

A TEN-YEAR RECORD OF BIRD OCCURRENCE ON THE HASTINGS RESERVATION

By JEAN M. LINSDALE

The Frances Simes Hastings Natural History Reservation is a 1600-acre tract in the northern Santa Lucia Mountains, in Monterey County, California. As a part of the plan to study continuously the biology of an undisturbed area, numerous persons have made observations on birds in the interval from October, 1937, to May, 1947. In this condensed summary the status is indicated for each of the 139 species so far recorded. The birds are discussed in three groups: 48 kinds that live on the area for their complete life cycle; 52 kinds that live here regularly but are unable to complete their life cycle; 39 kinds that are unable to live on the Reservation or to stay for long if they do come.

The five birds that we see most frequently are the California jay, spotted towhee, brown towhee, plain titmouse, and Oregon junco and each has been recorded on more than 97 per cent of the days in the field. A person who knows these birds knows the types of woodland and brushland inhabited by the characteristically upper foothill birds in California. Next on the list, in order of frequency of observation, is the crow, a few being present nearly every day. Up to 6 pairs nest on the area and wintering flocks may number 200. The number of linnets, the period of their stay each year, and the amount of ground occupied were considerably restricted by the natural changes which took place in the vegetation after 1937. Yellow-billed magpies have more than doubled in the ten years; as many as 200 come to roost in the winter. Numbers of California woodpeckers have fluctuated with differing acorn crops, but the occurrence of oaks makes it possible to be within hearing of the birds at almost any spot on the Reservation. Reduction of California quail which came with the increased density of ground cover has changed to an increase with the recent dry years. The winter influx of red-shafted flickers is reduced to fewer than 10 nesting pairs by spring.

The 7 to 10 pairs of black phoebes about buildings and bridges are reduced to one or two birds in severe winters and sometimes none is left for short periods. Except for possible reduction in the severest winters the wren-tit maintains high numbers over more than half the area. The western bluebird is the only member of the thrush family with complete life cycle on the Reservation and we see it on 9 out of 10 days spent in the field. The total white-breasted nuthatch population is not high, and sometimes it is difficult to find a single bird among the lone oaks, in parkland, or in the closed woods where it lives. In the early months of our stay the open ground was so nearly bare that we saw no meadowlarks, but as soon as sufficient grass was present this bird became a conspicuous resident. The green-backed goldfinch seems better adapted to the natural conditions of the region than many of the seed-eating birds, for it was less affected by the changes which came after farming was stopped. The Lawrence goldfinch occurs along with the green-backed, but it exhibits greater irregularity in presence and greater fluctuations in numbers.

At least one colony of lark sparrows has remained resident, but there are indications that these birds are being crowded out by the accumulating cover of plants. Characteristic of the streamside bushes, the California thrasher seemed to increase gradually through at least the early part of the ten-year period. We have seen Nuttall woodpeckers regularly among the streamside bushes, in parkland, and in closed woods, and we have

encountered the species about 4 times as often as the hairy and about 7 times as often as the downy.

We have designated the mourning dove as resident with complete life cycle although its numbers were small in winter and recently none stayed through winter, the reduction paralleling the increased density of low plant cover. Area occupied and total numbers of the purple finch are least in the nesting season and greatest in the fall when wild fruits are most widely available. In early years the normally resident bush-tit was scarce, probably as a result of starving in the severe winter of 1936-37, but a gradual increase brought the species to a high rank implied by its special affinity for live oaks. Two or 3 pairs of the sparrow hawk have nested on the area or close beside the boundary, but recovery of the vegetation apparently makes the land less favorable for it, and in later years the bird has been present less continually. Restriction of the Steller jay to the small extent of closed woods makes the total number on the Reservation small. The Anna hummingbird usually is considered non-migratory, but here none is found in severe parts of winter and nearly all individuals leave when cool fall weather comes. The Bewick wren is regularly present, inconspicuous and close to cover, in dense bushes, streamside bushes, lone trees, parkland, and closed woods. The one or two nesting pairs of red-tailed hawks and their young as well as individuals which range onto the tract make the sight of one nearly a daily occurrence except in the most severe weather of winter. Close restriction of song sparrows to streamside bushes and more open sections of the streams limits the habitat to less than 2 miles of intermittent creek bed where numbers rose as the vegetation increased after grazing stopped and then decreased when the streams remained dry for year-long intervals; in any year fewer were present in winter than summer.

