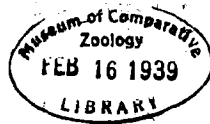


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BIRD-BANDING

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TEN YEARS OF BANDING AT BIRDWOOD

By MARIE V. BEALS

My banding station, Birdwood, is in Elmhurst, Queens County, New York, and is within the limits of New York City only five miles as the crow flies from New York's City Hall. The Trylon and the Perisphere of the New York World's Fair are within sight. Ten years ago, during the summer of 1928, I began banding and my total is now over 30,000 birds of 113 species.

Birdwood is on the terminal moraine of Long Island and has an elevation of 150 feet above sea level. The land measures 212 feet on the north side of 85th Street and is 100 feet deep. The dwelling is located on the east side of the plot and occupies 20 feet of the street front. West of the house for 80 feet was formerly a flower and vegetable garden, but now is largely covered by trees and shrubs that produce berries attractive to the birds. Still further west is 112 feet of wild land on 85th Street with a number of trees (mostly wild cherry, *Prunus serotina* and staghorn sumac, *Rhus typhina*), many shrubs and an undergrowth of herbaceous plants. To the north of the station, about 300 feet, is the main line of the Long Island Railroad, a six-track way between the Pennsylvania Railroad Station in New York City and Jamaica, Long Island, and points east. West and southwest of Birdwood and south of the railroad's right of way, there has been an area of unimproved land. This is now being developed with small homes. In the other directions from the banding station the near-by streets are well built up with homes.

The fruit trees that have been planted in Birdwood are apricot, cherry, peach, pear, plum and crab-apples (*Malus*) of different varieties. In the spring the blossoms of these trees attract the birds who go after the insects within the blooms. In the late summer and early fall the birds visit the cherry and crab-apple trees for their berries.

Birdwood appears like the work of a fairy in the spring because of the masses of color of the flowering trees and shrubs. The foliage, flowers and berries harmoniously vie with each other throughout the season. In the spring, insects entice the birds to these trees and shrubs; and, in the autumn, these thickets are alive with our

feathered friends eating the various kinds of berries. I have noted that in early March before the angleworms come to the surface of the ground, Robins and Hermit Thrushes feed on the berries that have remained on such plants as European Cranberry and Washington Thorn. Where space permits, bird banders should plant berry-bearing trees and shrubs. John Burroughs has said that insect-eating birds would starve if they did not have berries.

Many of my colleagues have commented on my success in trapping the number and variety of birds that have visited my station. Since I attribute much of it to the trees and shrubs I have planted I have listed some of them for the benefit of other banders.

Some of the flowering trees are:

- Shadblow (*Amelanchier canadensis*)
- Hercules Club (*Aralia spinosa*)
- White-flowering Dogwood (*Cornus florida*)
- Chinese flowering Dogwood (*Cornus kousa chinensis*)
- Cornelain Cherry (*Cornus mas*)
- Washington Thorn (*Crataegus cordata*)
- Cockspur Thorn (*Crataegus crusgalli*)
- Silver Bell (*Halesia tetraptera*)
- American Mountain Ash (*Sorbus americana*)
- European Mountain Ash (*Sorbus aucuparia*)

The following deciduous flowering shrubs grown in Birdwood have developed quickly into dense masses of foliage thus effectively serving as screens along the street and the adjoining properties.

- Five-leaved Aralia (*Aralia pentaphylla*)
- Butterfly Bush (*Buddleia Davidi*)
- Golden Bells (*Forsythia*) varieties
- Globe Flower (*Kerria japonica*)
- Beauty Bush (*Kolkwitzia amabilis*)
- Mock Orange (*Philadelphus coronarius*)
- Tree Spirea (*Sorbaria arborea*)
- Weigelia (*varieties*)

The flowering evergreen shrubs help to brighten the winter aspect of a banding station and the green foliage held throughout the year will give shelter to the birds that remain for the winter. Some of these plants are:

- Pieris floribunda (*Andromeda floribunda*)
- Pieris japonica (*Andromeda japonica*)
- Japanese Holly (*Ilex crenata*)
- Mountain Laurel (*Kalmia latifolia*)
- Drooping Leucothoe (*Leucothoe Catesbaei*)
- Oregon Hollygrape (*Mahonia aquifolium*)
- Hardy Azaleas and Rhododendrons

During the fall migration the berry-bearing shrubs in Birdwood are alive with many species of birds. These plants are perhaps a means of prolonging the stay of the birds at the station. I have often watched a bird feed for several days from a particular berry shrub. Its routine is to eat a few berries, fly to a near-by tree to rest, then back again to the same bush. A Bicknell's Thrush spent the

better part of ten days eating the berries from the same Asiatic Sweetleaf growing near the house. There was no question about the identity of this berry-feeding thrush because it was captured at least once each day in the traps near this plant.

