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**Massachusetts Audubon Society
Grassland Conservation Program**

**Regional Inventory of Grassland Birds in New England and
New York, 1997-2000**

Prepared for:
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Prepared by:
Andrea L. Jones, W. Gregory Shriver, and Peter D. Vickery
Center for Biological Conservation
Massachusetts Audubon Society
208 South Great Road
Lincoln, MA 01773

INTRODUCTION

Between 1997 and 2000, the Center for Biological Conservation at the Massachusetts Audubon Society completed a regional survey of grassland birds breeding in New England and New York. Across the region, 868 sites were surveyed in 1997 and an additional 262 sites were surveyed in 1999 and 2000 (total number of sites = 1,130). All sites were censused for eight species of grassland birds. These sites included hayfields, fallow fields, pastures, airports, and military bases from northern Maine to western New York. Efforts focused on areas historically recorded as grassland bird breeding sites. We were aided by the cooperation of state and federal agencies, conservation organizations, ornithologists, and birding enthusiasts. The contacts made during the course of this project enhanced communication and improved the coordination of regional and local grassland bird conservation actions.

Grassland bird populations are declining in the Northeast (Askins 1993) and throughout North America (Sauer and Droege 1992). This evidence is unambiguous as BBS results indicate significant declines for many grassland bird species between 1966 and 1991 (Robbins et al. 1986, Bollinger and Gavin 1992). In the mid-west grassland bird populations have been well monitored, but until recently little attention has been paid to these species in the Northeast. Within New England and New York, nine species of grassland birds are listed in more than five states (Vickery 1992). This record of population decline throughout these species' breeding ranges makes a detailed understanding of their distribution and abundance paramount for future conservation efforts.

The primary objectives of this study were to determine the distribution and abundance of grassland birds breeding in New England and New York, and to increase the communication and cooperation between grassland bird conservation programs within this region.

METHODS

Grassland sites were selected prior to the survey using multiple techniques. The Natural Resource Conservation Service was integral in site selection by allowing access to recent aerial photographs of each county within each state. We used DeLorme™ road atlases to cross reference areas identified on aerial photographs with the road maps. Sites were then "ground truthed" to determine if the habitat was suitable for grassland birds. Sites were considered suitable if they were open (clear of trees and shrubs), greater than ≈ 5 ha, and dominated by grasses and forbs. At each site 100 m radius points were established, the number of which was determined by the size of the site. All point centers were >300 m apart to insure independence of samples and at least 10 m from non-suitable habitat (forested edge).

Birds were counted for 5 minutes on each point from 0600-1100 am between 1 May and 30 July in 1997-2000. We recorded all individuals seen or heard for each species, and indicated whether an individual was within or outside the 100 m radius point. The

following species were included in the analysis: Savannah Sparrow, Bobolink, Red-winged Blackbird, Eastern Meadowlark, Vesper Sparrow, Grasshopper Sparrow, Upland Sandpiper, and Henslow's Sparrow. We also recorded sightings of Northern Harriers, Horned Larks, American Kestrels, and Short-eared Owls. The results are presented for the numbers of birds detected within the 100 m radius point for all species except the Upland Sandpiper. As this species has large territories and is very mobile, we thought that it was necessary to count all Upland Sandpipers detected. In Maine, results for Upland Sandpiper are indicated as number of pairs.

Physical site characteristic data was collected to determine property ownership (private vs. public), shrub cover, and soil moisture. Site coordinates (latitude and longitude) and rough sketches of site locations were also collected to aid in future replicate surveys. All site locations were generated in Arc/Info coverage and projected on an outline map of the Northeast to aid in the identification of site locations and future species mapping projects (Fig. 1). Distribution and abundance maps were created, using Arc/Info for each species based on data from the site locations. Numbers of individuals counted at each site for each species were grouped (1-10, 11-20 and 20+) and marked on an outline map using symbols (Figs. 5-12).

For sites surveyed in more than one year, we took the mean of each species detected across years. Bird abundances were summarized across the region and within each state. We determined the percentage of sites where each species occurred and also the total number of individuals encountered. These results are presented by state political boundaries.

RESULTS

We surveyed over 4,000 100 m radius points on 1,145 sites for breeding grassland birds in New England and New York during the 1997-2000 breeding seasons. These sites were distributed throughout 7 states, 96 counties, and 485 towns (Table 1, Fig. 1).

Regional:

Throughout the region, the Savannah Sparrow was the most common species as it occurred at 75% of all sites (Fig. 2). Bobolink and Red-winged Blackbird were the next most frequently encountered species, both occurring at 73% of all sites (Fig. 2). Eastern Meadowlarks were detected at 45% of all sites. Vesper Sparrows, Grasshopper Sparrows, Upland Sandpipers, and Henslow's Sparrows occurred on <20% of all sites (Fig. 2).

We counted 6,039 Bobolinks, 5,340 Red-winged Blackbirds, 4,627 Savannah Sparrows, 1,279 Eastern Meadowlarks, 1,054 Grasshopper Sparrows, 589 Vesper Sparrows, 429 Upland Sandpipers, and 216 Henslow's Sparrows (Fig. 2).

Statewide:

Connecticut

We surveyed 34 sites, inside 27 towns, within 7 counties in Connecticut (Table 1). Bobolinks were the most common species in this state with 330 birds counted on 38% of the sites (Table 2, Fig. 3&5). Red-winged Blackbirds were the second most common species in Connecticut, with 296 counted. Numbers of all the other species found in the state were relatively low, with the highest concentrations in Hartford County.

Massachusetts

We surveyed 76 sites, inside 40 towns, within 12 counties in Massachusetts (Table 1). Savannah Sparrow, Bobolink, and Red-winged Blackbird were most common across this state with all three species occurring on >35% of the sites surveyed (Fig. 3). We found 265 male Grasshopper Sparrows in Massachusetts, which is the second highest total for this species in the seven-state survey region. However, 73% of the population occurs on two sites in Massachusetts in Hampden and Dukes County (Table 2, Fig. 8). Eastern Meadowlarks and Vesper Sparrows were less common, occurring on 23% and 20% of the sites respectively. Of the seven states surveyed, we found the highest numbers of Upland Sandpipers in Massachusetts. A total of 155 adult Upland Sandpipers were counted during our surveys, but 88% of these occurred at one site in Hampden county (Scott Melvin, Massachusetts Division of Fish and Wildlife) (Table 2, Fig. 10).

Maine

We surveyed 322 sites, inside 105 towns, within 12 counties in Maine (Table 1). Savannah Sparrows were widely distributed throughout the state with 1,301 individuals occurring on 65% of the sites (Table 2, Figs. 3&7). Bobolink and Vesper Sparrow were the next most common species encountered with 34% and 30% occurring on all sites respectively (Table 2, Figs. 3&4). Red-winged Blackbirds, Upland Sandpipers, and Eastern Meadowlarks occurred on 14%, 14%, and 9% of all the sites, respectively. We counted 150 adult Upland Sandpipers in Maine, the second highest in the seven-state survey. The majority of this species was found in Washington County (Fig. 10). We counted 72 Grasshopper Sparrows in two counties (Cumberland and York) (Table 2, Fig. 8). This species occurred on 3% of all the sites within the state. In Maine, 399 male Vesper Sparrows were counted, which is the most counted in any state in the seven-state survey region (Figs. 4&12). The majority of these (n=208) were found in Washington County (Table 2).

New Hampshire

We surveyed 90 sites, inside 58 towns, within 10 counties in New Hampshire (Table 1). We counted 686 Bobolinks on 73% of the sites making this the most common grassland bird within the state (Table 2, Fig. 3). Savannah Sparrow and Red-winged Blackbird were the next most common species with 220 and 329 individuals counted on 41% and 46% of all sites, respectively (Table 2). Sixty-three Eastern Meadowlarks were counted on 10% of the statewide sites (Table 2). Upland Sandpipers occur at one site within New Hampshire, Pease Air Force Base, where a mean of 9 pairs were counted

between 1997 and 2000 (Diane Deluca, New Hampshire Audubon). Vesper and Grasshopper Sparrows are very rare in this state with 11 birds of each species counted during this survey (Table 2).

