

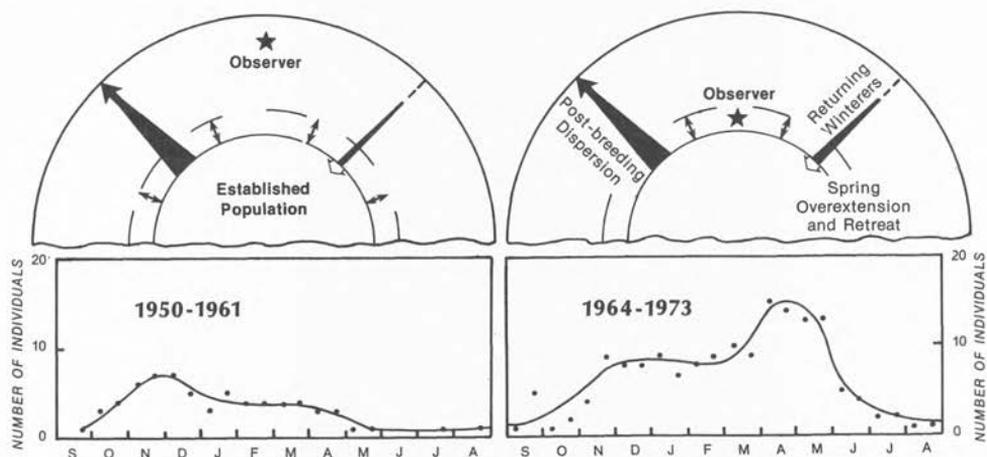
THE RED-BELLIED WOODPECKER IN MASSACHUSETTS---
A CASE HISTORY OF RANGE EXPANSION

by Leif J. Robinson, Wellesley

The first nesting of Red-bellied Woodpeckers (*Centurus carolinus*) in Massachusetts was confirmed in 1977 (Forster and Robinson, 1977), thus establishing the northeastern limit of this species' known breeding range. The legacy of bird-study in this commonwealth permits an evaluation of how the status of Red-bellied Woodpeckers changed in Massachusetts during more than a century.

RECENT HISTORY IN THE NORTHEAST: Bent (1939) reported that the Red-bellied Woodpecker "enjoys a wide distribution throughout much of the eastern half of the United States, except the most northern and northeastern States." The northeastern limit of its known breeding range was cited as southeastern Ontario, western New York state, southern Pennsylvania, and eastern Maryland.

Bull (1964) summarized the status of Red-bellied Woodpeckers in and around greater New York City: "Formerly accidental or casual; since 1955 a rare to uncommon visitant on or near the coast. Reported every month of the year--least often in summer. No proof of breeding." By 1969 breeding in southeastern New York had been confirmed, and 1971 yielded five records (Bull, 1974). Thereafter, the first nesting of Red-bellied Woodpeckers in southwestern Connecticut was observed in 1974, when a young bird was seen at Old Lyme on June 30th (Finch, 1975).



This proposed model (upper portions of diagram) by which the Red-bellied Woodpecker invaded Massachusetts is based on the observed number of individuals present in the state between 1950-61 (left below) and 1964-73 (right below). As the perimeter of the established population moved closer to the observer (that is, Massachusetts), more Red-bellied Woodpeckers were seen throughout the winter and spring months. Ultimately, breeding was confirmed.

MASSACHUSETTS DATA: The author has collected all available records of Red-bellied Woodpecker sightings in Massachusetts. Before 1955 the data are from McKechnie (1909), Bailey (1955), and Griscom and Snyder (1955); afterwards Records of New England Birds (1955-68, Smith (1962), and

unpublished records on file at Massachusetts Audubon Society through 1975.

Each record was compared with others as to date, geographical location, and sex or age of the bird (when available) to determine as accurately as possible the number of individuals being observed in the state at any given time. Except for a negligible number of cases, the identities seemed unambiguous; nevertheless, the author's judgement was necessarily subjective. Through 1973 some 73 individuals were thus catalogued (Table I); later sightings became so numerous as to preclude positive identification.

