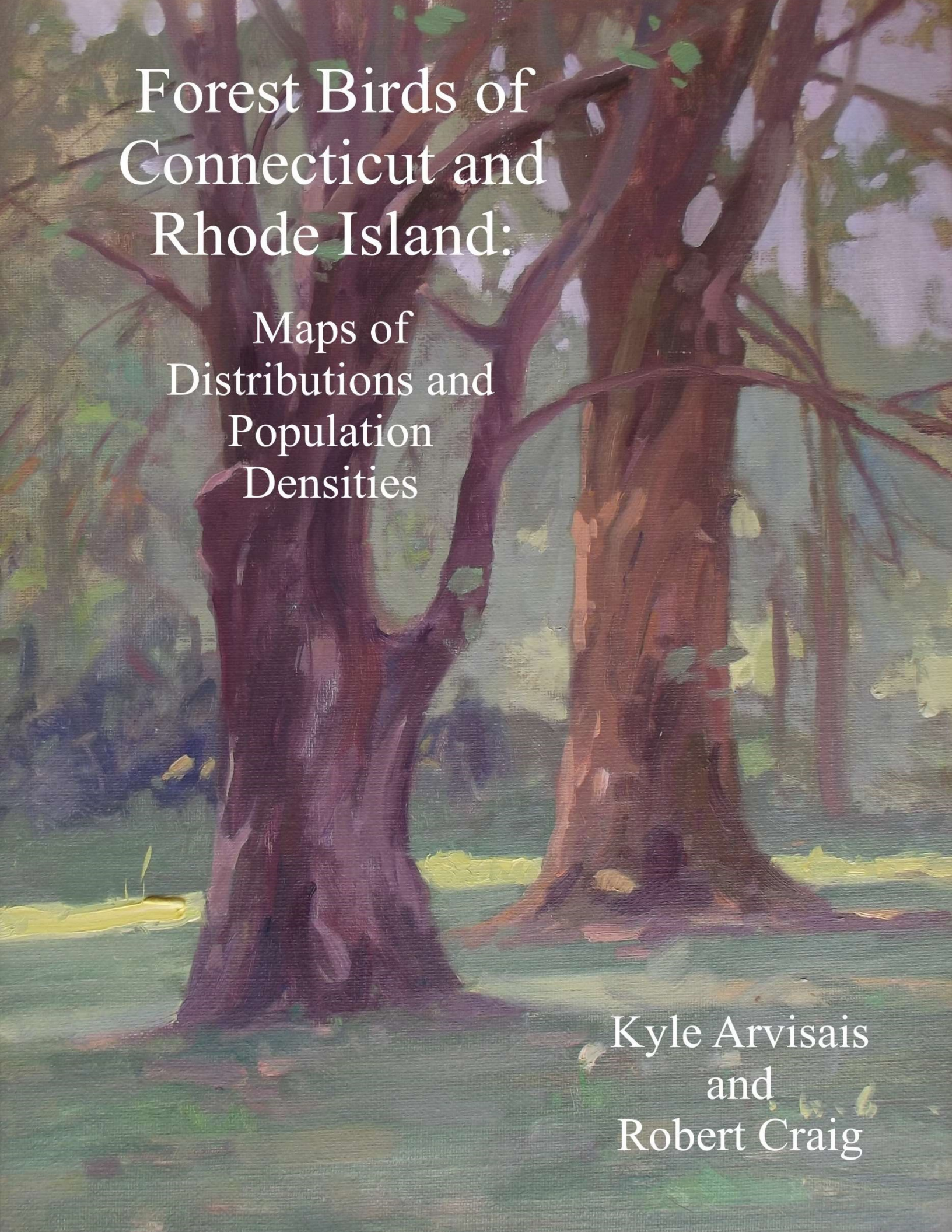

Forest Birds of Connecticut and Rhode Island:

Maps of Distributions and Population Densities

Kyle Arvisais
and
Robert Craig

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Contents

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INTRODUCTION

This report serves as a companion to the *Forest Birds of Connecticut and Rhode Island* (Craig 2017). In it, we map the distribution and population densities of 80 summering and 36 wintering forest bird species encountered on 147 transects during the years 2003−2009 (Fig. 1). Results of eastern Connecticut surveys conducted during 2001−2002 on 51 of these transects have previously been mapped by Craig et al. (2003). We also map data on habitat conditions gathered at 2205 sampling sites on these transects.

Details of study sites, survey methods and habitat conditions are reported by Craig (2017). This previous work discusses species population estimates and their variance, habitat associations, history and conservation concerns. For context and convenience, we repeat for each mapped species a brief section on population density. We also repeat as companions to maps of habitat and community characteristics brief sections on these parameters.

These maps provide the first ever view of regional patterns of bird distributions and population densities, but they must be understood to be knitted together from eight years of data. They should be assessed in terms of annual variation in bird populations.

METHODS

We created all maps in ESRI ArcGIS projected in Lambert Conformal Conic using the NAD83 State Plane coordinate system for Connecticut. Town boundaries came from the Connecticut Department of Energy and Environmental Protection (2018) and Rhode Island Geographic Information System (2018) websites.

Bird densities are displayed using graduated points and shaded color rasters. The graduated points, also used to map habitats, depict a range of density values where smaller points represent lower densities or habitat values and larger points represent higher densities or habitat values. Natural breaks (Jenks) are used to divide the data into categories (Fig. 2). The color rasters are shaded depending upon the estimated density of nearby points, where green represents lower densities and red higher densities (Fig. 3).

We determined shading using the Kernel Density tool from the Spatial Analyst toolbox of ArcMap, where the search radius was 0.175 degrees, area was square map units and the method was planar. We calculated densities for each species individually and determined the search radius empirically to produce an output that yielded realistic results. All species maps were set to the same density scale.

Although the shaded backgrounds can be used as a guide to bird densities, they are meant to compliment the point data and should not be considered as absolute measures. Due to the functionality of the kernel density tool, areas where there are no survey points (i.e. urbanized southwestern Connecticut and eastern Rhode Island) are more green-shaded. More points are needed to fill these data gaps and create a more complete data set.

RESULTS AND DISCUSSION

HABITAT

Southern and central Connecticut had the most deciduous forest (Kruskal-Wallis χ^2 = 62.6, df = 5, $P < 0.001$; Fig. 4) and most deciduous vegetation types (Kruskal-Wallis χ^2 = 26.9, df = 5, $P < 0.001$; Fig. 5) of the regions. Most widespread among these types was oak−dominated forest, which predominated in lower elevation, southern parts of Connecticut and northern Rhode Island (Fig. 6). Percent cover by mixed hardwood forest was greatest in central Connecticut (Fig. 7), conifer−hardwood forest in northern, higher elevation portions of Connecticut (Fig. 8), pine−oak forest in northeastern Connecticut and Rhode Island (Fig. 9) and predominantly conifer forest in southern Rhode Island (Fig. 10).

Western and central Connecticut were more mesic than eastern portions of the study area, with Rhode Island averaging most xeric (Kruskal-Wallis χ^2 = 64.1, df = 5, $P < 0.001$; Fig. 11). Tree size as measured by diameter at breast height (dbh) showed limited variation, although Rhode Island had the smallest trees of any region (Kruskal-Wallis χ^2 = 37.8, df = 5, $P < 0.001$; Fig. 12). Canopy

cover also showed limited variation, although central Connecticut had the most open forests of any region (Kruskal-Wallis $\chi^2 = 20.2$, df = 5, $P = 0.001$; Fig. 13). Understory density was greatest in Rhode Island and least in southwestern Connecticut (Kruskal-Wallis $\chi^2 = 35.5$, df = 5, $P < 0.001$; Fig. 14). Elevation was greatest by far in northwestern Connecticut and least in southeastern to central Connecticut and Rhode Island (Kruskal-Wallis $\chi^2 = 159.8$, df = 5, $P < 0.001$; Fig. 15).

BIRD SURVEYS

Regions differed in richness (summer: $F_{5,141} = 7.2$, $P < 0.001$; winter: $F_{5,141} = 8.3$, $P < 0.001$). Bonferonni multiple comparisons showed that in summer, richness in northwestern Connecticut was greater than in most of the rest of the study area (Fig. 16). In winter, richness in northeastern and northwestern Connecticut was lower than in the rest of the study area (Fig. 17).

Community density also differed among regions (summer: $F_{5,141} = 14.9$, $P < 0.001$; winter: $F_{5,141} = 11.6$, $P < 0.001$). Multiple comparisons showed that in summer, northwestern Connecticut had greater density than all other regions (Fig. 18). In winter, density was lower in northeastern and northwestern Connecticut than in the rest of the study area except for southwestern Connecticut (Fig. 19).

SPECIES ACCOUNTS

Following the maps of habitat distributions and community patterns are maps that document the occurrence of individual forest bird species inhabiting Connecticut and Rhode Island during the study period. We limit maps to those species detected on at least 5% of transects, as we found that detections made below this threshold appeared as likely to relate to chance as to actual regional distributions.

FIG. 1. Study area, with transect locations denoted by dots.

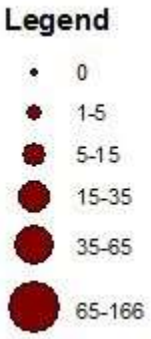


FIG. 2. Population density of individual species.

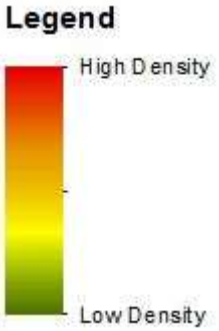


FIG. 3. Color code for relative population density.

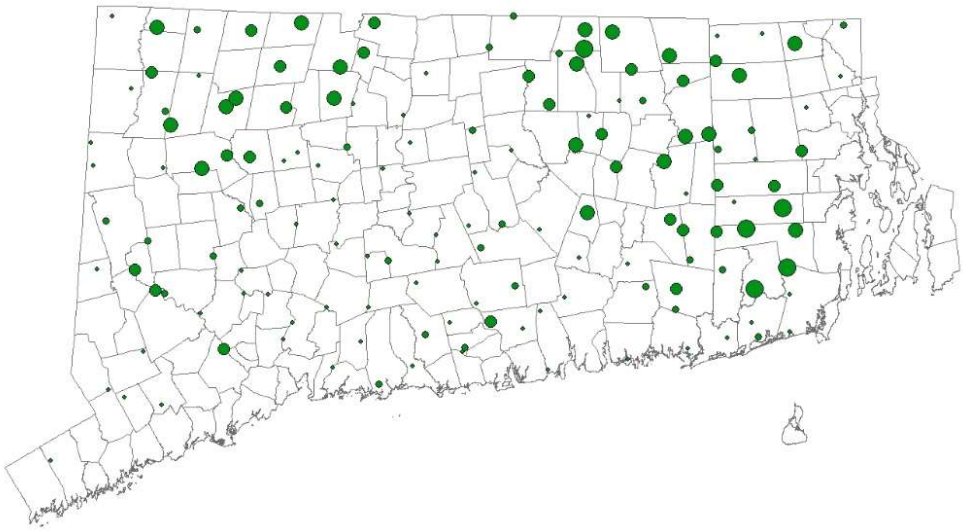


FIG. 4. Distribution of forest types/ transect. 1 = 100% deciduous to 3 = 100% conifer.