New York

We surveyed 474 sites, inside 175 towns, within 38 counties in New York (Table 1). Savannah Sparrows had the highest densities in Jefferson and St. Lawrence counties (881 total, Table 2, Fig. 7) and occurred on 73% of the sites throughout the state. Bobolinks were most abundant in Jefferson, Montgomery, and St. Lawrence counties with 1,227 individuals counted in these areas (Table 2). They occurred on 74% of all sites within New York. The Red-winged Blackbird was the most abundant species in this state with 3,102 counted during this survey (Table 2, Fig. 3). New York had the greatest number of Bobolinks, Eastern Meadowlarks, Grasshopper Sparrows, Henslow's Sparrows, Red-winged Blackbirds, and Savannah Sparrows in the seven-state survey (Table 2, Figs. 3&4). Vesper Sparrows and Upland Sandpipers were rare in New York with a total of 112 and 93 birds occurring on 8% and 6% of all sites, respectively (Table 2). Most Vesper Sparrows were encountered in Herkimer, Jefferson, and Montgomery counties (Fig. 12) and most Upland Sandpipers were encountered in Jefferson, Montgomery, and Seneca counties (Table 2, Fig. 12). New York is the only state in the seven-state region to maintain populations of Henslow's Sparrows (Fig. 9). Within this state, a total of 214 birds were detected across 15 counties. These populations are small and isolated throughout the state, with three regions where these birds are present: the Finger Lakes, eastern New York, and the St. Lawrence Plains. This rare species most commonly occurs in the Finger Lakes region where 28% of the sites had Henslow's Sparrow present (Fig. 9). The St. Lawrence Plains had 88 individuals on 7% of the sites, and eastern New York had 8 individuals on 1% of the sites (Table 2, Fig. 9).

Rhode Island

We surveyed 40 sites, inside 18 towns, within 4 counties in Rhode Island (Table 1). Red-winged Blackbird was the most common species in this state with 216 individuals occurring on 90% of the sites (Table 2, Figs. 3&11). Bobolink and Savannah Sparrow occurred on 45% and 26% of the sites respectively, and Eastern Meadowlark occurred on 24% of the sites. We did not detect Grasshopper Sparrows, Vesper Sparrows, or Upland Sandpipers on any Rhode Island points in during the survey.

Vermont

In Vermont, we surveyed 109 sites, inside 62 towns, within 13 counties (Table 1). The Bobolink was the most common and most abundant species in Vermont with 647 individuals counted on 79% of the sites (Table 2, Figs. 3&5). Savannah Sparrow and Red-winged Blackbird were the next most common species within the state with 404 and 433 individuals counted on 63% and 69% of the sites, respectively (Table 2, Fig. 3). Sixty-three Eastern Meadowlarks were counted on 14% of the sites, with one-third occurring in Addison County (the Champlain Valley) (Fig. 6). Grasshopper Sparrow, Vesper Sparrow, and Upland Sandpiper were rare within Vermont with all species occurring on $\leq 5\%$ of all sites (Fig. 4).

DISCUSSION

This project was possible only with the assistance of many conservation organizations and agencies across the seven state region. Without the coordination with ongoing projects from state to state we would not have obtained these data. During 1998 and 1999, we collaborated with National Wildlife Refuges throughout the Northeast to develop monitoring standards and protocols. As a result, many refuges were added to the database that were not a part of the 1997 survey. We greatly appreciate all the assistance received to improve the efficiency and effectiveness of this survey. In the process we have expanded the communication for Northeast grassland bird conservation.

Within each state different types of habitat were surveyed. In Maine, the important grassland bird habitat occurs on native sand-plain grasslands in the southern portion of the state ("Downeast"), on the blueberry barrens, and in Aroostook County on old agricultural lands. In New Hampshire and Vermont, grassland habitat is primarily limited to river valleys. The Connecticut River watershed is an important area between the two states. The Champlain Valley and the Memphramagog Valleys also important agricultural areas in Vermont that still provide habitat for grassland birds, particularly Upland Sandpipers. We surveyed three regions in New York: the St. Lawrence Plains, the Mohawk-Hudson Valley, and the Finger Lakes. These regions are dominated by old field, pasture, and agricultural habitat. In Massachusetts, the Connecticut River Valley is the most important area for breeding grassland bird as this area has historically been in some form of agriculture since European settlement. Sandy deposits as a result of glacial outwash have created sandplains that, when managed accordingly, provide ideal habitat for some of our rare grassland birds (Westover Air Reserve Base and Turners Falls Airport, for example). Also important in Massachusetts are the airports and coastal sand-plains located on Cape Cod and the associated islands. Rhode Island and Connecticut are both dependent on agricultural areas, airports, and capped landfills for grassland bird habitat.

With these data, a clear understanding of which areas are important for each species is gained. For example, Maine had the most Vesper Sparrows; they occurred on more points in Maine than in any other state. We determined which regions in New York are most important for the rare Henslow's Sparrow. Massachusetts is important regionally for both Grasshopper Sparrows and Upland Sandpipers. This information can assist in the prioritization of conservation actions that will benefit focal species within each state. These data also provide evidence for state agencies to use in the consideration of listing species with low population levels.

Our goal was to provide a general picture of the status of grassland birds in New England and New York. The use of these data and accompanying maps will provide a tool to identify "regional hot-spots" for breeding grassland birds where conservation actions can be focused. Most surveys were completed in 1997 but in 1998-2000 we completed the remaining major unsurveyed grasslands in the region. We also revisited

the most promising sites from the 1997 survey. As a result, we feel this data provides an adequate representation of grassland bird abundance and distribution throughout the region. Some small sites have not been surveyed, and some new sites may be created in the future.

Conservation of grassland birds in the Northeast is an on-going effort. Periodic monitoring of populations, research on the viability of these populations that occur in a fragmented landscape and active management practices are all a necessary of the process. Communication between federal, state, and non-profit organizations is essential, and is made available through the Partners in Flight network. Sharing data and research will help increase our understanding of grassland bird populations and focus our conservation efforts.

ACKNOWLEDGEMENTS

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Table 1. Total number of counties, towns, and sites surveyed during the 1997-2000 regional survey.

STATE	COUNTY	# TOWNS	# SITES
CT	FAIRFIELD	2	4
	HARTFORD	7	9
	LITCHFIELD	8	11
	MIDDLESEX	1	1
	NEW HAVEN	3	3
	NEW LONDON	4	4
	WINDHAM	2	2
CT Total	7	27	34
MA	BARNSTABLE	1	10
	BERKSHIRE	3	3
	DUKES	3	5
	ESSEX	6	10
	FRANKLIN	5	6
	HAMPDEN	1	3
	HAMPSHIRE	4	19
	MIDDLESEX	5	7
	NANTUCKET	1	1
	NORFOLK	5	5
	PLYMOUTH	3	4
	WORCESTER	3	3
MA Total	12	40	76
ME	AROOSTOOK	31	104
	CUMBERLAND	4	18
	FRANKLIN	3	5
	HANCOCK	4	5
	KENNEBEC	3	5
	KNOX	7	18
	PENOBSCOT	3	6
	PISCATAQUIS	3	6
	SOMERSET	9	19
	WALDO	12	41
	WASHINGTON	17	71
YORK	9	24	
ME Total	12	105	322

STATE	COUNTY	# TOWNS	# SITES
NH	BELKNAP	1	1
	CARROLL	3	3
	CHESHIRE	3	4
	COOS	11	20
	GRAFTON	11	20
	HILLSBOROUGH	8	10
	MERRIMACK	9	10
	ROCKINGHAM	6	9
	STRAFFORD	2	4
	SULLIVAN	4	9
NH Total	10	58	90

NY	ALBANY	5	
	BROOME	1	
	CATTARAUGUS	1	
	CAYUGA	4	
	CHAUTAUQUA	2	
	CHEMUNG	6	
	CHENANGO	1	
	DUTCHESS	1	
	ERIE	3	
	FULTON	3	
	GENESSE	1	
	HERKIMER	13	
	JEFFERSON	20	
	LIVINGSTON	4	
	MADISON	2	
	MONROE	1	
	MONTGOMERY	7	
	NIAGARA	2	
	ONEIDA	6	
	ONONDAGA	4	
	ONTARIO	3	
	ORLEANS	2	
	OSWEGO	9	
	SARATOGA	6	
	SCHENECTA	4	
	SCHOHARIE	5	
	SCHUYLER	2	

STATE	COUNTY	# TOWNS	# SITES
NY (cont.)	SENECA	7	
	ST.LAWRENCE	21	
	STEUBEN	12	
	SUFFOLK	3	
	TIOGA	3	
	TOMPKINS	4	
	ULSTER	1	
	WASHINGTON	3	
	WESTCHESTER	1	
	WYOMING	1	
	YATES	1	
NY Total	38	175	474
RI	KENT	1	2
	NEWPORT	4	11
	PROVIDENCE	5	7
	WASHINGTON	8	20
RI Total	4	18	40
VT	ADDISON	14	36
	CALENDONIA	11	17
	CHITTENDEN	2	2
	ESSEX	4	6
	FRANKLIN	3	4
	GRAND ISLE	3	7
	LAMOILLE	1	1
	ORANGE	3	4
	ORLEANS	3	5
	RUTLAND	4	7
	WASHINGTON	1	1
	WINDHAM	3	3
	WINDSOR	10	16
VT Total	13	62	109
Regional Totals:	Counties 96	Towns 485	Sites 1145

Table 2. Total numbers of individual/species counted during the 1997-2000 regional survey. BOBO = Bobolink, EAME = Eastern Meadowlark, GRSP = Grasshopper Sparrow, HESP = Henslow's Sparrow, RWBL = Red-winged Blackbird, SASP = Savannah Sparrow, UPSA = Upland Sandpiper, VESP = Vesper Sparrow.