Between 1863 and the mid-1950's, only one Red-bellied Woodpecker was reported every nine years, on the average. Then the rate changed dramatically, to about four birds per year--an increase by a factor of 40! Since Bull (1964) concluded that prior to 1955 this species was no more than a vagrant as far north as greater New York City, the subsequent range expansion into New Jersey and New York state in the mid-1950's reverberated immediately northward into Massachusetts.

That the status of Red-bellied Woodpeckers changed significantly within the last decade is also evident from the lower sections of the diagram, which shows at bi-monthly intervals the number of individuals present in Massachusetts. The left curve was eye-fitted to 1950-61 data; the right to 1964-73 data. (No special criteria were used to select these intervals, merely that one represents a relatively recent period and the other a time near when the invasion began.) Note that in the autumn, September through November, both curves rise at about the same rate. But then the 1950-61 curve begins to decline, while the 1964-73 curve holds essentially steady until the beginning of spring. Then the latter curve rises to a peak in April, followed by an abrupt drop.

DISCUSSION: The following scenario is proposed to explain how the Red-bellied Woodpecker came to Massachusetts; it is based on the differing shapes of the curves. Assume a region to the south of Massachusetts that has an established and expanding population of an essentially sedentary species. An observer far to the north of this area, as in the upper left portion of the diagram, should get the first hint of an oncoming invasion after the breeding season, when some birds move beyond the established perimeter. During the winter, this advance population declines substantially due to mortality in marginally adequate habitat and also possible southward withdrawal. By the beginning of the next breeding season, the avant-garde population has died off, retreated, or moved southward in search of mates.

Now consider an observer nearly contiguous to the area having established permanent residents, as in the upper right section of the diagram. Again, post-breeding dispersal is observed, but since the habitat is very nearly equivalent to that of the established area, little winter mortality occurs. The increase observed in spring results from two factors: the southward retreat of birds that had wintered to the north and the northward range over-extension of birds from the south. The rapid decline during the breeding season may reflect an actual retreat of birds to more suitable habitat or be merely an artifact due to the traditional lack of interest among birders toward summer residents.

This idealized scenario is supported by the fact that the actual number of individuals seen annually during the past two decades has been markedly greater than previously, a northward movement of the perimeter containing the established population. Consider, for example, the distances from Worcester (arbitrarily chosen) to the closest nesting sites for Red-bellied Woodpeckers: 1962, Princeton, New Jersey, 200 miles (Bull, 1964); 1969, southeastern New York state, 150 miles (Bull, 1974); 1974, Old Lyme, Connecticut, 70 miles (Finch, 1975). At face value, this corresponds to a breeding range expansion of about ten miles per year.

CONCLUSIONS: From data at hand it seems possible that the Red-bellied Woodpecker nested in Massachusetts as early as 1972, most likely in the Springfield area (male and female present from January through April but not reported thereafter). That this species was not confirmed until 1977 reflects, I believe, merely inattention by birders. The Massachusetts Audubon Society has done much to change that attitude as a result of its Breeding Bird Atlas Project. This interest should be sustained, for breeding birds measure critically the quality of our environment.

The Red-bellied Woodpecker represents yet another "southern species" that has expanded its breeding range northward during the past couple of decades. Other examples include: Cattle Egret, Louisiana Heron, Glossy Ibis, American Oystercatcher, Acadian Flycatcher, Fish Crow, Tufted Titmouse, Carolina Wren, Mockingbird, and Cardinal.

Is it premature to speculate that the general warming trend underway in the Northern Hemisphere is being witnessed through the range expansion of these traditionally southern species? And has the recent reduction in hard pesticide use created the concomitant adjunct food supply necessary for such expansion?