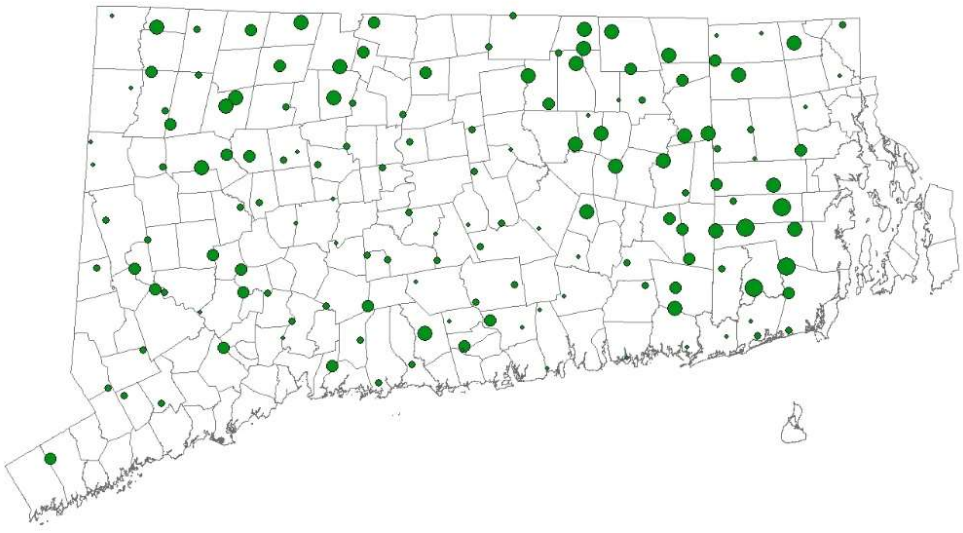


FIG. 5. Distribution of vegetation types/ transect. 1 = oak−dominated, 2 = mixed deciduous, 3 = conifer−hardwood, 4 = pine−oak, 5 = conifer, 6 = mixed cover.

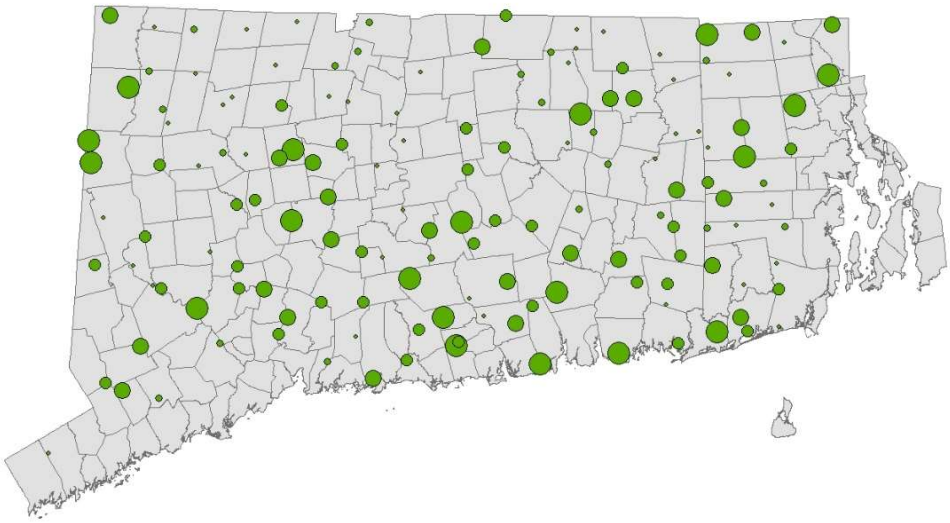


FIG. 6. Percent cover/ transect by oak−dominated forest.

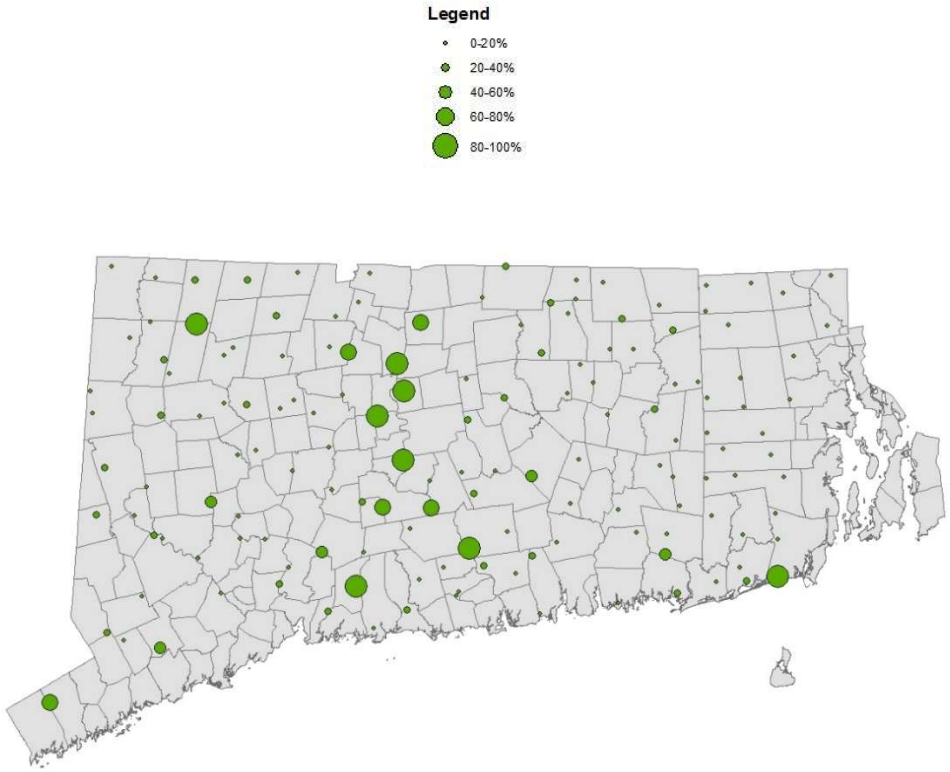


FIG. 7. Percent cover/ transect by mixed deciduous forest.

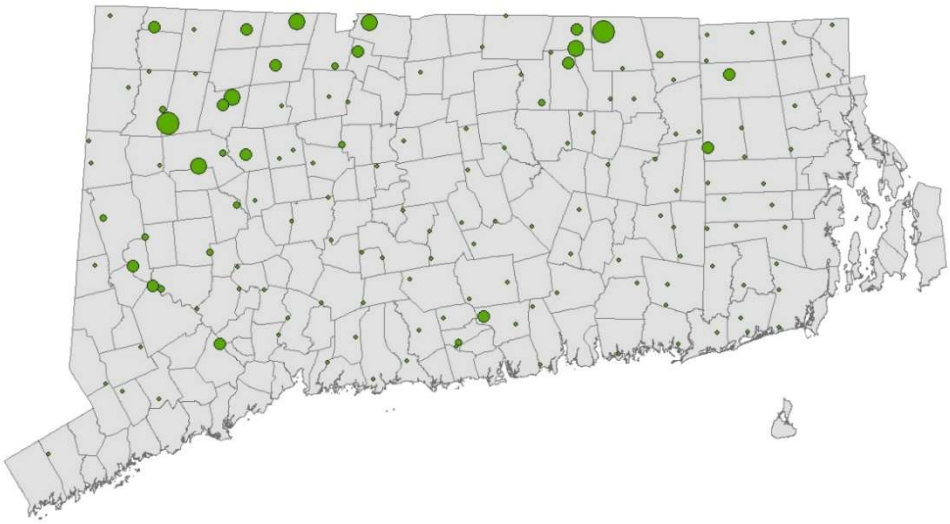


FIG. 8. Percent cover/ transect by conifer−hardwood forest.

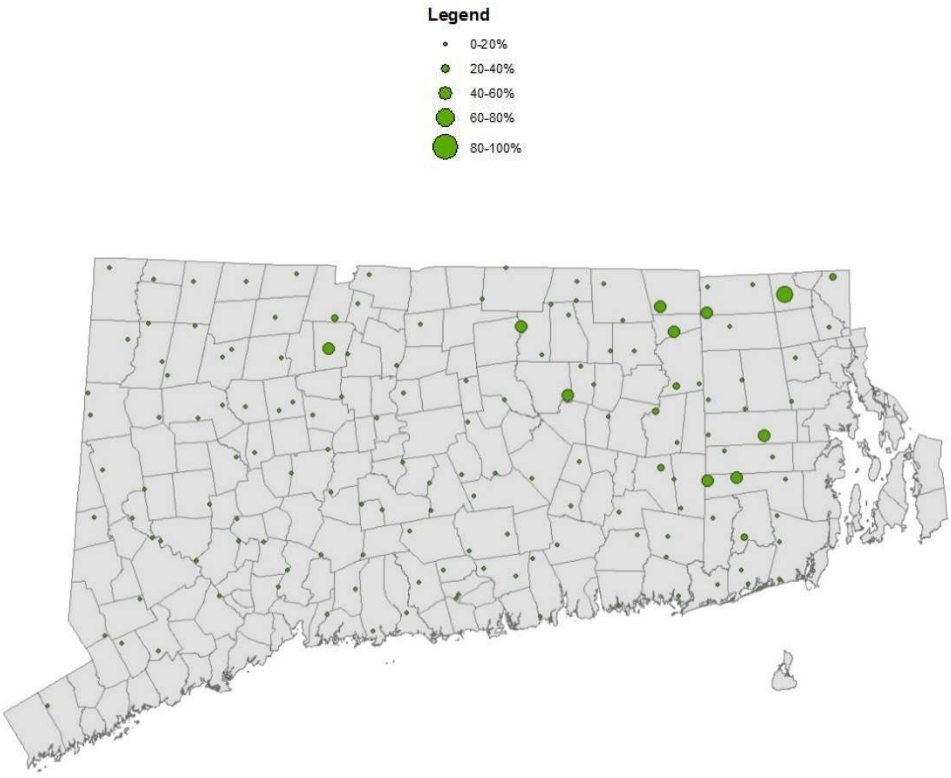


FIG. 9. Percent cover/ transect by pine−oak forest.

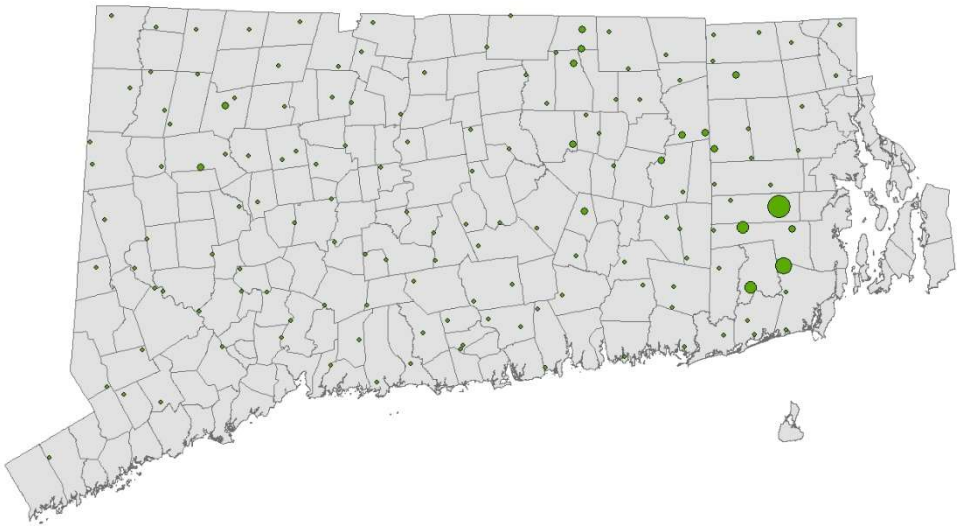


FIG. 10. Percent cover/ transect by conifer forest.

