

Species which lived about the barracks but which I did not see until late afternoon after the passing of the storm, were the Cardinal (*Richmondena cardinalis*), Ground Dove (*Columigallina passerina*), and Red-bellied Woodpecker (*Centurus carolinus*). A species which we had been seeing daily as it passed over, but which was nowhere to be seen on the 19th, was the Fish Crow (*Corvus ossifragus*).

Several Ring-billed Gulls (*Larus delawarensis*) and about 15 Common Terns (*Sterna hirundo*) were blown in by the storm. The latter lingered about Lake Corinne for three days. On the day after the hurricane I almost captured one of these terns which probably had been badly buffeted by the wind. The gulls stayed about for some time.

Word reached us that a Caracara (*Polyborus cheriway*) had been picked up dazed in the streets of Titusville, Brevard County, Florida, thirty some miles to the east of Orlando.

In general, I was surprised at the birds' ability to adjust themselves so quickly to the conditions imposed by the storm. A good many birds might even have remained in their roosting places (as did the Red-headed Woodpecker) during most of the day. Certainly not many birds attempted to feed, though the Blue Jays appeared to be doing so. The one dead bird which I found on October 20 (Palm Warbler) may or may not have been a victim of the storm.

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## A COMPARISON OF THE SUMMER RESIDENT BIRDS TODAY AND FORTY YEARS AGO IN A SMALL AREA IN MASSACHUSETTS

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In the winter of 1943 I chanced to glance over some of my old ornithological notebooks and realized that perhaps I had something of value. Here, for the years 1903 and 1904, were very full notes on the birds seen in Milton, Massachusetts. I still live on the same land, so I planned to make a survey in the spring and see how the avifauna compared in 1943 with 1903. The week of May 30 to June 6 was chosen as the best time to study resident birds, and the survey was repeated in 1944. Birds that were seen three or more times on the land chosen during those weeks were counted as resident; in a few instances nests were found. The scoring was done in pairs, a male and a female counting as one unit, so on the chart the number in parentheses after the bird's name means the number of pairs, not number of

individuals. Birds were considered "common" and were therefore counted if two or more pairs were resident in the area. Many less common birds were represented by one pair only, but it was thought that because of the many possible errors in the method of observation and the ambiguity of some of the old notes, it was wiser to study only the common resident birds about which there could be no doubt. This method certainly cannot be considered accurately quantitative, but I believe it gives a close enough approximation to the truth to be valuable in a field where good quantitative data are scarce.

The area studied is a little less than one-third of a mile square, about 75 acres. It lies on the eastern part of Milton Hill, and is bounded along the southern side by a main road and on the north by a salt marsh. About half the land is on the rounded top of the hill; the other half is a slope to the north, overlooking the estuary of the Neponset River. The northern half of the land is wood-lot and partly overgrown pasture. The trees are mostly hardwoods, maple, beech, oak, birch and a few white pines. In the pasture are many cedars and scattered hemlocks and pines, with oaks occasionally and sumachs and brush along the stone walls. The hill is a terminal moraine rising 50 to 80 feet above the tidewater. Along its top and south side (in this area in 1904) were eight residential houses and about an equal number of barns. Five new houses have been built in the forty years, but two old ones have been torn down. So the land remains remarkably similar to its state in 1904. Around these houses are small lawns, fields of an acre or two, flower gardens and truck gardens, with many large shade trees, elms, oaks, beech, white pines, spruce and hemlock. There are several small orchards near the houses of five to ten apple, cherry and pear trees.

The data are presented in the chart. On the left is a list of 26 common birds that had two or more pairs resident in this area in 1903 and 1904; on the right is a list of the 24 common birds represented by two pairs in 1943 and 1944. The commonest birds are listed at the top (*e. g.*, House Sparrow, ten pairs in 1904, and Robin, 6 pairs in 1944). When a bird appears on both lists, a line is drawn from its position in one column to that in the other column. If the line descends from left to right it indicates that the bird has become less common in forty years. If the line ascends from left to right it indicates an increase in numbers. A glance at the chart shows that fifteen birds have decreased, ten have held their own, and seven have increased in numbers, only four of these significantly. Nine birds in the 1904 list are not on the 1944 list at all, and three birds on the 1944 list do not appear in 1904; these are the Starling and Ring-necked Pheasant

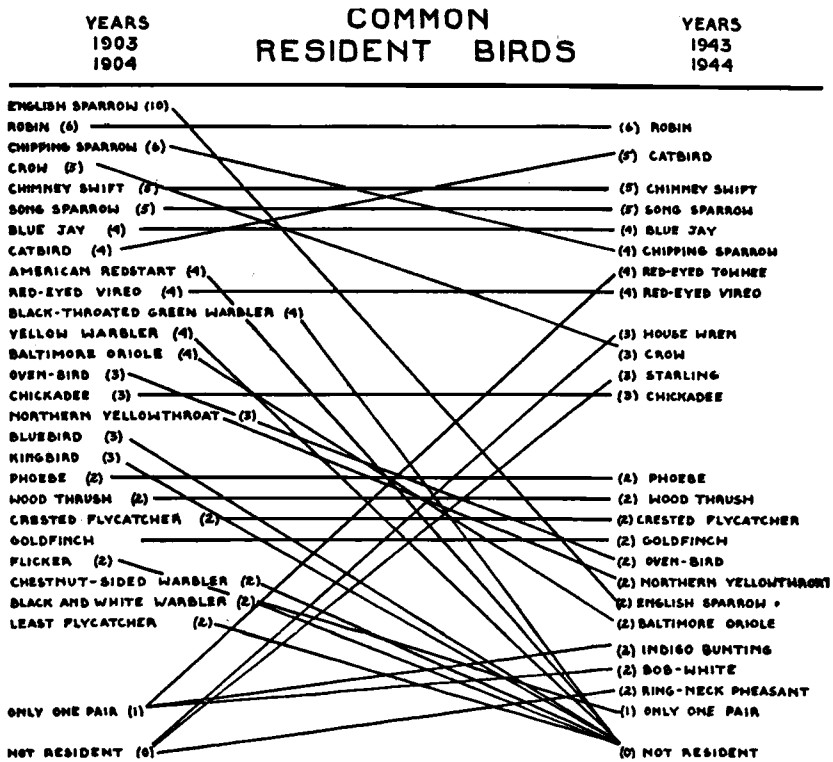
(both introduced) and the House Wren which is well known to have spread its range northward during these years. The other bird that has shown a marked increase is the Towhee. In 1904 these birds were not often found breeding on Milton Hill although they were common in the rough scrub-oak country of the Blue Hills only five miles to the south. Now they seem to be more abundant everywhere and have spread into areas not typical of their former habitat. In fact, I think the Towhee may now be the commonest bird in Massachusetts, even outnumbering the Robin.

