual number of Tennessee, Cape May and Bay-breasted Warblers in 1953, 1954, 1956 and 1958, coincided with outbreaks of spruce budworm. However, the repeated mass spraying for spruce budworm by large paper companies in 1958 and 1959 probably accounted for the marked decline May 1960 of these and other budworm-eating spruce-nesters as the Parula and Black-throated Green Warblers. Similarly the chemical warfare on the potato bug rendered the East Meadows of Northampton almost birdless the summer of 1960. It is hoped that in the future at least this hazard of indiscriminate use of insecticides will be eliminated.

Large tracts of land should be increasingly reserved as refuges under enforced protection for the support of all species of wildlife, so as to keep pace with the inroads of rural areas by man in his expansion of "civilization," which is accompanied by the destruction of natural habitats, and will result in marked changes in the bird population in the next 50 years.

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## A CONVENIENT METHOD OF SEXING AND AGING THE STARLING

By G. HAPGOOD PARKS

During 1960 the Bird-Banding Office launched an 18-month project for the purpose of testing "the comparative rates of recovery of birds banded with regular Fish and Wildlife Service bands and with those bearing a post office box legend" which would reveal no connection with any governmental agency. We became aware of this project when we read the appeal, published in *EBBA News* (1) and in *Bird-Banding* (2), for interested banders to cooperate in the study.

Hartford's abundant population of Starlings (*Sturnus vulgaris*) promised adequate working material so, rather tardily, we volunteered our cooperation. On January 21, 1961 we received a supply of the special bands which carried the legend, "Write P. O. Box 66, Bowie, Md. USA," and control bands with the standard legend, "Write F & W Serv. Wash. D. C. USA."

The instruction sheet which accompanied the bands asked that all birds be sexed and aged, if possible. Although we had handled, previously, more than a thousand individuals of this species we had never made more than a cursory effort to sex and age them. We decided to take advantage of this project to test our own ability of applying certain suggested sexing and aging procedures. This paper is a brief description of our experience.

We chose to be guided by the methods described in *Bird-Banding* by