STATE	COUNTY	BOBO	EAME	GRSP	HESP	RWBL	SASP	UPSA	VESP
CT	FAIRFIELD	70	1	0	0	34	0	0	0
	HARTFORD	37	26	53	0	44	70	12	0
	LITCHFIELD	198	10	0	0	149	7	0	0
	MIDDLESEX	0	0	0	0	11	0	0	0
	NEW HAVEN	13	4	0	0	25	5	0	0
	NEW LONDON	1	2	0	0	25	0	0	0
	WINDHAM	11	4	3	0	8	0	0	0
Total		330	47	56	0	296	82	12	0
MA	BARNSTABLE	0	0	3	0	0	10	0	24
	BERKSHIRE	109	4	0	0	50	8	0	0
	DUKES	1	0	68	0	14	57	0	0
	ESSEX	146	35	1	0	353	14	0	0
	FRANKLIN	14	3	22	0	5	21	0	9
	HAMPDEN	68	87	125	0	18	81	136	0
	HAMPSHIRE	87	25	8	0	141	35	4	2
	MIDDLESEX	43	7	6	0	43	23	12	6
	NANTUCKET	0	0	0	0	0	18	0	0
	NORFOLK	10	9	0	0	41	3	0	0
	PLYMOUTH	13	3	2	0	13	9	0	1
	WORCESTER	51	5	30	0	5	44	3	6
Total		542	178	265	0	683	323	155	48

STATE	COUNTY	BOBO	EAME	GRSP	HESP	RWBL	SASP	UPSA ¹	VESP
ME	AROOSTOOK	238	1	0	0	68	640	20	41
	CUMBERLAND	92	24	15	0	59	15	3	3
	FRANKLIN	9	1	0	0	0	13	0	0
	HANCOCK	1	0	0	0	1	16	9	16
	KENNEBEC	32	4	0	0	2	14	0	5
	KNOX	87	8	0	0	47	111	6	45
	PENOBSCOT	26	1	0	0	3	21	0	0
	PISCATAQUIS	48	0	0	0	1	34	0	0
	SOMERSET	145	18	0	0	14	71	4	0
	WALDO	171	6	0	0	21	57	0	45
	WASHINGTON	2	11	0	0	5	285	101	208
	YORK	126	32	57	0	71	25	7	36
Total		977	106	72	0	292	1301	150¹	399
¹ # of pairs									
NH	BELKNAP	5	0	0	0	0	0	0	0
	CARROLL	49	0	0	0	14	6	0	0
	CHESHIRE	69	1	0	0	14	11	0	0
	COOS	99	7	0	0	52	59	0	0
	GRAFTON	154	10	0	0	88	57	0	0
	HILLSBOROUGH	58	9	6	0	39	22	0	2
	MERRIMACK	85	6	2	0	16	17	0	8
	ROCKINGHAM	78	20	3	0	47	34	9	1
	STRAFFORD	46	10	0	0	25	9	0	0
	SULLIVAN	44	1	0	0	36	7	0	1
Total		686	63	11	0	329	220	9	11

STATE	COUNTY	BOBO	EAME	GRSP	HESP	RWBL	SASP	UPSA	VESP
NY	ALBANY	49	6	8	0	71	20	0	6
	BROOME	17	5	8	0	5	16	0	0
	CATTARAUGUS	5	0	0	0	7	9	0	0
	CAYUGA	45	16	22	5	96	58	0	1
	CHAUTAUQUA	5	0	1	0	15	26	0	0
	CHEMUNG	15	7	22	0	28	51	1	1
	CHENANGO	20	2	4	9	55	6	0	0
	DUTCHESS	10	0	0	0	33	0	0	0
	ERIE	10	1	1	0	8	23	2	0
	FULTON	29	5	1	0	21	9	0	0
	GENESSE	4	3	5	1	15	9	0	0
	HERKIMER	60	72	32	3	226	150	6	27
	JEFFERSON	690	213	168	107	687	639	26	17
	LIVINGSTON	101	45	34	13	99	92	1	0
	MADISON	19	1	0	0	26	2	0	0
	MONROE	1	2	3	0	0	3	0	0
	MONTGOMERY	272	77	34	2	336	120	25	18
	NIAGARA	3	2	4	0	3	76	0	0
	ONEIDA	58	8	4	0	42	40	2	0
	ONONDAGA	36	3	2	0	19	25	0	0
	ONTARIO	14	18	0	8	24	17	0	0
	ORLEANS	13	0	0	0	1	6	0	0
	OSWEGO	144	20	14	1	141	27	0	0
	SARATOGA	97	26	3	0	132	26	0	7
	SCHENECTA	89	15	0	0	79	19	0	0
	SCHOHARIE	116	34	11	0	180	80	0	12
	SCHUYLER	40	2	30	30	35	33	10	0

STATE	COUNTY	BOBO	EAME	GRSP	HESP	RWBL	SASP	UPSA	VESP
NY (cont.)	SENECA	99	26	48	0	125	114	19	2
	ST.LAWRENCE	265	97	0	2	208	242	0	0
	STEUBEN	194	31	76	26	85	150	0	5
	SUFFOLK	0	3	37	0	31	0	1	5
	TIOGA	64	10	6	0	39	18	0	0
	TOMPKINS	60	33	15	3	141	104	0	0
	ULSTER	15	6	0	0	14	2	0	0
	WASHINGTON	96	15	11	3	55	29	0	11
	WESTCHESTER	0	0	0	0	8	2	0	0
	WYOMING	8	0	2	0	2	9	0	0
YATES	17	7	7	1	10	20	0	0	
Total		2779	810	613	214	3102	2272	93	112
RI	KENT	0	4	0	0	1	3	0	0
	NEWPORT	19	2	0	0	60	15	0	0
	PROVIDENCE	12	8	0	0	48	0	0	0
	WASHINGTON	58	4	1	0	107	12	0	0
Total		89	18	1	0	216	30	0	0

STATE	COUNTY	BOBO	EAME	GRSP	HESP	RWBL	SASP	UPSA	VESP
VT	ADDISON	148	24	18	0	112	173	1	11
	CALEDONIA	77	6	0	0	47	30	0	0
	CHITTENDEN	4	2	2	0	5	4	5	0
	ESSEX	33	0	0	0	24	21	0	0
	FRANKLIN	16	4	6	2	3	19	1	6
	GRAND ISLE	35	5	0	0	25	26	2	0
	LAMOILLE	4	0	0	0	8	9	0	0
	ORANGE	45	4	0	0	41	18	0	0
	ORLEANS	56	2	0	0	4	16	0	0
	RUTLAND	28	4	1	0	34	33	0	0
	WASHINGTON	8	5	0	0	4	16	0	0
	WINDHAM	24	1	0	0	15	2	0	0
	WINDSOR	169	7	0	0	112	37	0	0
Total		647	63	27	2	433	404	9	17

Regional Totals:	BOBO	EAME	GRSP	HESP	RWBL	SASP	UPSA	VESP
	6039	1279	1054	216	5340	4627	429	589

Figure 1. Grassland bird sites surveyed in New England and New York, 1997-2000.