In some years the chipping sparrow is resident with complete life cycle on the area, but in every winter there has been a period when none was seen; it is present regularly in small numbers from mid-April to mid-September. The sharp-shinned hawk nests here some years, but it is most numerous as a transient in the fall. Hutton vireos increased to occupy the whole live oak woodland after depletion in the severe winter of 1936-37. Usually a pair, sometimes a single bird and sometimes three, barn owls have lived almost continuously in an unused barn but successful broods seldom matured. Several pairs, possibly 4 or 5, of the horned owl reside on the area. The Cooper hawk is usually present through the year, but it is likely that the nesting pairs are replaced at other seasons by transients. Screech owls are more numerous and widespread through the year in the parkland and closed woods than any other owl. Mountain quail have increased in numbers through the 10 years, but they remain restricted to the more heavily wooded portions of the area. The Bell sparrow is closely restricted to sparse and dense bushes and is not seen unless special search is made for it. Road-runners, one to 4 birds at a time, have been seen in each month except November and December on bare ground, and in low grass, sparse bushes, and parkland with records most numerous in the spring and in the driest years. Both the brown creeper and chestnut-backed chickadee are represented by one or two nesting pairs in the moister woods and along the more heavily shaded canyons. The latter species was not found for two full years after the cold and stormy 1936-37 winter. A few rufous-crowned sparrows live in sparse bushes, dense bushes, and streamside bushes and they keep close within the cover provided by the low plants in these situations. The pigmy owl has so increased in the woodland that individuals are heard on almost every day in the field. Several broods of the saw-whet owl were reared successfully in the summer of 1940, but we have not since then detected the species. A resident pair of dipper occupied about a mile of creek length on the Reservation from 1942 until the recent drouth caused the stream to become intermittent.

This concludes the list of 48 birds which so far have demonstrated a capacity to

find all the requirements for a complete life cycle on the tract. Not all of them are able to stay through the whole year or to stay every year, but they are able to live in some years on the kind of land represented. The varying numbers and differing habitats occupied show further characteristics in response to the land.

Another group of 52 birds lives regularly on the Reservation, but none is able to complete its life cycle there. Because this group includes birds resident in the near vicinity, nesters on the area, winter visitants, and transients all represented by highly variable numbers in different years, the arrangement is in systematic order. One or more turkey vultures fly across the area regularly through the summer from mid-March to August or September; extreme dates being February 22 and October 16. The nearest nesting site of the golden eagle is about a mile outside the Reservation; members of at least two pairs came regularly to hunt when ground squirrels were still plentiful. More than 60 occurrences of the marsh hawk, a casual visitor, have represented all the months but May and August with peaks in January and November. Among 19 brief occurrences of prairie falcons, all but one of single birds, all the months were represented but January and April. One or two duck hawks were recorded on 5 February dates, once in June, twice in September. The pigeon hawk was seen in the parkland on 13 dates between September 26 (1940) and April 6 (1938). Small numbers of the killdeer make exploratory or migratory flights over the Reservation through the year, for records cover every month but June and July. The band-tailed pigeon is winter visitant on the Reservation, although a few nest in the region. Here the bulk of the birds come in October and November, with extreme dates July 4 and May 28 except for a record on June 8, 1945. The summer resident poor-will has been detected in every month but December and January. The birds have been heard on bare ground, among sparse bushes, and in parkland from February 16 (1946) to November 30 (1937). Earliest and latest dates for the summer resident black-chinned hummingbird are March 18 (1946) and September 24 (1945). All other spring records are after mid-April. The Allen hummingbird is present as a nester from March to July; March 28 (1944) and July 31 (1944) being extreme dates. The belted kingfisher has been resident although with incomplete life cycle on the Reservation, for the birds which come have nesting sites down the stream below the area. The occurrences are distributed through the year, with the greatest number in September. In the large wintering population of flickers there are many hybrids and the gross appearance of a few indicates they belong to the yellow-shafted species. Records show presence between October 21 and February 6. A few winter red-breasted sapsuckers occur among dense bushes, streamside bushes, parkland, and closed woods between September 23 (1946) and April 16 (1940).