Some of the berry-bearing shrubs are:

- Red Chokeberry (*Aronia arbutifolia*)
- Glory Tree (*Clerodendron*)
- Gray Dogwood (*Cornus paniculata*)
- Golden-twig Dogwood (*Cornus stolonifera flaviramea*)
- Blood-twig Dogwood (*Cornus sanguinea*)
- Cherry Elaeagnus (*Elaeagnus longipes*)
- Autumn Elaeagnus (*Elaeagnus umbellata*)
- Winged Euonymus (*Euonymus alatus*)
- Inkberry (*Ilex glabra*)
- Winterberry (*Ilex verticillata*)
- Ibota Privet (*Ligustrum ibota*)
- Morrow Honeysuckle (*Lonicera morrowi*)
- Tatarian Honeysuckle (*Lonicera tatarica*)
- Northern Bayberry (*Myrica carolinensis*)
- Chinese Christmas Berry (*Photinia villosa*)
- Nanking Cherry (*Prunus tomentosa*)
- Laland Firethorn (*Pyracantha coccinea Lalandi*)
- Common Elder (*Sambucus canadensis*)
- Common Snowberry (*Symphoricarpos racemosus*)
- Coral Berry (*Symphoricarpos vulgaris*)
- Asiatic Sweetleaf (*Symplocos paniculata*)
- High-bush Blueberry (*Vaccinium corymbosum*)
- Nannyberry (*Viburnum lentago*)
- Arrowwood (*Viburnum dentatum*)
- Japanese Bush Cranberry (*Viburnum dilatatum*)
- European Cranberry (*Viburnum opulus*)
- Double-file Viburnum (*Viburnum tomentosum*)

Vines such as bittersweet, clematis, virginia creeper, honeysuckle, ivy and wistaria add charm and value to a station, for they arrange themselves into a picturesque mass of foliage, flowers and berries. They are another source of food for the birds.

There are growing in Birdwood small quantities of Jack-in-the-Pulpit (*Arisaema triphyllum*), common Poke (*Phytolacca decandra*) and False Solomon's Seal (*Smilacina racemosa*); but the amount of this material is insufficient to supply my needs. In order to keep my traps well-filled with these berries, I go to the woods and gather a supply of them, for the birds like them. Another advantage of these wild wood-berries is their keeping quality in the traps while exposed to the sun and rain. For the Myrtle Warblers, a good lure is bayberries. In the fall I put bunches of these berries near the various traps.

Banding at Birdwood began in the summer of 1928 with one government sparrow trap and, up to the end of that year, 38 birds of 5 species were banded. Starting the first year with one trap, the trap equipment has been increased each year so that now in 1938 we have about 80 traps consisting of sparrow, drop, house, Cohasset, tree, Potter and Brenckle water trap. In our trapping area I have

arranged the traps in groups in various ways. One group contains one sparrow, one Brenckle and several Potters; another group consists of one house, one Cohasset, several Potters; and so on. These groupings are placed near a thicket of shrubs or under a tree. Traps so arranged seem to increase the number of birds captured as a captive bird seems to attract others. Usually this grouping will give the bird a choice, for if it happens to be wary of the Potter, it might saunter into the house trap or one of the other near-by traps.

A banding station should be equipped with several types of traps. My experience has been that no one type is more effective than another, but a combination of types will tend to increase the number of birds caught. For several years besides the types of traps listed in Table 1, I also used the clover-leaf, resetting and Michener. Very few birds used the last three mentioned types so they were discarded. I do not mean to infer that they are not good types of traps, but simply that my birds would not use them. The effectiveness of the various types depends on the time of the year. In the early spring, Potter, drop and sparrow traps capture most of the birds. As spring advances, birds prefer those with dripping water. In the summer and early fall the traps with water will catch most of the birds; but in late fall when the Robins, thrushes and sparrows stop at my station, the sparrow, Potter and drop traps again become effective. In winter a few drop and Potter traps are kept open. Cold weather prevents the use of dripping water, so a pan of water is placed daily in the open for all birds to use.

Table 1 shows the value of various types of traps during a representative year. The number of birds captured in each type is listed for each month. It should also be emphasized that the total number of birds for each type does not demonstrate the comparative value of the specific type since species caught in the tree trap might never go into any of the others and warblers seldom use the Potter traps.

TABLE 1.
Types of Traps

<i>1937</i>	<i>Sparrow</i>	<i>Drop</i>	<i>Potter</i>	<i>House</i>	<i>BrenckleWater</i>	<i>Cohasset</i>	<i>Tree</i>
Jan.		5					
Feb.		2					
Mar.	8	5	19				
Apr.	3	27	36	14	14		9
May	17	61	78	79	163	24	3
June		1	6	15	14	2	
July	1	24	4	45	43	12	

Aug.	10	28	2	36	128	30	
Sept.	19	142	166	241	541	447	2
Oct.	87	369	523	151	650	66	10
Nov.	17	208	179	60	202	5	3
Dec.		44	34	3	19	1	1
Total	162	916	1047	644	1774	587	28

During the spring and fall migrations all of the traps are open for captures. Banding for me begins at dawn each day and continues until nightfall. Six drop traps are kept under constant observation and they keep me busy all day. All of the traps when in operation are visited at least once an hour. During the migratory periods more frequent inspections are made. Sometimes the traps may contain only a dozen birds, then again, all of the 15 gathering cages may be filled with captives during one round of the traps. As soon as a bird is put into the gathering cage, a cloth is dropped over it. This quiets the bird and prevents fluttering and possible injury. All birds are taken indoors, banded, examined for external parasites and then released.

