

AN ASSESSMENT OF THE IRRUPTIVE STATUS OF THE BOREAL CHICKADEE IN NEW YORK STATE

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The Boreal Chickadee (*Parus hudsonicus*) is generally regarded as a sedentary species of dense boreal forests; however, occasional irruptions of this species have been noted in the northeastern United States. Using field note reports as a basis for measuring fluctuations in the abundance of this species in New York, I have traced its present irruptive history and reviewed changes in its reported abundance as a New York resident.

METHODS

Seasonal field note data appearing in *The Kingbird* were reviewed for the period 1950-1982. Reports of Boreal Chickadee sightings were noted to establish arrival and departure dates, locations, numbers of birds per month, and numbers reported for each invasion season (September through May). The reports were separated into those occurring in the Adirondack Mountain region of northern New York where the species is resident and breeds, and those from elsewhere in the state where it occurs as an irruptive winter visitor.

RESULTS

The field report data are given in Table 1 and are represented graphically in the middle of Fig. 1. An analysis of monthly sighting reports appears in Fig. 2. The Adirondack results are reviewed and discussed separately.

Data from annual National Audubon Society Christmas Counts published in *Audubon Field Notes* or *American Birds* were surveyed for the period 1960-1981. These late December or early January counts numbered between 40 and 61 per year. The numbers of Boreal and Black-capped (*Parus atricapillus*) chickadees reported per count were divided by the total number of observer party-hours used to locate these birds (Fig. 1).

DISCUSSION

Early literature portrays little of the irruptions of this species. Judd (1907) called it a "rare winter visitant" in Albany County. Eaton (1912) referred to it as a "characteristically non-migratory member of the boreal fauna." He mentioned summer and breeding records from Essex, Franklin, and Herkimer counties in the Adirondacks and wrote of it as "abundant" in Herkimer County in February-March 1882. He cites irruptive individuals outside the Adirondack region in January 1877, November 1894, and January 1914. Forbush (1929) regarded it as an irregular and rare straggler to the southern Northeast, occurring south to central New York and casually to southeast New York and northern New Jersey. In the summer of 1925, Saunders (1929) found the species

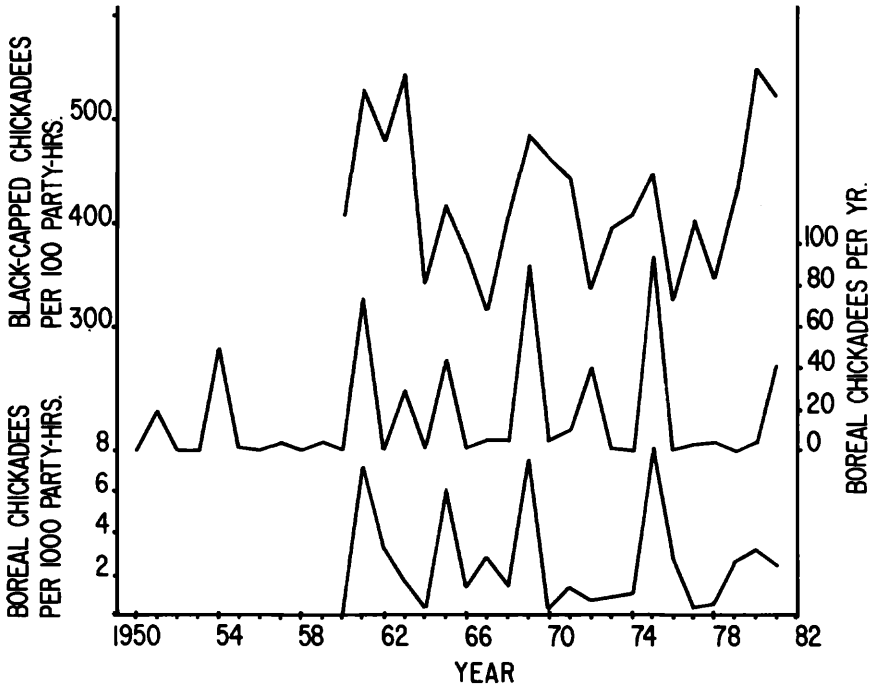


FIGURE 1. Field observation and Christmas Count data on Boreal and Black-capped chickadees in New York for the period 1950–1981. Top: Black-capped Chickadee Christmas Count observations expressed as birds reported per 100 party-hours for all counts held statewide. Middle: Boreal Chickadee field observations outside of the Adirondack region expressed as the total number of birds reported each year. The numbers reported per year were tallied from field notes in *The Kingbird* during the period September of the year indicated, through May of the following year. Bottom: Boreal Chickadee Christmas Count observations expressed as birds reported per 1000 party-hours for all counts held statewide for the year indicated.