One or two nesting pairs of Arkansas kingbirds inhabit lone trees and parkland in the vicinity of buildings through the early summer, extreme dates: March 28 (1947) and July 23 (1945). The ash-throated flycatcher is a regular nester in the parkland, coming as early as April 10 (1938) and remaining as late as August 24 (1942). One or two winter visitant Say phoebes are seen each winter over low grass, tall grass, sparse bushes, among lone trees, in parkland, and about buildings from September 12 (1942) to March 25 (1939), with 2 other dates on May 23, 1938, and August 20, 1943. The summer resident western flycatcher occupies the streamside bushes, closed woods, and vicinity of buildings for as much as 6 months of the year, extreme dates being March 11 (1941) and October 5 (1939). Another flycatcher, the wood pewee, lives for less than 5 months of the summer in the streamside bushes, parkland, and closed woods with seasonal limits between April 15 (1942) and September 18 (1939). Records of the olive-sided flycatcher extend from April 9 (1939) to August 21 (1946) with the few individuals staying only long enough to complete their nesting.

Extreme dates for the violet-green swallow are February 17 (1938) and October 3 (1942), but this is a much longer interval than most of the nesters stay here. They are seen in the air and among lone trees and parkland. Cliff swallows at first nested in small numbers, but after 1941 their annual stay became shorter, and in some years there was only one record, obviously of summer stragglers. Extreme dates are April 3 (1939) and August 9 (1938). Cavities in lone valley oaks on flats and hilltops were occupied by a few pairs of nesting purple martins whose stay extended from as early as March 30 (1942) to September 25 (1946). House wrens have normally been summer residents from late March to August or September, with stragglers present in some years as late as December 1 (1937) and 15 (1939) and one record for January 4 (1939). Robins are regularly winter visitants, sometimes in large numbers, in the period ranging from September 28 (1942) to May 13 (1941) with the last normally sometime in April, once as early as February 3 (1943) and one in summer on July 21 (1944). The varied thrush is present in winter, sometimes numerous and sometimes scarce, in the period between October 27 (1937) and April 15 (1945). Winter visitant hermit thrushes have been seen between September 26 (1945) and April 21 (1938 and 1945), but a young bird that could not have traveled many miles from the nest, seen on July 12, 1943, was a reminder that the species nests in the region. The russet-backed thrush is summer resident but we have not yet established that it nests within the Reservation boundaries. The 36 occurrences were between April 22 and September 14 and nearly half of them were in May.

Blue-gray gnatcatchers are characteristic summer residents with incomplete life cycle in the parkland, with extreme dates of occurrence between February 28 (1938) and September 28 (1938). From the last week of September (17th in 1945) to the last week of April (27th in 1938) we expect to see the ruby-crowned kinglet daily in dense bushes, streamside bushes, parkland, and closed woods. Pipits were winter visitant until 1940 when the bare ground which attracted them became covered with vegetation so tall as to prevent their further use of the area. Seasons of occurrence extended from November 7 to March 1. Cedar waxwings, as winter visitants, have been present each winter in lone trees, parkland, and closed woods with records coming between September 19 and May 30. From July 1, 1939 to March 1, 1940, one or two loggerhead shrikes lived on or close to the Reservation continuously. One other individual was seen on August 26, 1942. The summer resident solitary vireo is restricted to the closed woods, and extreme seasonal dates for it have been March 18 (1946) and October 2 (1946). The warbling vireo differs from the solitary by arriving earlier, March 15 (1941 and 1947) and staying later, September 27 (1938), by occupying a greater variety of habitat (streamside bushes, parkland, and closed woods), and by being present in greater numbers.