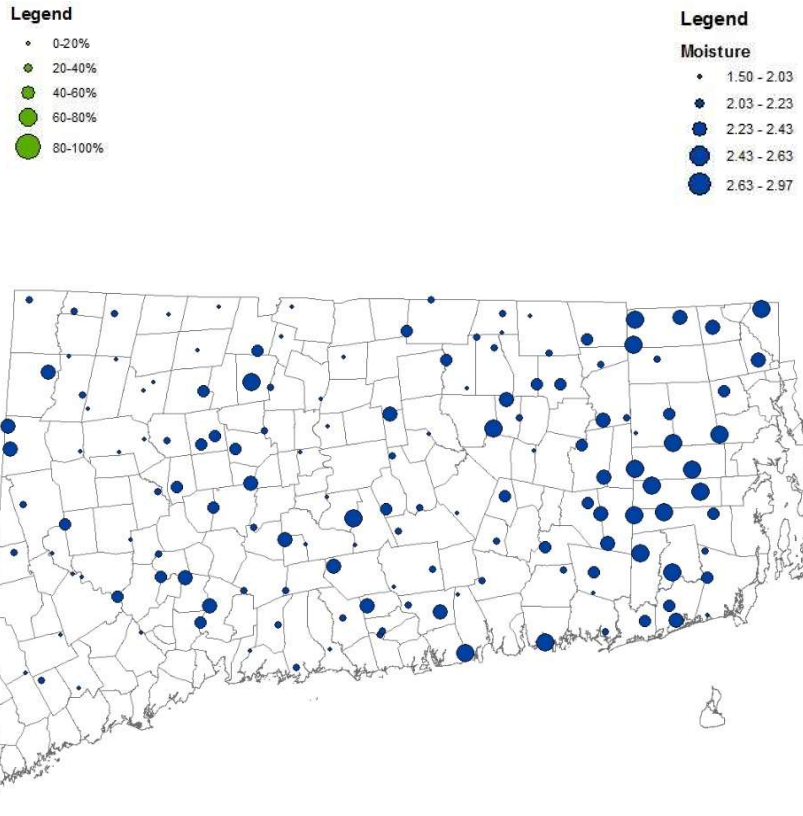


FIG. 11. Distribution of moisture regimes/ transect. 1 = hydric to 3 = xeric.

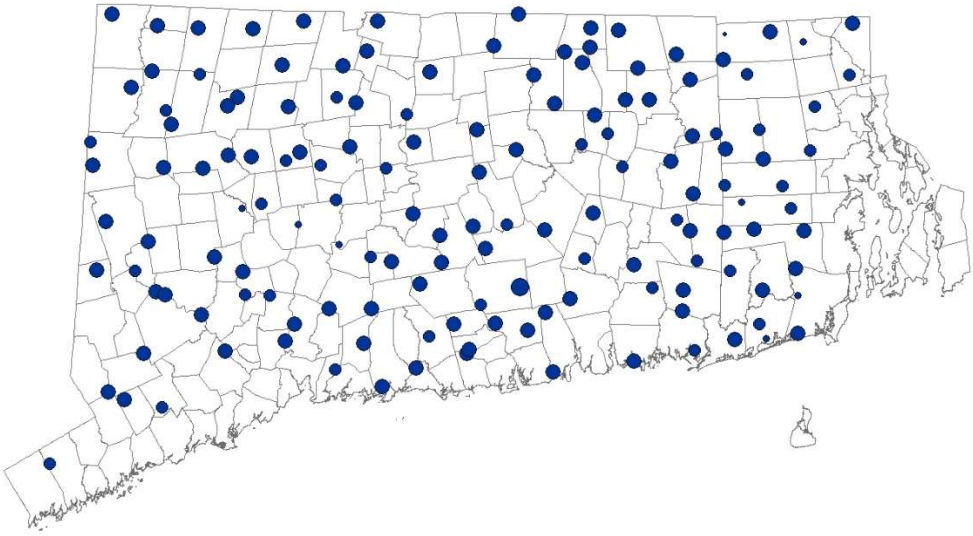


FIG. 12. Distribution of tree sizes (dbh)/ transect. 1 ≤ 15 cm to 3 > 45 cm average.

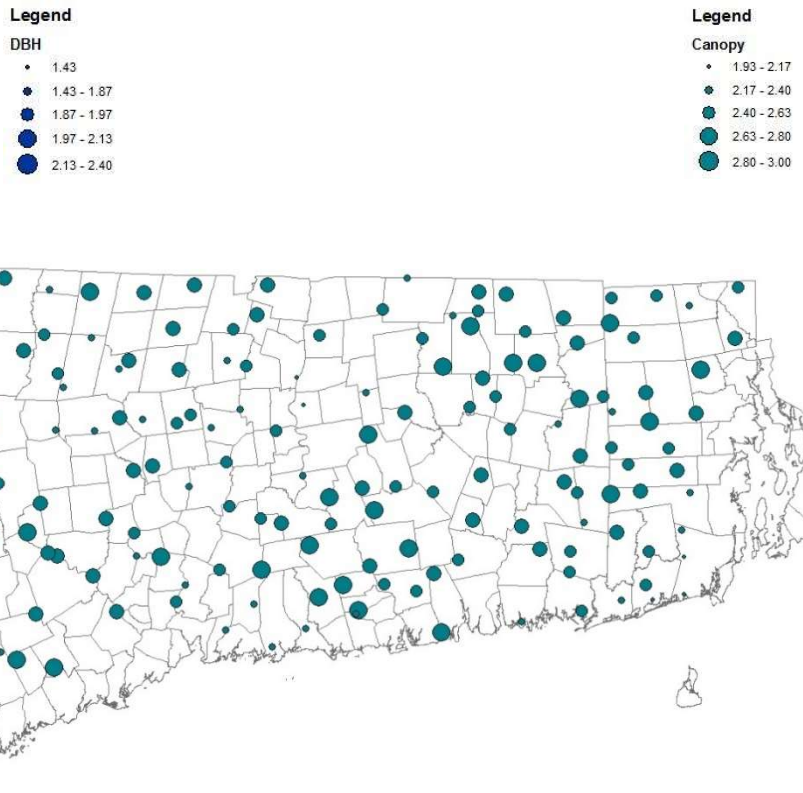


FIG. 13. Distribution of canopy cover/ transect. 1 ≤ 40% to 3 ≥ 70% cover.

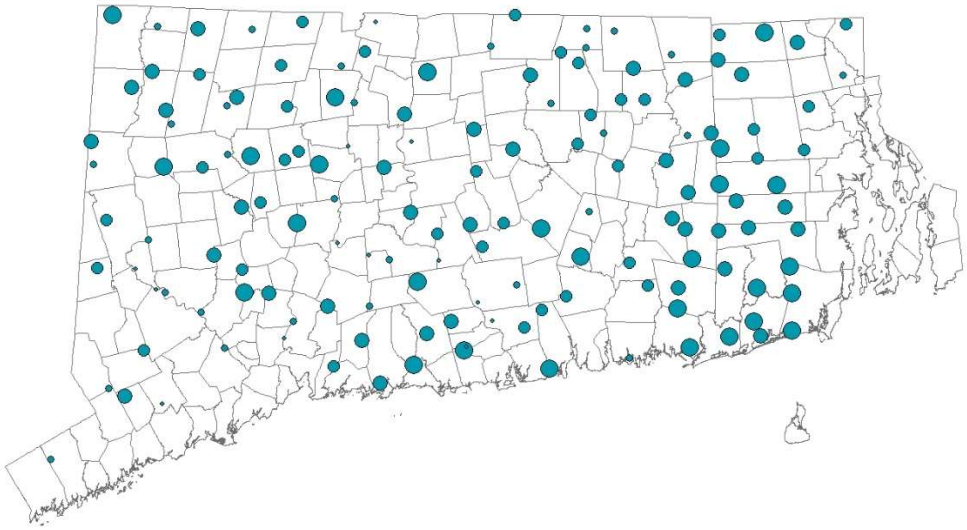


FIG. 14. Distribution of understory density/ transect. 1 = ≤ 20% to 3 ≥ 70% cover.

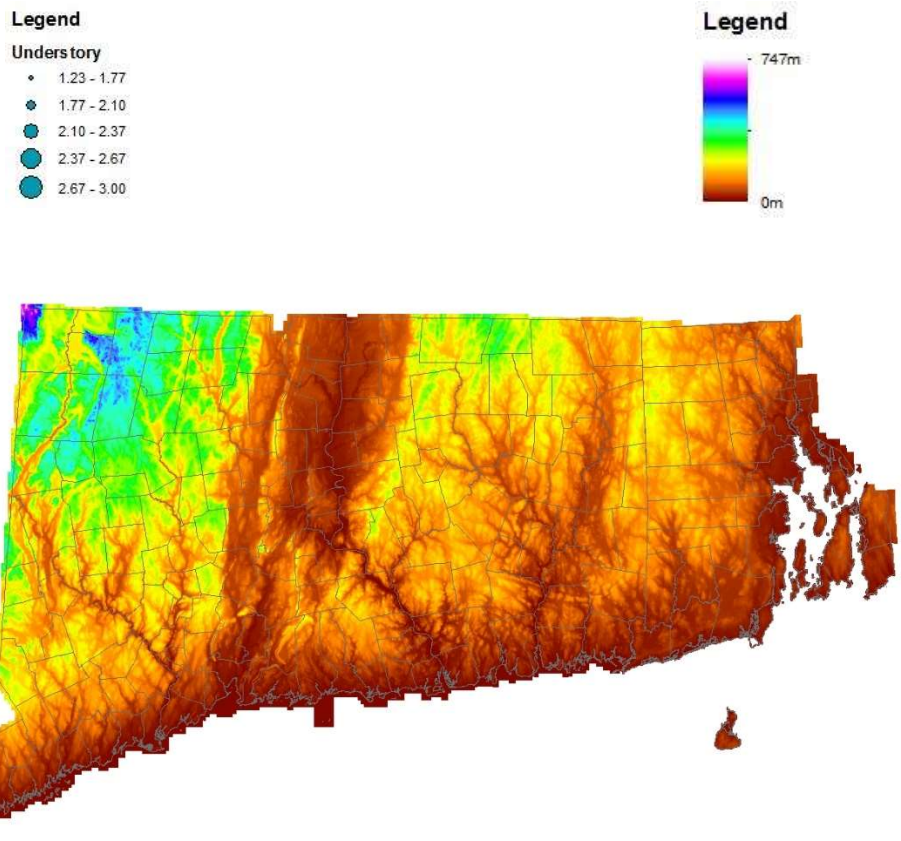


FIG. 11. Distribution of elevations.

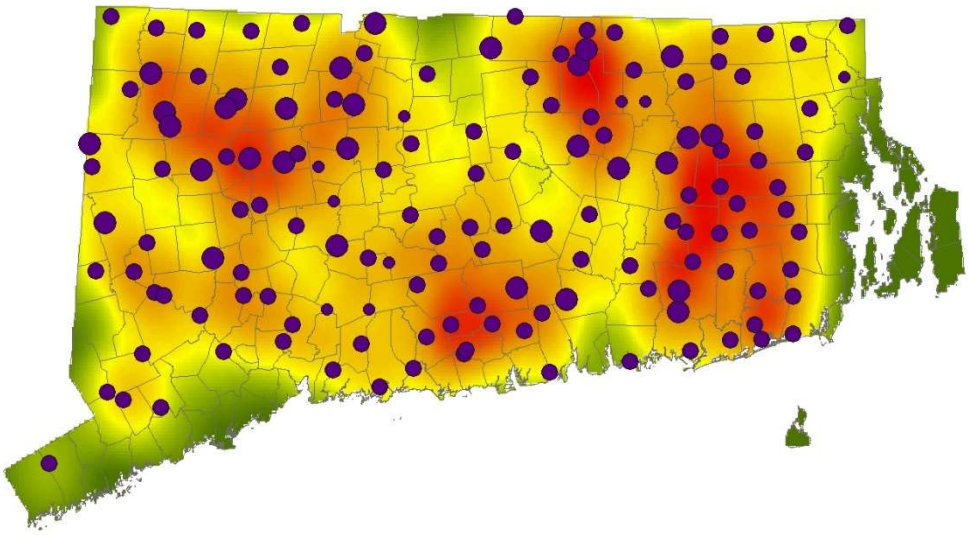
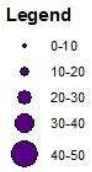


FIG. 16. Summer species richness/ transect.