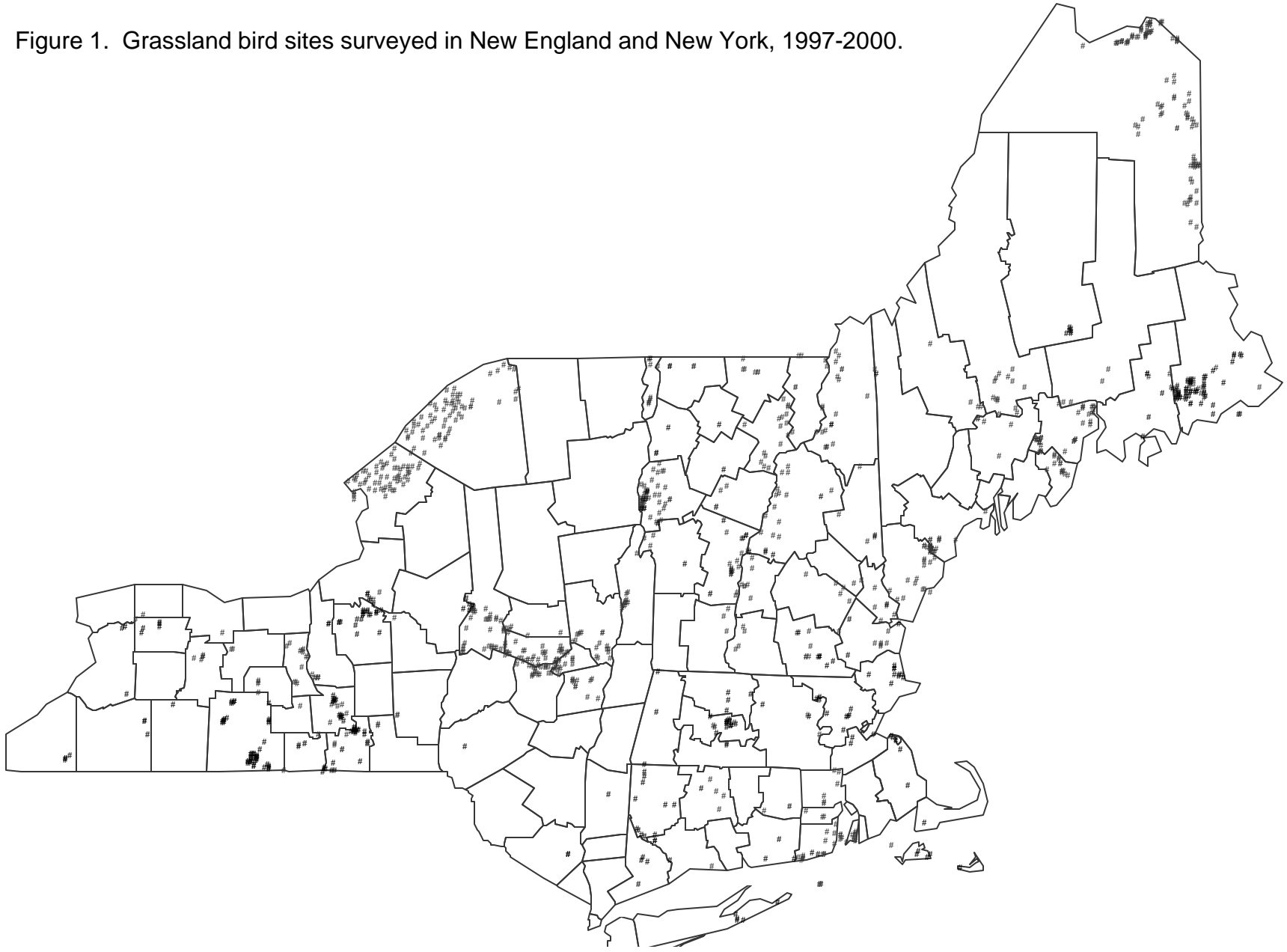


Figure 2. Regional abundances of eight grassland bird species counted during the 1997-2000 survey. Numbers on top of bars indicate total number of individuals counted.

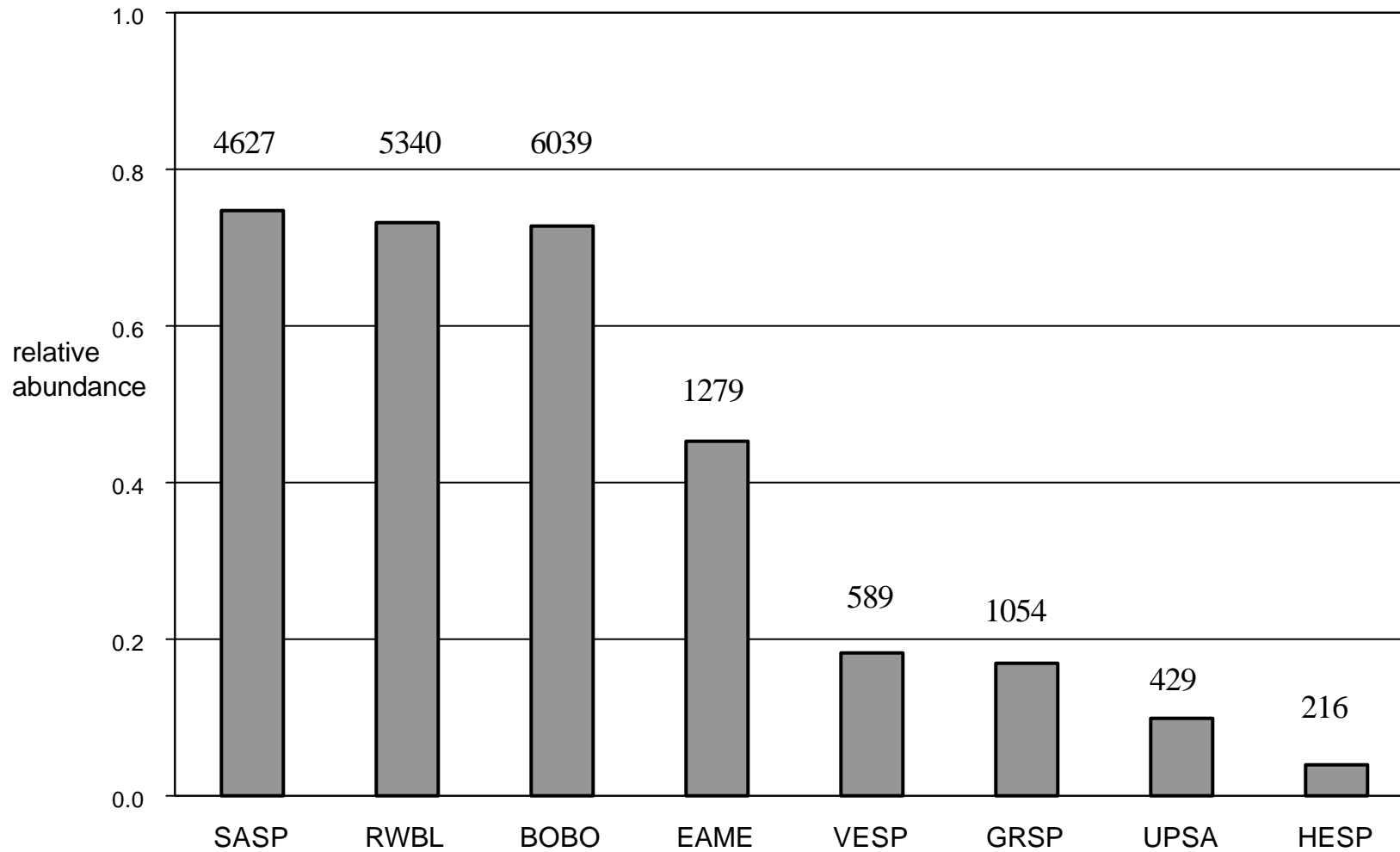


Figure 3. Total number of individuals counted for three common grassland bird species during the 1997-2000 survey.