The summer resident orange-crowned warbler comes close to being present through the year, for individuals have been seen as early as February 27 (1938) and as late as November 5 (1938), but these extremes are not necessarily members of the nesting race. Early and late dates for yellow warblers are April 13 (1944) and October 8 (1940); the fall birds seem to be transients. Winter records of myrtle warblers are between October 28 (1946) and April 27 (1939). Winter records of Audubon warblers are between September 21 (1939) and April 20 (1947). The species nests within 2 miles of the boundary but apparently these summer birds do not regularly come to the Reservation, even though a single bird was seen there once, on June 27, 1940. We consider the black-throated gray warbler a summer resident although records have been made in every month but January. The occurrences are between February 5 (1938) and December 24 (1940) with the bulk of them from April to August, and the birds are usually in parkland

and closed woods. Townsend warblers are winter visitant and occur, usually singly, in the closed woods from August to April. One or two nesting pairs of Tolmie warblers have lived in dense bushes or streamside bushes in the interval between April 6 and September 20. Yellow-breasted chats are sparse transients; usually only one bird is seen in one day. In spring 11 records in 7 years were between April 22 and May 19. In the fall one bird was present for nearly a week in mid-August and another was seen on September 21 (1944). Pileolated warblers are transient on the Reservation, but the species nests in the vicinity, for we have seen the birds in every month from March to November with peaks in April and September and extremes March 15 (1941) and November 1 (1939).

The Bullock oriole in summer inhabits lone trees and parkland and forms colonies which nest in the trees about groups of buildings. Extreme dates of occurrence are March 17 (1947) and September 4 (1942), but the birds usually arrive in the last week of March and leave by the end of July. Extreme dates for the summer resident black-headed grosbeak are March 29 (1940) and October 10 (1945). The summer resident lazuli bunting has come as early as April 15 (1940) and stayed as late as September 11 (1939). The first increase in population was followed by a marked decrease in later years. Winter visitant savannah sparrows have been present regularly and in increasing numbers each year from mid-September to the end of April. The wintering white-crowned sparrows arrive in mid-September (9 dates between 13th and 23d) and leave in late April or early May, the latest being May 11 (1938). The earliest arrival date for the golden-crowned sparrow is September 20 (1946), and the latest spring date is May 17 (1944). Wintering fox sparrows have never been numerous; presence has been between September 26 and May 1. Small numbers of Lincoln sparrows have been recorded from September 9 (1943) to May 6 (1942) with the greatest number of records in April.

A third group of birds includes kinds which are unable to live on the Reservation or to stay for long if they do happen to come there. The environment is not suited for any appreciable segment of their life cycles and their presence here is really accidental. These 34 species invite a different kind of interest than the two groups just discussed.

A common loon was seen in flight twice on the morning of December 11, 1937. On April 15, 1941, a Pacific loon was in a small creek apparently forced down from a large flight over land. A great blue heron flew over the area on August 15, 1946. Single green herons were found in willow thickets on May 29, 1939, and July 23, 1942. A small flock of pintail flew across the Reservation on August 18, 1939, and it or a similar flock was seen flying in the opposite direction 24 hours later; another group of 15 in flight was seen on November 3, 1944. White-tailed kites have been seen 4 times, January 20, 1938, April 28, 1946, May 3, 1943, and May 2 to 21, 1947, usually over sites of meadow mouse colonies. A red-bellied hawk was present for several days in mid-March, 1939. An osprey was seen once, on April 21, 1938. A Wilson snipe was found on November 2, 1938, and one settled to the ground beside a house in a snowstorm on the night of February 2, 1946. At least two long-eared owls lived on the area part of the time until June, 1940. The sixteen records in three years were for dates between February 22 and June 18. North-bound migrant Vaux swifts have been seen on 5 dates between April 22 and May 19, usually as single birds, but once as many as 12 together. White-throated swifts reside within a few miles but not near enough to cross the area regularly. Groups or lone birds in flight have been seen in January, February, May, June and September. Rufous hummingbirds have been observed from March 31 (1939) to April 15 (1938) and on July 23 (1942). Lewis woodpeckers are casual on the Reservation and accidental with respect to life cycle. The largest number of records has been in October and seasonal limits have been September 22 (1940) and May 16 (1942).