Of the birds that have decreased, the most striking is the House Sparrow. In 1903-1904 they infested every barn; now a few were found around one stable. This is probably due to the replacement of horses by automobiles and the resulting decline in oats and horse manure. The other birds that have shown a marked decrease are the Redstart, Black-throated Green Warbler, Yellow Warbler, Bluebird, Kingbird, Chestnut-sided Warbler, Black and White Warbler and Least Flycatcher. In 1903-1904 these were regular residents in the fruit trees and shrubs. Finding their nests was easy and these birds made the gardens lively. Now they are absent; they are seen in migration in moderate numbers but they do not populate this area as they used to do. The land, trees and shrubs are much the same as forty years ago. Cats are only slightly more common. What, then, has caused this great decrease? One factor that is new since 1904 is the regular spraying of fruit trees, shade trees and some shrubs. The possibility that this has destroyed the birds' food and also poisoned many birds is to be considered. At least it can be said that six of the eight birds in this group were our common orchard dwellers in 1904.

Two other birds that have decreased are the Chipping Sparrow and the Crow. The latter seems to be just as common in winter, but fewer of them nest in the area, perhaps because so many of their favorite trees—the white pines—were destroyed by the hurricane in 1938. The Chipping Sparrows are still common, but not as abundant as formerly. This I believe to be a recent falling off in the last five years, at its lowest in 1942 and already improving. No explanation suggests itself. The moderate decrease in the Baltimore Orioles may be like that of the orchard birds, but less marked.

Birds that have shown a moderate increase are the Catbird, Bobwhite and Indigo Bunting. Those that have held their own make a list of stalwarts: Robin, Chimney Swift, Song Sparrow, Blue Jay, Red-eyed Vireo, Chickadee, Phoebe, Wood Thrush, Crested Flycatcher and Goldfinch.

The salt-marsh to the north of the area surveyed is an interesting



TEXT-FIGURE 1.—The chart consists of two lists of birds: on the left are those species of which two or more pairs were resident in the area studied in the breeding seasons of 1903 and 1904. The number in parentheses after the birds' names indicates the estimated number of pairs breeding in the area. The list on the right is of those birds two or more pairs of which bred in the area in 1943 and 1944. When a species appears in both columns the names are joined with a line. Since the species are arranged in order of abundance from the top down, a horizontal line indicates that the abundance of that species has remained unchanged. A line falling from left to right shows a decrease from 1904 to 1944, a line rising from left to right show an increase in that species during the forty years.

stretch of land bordering the tidal Neponset River. It covers more than a square mile and I could not properly observe the birds on it in the time allotted. A few facts were obvious: Bobolinks that in 1903-1904 were noted as "several" and "common" about the fields bordering the marsh are now rarely seen. This is probably due, at least in part, to the cutting up of the big fields into house lots. In fact one might ask if all the changes in fauna were not caused by the change of the region from rural to suburban. This is quite true of the land to the east and west of the area under consideration, but the area itself has changed hardly at all.

On the marsh and river the increase in Herring Gulls has been conspicuous. Notes from the years 1903-1904 give the number of gulls seen as:

Jan. 16, 1903	9	Jan. 31, 1904	3
Mar. 25	6	Feb. 1	1
Apr. 1	110	Mar. 11	20
Apr. 13	30	Mar. 20	150
		Mar. 25	50
		Mar. 26	100
		Apr. 11	4

Nowadays there are 100 to 200 Herring Gulls on this stretch of river and marsh practically every day and it is not unusual to count 300 or 400. Moreover, many stay through June, July and August, a thing unknown in 1903-1904.

Besides this marked increase in gulls there has been an increase in ducks. The best time to see ducks here is in March just after the ice goes out. My 1904 notes give the number of Red-legged Black Ducks seen on three expeditions in March as 4, 4, and 7. In 1943 and 1944, I usually saw between 30 and 50 Black Ducks during a walk by the marsh, with a few Mallards and an occasional teal. The number of Black-crowned Night Herons seems to be about the same. The Green Herons are less abundant. Starlings occasionally descend on the marsh in large flocks, but they are irregular.

#### SUMMARY

Field notes made by me in 1903 and 1904 as compared with notes made in the same area in 1943 and 1944 on birds resident in early June show that the Red-eyed Towhee, the House Wren, the Starling and the Ring-necked Pheasant have increased in numbers (the last two, being imported species, have increased from 0). The species that have shown a marked decline in numbers are the House Sparrow, American Redstart, Black-throated Green Warbler, Yellow Warbler, Chestnut-sided Warbler, Black and White Warbler, Bluebird, Kingbird and Least Flycatcher.

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