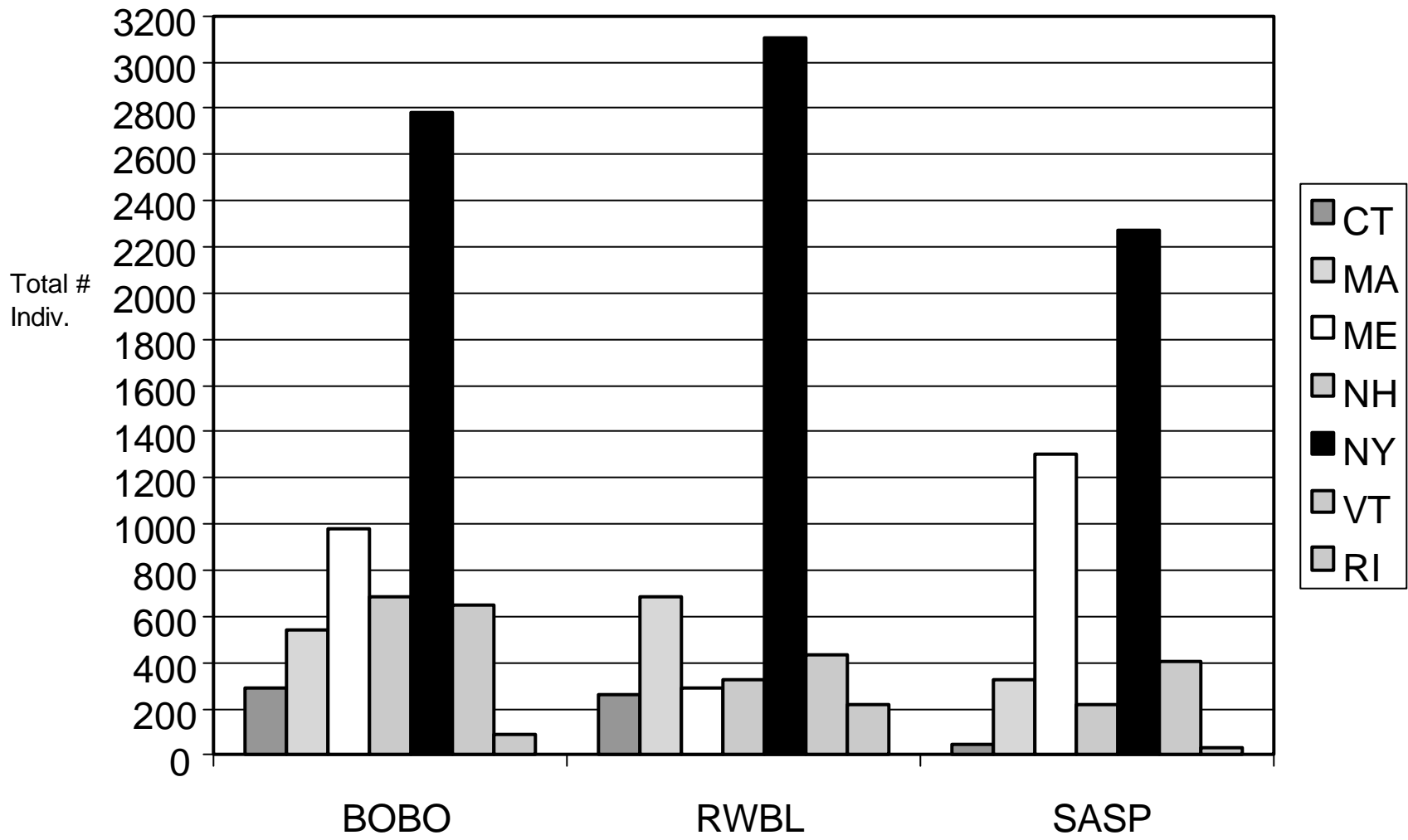


Figure 4. Total number of individuals counted for rare and uncommon grassland bird species during the 1997-2000 survey.

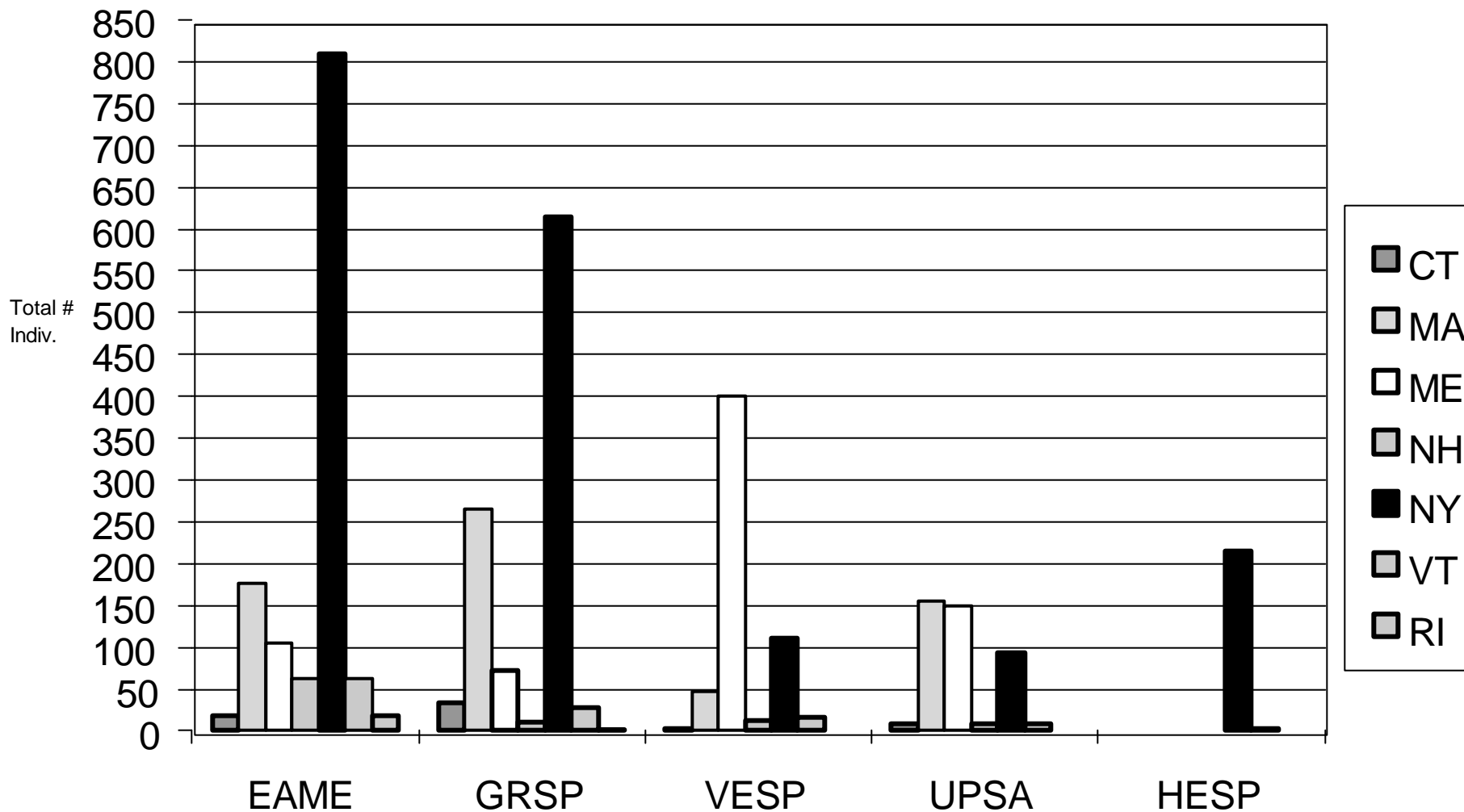


Figure 5. Bobolink distribution and abundance in New England and New York, 1997-2000.