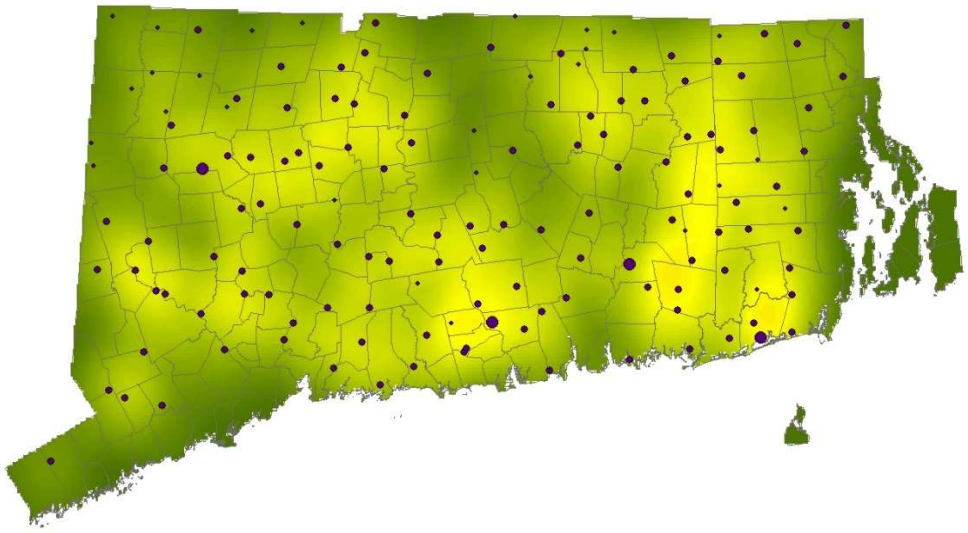


FIG. 17. Winter species richness/ transect.

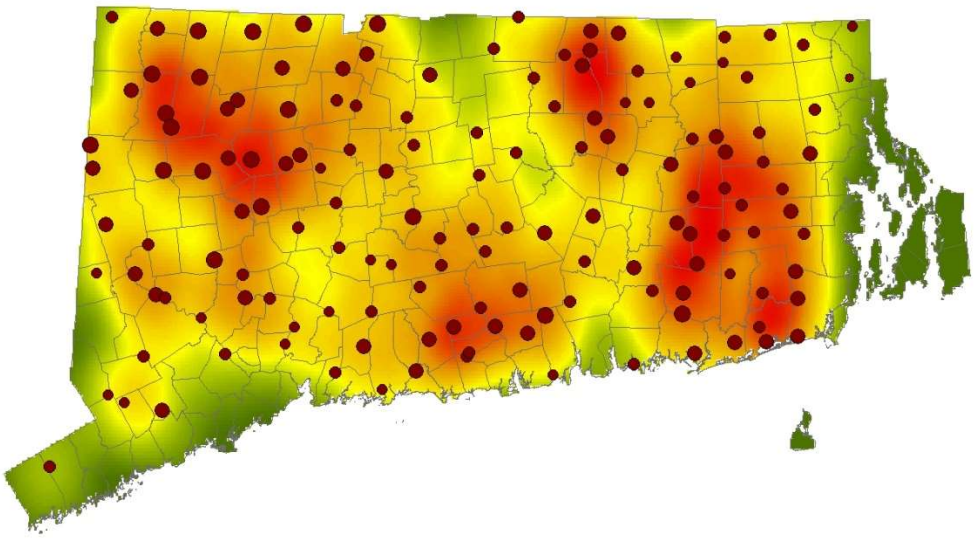


FIG. 18. Summer community density. Birds/ km^2.

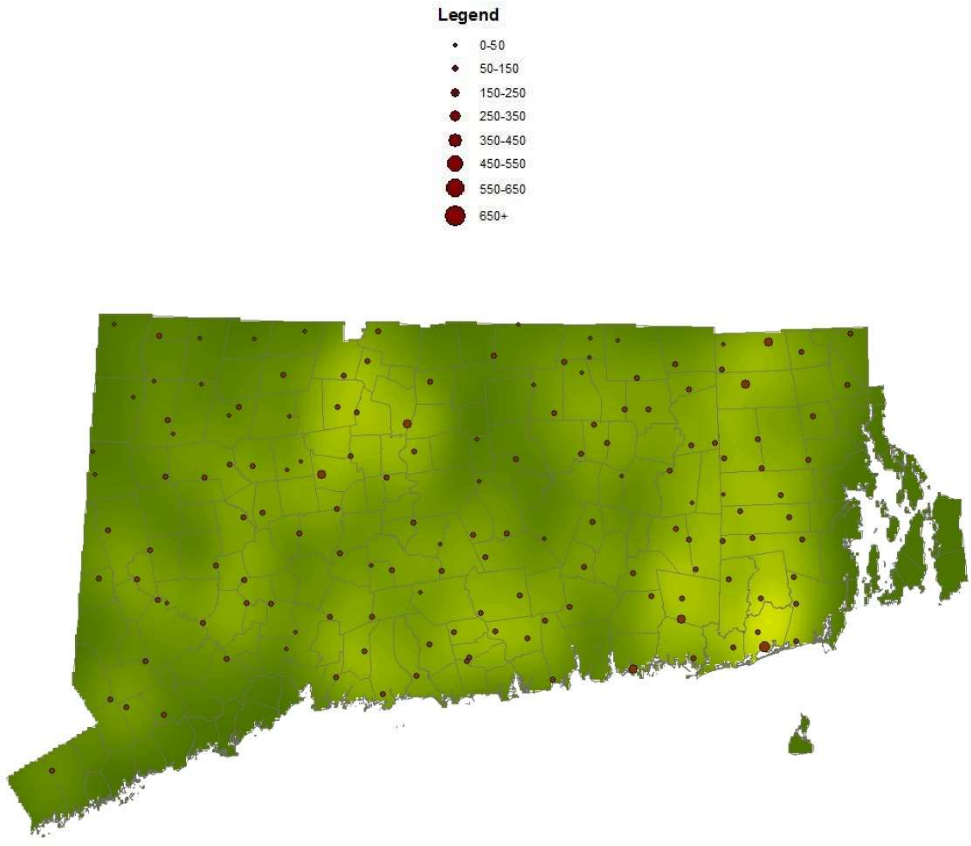


FIG. 19. Winter community density. Birds/ km^2.

RUFFED GROUSE

Bonasa umbellus

The Ruffed Grouse appeared on only 5% of summer and 4% of winter transects, although birds were nearly always detected at close range, so computed densities were comparatively high. Based on 15 pooled detections, we tentatively estimate summer density in primarily forested landscapes as 0.74 birds/km^2 with a total population of 6787. We estimate winter density as 0.66 birds/km^2 with a total population of 6036.

Summering individuals of this often secretive species occurred primarily in northwestern Connecticut (Fig. 1), although our few winter records were from eastern Connecticut. The species did not occur on counts in Rhode Island and elsewhere.

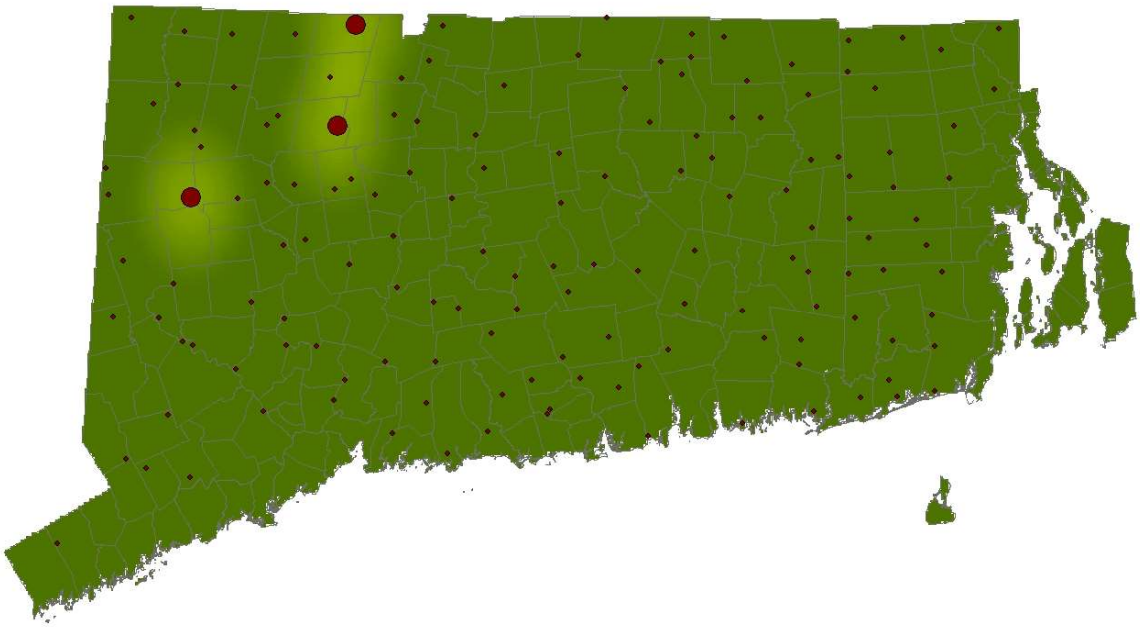


FIG. 1. Summer distribution.

Sponsored by Jay Cantor

WILD TURKEY

Meleagrus gallopavo

Summer
Density (birds/km^2): 0.89 (n = 50, 95% CI: ± 0.29)
CT: 1.02
RI: 0.28
Population (birds): 8,153 (95% CI: ± 2629)
CT: 7,702
RI: 451

Wild Turkeys occurred on 24% of summer but only on 3% of winter transects. Because of their low winter detectability, we made no winter population estimates. Low detections may have been due in part to the species' secretive nature at this season, although the few winter tracks observed suggested that birds largely vacated forest habitat during this season. Indeed, most birds observed in winter were in agricultural land.

Although males were more conspicuously vocal than females in summer, we detected them with about equal frequency. Hence, we consider our computations above to represent most reasonably total population density (Fig. 1). Population estimates are based on less than 60 detections, so have higher variance.