In the spring the traps are baited with chick feed, cracked corn, hemp, corn-meal, millet, wild rice, whole wheat bread and suet. To entice the Robins, Thrushes, Catbirds, etc., cranberries, grapes and pieces of tomatoes are used.

In the fall the various berries from the shrubs on our place and from outside collections are used as bait. When the various sparrows begin to arrive, a variety of grains are put in the traps. Birdwood is equipped with an overhead line of three-eighths inch copper tubing which carries water to nearly all of the traps. This dripping water is the best lure.

Winter feeding at the station attracts Northern Downy Woodpeckers, Northern Blue Jays, Black-capped Chickadees, Starlings, House Sparrows, Eastern Redwings, Eastern Goldfinches, Slate-colored Juncos, Eastern Tree, Fox, Song and White-throated Sparrows and an occasional Eastern Robin and Eastern Hermit Thrush; in all about 100 individuals. Food is spread about the ground near the house and under a few traps. I trim discarded Christmas trees with various nuts, bread, doughnuts and suet.

Seven Black-capped Chickadees spent the winter of 1937 at Birdwood and kept us busy replenishing the nuts on these trees.

For several winters two unbanded Northern Downy Woodpeckers have occupied separate bird houses at the station during the night. One winter I had a banded male in Birdwood but I never succeeded in capturing him to learn his identity. On November 19, 1938, I banded a male Downy and this bird and another male

occupy the two bird houses and they will probably stay throughout the winter. My records show that these woodpeckers leave their lodgings at seven in the morning and return at about four-thirty each afternoon.

The other winter birds begin to appear at daylight and remain throughout the day. As the afternoon advances, small groups will begin to fly away, the last flock flying to the southwest at about four-thirty. A few of the Juncos, White-throated, Fox and Song Sparrows find protective quarters for the night in near-by evergreen trees, in dense shrubbery and in the vines along the fence.

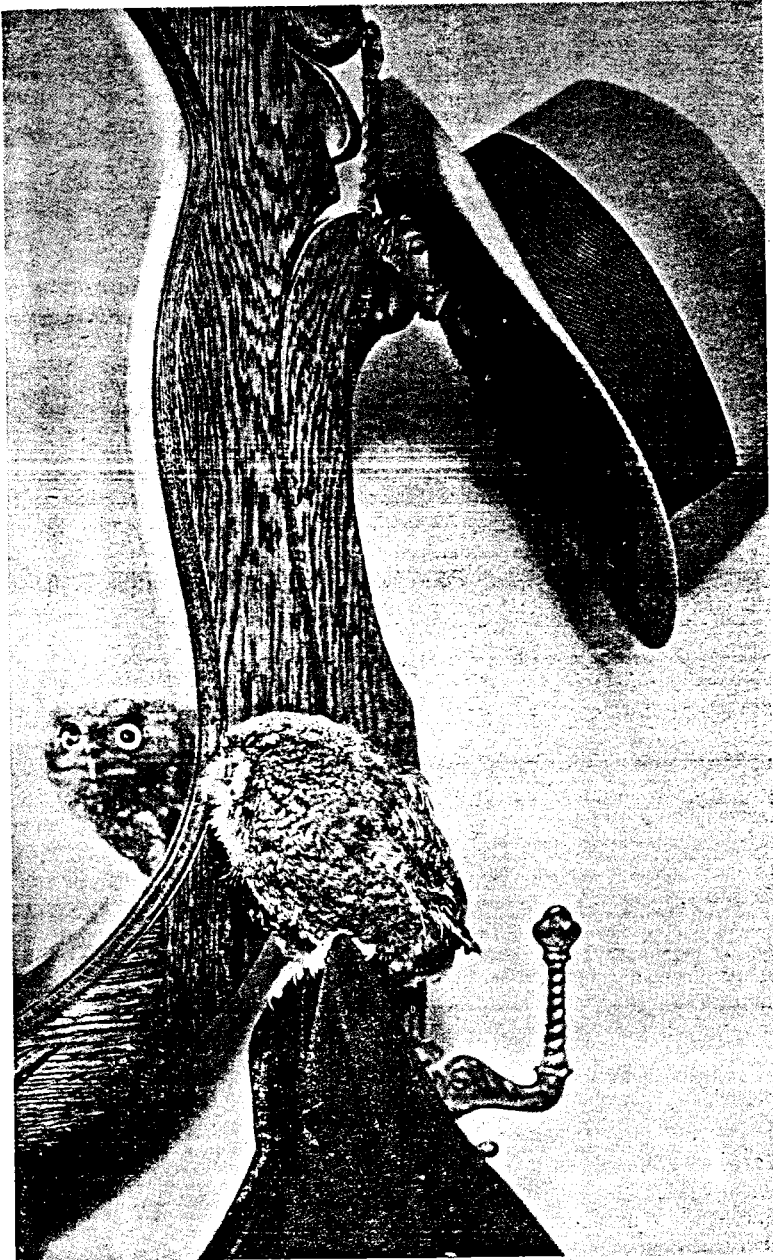
Many interesting adventures have developed through my banding activities. On one occasion "Bobby," a young Eastern Robin, unable to fly, was captured in a Potter trap. He was banded, given a few berries and placed on the lawn. Late that same day he was again in the same trap. I kept him indoors for a time. After a little attention, he learned to feed himself and to fly.