chiefly above 1220 m elevation in the Adirondack Mountains; and rarely at lower elevations, though more likely at lower elevations in winter.

Recent literature provides more detailed accounts. When 2 occurred in Westchester County in southern New York in December 1951, Komorowski (1951) termed them the “first reported in 10 years.” Three that occurred at feeders at Saranac Lake in northern New York that same winter were described as the first in 5 years (Meade 1951). In western New York, Beardslee and Mitchell (1965) called it an “occasional rare winter visitor” and cited 3 records prior to 1951–1952: January–March 1944, November 1946, and August 1950. They labelled the fall 1951 flight as “unprecedented” with the first report on 26 October, a maximum of 5 on 11 November at Braddock’s Bay, and the last report on 31 May 1952. They described the 1954–1955 flight as

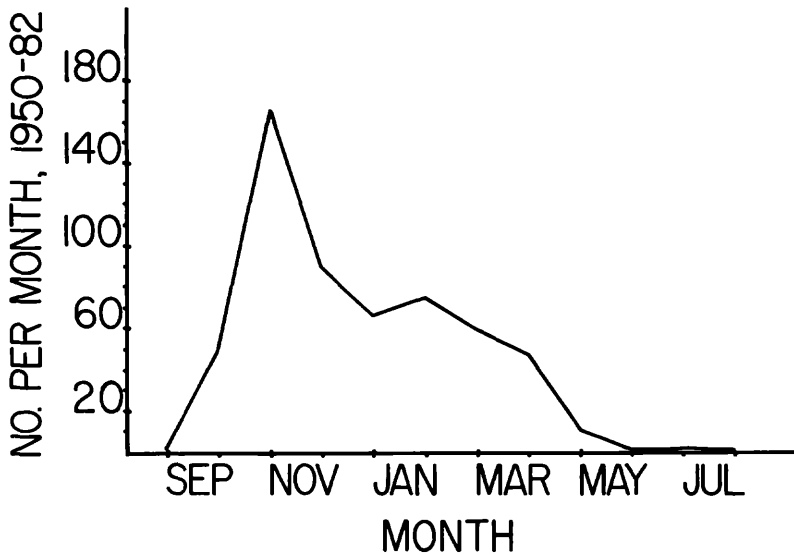


FIGURE 2. Monthly counts of Boreal Chickadees reported or known to be present in New York outside the Adirondack region based on field note data published in *The Kingbird* for the period 1951–1981.

“minor” and the 1961–1962 flight as a “major influx” with at least 7 wintering individuals. Bull (1974) described the species as sedentary and irregularly migratory, wandering to southeastern New York and northern New Jersey, casually farther south. He described it as an uncommon breeder in the Adirondacks, principally in Essex County, and occurring as a rare to uncommon upstate visitant, much rarer downstate. He described it as unrecorded in most winters with large irruptions in 1951–1952, 1954–1955, 1961–1962, and 1965–1966 usually with Black-capped Chickadee irruptions. A maximum count of 15 occurred at Westmoreland, Oneida County on 11 November 1965 where 12 individuals spent the winter. In the New York City area, Bull (1964) referred to a major flight in 1916–1917 and lesser flights in 1913–1914 and 1941–1942 in addition to those referred to above.

Using the field note data from *The Kingbird* (Fig. 1), the recent irruptive status of this species can be more clearly defined. Sightings outside the Adirondack Mountains indicate major irruptions in 1954–1955, 1961–1962, 1969–1970, and 1975–1976 at approximate intervals of 6–8 years. Lesser invasions occurred in 1951–1952, 1963–1964, 1965–1966, 1972–1973, and 1981–1982. The 1951–1952 invasion may have been greater than reports indicated, because the reporting system for *The Kingbird* was at a fledgling stage and not fully established to measure the full impact of the invasion. When all irruptions are con-

TABLE 1. Summary of Boreal Chickadee observations recorded in The Kingbird for areas in New York outside the Adirondack Mountain region.