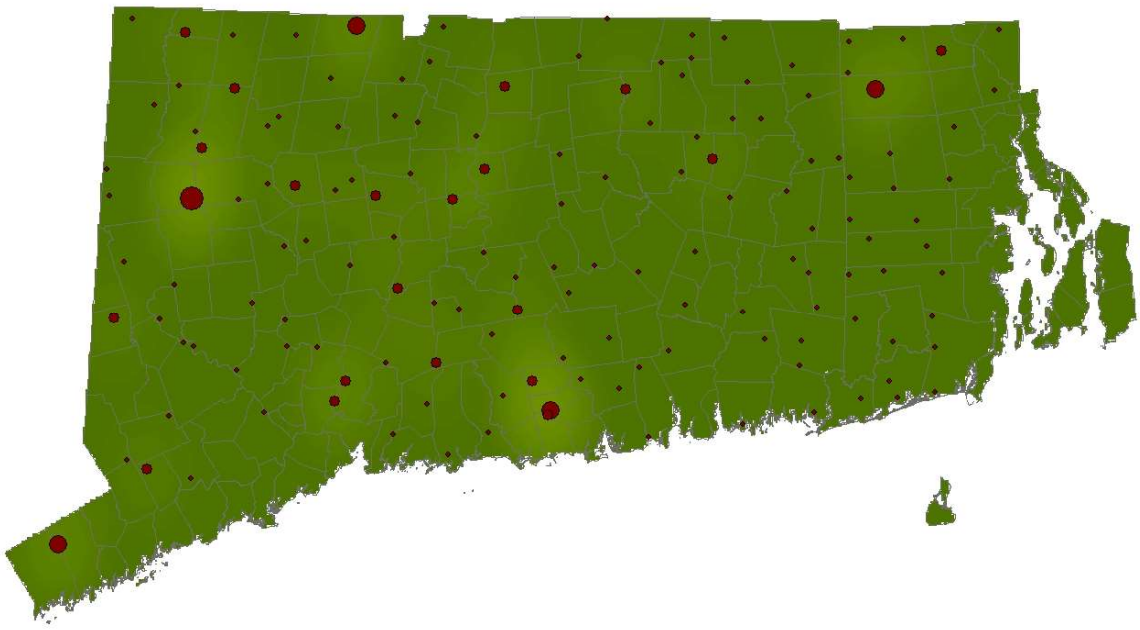


FIG. 1. Summer distribution.

SHARP-SHINNED HAWK

Accipiter striatus

We found only one summering Sharp-shinned Hawk during this study—a bird detected incidentally to surveys in northeastern Connecticut. The species also appeared at 5% of winter transects, with all observations occurring from central Connecticut east through Rhode Island (Fig. 1). From nine detections, we tentatively estimate a winter density of 0.22 birds/km^2 and total population of 1984 for a typical winter.

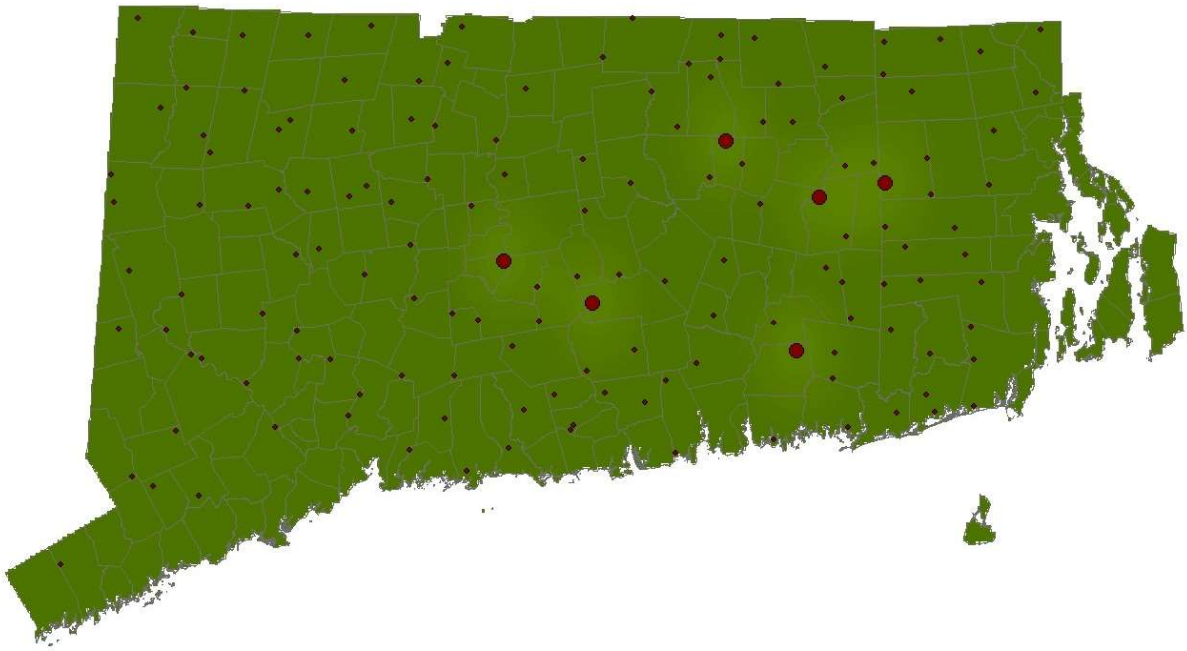


FIG. 1. Winter sightings.

COOPER'S HAWK

Accipiter cooperii

Although infrequently encountered as a breeder, the Cooper's Hawk was less rare than the Sharp-shinned Hawk, appearing on 10% of transects and also incidentally at three additional sites. We found it in summer throughout Connecticut and Rhode Island (Fig. 1). From 15 detections, we tentatively estimate a summer density of 0.53 birds/km^2 and a total summer population of 4820.

Birds appeared on winter surveys only once in Connecticut, although these were clearly paired birds that were late winter arrivals to the breeding ground. We incidentally observed a similar late winter arrival of paired birds in Rhode Island, and also incidentally observed winter birds at two additional Connecticut locations. Our limited winter data yielded no population estimate.

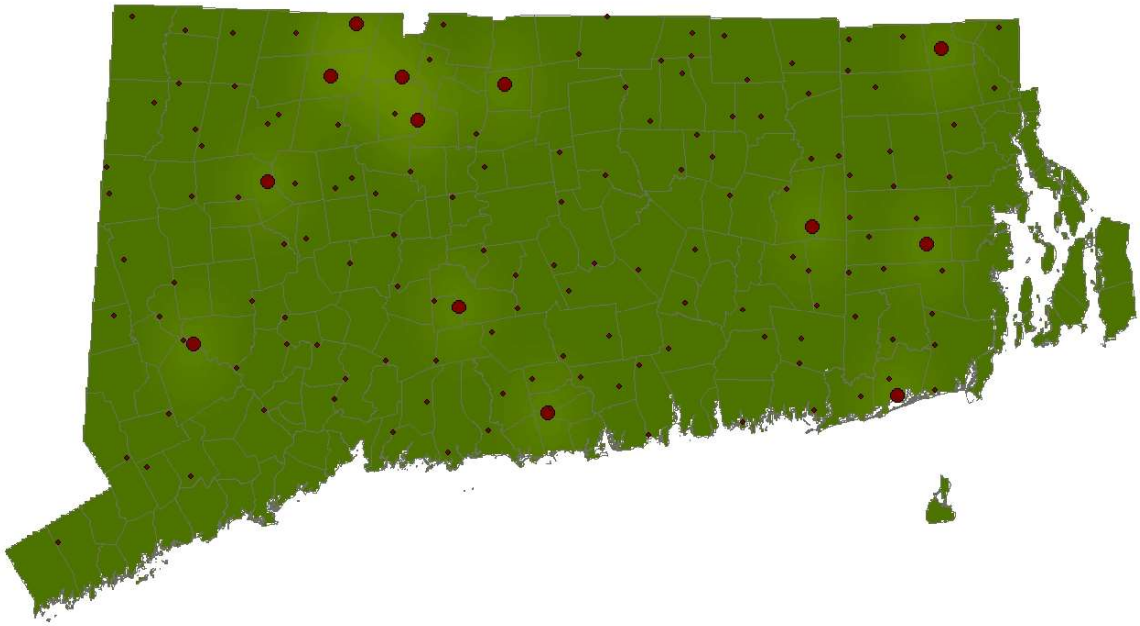


FIG. 1. Summer distribution.

Sponsored by Glen Dash

NORTHERN GOSHAWK

Accipiter gentilis

The Northern Goshawk appeared on 6% of summer transects (Fig. 1), principally in northeastern and northwestern Connecticut, although three detections were from Rhode Island. Birds also appeared on 2% of winter transects in eastern Connecticut and Rhode Island.

Inasmuch as birds vocalized in both summer and winter, making seasonal detections reasonably similar, we pooled all data in computing detectability. From our 15 detections, we tentatively estimate a summer density of 0.12 birds/km^2 and a total population of 1062. We estimate a winter density of 0.06 birds/km^2 and a total population of 521. Notably, however, of these 15 total observations, 11 were from 2003 or earlier.

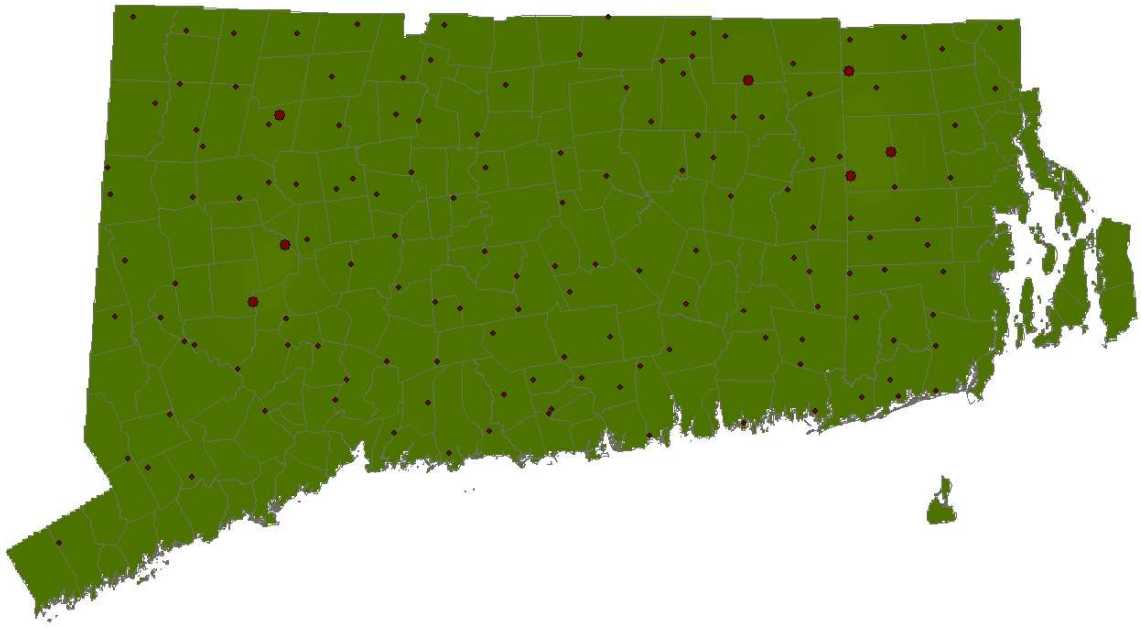


FIG. 1. Summer distribution.

Sponsored by Sally Keil

RED-SHOULDERED HAWK

Buteo lineatus

Summer	Winter
Density (birds/km^2): 0.11 (n = 97, 95% CI: ± 0.03)	Density (birds/km^2): 0.03 (pooled n = 113, 95% CI: ± 0.01)
CT: 0.10	CT: 0.03
RI: 0.14	RI: 0.02
Population (birds): 979 (95% CI: ± 174)	Population (birds): 235 (95% CI: ± 110)
CT: 760	CT: 204
RI: 219	RI: 31

The loudly vocal Red-shouldered Hawk could be detected at great distances and was the most commonly encountered hawk of the study, appearing on 40% of summer and 15% of winter transects. Being easily located does not equate with commonness, however, as great detection distances led to a computed summer density much lower than that of the less frequently encountered but more secretive Cooper's Hawk.

Summering birds occurred most commonly in southern portions of the study area (0.14 vs. 0.08 birds/km^2, Mann-Whitney U = 2205.5, P = 0.02, n = 147) and appeared to be least common in lightly forested central Connecticut (Fig. 1). Birds were vocal throughout the year (see also Crocoll 1994), so we pooled all detection data in computing winter density. The species was rare during this season, however, and showed no clear regional pattern of occurrence (Fig. 2).