On pleasant days he was placed in the house trap. Here he could find angleworms and the berries I scattered in the trap. He was growing rapidly, losing his juvenile feathers and learning to alight on any perch he tried to reach. Fall migration was at hand and flocks of Robins began to assemble near the station. On a bright September afternoon, the bird was put into a drop trap. Then the trap was slowly raised. After a few minutes, Bobby walked out, played with the leaves and pebbles around the trap and then flew to a tree. Later he joined a group of Robins that soon started south.

An injured young Eastern Screech Owl in the red phase of plumage was found in a Long Island wood. One eye was closed and one wing had been damaged. He could sit on a perch but could not fly. I fed him insects, chopped meat and bread. These various items had to be pushed down his throat. After he had been with us for a few days I secured a live mouse for him and placed it in his cage. "Snapper" as I called him paid no attention to it. Next morning when I looked into his cage, no mouse could be seen. I discovered that it had fallen from a warm hiding place between the body and a wing of the owl. The mouse was then cut into small bits and these Snapper ate. The owl flew about the house during the day. One day he was found perched on the hall hat rack gazing at his image in the mirror. He had found a pal, see photograph. After about a month of care, Snapper recovered so that he could use the injured eye and could fly accurately. He was then released in the same woods where he had been found.

Over 30,000 birds have been banded since 1928. Of this number, 337 birds representing 16 species have been banded at the salt marshes and beaches of Long Island while 97 species have been banded at Birdwood. The species banded at the station are listed below. The numbers in parentheses after each species represent the number banded.

American Woodcock, *Philohela minor* (1); Eastern Mourning



The Screech Owl Has Found a Pal

Dove, *Zenaidura macroura carolinensis* (1); Yellow-billed Cuckoo, *Coccyzus americanus americanus* (11); Saw-whet Owl, *Cryptoglaux acadia acadia* (1); Ruby-throated Hummingbird, *Archilochus colubris* (9); Northern Flicker, *Colaptes auratus luteus* (149); Yellow-bellied Sapsucker, *Sphyrapicus varius varius* (10); Northern Downy Woodpecker, *Dryobates pubescens medianus* (11); Eastern Phoebe, *Sayornis phoebe* (34); Yellow-bellied Flycatcher, *Empidonax flaviventris* (42); Alder Flycatcher, *Empidonax trailli trailli* (12); Least Flycatcher, *Empidonax minimus* (16); Northern Blue Jay, *Cyanocitta crisata crisata* (115); Black-capped Chickadee, *Penthestes atricapillus atricapillus* (15); White-breasted Nuthatch, *Sitta carolinensis carolinensis* (2); Red-breasted Nuthatch, *Sitta canadensis* (7); Brown Creeper, *Certhia familiaris americana* (98); Eastern House Wren, *Troglodytes aedon aedon* (61); Eastern Winter Wren, *Nannus hiemalis hiemalis* (58); Carolina Wren, *Thryothorus ludovicianus ludovicianus* (3); Eastern Mockingbird, *Mimus polyglottos ployglottos* (1); Catbird, *Dumetella carolinensis* (795); Brown Thrasher, *Toxostoma rufum* (449); Eastern Robin, *Turdus migratorius migratorius* (2362); Wood Thrush, *Hylocichla mustelina* (130); Eastern Hermit Thrush, *Hylocichla guttata faxoni* (2795) Olive-backed Thrush, *Hylocichla ustulata swainsoni* (729); Gray-cheeked Thrush, *Hylocichla minima aliciae* (262); Bicknell's Thrush, *Hylocichla minima minima* (109); Veery, *Hylocichla fuscescens fuscescens* (276); Eastern Bluebird, *Sialia sialis sialis* (1); Eastern Golden-crowned Kinglet, *Regulus satrapa satrapa* (176); Eastern Ruby-crowned Kinglet, *Corthylio calendula calendula* (262); Cedar Waxwing, *Bombycilla cedrorum* (120); Starling, *Sturnus vulgaris vulgaris* (3732); White-eyed Vireo, *Vireo griseus griseus* (3); Blue-headed Vireo, *Vireo solitarius solitarius* (9); Red-eyed Vireo, *Vireo olivaceus* (155); Philadelphia Vireo, *Vireo philadelphicus* (1); Eastern Warbling Vireo, *Vireo gilvus gilvus* (2); Black and White Warbler, *Mniotilta varia* (232); Prothonotary Warbler, *Protonotaria citrea* (1); Worm-eating Warbler, *Helmitheros vermivorus* (37); Golden-winged Warbler, *Vermivora chrysoptera* (5); Blue-winged Warbler, *Vermivora pinus* (67); Tennessee Warbler, *Vermivora peregrina* (12); Orange-crowned Warbler, *Vermivora celata celata* (1); Nashville Warbler, *Vermivora ruficapilla ruficapilla* (54); Northern Parula Warbler, *Compsothlypis americana pusilla* (118); Eastern Yellow Warbler, *Dendroica aestiva aestiva* (93); Magnolia Warbler, *Dendroica magnolia* (161); Cape May Warbler, *Dendroica tigrina* (5); Black-throated Blue Warbler, *Dendroica caerulescens caerulescens* (80); Myrtle Warbler, *Dendroica coronata* (1066); Black-throated Green Warbler, *Dendroica virens virens* (63); Blackburnian Warbler, *Dendroica fusca* (12); Chestnut-sided Warbler, *Dendroica pensylvanica* (41); Bay-breasted Warbler, *Dendroica castanea* (11); Black-poll Warbler, *Dendroica striata* (331); Northern Pine Warbler, *Dendroica pinus pinus* (4); Northern Prairie Warbler, *Dendroica discolor discolor* (24); Western Palm Warbler, *Dendroica palmarum*