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TABLE I

<u>Date</u>	<u>Location</u>	<u>No.</u>	<u>Date</u>	<u>Location</u>	<u>No.</u>
5/13/1863	Springfield	1	11/11/1960-1/1961	Springfield	1 male
11/25/1880	Newton	2	12/4/1960	Newburyport	1
5/28/1881	Cohasset	1	10/5-12/1/1961	Andover & Lawrence & Amesbury	1 male
/1882	Hull	1 imm. male			
7/17/1896	Clinton	1	10/21/1961	Longmeadow	1
4/9/1921	Cambridge	1	11/15/1961-5/1/1962	Weston	1 female
10/2-3/1930	N. Eastham	1	1/18-?/1964	Westford	1 male
8/26/1937	Westhampton	1	9/28/1964-5/10/1965	Middleboro	1 male
2/28/1945	Swampscott	1	2/8-4/11/1965	Monson	1 male
6/22/1947	Wayland	1	9/25-26/1965	Middleboro	1
2/1/1948	Braintree	1	9/30/1965	Worcester	1
3/18/1952	S. Duxbury	1	11/17/1966-5/2/1967	Marshfield Hills	1 male
10/10-11/1953	Rockport	1	11/23/1966-4/26/1967	E. & S. Weymouth	1
3/12-4/25/1954	Westport	1	11/24-12/7/1966	W. Barnstable	1 female
7/22/1954	Edgartown	1	11/28/1966-5/19/1967	E. Longmeadow & S. Hadley	1 male
8/24/1957	N. Middleboro	1	5/26/1967	Martha's Vineyard	1
11/17/1957-5/1958	Wellesley	1 female	6/15/1967	Chatham	1
5/13/1958	Nantucket	1	1/15/1968	Andover	1
5/29/1958	Milton	1	4/19-5/7/1968	Winchester	1
12/21/1958-2/28/1959	W. Newburyport & Newburyport	1	8/-12/22/1968	Lincoln	1
2/22/1959	Martha's Vineyard	1 female	11/1968	E. Bridgewater	1
1/16-23/1960	N. Chelmsford	1	11/-12/29/1968	Wellfleet & Orleans	1
11/7-27/1960	Eastham & Brewster	1 female	3/2/1969	Rockport	1
11/7-12/12/1960	Martha's Vineyard	1 female	4/12-5/16/1969	Middlesex Fells & Cambridge	1

<u>Date</u>	<u>Location</u>	<u>No.</u>	<u>Date</u>	<u>Location</u>	<u>No.</u>
4/-5/12/1969	Chatham	1	7/1971	Martha's Vineyard	2
4/28-5/14/1969	Taunton & E. Middleboro	1 female	10/25/1971-4/24/1972	Springfield & Longmeadow	1 male
5/6-6/1969	Woods Hole	1 male	11/20/1971	Marblehead Neck	1
5/18/1969	Dover	1	1/1-4/24/1972	Agawam	1 female
5/24-25/1969	Pelham	1	1/7-5/26/1973	Southampton	1 male
9/28/1969	Holyoke	1	4/-5/7/1973	Plymouth	1
5/6-7/1970	Woods Hole	1	4/-5/17/1973	Newton	1
5/28/1970	Cambridge	1	4/11/1973	Middleboro	1 imm.
9/21/1970	Milton & Dedham	1	5/18/1973	N. Billerica	1 male
2/24-6/21/1971	S. Natick & Wellesley & Dover	1 female	6/24/1973	S. Amherst	1
5/30/1971	Newburyport	1	12/6/1973-1/14/1974	Holyoke	1 male
6/13/1971	Milton	1 or 2	12/25/1973	Dover	1



This photograph by Eliot W. Taylor shows the adult male Red-bellied Woodpecker (at right) feeding a juvenile bird on one of the large oaks that surrounds the Eason property. This picture was taken June 21, 1977, the day after the first sighting of two young, thus establishing the first breeding record for this species in Massachusetts.