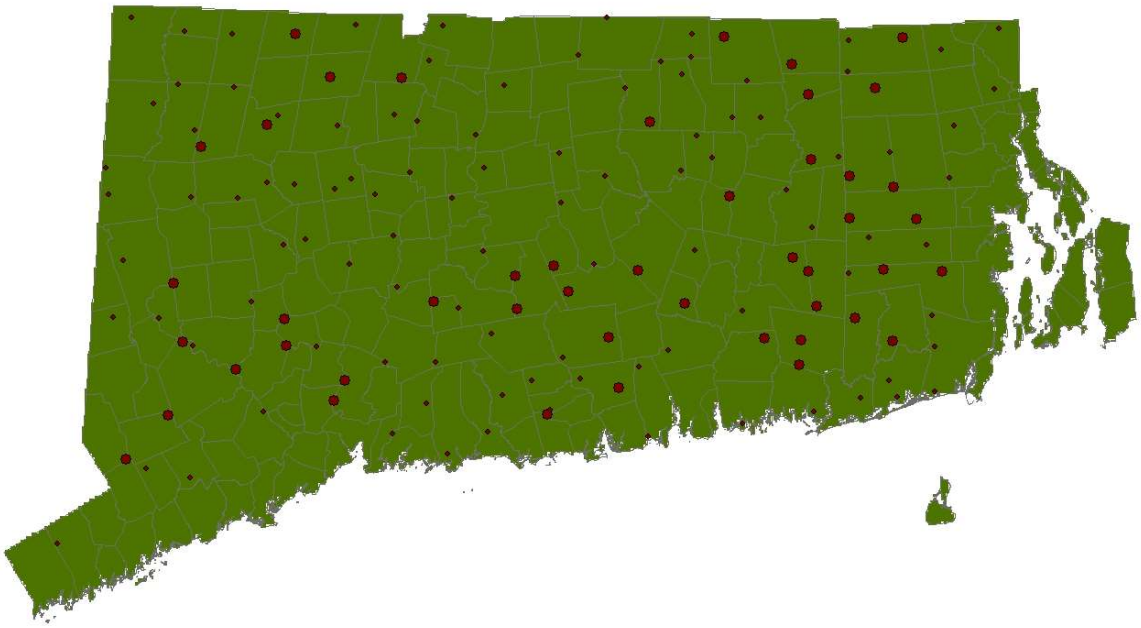


FIG. 1. Summer distribution.

FIG. 2. Winter distribution.

BROAD-WINGED HAWK

Buteo platypterus

Summer

Density (birds/km^2): 0.23 (n = 29, 95% CI: ± 0.09)
CT: 0.15
RI: 0.59

Population (birds): 2,068 (95% CI: ± 826)
CT: 1,134
RI: 934

We observed the more secretive Broad-winged Hawk at only 19% of transects, but at generally close range, so we computed its population as comparatively higher than that of the Red-shouldered Hawk. Although our sample was half of the 60 observations preferred for density estimation, our data fit a detectability curve well, so we believe our estimates of density are reasonable, albeit with high variance. Densities averaged greater in northern vs. southern portions of the study area (0.24 vs. 0.17 birds/km^2) and particularly Rhode Island (Fig. 1).

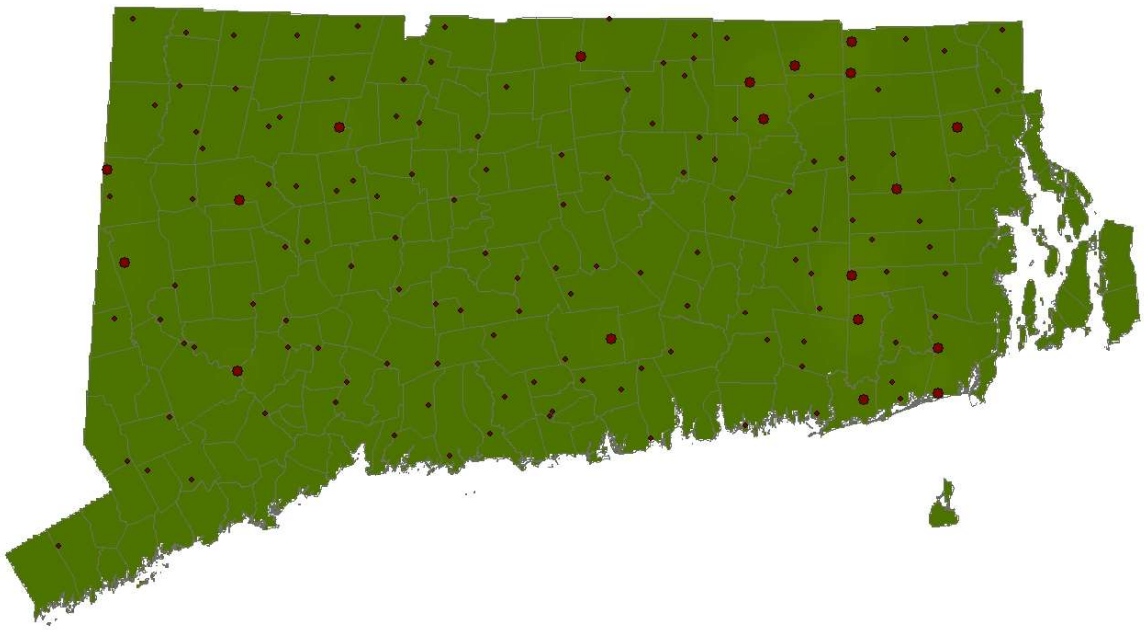


FIG. 1. Summer distribution.

RED-TAILED HAWK

Buteo jamaicensis

Summer	Winter
Density (birds/km^2): 0.43 (pooled n = 79, 95% CI: ± 0.15)	Density (birds/km^2): 0.45 (pooled n = 79, 95% CI: ± 0.17)
CT: 0.46	CT: 0.52
RI: 0.30	RI: 0.15
Population (birds): 3,927 (95% CI: ± 1,372)	Population (birds): 4,138 (95% CI: ± 1,511)
CT: 3,444	CT: 3,896
RI: 483	RI: 242

The vocal and conspicuous Red-tailed Hawk appeared to be about equally detectable year-round, so we pooled detections in computing seasonal population estimates. Summering birds occurred on 24% of transects, most commonly in southern portions of the study area (0.26 vs. 0.56 birds/km^2), and appeared to be most common in more lightly forested central and southwestern Connecticut (Fig. 1).

During winter, population density appeared to be about the same as in summer. The species occurred on 24% of transects and again occurred most commonly in southern portions of the study area (0.34 vs. 0.61 birds/km^2). Populations also appeared to be greatest in more lightly forested and southwestern Connecticut (Fig. 2).

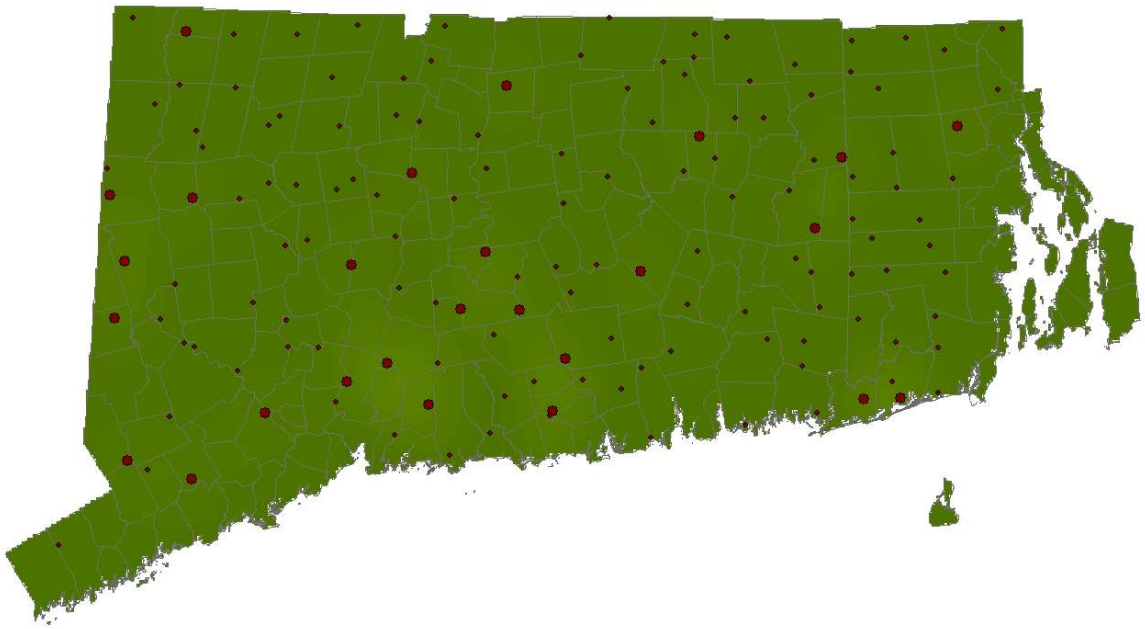


FIG. 1. Summer distribution.

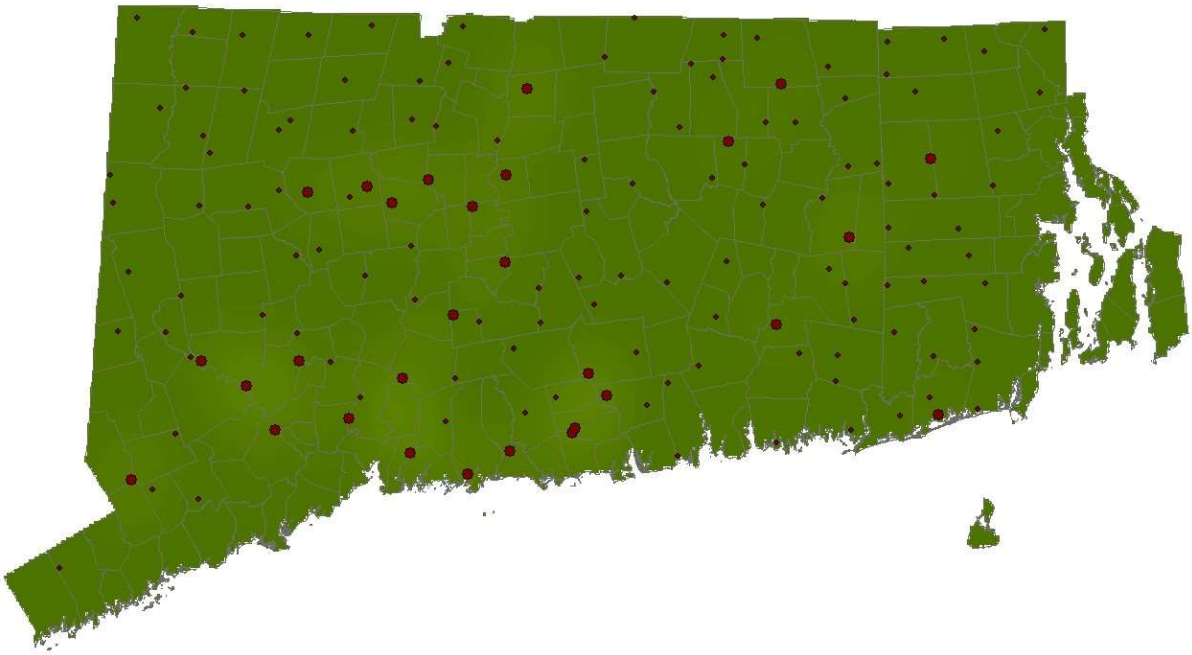


FIG. 2. Winter distribution.