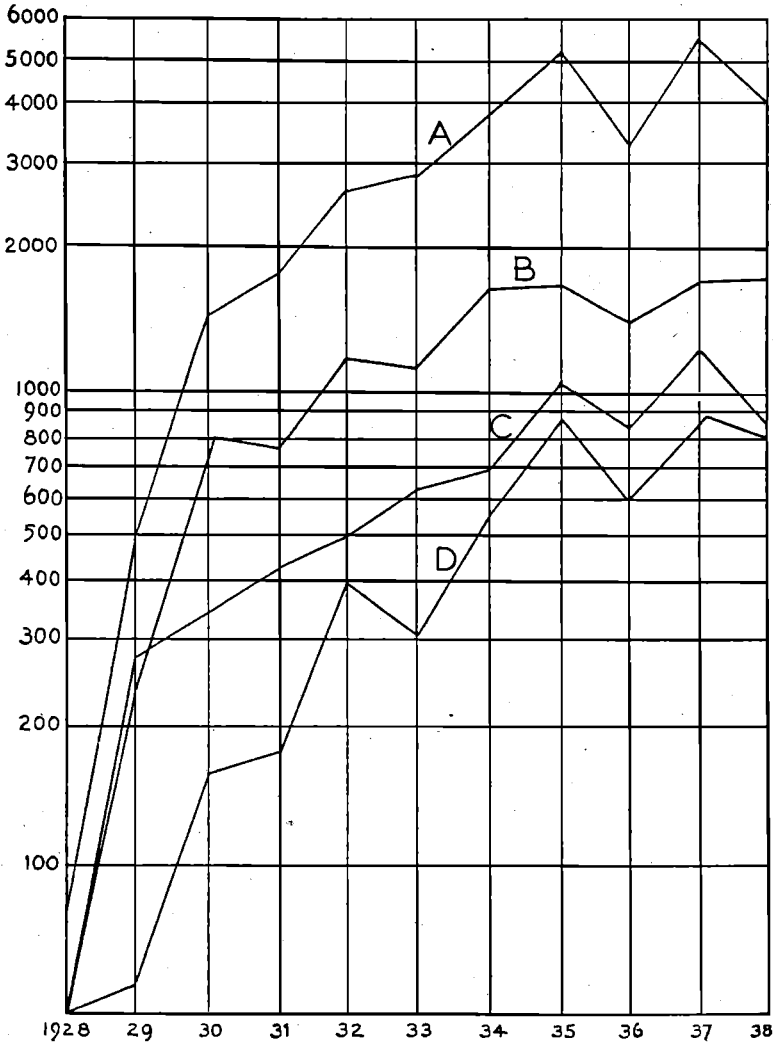


FIG. 1.—Graph showing numbers of birds banded each year. A represents the total number for all species, B shows the number of Fringillidae banded, C the number of Turdidae and D the number of Compothlypidae.

palmarum (3); Yellow Palm Warbler, *Dendroica palmarum hypochrysea* (28); Ovenbird, *Seiurus aurocapillus* (511); Northern Water-Thrush, *Seiurus noveboracensis noveboracensis* (303); Connecticut Warbler, *Oporonis agilis* (12); Mourning Warbler, *Oporonis philadelphia* (2); Northern Yellow-throat, *Geothlypis trichas brachidactyla* (508); Yellow-breasted Chat, *Icteria virens virens* (24); Hooded Warbler, *Wilsonia citrina* (9); Wilson's Warbler, *Wilsonia pusilla pusilla* (52); Canada Warbler, *Wilsonia canadensis* (131); American Redstart, *Setophaga ruticilla* (661); Eastern Redwing, *Agelaius phoeniceus phoeniceus* (25); Orchard Oriole, *Icterus spurius* (1); Baltimore Oriole, *Icterus galbula* (95); Rusty Blackbird, *Euphagus carolinus* (1); Purple Grackle, *Quiscalus quiscula quiscula* (100); Eastern Cowbird, *Molothrus ater ater* (28); Scarlet Tanager, *Piranga erythromelas* (77); Rose-breasted Grosbeak, *Hedymeles ludovicianus* (7); Indigo Bunting, *Passerina cyanea* (13); Eastern Purple Finch, *Carpodacus purpureus purpureus* (155); Eastern Goldfinch, *Spinus tristis tristis* (51); Red-eyed Towhee, *Pipilo erythrophthalmus erythrophthalmus* (731); Eastern Savannah Sparrow, *Passerculus sandwichensis savanna* (2); Slate-colored Junco, *Junco hyemalis hyemalis* (1354); Eastern Tree Sparrow, *Spizella arborea arborea* (264); Eastern Chipping Sparrow, *Spizella passerina passerina* (83); Eastern Field Sparrow, *Spizella pusilla pusilla* (129); White-crowned Sparrow, *Zonotrichia leucophrys leucophrys* (43); White-throated Sparrow, *Zonotrichia albicollis* (6705); Eastern Fox Sparrow, *Passerella iliaca iliaca* (1654); Lincoln's Sparrow, *Melospiza lincolni lincolni* (33); Swamp Sparrow, *Melospiza georgiana* (121); Eastern Song Sparrow, *Melospiza melodia melodia* (623).