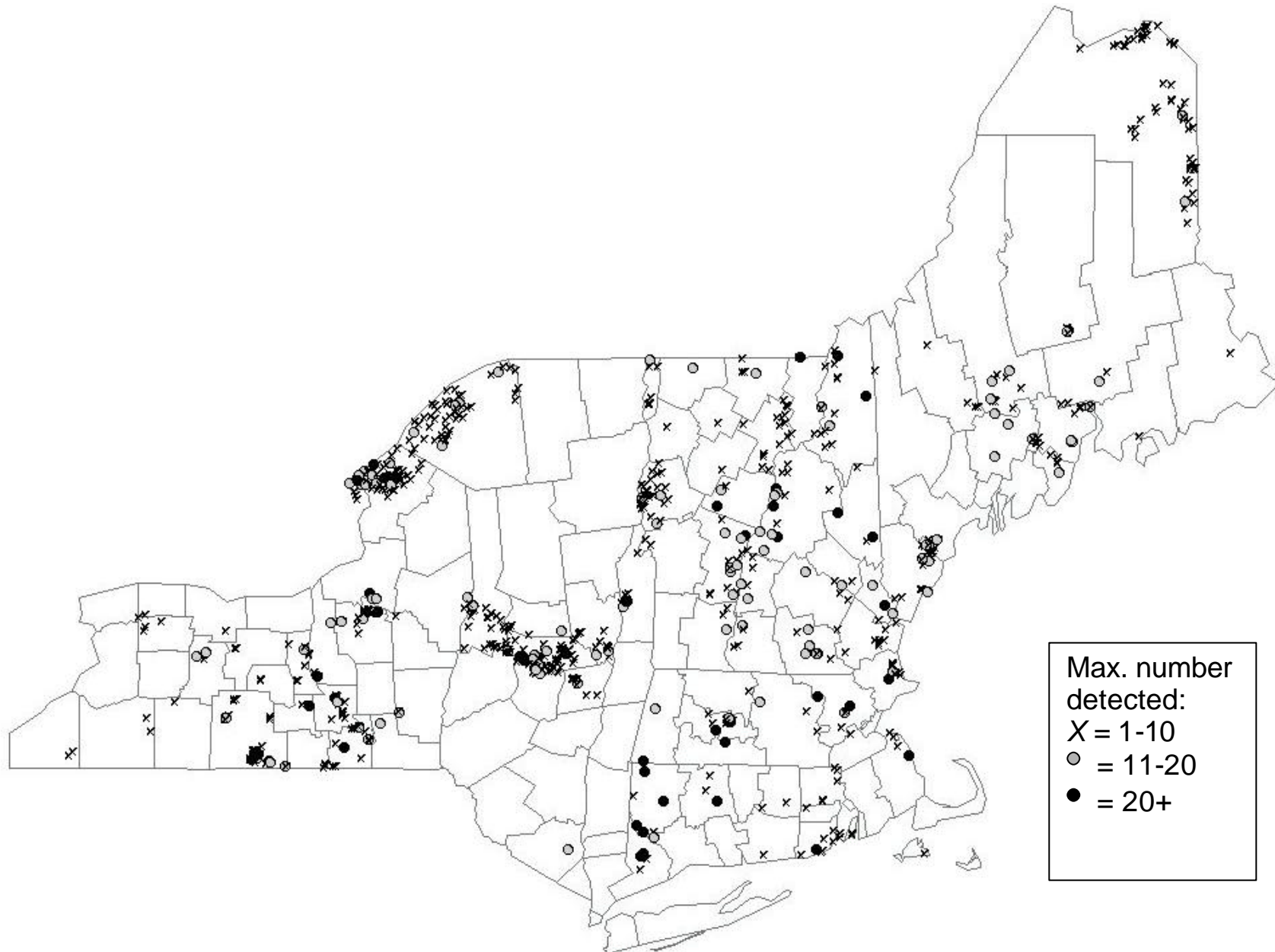


Figure 6. Eastern Meadowlark distribution and abundance in New England and New York, 1997-2000.

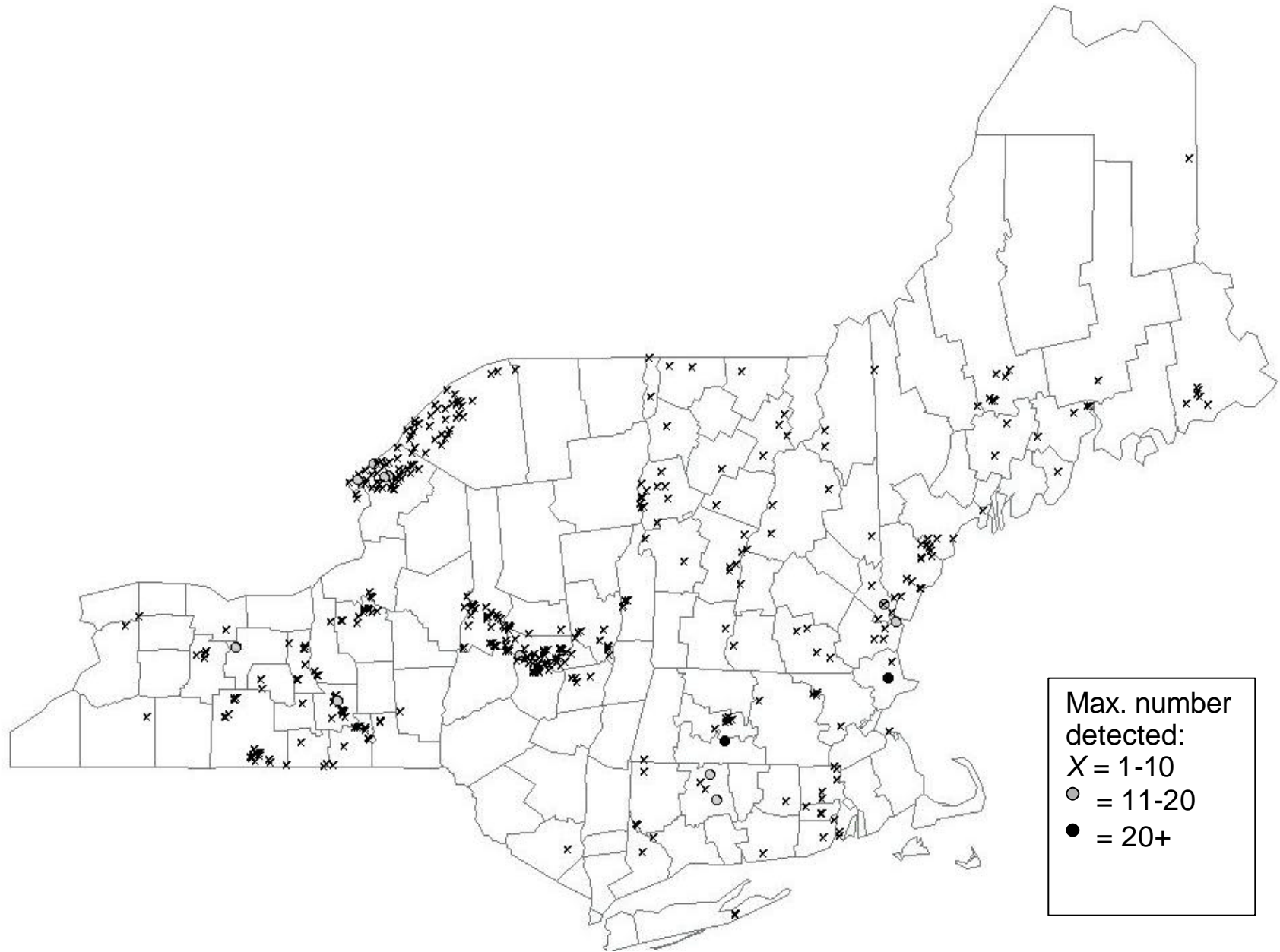


Figure 7. Savannah Sparrow distribution and abundance in New England and New York, 1997-2000.

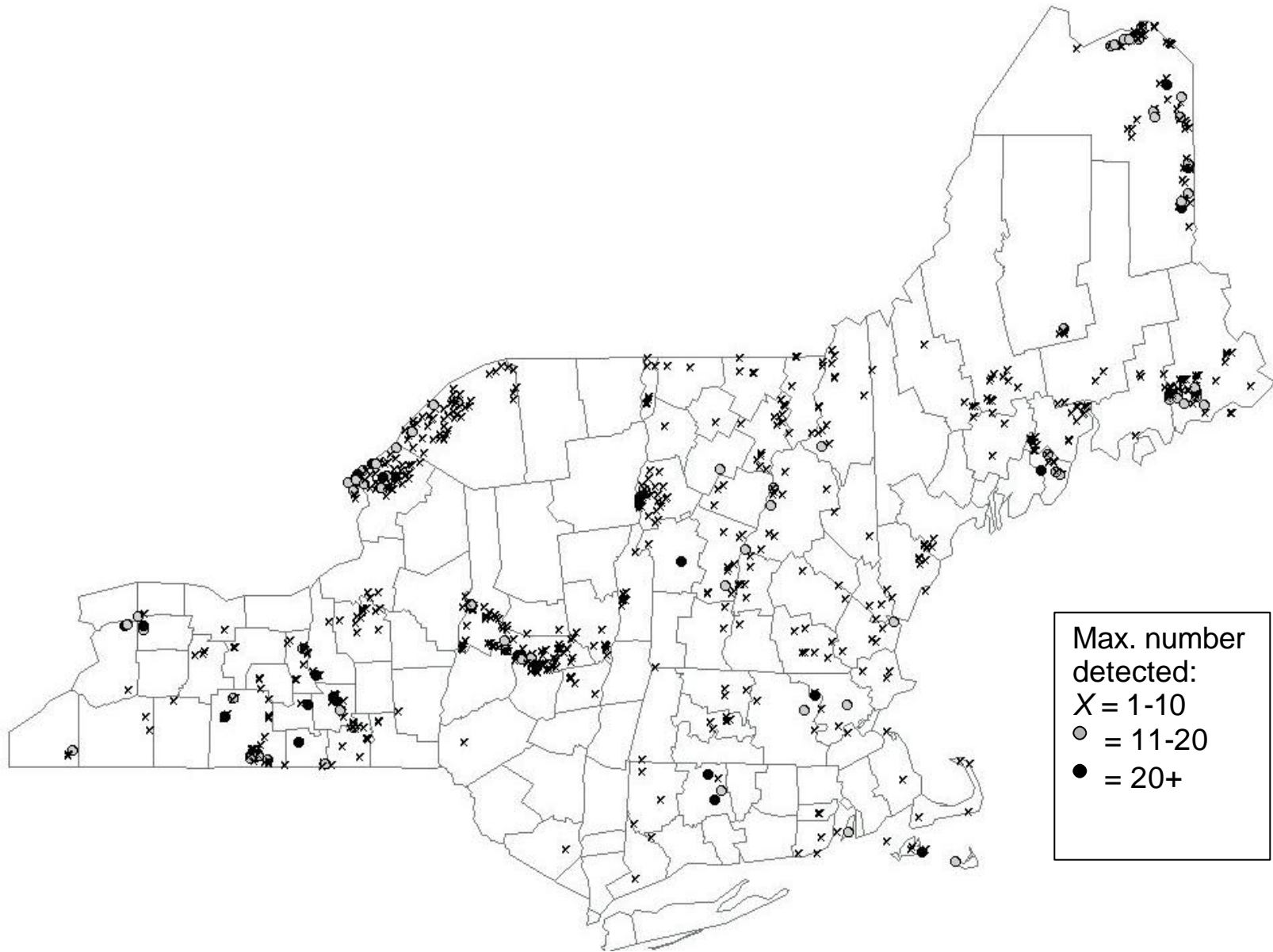


Figure 8. Grasshopper Sparrow distribution and abundance in New England and New York, 1997-2000.