Sponsored by James and Nancy Weiss

MOURNING DOVE

Zenaida macroura

Summer	Winter
Density (males/km^2): 2.05 (n = 653, 95% CI: ± 0.26)	Density (males/km^2): 2.34 (n = 113, 95% CI: ± 0.77)
CT: 2.00	CT: 2.23
RI: 2.25	RI: 2.86
Population (males): 18,654 (95% CI: ± 2,348)	Population (males): 21,291 (95% CI: ± 7,053)
CT: 15,074	CT: 16,743
RI: 3,580	RI: 4,548

Although we recorded the Mourning Dove on 92% of summer forest transects, its call carried long distances, so not all birds encountered were likely to have been associated closely with forest habitats. Moreover, even in winter, nearly all detections on the 36% of transects where birds occurred were of vocalizing males. Hence, estimates of densities are best interpreted as those of males. Estimates refer only to that part of the population detectable from primarily forested regions.

Summer densities (Fig. 1) averaged least in southeastern Connecticut and greatest in southwestern Connecticut and Rhode Island (2.25 males/km^2), although there was no significant difference among regions (Kruskal-Wallis $\chi^2 = 2.3$, $n = 147$, $P = 0.80$). Winter densities were least in northeastern and northwestern Connecticut and greatest in central Connecticut (Fig. 2). At this season, regional differences were significant (Kruskal-Wallis $\chi^2 = 12.1$, $n = 147$, $P = 0.03$). Densities did not change from summer to winter (Wilcoxon $Z = -1.4$, $n = 294$, $P = 0.15$).

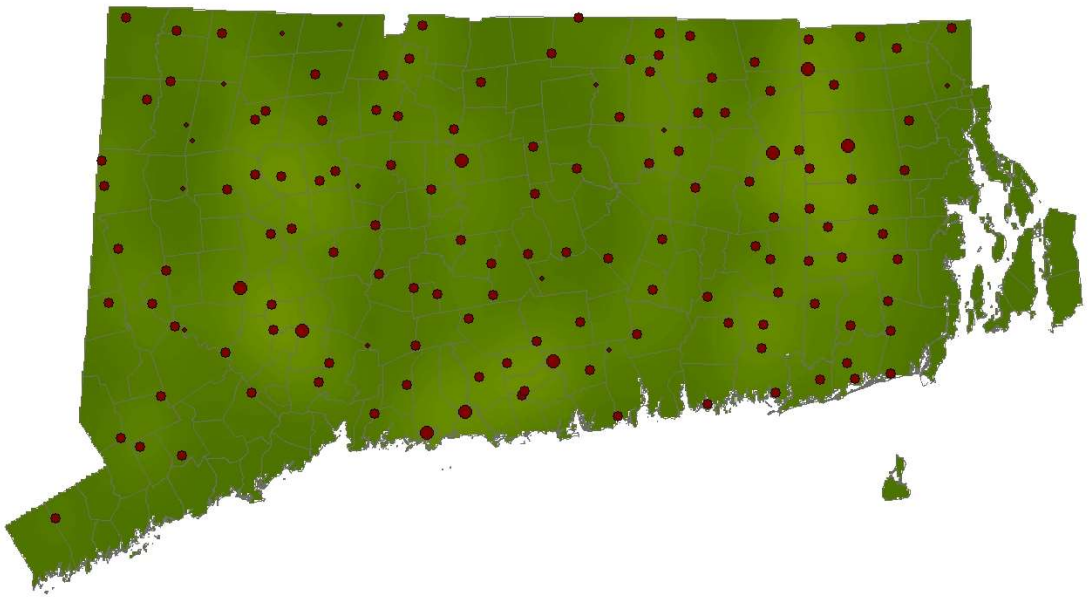


FIG. 1. Summer distribution.

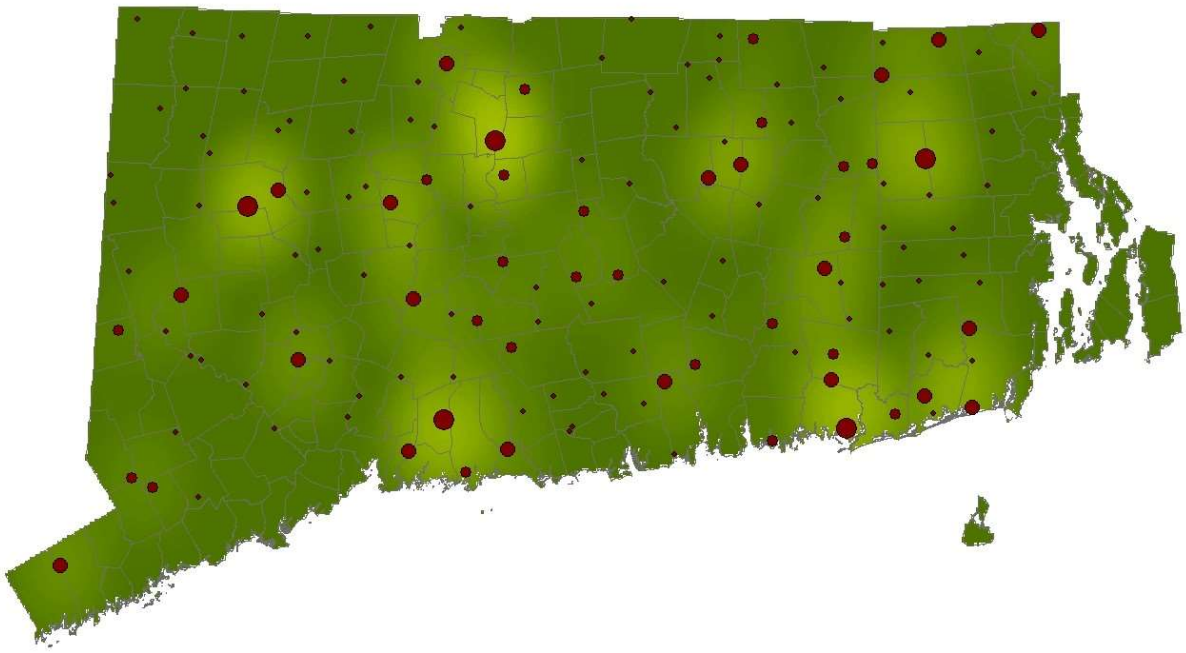


FIG. 2. Winter distribution.

YELLOW-BILLED CUCKOO

Coccyzus americanus

Summer

Density (males/km^2): 0.48 (n = 107, 95% CI: ± 0.18)
CT: 0.43
RI: 0.70

Population (males): 4,371 (95% CI: ± 1,637)
CT: 3,255
RI: 1,116

In identifying the Yellow-billed Cuckoo, we used the characteristic (Hughes 1999) *kowlp-kowlp-kowlp* call, which is apparently uttered only by males. Hence, we interpret densities as those of males.

Although occurring at low densities on 35% of transects in principally forested habitats, the Yellow-billed Cuckoo was much more common during the study period than its congener, the Black-billed Cuckoo. Similarly to this species, however, it reached its greatest densities in southeastern Connecticut and Rhode Island (Kruskal-Wallis $\chi^2 = 42.0$, $n = 147$, $P < 0.001$; Fig. 1).

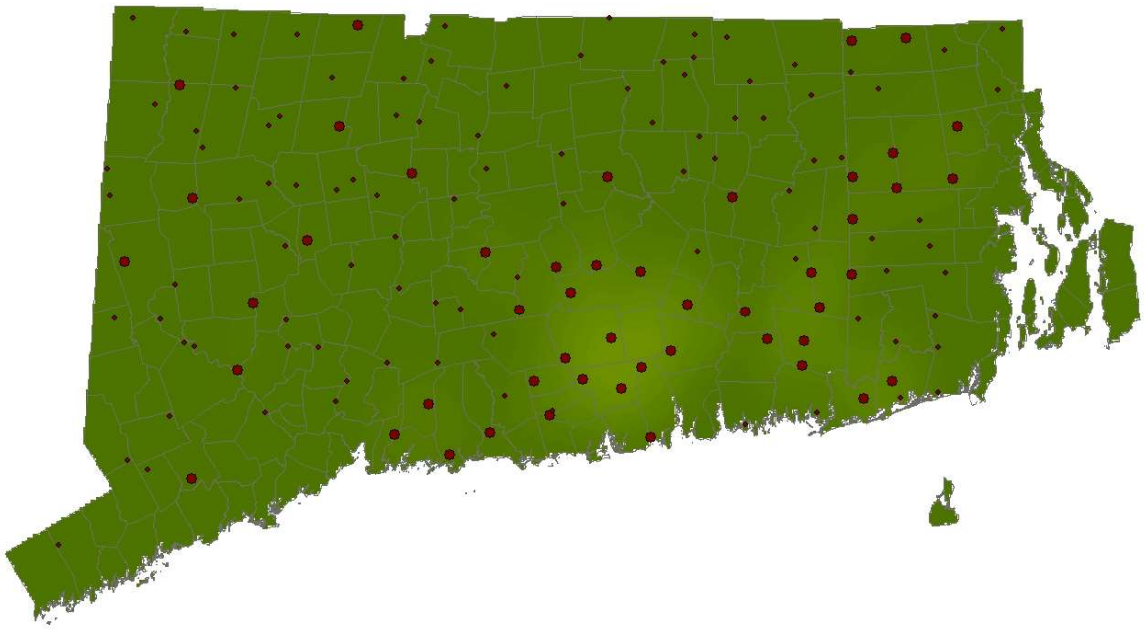


FIG. 1. Summer distribution.

Sponsored by Paul and Maureen Wolter

BLACK-BILLED CUCKOO

Coccyzus erythropthalmus

Summer

Density (birds/km^2): 0.11 (n = 54, 95% CI: ± 0.04)
CT: 0.08
RI: 0.24

Population (birds): 993 (95% CI: ± 375)
CT: 613
RI: 380

The Black-billed Cuckoo occurred on only 22% of transects during this study. Densities appeared greatest in especially eastern Connecticut and Rhode Island (Fig. 1), although the species is notoriously variable in annual occurrence (Hughes 2001).

In identifying this species, we used the characteristic *cu-cu-cu-cu* call, which is uttered by both sexes (Hughes 2001). Hence, population estimates are of total individuals. However, they are based on <60 detections, so have comparatively high variance.

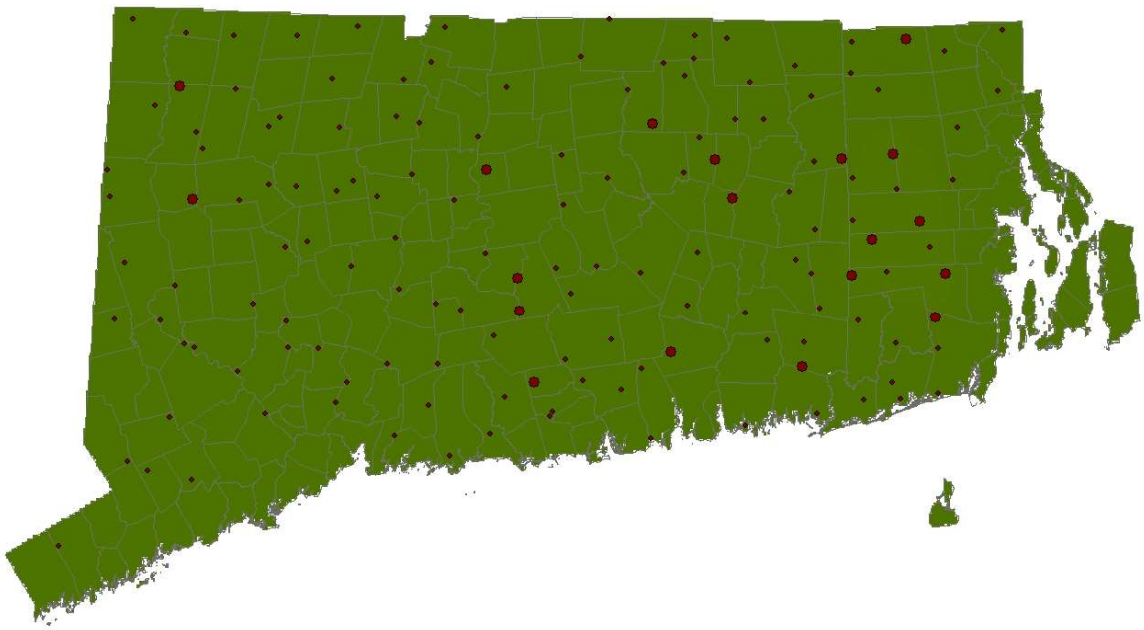


FIG. 1. Summer distribution.