The total number of birds banded each month for the ten years is listed in Table 2.

TABLE 2
Birds Banded Each Month for Ten Years

Species	Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Total	Grand Total
5	1928							1		2	32	3		38	38
35	1929			2	25	38	10	13	24	59	297	43	3	513	551
53	1930	8	3	7	25	117	12	19	28	111	905	184	115	1534	2085
58	1931	44	8	9	25	88	38	72	52	220	748	303	88	1695	3780
65	1932	23	60	42	74	268	15	71	79	412	1394	226	56	2720	6500
74	1933	116	100	76	84	329	33	119	183	338	981	229	92	2750	9250
76	1934	118	341	155	44	386	85	74	210	285	1557	475	39	3769	13019
96	1935	68	166	75	182	441	251	140	221	1375	1793	322	49	5083	18102
83	1936	101	114	118	89	287	86	235	331	539	1120	328	29	3377	21479
85	1937	5	2	33	103	428	173	170	237	1561	1876	674	102	5364	26843
79	1938	67	35	49	143	656	50	231	244	529	1591	222	29	3784	30627

The yearly fluctuation in the number of birds banded is shown in the accompanying graph (Figure 1). The fluctuations in numbers of Turdidae, Compothlypidae and Fringillidae, the families of which the greatest numbers were banded, are also shown. With the exception of 1929 when more of the Turdidae were caught than were the Fringillidae, the latter have been the most abundant. The types of traps used seem adequate explanation for this fact.

The increase from year to year, 1928 to 1935, in the number of birds banded (graph 1) may be largely accounted for by the increase in station equipment and the planting of berry trees and shrubs. The drop in numbers in 1936 and 1938 I cannot explain. Many rain-storms during these two years may account for some of the decrease. Other contributing factors may also be involved. It is interesting to note that all groups showed a decrease in 1936 whereas in 1938, with no change in the number of traps and plants over the previous year, although the total number of captures of new birds decreased and the Turididae showed a decided drop, the Compothlypidae decreased only slightly while the Fringillidae remained about the same. Can these changes be due to weather conditions during the breeding time? Do they represent population cycles? Do weather conditions change their course, or stopping-off place during migration or are other factors involved?

RETURNS AND RECOVERIES

Of a total of 30,290 birds banded at Birdwood only 152 have returned to Birdwood while 210 of the total have been reported as recoveries to the United States Biological Survey.

Of 149 Northern Flickers (*Colaptes auratus luteus*) banded, one banded in May returned to the station in September of the same year. B 335239, banded as an adult male on October 25, 1932 was found dead the next day at St. Albans, Long Island, about 8 miles from the station. 34-359991, banded as an adult female October 16, 1935 was caught February 1, 1936 at Bethel, North Carolina.

Of 11 Northern Downy Woodpeckers (*Dryobates pubescens medianus*) banded, two, both females, were subsequently found dead, one at the station four months after banding. The other, 34-146572, banded November 16, 1934, was found dead on February 17, 1938 at Great Neck, Long Island.

Of 115 Northern Blue Jays (*Cyanocitta crisata crisata*) banded, three have returned to the station the year after banding. One of these, banded October 14, 1934, returned on May 15, 1935 and again on May 17, 1936. C 335809, banded August 23, 1934, was found dead June 10, 1937 at Forest Hills, Long Island, and 34-360000, banded October 21, 1935, was captured on January 22, 1938 at Amagansett, Long Island.

Of 795 Catbirds (*Dumetella carolinensis*) banded, four banded in 1937 returned to the station one year after banding. A 268167, banded May 12, 1933, was found dead September 26, 1933 in

Yonkers, N. Y. 36-122462, banded October 14, 1937, was found dead October 26, 1937 at Newport, N. J.

Of 449 Brown Thrashers (*Toxostoma rufum*) one, banded in May 1929, returned to the station in May 1930; one, banded on May 21, 1937 returned in September of the same year, while another, banded on the same day, returned in May 1938. B 335035, banded September 21, 1932, was found dead on May 9, 1935 at Westbury, Long Island. 35-329824, banded on September 4, 1936, was killed by a cat the following May at Hastings-on-Hudson, N. Y. 35-332620, banded September 12, 1937, exactly three months later was caught near Fargo, Georgia, and 35-332873, banded September 24, 1937, was found dead on May 28, 1938 at Byfield, Mass. C335748, banded May 23, 1934, has proven to be one of my most interesting recoveries. While on a bird trip in June 1937 at Flushing, Long Island, about four miles from Birdwood, a thrasher with a band was observed nesting. On June 23 it was captured near the nest in a Potter trap and identified. Its mate and four young were also banded.