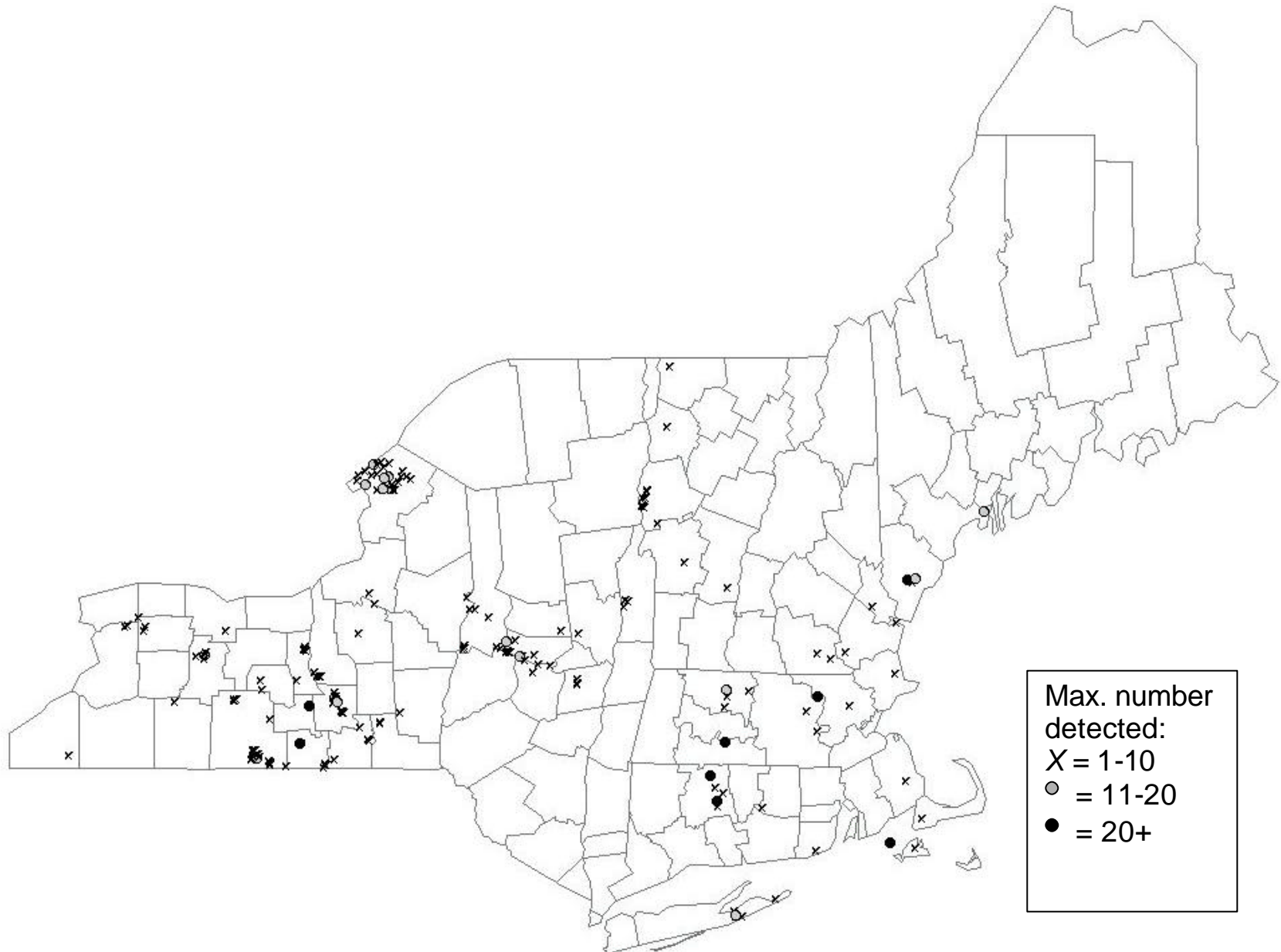


Figure 9. Henslow's Sparrow distribution and abundance in New England and New York, 1997-2000.



Figure 10. Upland Sandpiper distribution and abundance in New England and New York, 1997-2000.

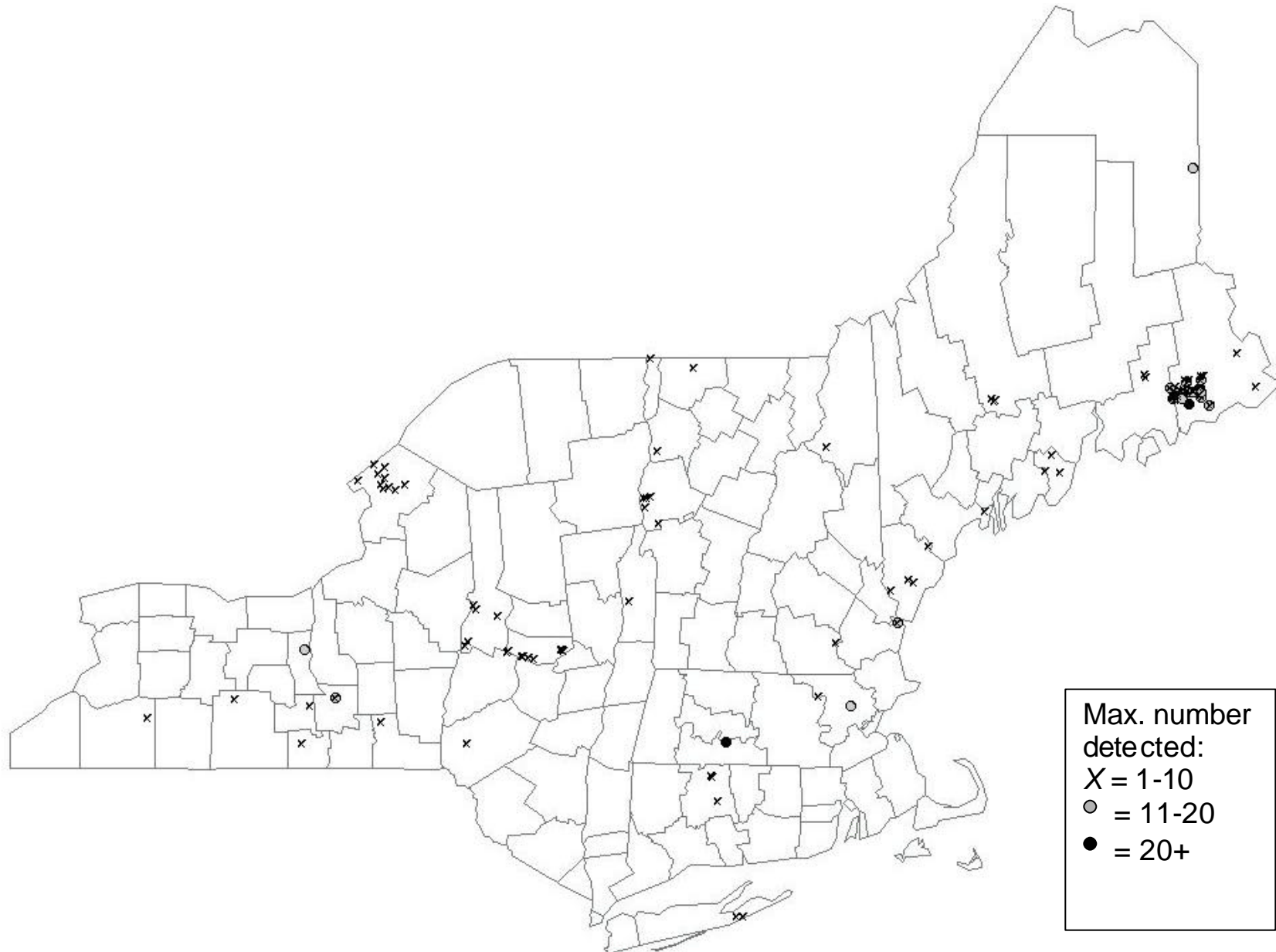


Figure 11. Red-winged Blackbird distribution and abundance in New England and New York, 1997-2000.