Year	Date of first report	Date of last report	Number of reports
1950-1951	—	—	0
1951-1952	Late fall	24 February	20
1952-1953	—	—	0
1953-1954	—	—	0
1954-1955	17 October	31 March	50
1955-1956	December	March	1
1956-1957	—	—	0
1957-1958	3 November	—	3
1958-1959	—	—	0
1959-1960	December	Winter	3
1960-1961	—	—	0
1961-1962	9 October	24 April	75
1962-1963	—	—	0
1963-1964	22 October	2 May	29
1964-1965	30 December	2 January	2
1965-1966	14 September	17 April	44
1966-1967	Winter	Winter	2
1967-1968	November	—	5
1968-1969	29 October	22 December	5
1969-1970	19 October	29 May	90
1970-1971	7 September	1 May	5
1971-1972	18 October	31 March	10
1972-1973	15 October	2 May	40
1973-1974	Late December	—	1
1974-1975	—	—	0
1975-1976	6 October	15 April	95
1976-1977	14 November	—	1
1977-1978	24 November	7 May	3
1978-1979	24 October	29 May	4
1979-1980	—	—	0
1980-1981	13 December	5 May	4
1981-1982	14 October	27 April	42

sidered, they occurred at intervals of 2-7 years and averaged 1 every 3.8 years for the 1950-1981 period. Another, and probably more appropriate, interpretation of these results suggests that irruptions of variable magnitude occurred at intervals of 2-3 years with an occasional interruption in the pattern as occurred when no irruption took place in the late 1950's and late 1970's.

The Christmas Count data at the bottom of Fig. 1 show major irruptions occurring in 1961-1962, 1965-1966, 1969-1970, and 1974-1975 at intervals of 4-6 years. The other variations in the base line can be attributed to the influence of, and variations in, Adirondack count data. If the Adirondack counts are excluded, only the 3 major invasions stand out, and the 1965-1966 invasion becomes downgraded to a minor invasion agreeing with the field observation data. When the Adirondack

counts are subtracted from the 1979, 1980, and 1981 count data, what appears to be minor irruptive activity is reduced to or near zero, agreeing with the 1979 and 1980 field data, but contrary to it in 1981.

When the Boreal Chickadee data are compared with the Black-capped Chickadee Christmas Count data at the top of Fig. 1, all of the major Boreal Chickadee irruptions coincided with companion Black-cap irruptions. However, all Black-capped Chickadee irruptions were not accompanied by similar Boreal irruptions. For instance, in 1963–1964 a major Black-cap irruption accompanied a minor Boreal irruption; in 1965–1966 both irruptions were minor; in 1972–1973 a minor Boreal irruption occurred when very definitely there was no irruption of the Black-cap; a minor Black-cap irruption in 1977–1978 had no companion Boreal irruption; and the Black-cap irruption in 1980 that was the greatest in this period also had no companion Boreal irruption.

The 4 major irruptions of Boreal Chickadees noted in the field data in the middle of Fig. 1 were preceded by years of absence or scarcity of reports. When the Adirondack count data are subtracted from the Christmas Count results at the bottom of Fig. 1, the 3 major irruptions noted in these counts were similarly preceded by years when Boreal Chickadees were absent on the Christmas Counts. Quite differently, the Christmas Count data for the Black-capped Chickadee show abundance peaks in 1969–1970, 1975–1976, and 1980–1981 which involved increases in abundance continuing over periods of 2–3 years. In December during years of peak abundance, the Boreal Chickadee averaged 6 to 8 individuals per 1000 party-hours, while the Black-cap ranged from 475 to 550 per 100 party-hours.

When irruptions of Boreal Chickadees occurred, they began outside the Adirondack region in October and peaked in November (Fig. 2). Further reports of these birds, and reports of new arrivals, generally declined thereafter. In the 8 invasion years, dates of first reports ranged from 14 September to 19 October, with 7 of the years ranging very closely in the 6–19 October period (15 October average). Dates of last sighting in invasion years ranged from 31 March to 29 May. In non-invasion years, dates of first report varied from 7 September to 30 December (averaging 15 November for the 8 years for which exact dates were given, excluding the 7 September date). Last sighting dates for those years ranged from 2 January to 29 May.