Of 2363 Eastern Robins (*Turdus migratorius migratorius*) banded, at Birdwood, 30 have returned to the station and 27 have been caught elsewhere, in each case a little over one per cent. One bird was found dead at the station and one was killed by a cat in a neighbor's yard about a month after banding. Four banded in the spring were trapped at Birdwood the following fall. Twenty-two Robins returned to the station about one year after banding. B 380610, banded as a juvenile on July 20, 1933, was captured at Birdwood one August 2, 1934 and again on April 18, 1935 and has not been heard from since. C 338250 has the most complete record. This bird was banded on April 22, 1935, returned to Birdwood April 14, 1936, August 22, 1937 and April 13, 1938. On July 2, 1938 it was killed by a cat in a neighbor's garden. 35-332586, banded on May 1, 1937, returned on March 24, 1938 and was killed by a cat on April 21, 1938 in a nearby town. Four Robins were found dead in nearby towns the same year they were banded. 38-210252 was banded as a juvenile bird on October 10, 1937 and was trapped and released on October 17, 1937 by L. F. Coster at Maspeth, Long Island. 35-329825 was banded September 4, 1936 and was trapped and released on October 9, 1936 by Robert Ralston at Flushing, Long Island. Five Robins were reported dead in nearby towns about one year after banding and two were similarly reported about two years after banding, while one, banded as an immature bird, was found dead three years later in Brooklyn, N. Y. Three of my Robins met their death in Westchester County, N. Y. across Long Island Sound, one, two and three years after banding. One of these was apparently killed by a golf ball.

A few of the Robins have turned up for identification far away from Birdwood. B 380646, banded as a juvenile on August 27, 1933, was captured in Tyner, North Carolina on March 4, 1934. Another

immature bird, banded on July 27, 1935, was killed at Cottonport, La., on January 19, 1936. 35-329751, banded August 4, 1936, was shot at Branford, Florida, on March 3, 1937. An adult, banded October 24, 1936, was found injured at Cleveland County, North Carolina, on February 21, 1937. Another, banded as an immature bird on September 13, 1935, was found dead at Hemingway, South Carolina, on December 1, 1937. Another immature, banded September 24, 1935, was caught near Sylvania, Georgia, on March 18, 1938. An adult, banded on September 29, 1937, was found dead on December 28, 1937 near Blenheim, South Carolina, and another adult, banded November 7, 1937, was found dead at Freeland, North Carolina, on December 17, 1937. At least five of the Robins were killed by cats.

Of 2795 Eastern Hermit Thrushes (*Hylocichla guttata faxoni*) banded, B 116085, banded October 31, 1930, was found exhausted at Brunswick, Georgia, on February 13, 1933. 35-121039, banded on October 24, 1935, was caught by a cat at Lakeport, New Hampshire, on August 19, 1937.

Of 176 Eastern Golden-crowned Kinglets (*Regulus satrapa satrapa*) banded, F 21752, banded November 5, 1931, was found dead at Suwanee, Georgia, on January 19, 1933.

Of 3752 Starlings (*Sturnus vulgaris vulgaris*) banded, 27 have returned to Birdwood and 127 have been reported elsewhere. These results will be reported in a later paper.

Of Blue-winged Warblers (*Vermivora pinus*), one of the 67 banded has been heard from. This bird, 34-50149, was banded on August 17, 1935. On May 7, 1937, it flew into a screened porch at Westbury, Long Island and was identified and released.

Of Cape May Warblers (*Dendroica tigrina*), only one of the 5 banded, 36-25710, banded on September 12, 1937, was caught by a cat at Cleveland, Tennessee, on October 15, 1937.

Of 1066 Myrtle Warblers (*Dendroica coronata*) banded, one, banded November 7, 1935, was found dead at Oyster Bay, Long Island, January 25, 1936. Another, banded October 19, 1936, was caught at Awensdaw, South Carolina, on December 9, 1936.

Of 28 Yellow Palm Warblers (*Dendroica palmarum hypochrysea*) H 27223, banded October 13, 1932, was caught at Dunn, North Carolina, January 15, 1933.

Of 100 Purple Grackles (*Quiscalus quiscula quiscula*) banded, two were killed four months after banding and one was found dead a year later in New Jersey. One was found dead in Queens Village, Long Island, a year after it was banded and another was trapped and released about a year after banding by M. C. Rich in Central Park, New York City.

Of 731 Red-eyed Towhees (*Pipilo erythrophthalmus erythrophthalmus*) banded, a female, banded May 16, 1936, was found dead June 7, 1936 at Vineyard Haven, Massachusetts. Another female,

banded October 5, 1937, was killed April 29, 1938 at Crystal River, Florida.