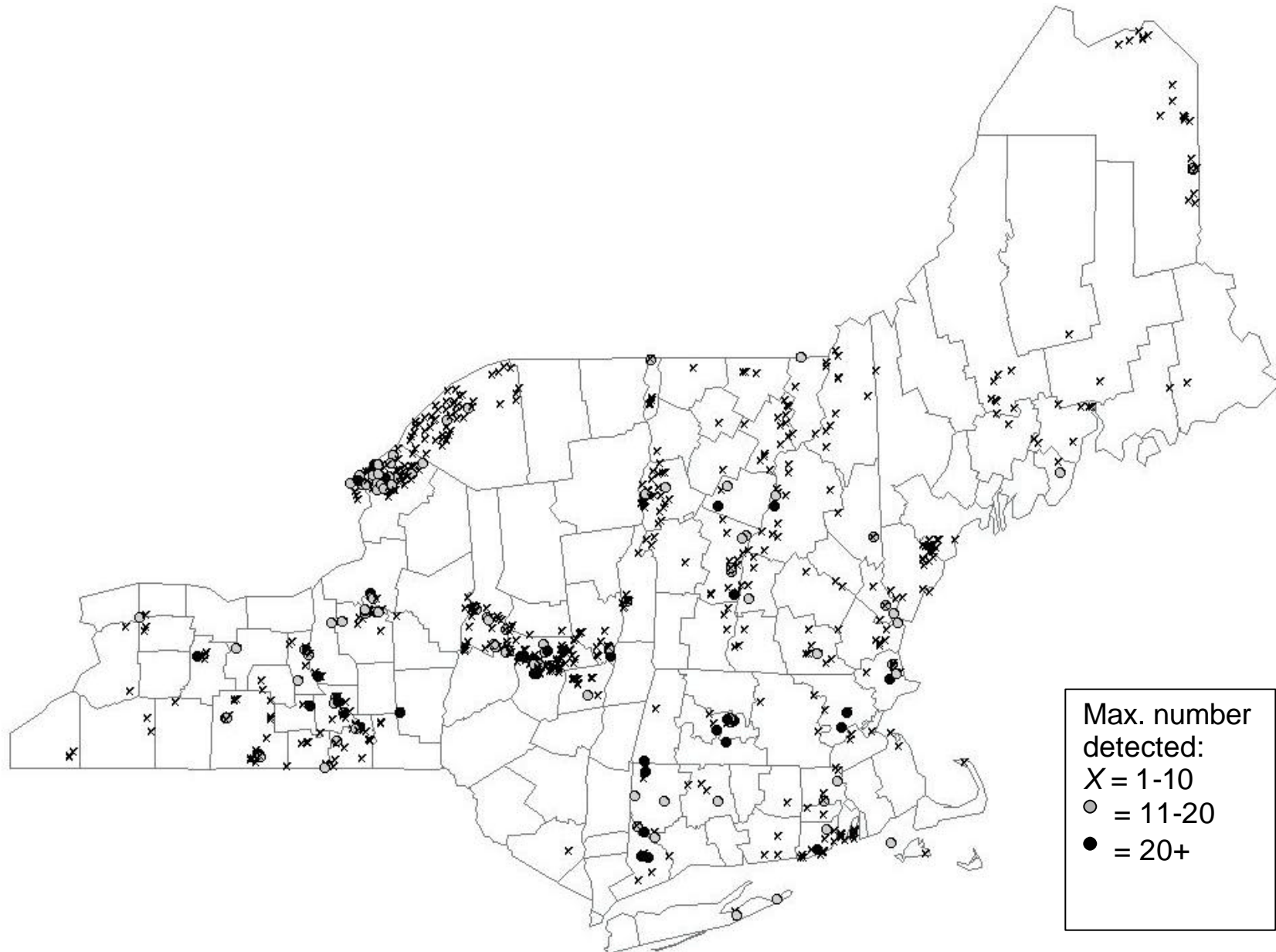
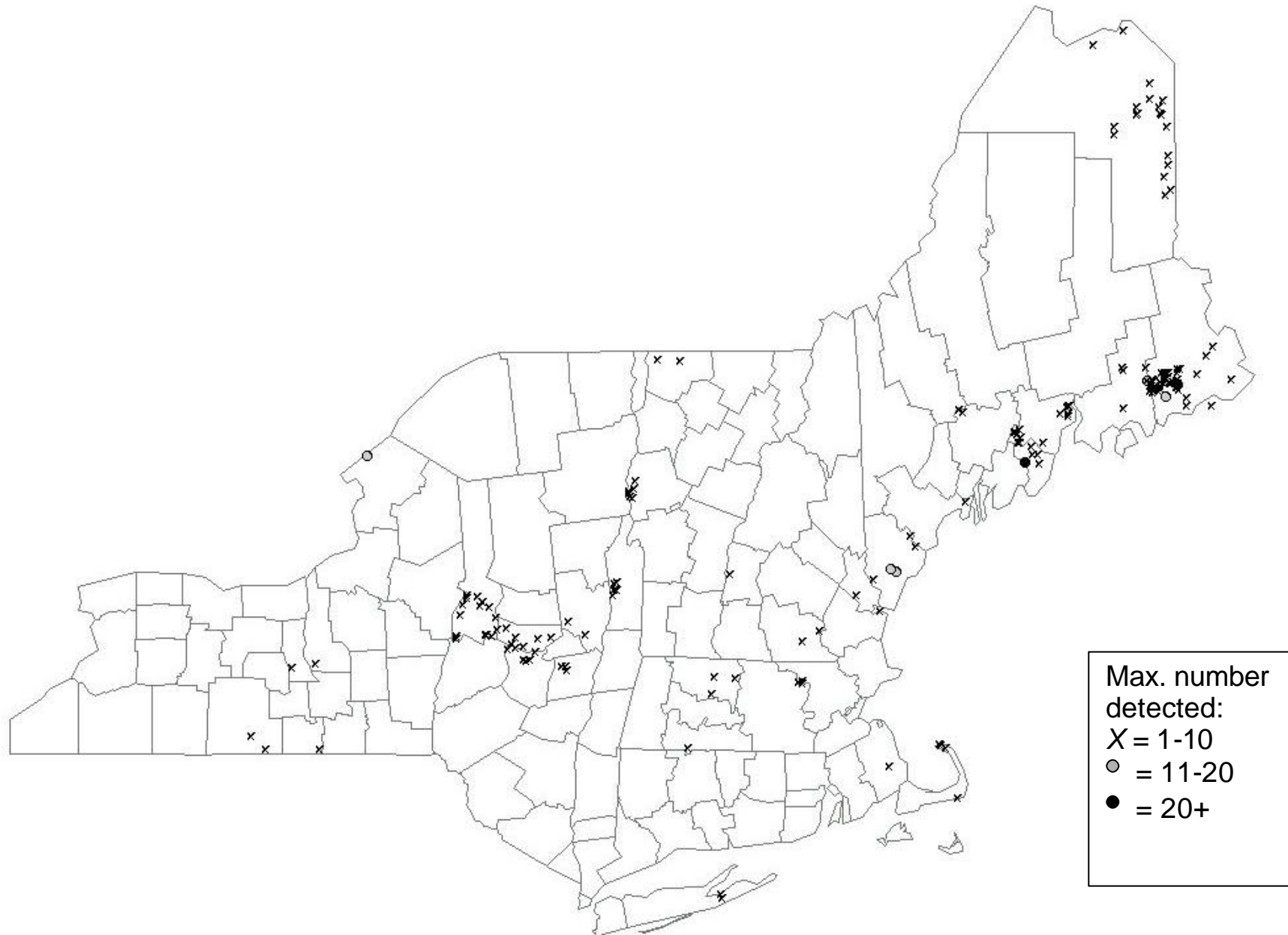


Figure 12. Vesper Sparrow distribution and abundance in New England and New York, 1997-2000.



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