A Cassin kingbird was on the area on November 6, 1944. In April and May of each year and again in August and September a few Traill flycatchers have been in the thickets along the streams, but apparently none was present for more than a few days. Horned larks were detected on 26 days from November 6, 1937, to January 22, 1938, always on nearly bare sandy hilltops, but with the increase in vegetation there was no ground suitable for the species. A pair of rough-winged swallows flew about over the Reservation boundary for a few minutes on the morning of April 12, 1943. A barn swallow was seen in flight on the morning of May 10, 1938. A transient red-breasted nuthatch was watched for about 2 minutes on November 27, 1937. Winter wrens have been seen from October 2 to November 25 with one on April 14, 1945, usually in streamside bushes or closed woods. A canyon wren was present about buildings on 4 dates in August, 1942, and on August 2, 1944; one was on a rocky slope in woodland on October 15, 1942. Thirteen occurrences of mockingbirds on dates between October 3 and March 9 in 5 winters represented about 8 birds and all were seen in an area less than an eighth of a mile across. Golden-crowned kinglets might be expected to occur on the area more often than they have been seen; five birds were seen together on November 16, 1938, and a considerable number spent the winter of 1944-45 here when exceptional numbers were present in the region. Vagrant phainopeplas were detected 4 times in 3 years; on February 22, 1939, April 23, 1946, August 13, 1939, and November 25, 1937. Four times in April of 3 different years single Nashville warblers were recorded. Hermit warblers have been seen 3 times in late April and once toward the end of September. Four definite records of yellow-throats are for March 24 (1946) and 27 (1945) and April 11 (1940) and 15 (1946). House sparrows, singly or in pairs have been present for short periods in March (1940) and April (1939 and 1946). Dates of exploratory appearance of single male red-winged blackbirds were April 14 and May 2, 1939, and April 5, 1940. In early years from October to February flocks of tricolor redwings frequently visited or crossed over the narrowest part of the Reservation, usually with Brewer blackbirds. The latter are likely to be seen any day of the year for the nearest nesting colony is about two miles away and individuals, pairs, or flocks, frequently cross the area although they seldom stop. The western tanager is the most conspicuous of the strictly transient birds on the Reservation. The migration period is long, extending from mid-April to late May and from mid-July to mid-October. A blue grosbeak was present on August 31, 1938. The winter visitant pine siskin and the American goldfinch were seen frequently in the first year but rarely or not at all in subsequent years. Single black-chinned sparrows have been seen only twice, on June 8, 1938, and August 30, 1939, even though the species nests regularly in the neighborhood. A Harris sparrow was banded on November 19, 1944. White-throated sparrows have been recorded in 9 winters, on dates as early as October 16 (1940) and as late as April 18 (1947).

The observations here summarized tend to emphasize the specific response each kind of bird makes to the environment. This response may permit the bird to maintain a small or large population in the area from year to year, as the first group demonstrates. Or it may permit the bird to spend some major segment of its life there, as is shown by the second group. Still a third group contains birds able to reach the area, but unable to establish themselves there, even for a short time. No sharp break separates the groups and many species may be transferred from one to another. In so short a time as 10 years numerous species have changed from one group to another, usually as conditions on the land changed, but sometimes in response to changes in conditions elsewhere.

Hastings Reservation, Monterey, California, May 20, 1947.