Of 1354 Slate-colored Juncos (*Junco hyemalis hyemalis*) banded, none returned to Birdwood and only three were caught elsewhere. C 37666, banded October 6, 1930, was captured December 20, 1932 at Mt. Airy, Georgia. F 26935, banded November 2, 1932, was captured and released without its band on November 8, 1933 at Shelbyville, Indiana. L 2849, banded November 2, 1934, was captured January 27, 1935 at Sandersville, Georgia.

Of 264 Eastern Tree Sparrows (*Spizella arborea arborea*) banded, 43 have returned to Birdwood. 14 banded in the winter returned the following winter, while 8 returned for 2 years and 3 for 3 years. My oldest Tree Sparrow is F 26960, banded February 13, 1933. It has returned February 16, 1936, February 26, 1937 and February 22, 1938.

Of 129 Eastern Field Sparrows (*Spizella pusilla pusilla*) banded, one recovery has been reported, H 27290, banded October 21, 1932, was shot on April 7, 1937 at York, Pennsylvania.

Of 6705 White-throated Sparrows (*Zonotrichia albicollis*) banded, only four have returned to the station. C 176306, banded October 28, 1933, returned February 6, 1935; 34-146362, banded November 6, 1934, was found injured at Birdwood on May 30, 1935; C 176615, banded November 18, 1933, returned December 30, 1934 and on March 8, 1936, while 36-121606, banded November 29, 1936, returned April 14, 1938 and December 10, 1938. B 116127, banded November 1, 1930, was trapped and released on November 11, 1932, at Silver Springs, Maryland, by Harold S. Peters, the first bird Mr. Peters trapped at his station. 36-122591, banded October 15, 1937, was captured and released on January 15, 1938 at Prosperity, South Carolina, by Edward Hawkins, and 34-172011, banded October 14, 1935, was caught on February 3, 1936 at Florence, North Carolina. Three have been found dead: 34-146413, banded November 10, 1934, was found frozen on February 19, 1936, at Malba, Long Island; 36-122432, banded October 14, 1936, was found dead February 3, 1938 at Olanta, South Carolina, and the same fate happened to 36-121593 at West Englewood, New Jersey, on March 5, 1938. It had been banded on November 26, 1936; B 188334, banded October 22, 1932, was at Mullins, South Carolina, on February 20, 1936. Four birds banded in the fall have been shot during the following winter; one at Brookneal, Virginia, one at Williamaton, North Carolina, one at Hartsville, South Carolina, and another at Willacoochee, Georgia.

Of 1654 Eastern Fox Sparrows (*Passerella iliaca iliaca*) banded, 36-121516, banded November 17, 1936, was trapped and released on November 22, 1936, at Demarest, New Jersey, by B. S. Bowdish. 34-146428, banded November 10, 1934, was caught on January 30, 1936, at Cerro Gordo, North Carolina. 38-121439, banded September 13, 1937, was reported at Columbus, North Carolina, on January

23, 1938. 36-110400, banded November 8, 1936, was found dead November 13, 1937 at Holden, Massachusetts.

Of 623 Eastern Song Sparrows (*Melospiza melodia melodia*) banded, 15 have returned to the station about one year after banding and one two years after banding. B 141301, banded March 12, 1932, returned January 30, 1935; 34-146747, banded April 4, 1935, returned January 6, 1936 and June 10, 1938; L 2892, banded December 22, 1934, returned March 31, 1936 and April 2, 1937.

Six birds have been recovered at this station that have been banded elsewhere.

SUMMARY

Since June, 1928, I have banded on Long Island a total of over 30,627 birds representing 113 species. Of this number 30,290 including 97 species, have been banded in the yard at my home—Birdwood—which has an area of about half an acre in a residential section of Greater New York City. Starting the first year with a single trap, the number now has been increased to about 80. Arranging the traps in small groups has yielded the best results. The traps are baited with water as well as grains and berries in season. A great variety of plants are used to attract the birds.

The greatest number of birds banded in any one year was 5364 in 1937. The greatest number for one month was 1876 in October 1937. The largest number of birds banded on any one day was 267 on September 24, 1935. Yearly fluctuations in the number of birds banded are attributable to types and number of plants and shrubs that attract the birds, kind of bait used, weather conditions and undetermined factors.

A greater number of banded birds have been reported away from the station (210) than have returned to the place of banding (152). The bird that has yielded the most data was a Robin, C 338250, banded as an adult on April 22, 1935. This bird returned to my traps on April 14, 1936, August 22, 1937 and April 13, 1938. It was killed by a cat in a neighbor's yard on July 2, 1938. The oldest bird of which I have record is an Eastern Tree Sparrow banded February 13, 1933, considered an adult when banded, which was last recorded at my station on February 22, 1938, a bird at least six years of age. A Slate-colored Junco, banded at Birdwood, has been reported as far west as Shelbyville, Indiana. A Starling, banded March 16, 1934, was caught on January 27, 1935 at Grand Caseopedia, Bonaventure County, Quebec, Canada. One of my Robins was shot at Branford, Florida; another was killed at Cottonport, Louisiana.

Besides the Starlings, which are not reported in this paper, the greatest number of returns and recoveries have been from Robins and various species of sparrows. I have banded 4662 warblers including 33 of the 37 species reported to occur in this region. None of these warblers has thus far been retrapped at Birdwood but five of them have been reported elsewhere.

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