To the extent that the field reports indicated length of stay of particular individuals at specific locations or feeders, the following was found. Single-date sightings accounted for 59.0% ($n = 226$) of the birds reported outside the Adirondack region over the 1950–1982 period, while 41.0% ($n = 157$) were reported for more than 1 day at 1 location. Among the single-day sightings, 6.2% ($n = 14$) were reported at feeders, while 26.8% ($n = 42$) of the multiple-date sightings occurred at feeders. The high proportion of single-date sightings, and inspection of the geographic distribution of reports (87% of New York's 53 non-Adirondack counties were represented) during irruption, indicate that the Bo-

real Chickadee was quite mobile and widespread during irruption. While some birds became associated with feeders, the number of individuals with long-term association was relatively low. During irruption, individuals appeared in a wide range of habitat, quite unlike the dense boreal habitat of their origin.

Based on the field notes reviewed, there appeared to be no spring return flight resembling the intensity with which these birds burst out of the boreal forests in latter October and November. However, observations at certain concentration points of spring migration support the idea of a weak return flight. In several years, Derby Hill (Oswego County) was the scene of April and May appearances. A 17 April 1966 sighting at that site, along with some other sightings, was referred to by Scheider (1966) as "undoubtedly returning birds." Scheider (1973) referred to a "distinct lakeshore flight" in the 19 April–5 May 1973 period when 15 individuals were tallied along Lake Ontario.

For the resident birds in the Adirondack region, there appears to have been a definite change of status in its abundance and distribution. The comparison of the reports of Eaton (1912) and Saunders (1929) with those of some recent regional field note editors makes this apparent. The 3 reported by Meade (1951) in the winter of 1951–1952 at Saranac Lake were the first in 5 years. There were no further reports until Lesperance (1961, 1962) reported 7 in the winter of 1961–1962. Delafield's (1964) reports for the 1963–1964 season totalled 22–23 birds, and by 1965–1966 she (1965, 1966) referred to small numbers at about 15 locations with over 40 birds total. In 1967 she (1967) reported 25 at Paul Smith's (Franklin County) on 30 July. By 1971, Mack (1971) found the species "widely reported in good numbers and seen at several low-altitude areas; common in high peaks" during the August–November period. The highest count was 25 on 26 August at Osgood Pond (Franklin County). In 1974, Mack (1974) reported "good numbers and from some new low-elevation areas" during the June–August period. By 1977 he (1977) labelled the species "plentiful" in April–May; there were "lots" by June–August of 1978; and finally in 1981 (1982), "Boreal Chickadees were too numerous to detail."

Undoubtedly, greater numbers of observers and observer activity have played some part in increased reporting of the species in and out of the Adirondack region. Beyond that, there appears to have been a real increase in numbers, and an invasion of lower altitude habitats in the Adirondack region by resident breeding individuals. One possible cause for this may have been the gradual reforestation of large tracts of the Adirondack region beginning in 1900. Reforestation resulted from the establishment in 1892 of the Adirondack State Park and in 1894 of the "forever wild" Forest Preserve (Brooks 1981). This park area of over 2.4 million ha consists of about 1.1 million ha (about 45%) of Forest Preserve. Prior to enactment of these protective measures, and the resultant acquisition of the Forest Preserve by the state, the region had been extensively lumbered (New York ranked first in the nation in

lumber production in 1850). With the recent stabilization of large tracts of suitable habitat within this century, the species appears to be prospering and spreading.

SUMMARY

Variations in abundance of field reports and Christmas Count totals in New York since 1950 indicate that the Boreal Chickadee irrupted from its resident range approximately every 2–3 years. At intervals of 6–8 years in the past 25 years, there have been major irruptions totalling 75 to 95 reports per irruption statewide. On its resident range in the Adirondack Mountains of northern New York there has been a marked increase in the number of reports over the past 30–35 years, and an increased occurrence of birds at lower elevations where previously none was reported. Reforestation which has taken place in this century under a “forever wild” Forest Preserve concept may be a contributing factor to this increase and expansion.

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