RUBY-THROATED HUMMINGBIRD

Archilochus colubris

Summer

Density (birds/km^2): 22.34 (n = 53, 95% CI: ± 6.43)
CT: 22.25
RI: 22.75

Population (birds): 203,627 (95% CI: ± 58,635)
CT: 167,448
RI: 36,179

Although encountered on only 30% of transects, detections of the Ruby-throated Hummingbird in primarily forested habitats were frequently at 5−10 m, so computed densities were high. Birds were most abundant in northwestern and least abundant in southwestern Connecticut (Kruskal-Wallis $\chi^2 = 19.3$, $n = 147$, $P = 0.002$; Fig. 1).

While surveying, we encountered non-singing, foraging birds almost exclusively and encountered males and females with about equal frequency. Hence, computed densities are of birds/km^2.

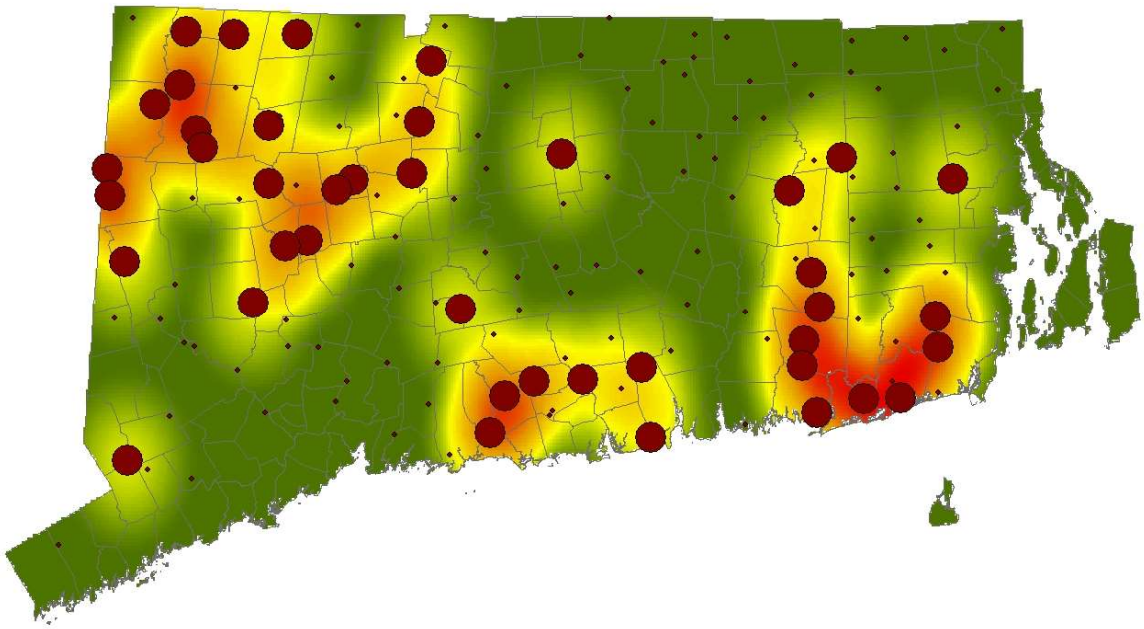


FIG. 1. Summer distribution.

Sponsored by Ben Williams

RED-BELLIED WOODPECKER

Melanerpes carolinus

Summer	Winter
Density (birds/km^2): 2.32 (n = 355, 95% CI: ± 0.43)	Density (birds/km^2): 2.06 (n = 327, 95% CI: ± 0.41)
CT: 2.52	CT: 2.20
RI: 1.37	RI: 1.38
Population (birds): 21,113 (95% CI: ± 3,948)	Population (birds): 18,754 (95% CI: ± 3,738)
CT: 18,933	CT: 16,566
RI: 2,180	RI: 2,188

The Red-bellied Woodpecker was a widespread inhabitant of Connecticut and Rhode Island, occurring on 71% of summer and 69% of winter transects. Population estimates are based on detections of males and females.

Summer density was greatest in southwestern and least in northwestern Connecticut (Kruskal-Wallis $\chi^2 = 31.3$, $n = 147$, $P < 0.001$; Fig. 1). In winter, its density was greatest in central and least in northeastern and northwestern Connecticut (Kruskal-Wallis $\chi^2 = 30.7$, $n = 147$, $P < 0.001$; Fig. 2)).

Populations showed no significant seasonal change for the region as a whole (Wilcoxon $Z = -0.98$, $n = 147$, $P = 0.33$). However, duplicated data for eastern Connecticut suggested that populations grew slightly from summer to winter in southeastern Connecticut.

FIG. 1. Summer distribution.

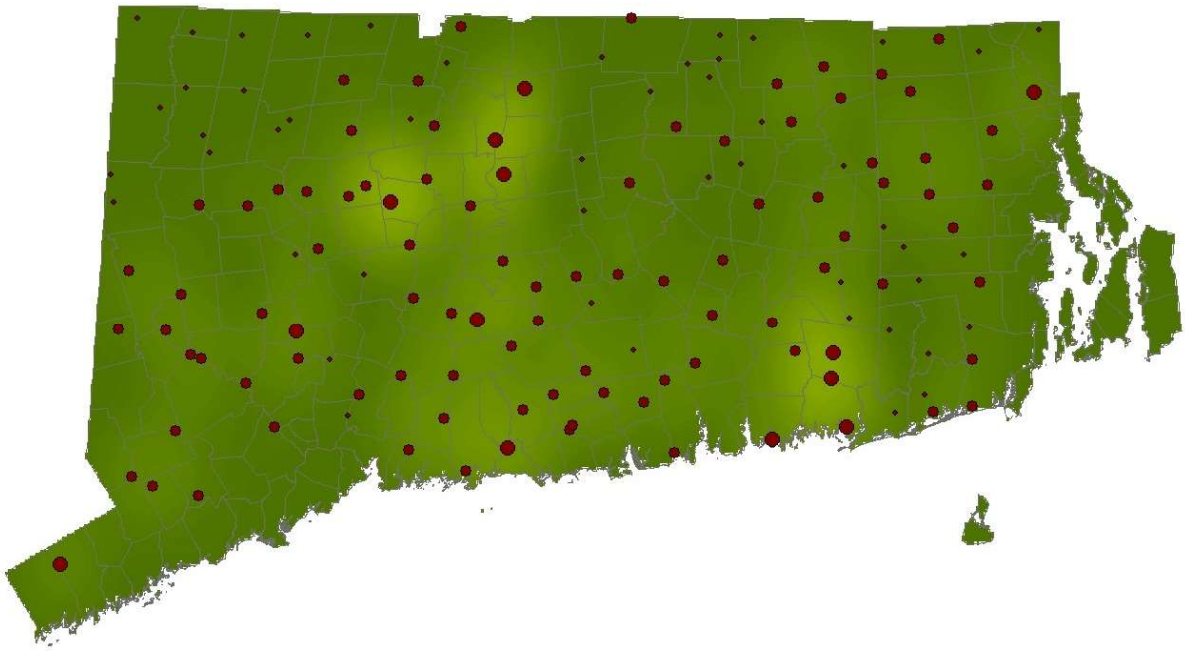


FIG. 2. Winter distribution.

Sponsored by Philippa Paquette

YELLOW-BELLIED SAPSUCKER

Sphyrapicus varius

Summer

Density (birds/km^2): 2.50 (n = 176, 95% CI: ± 0.94)
CT: 3.03
RI: 0

Population (birds): 22,791 (95% CI: ± 8,579)
CT: 22,791
RI: 0

The Yellow-bellied Sapsucker summered on 21% of transects in more mountainous portions of Connecticut. Densities are based on detections of call notes uttered by both sexes. Its greatest density by far occurred in northwestern Connecticut, where it was the commonest woodpecker species, although it also ranged into northeastern and northern portions of southwestern Connecticut (Fig. 1).

The species normally winters south of New England, although we made one winter observation in central Connecticut. Because of its rarity at this season, we make no winter population estimate. However, since the completion of field studies in 2009, it has become an increasingly common winter resident.

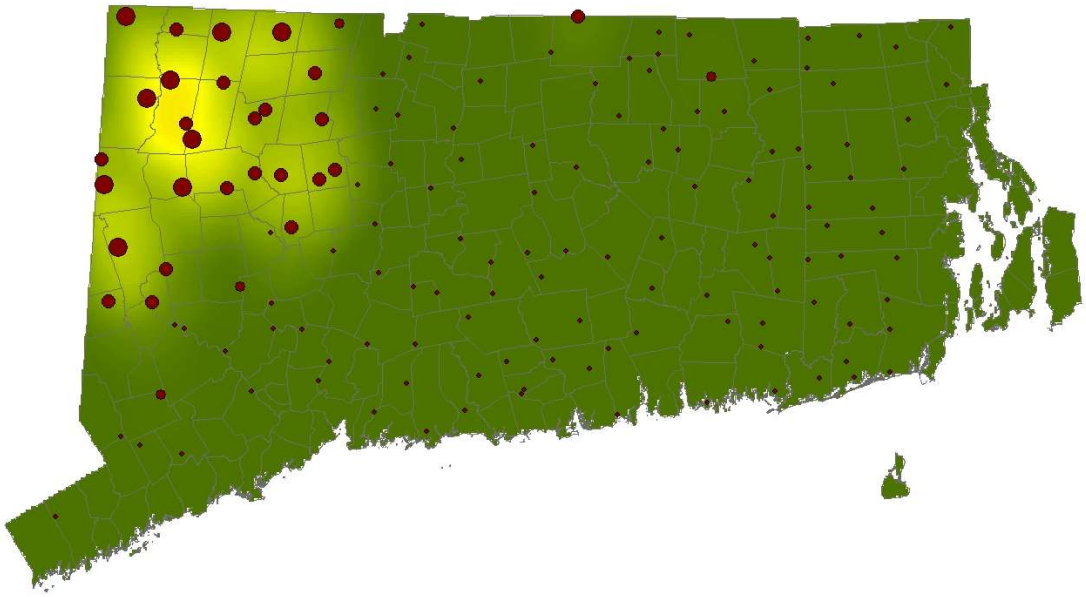


FIG. 1. Summer distribution.

Sponsored by Helen Chase Millett-Miller

DOWNY WOODPECKER

Picoides pubescens

Summer	Winter
Density (birds/km^2): 9.96 (n = 683, 95% CI: ± 1.10)	Density (birds/km^2): 9.64 (n = 584, 95% CI: ± 1.42)
CT: 10.56	CT: 10.36
RI: 7.13	RI: 6.19
Population (birds): 90,760 (95% CI: ± 8,133)	Population (birds): 87,820 (95% CI: ± 12,955)
CT: 79,426	CT: 78,031
RI: 11,334	RI: 9,839

The Downy Woodpecker occurred on 98% of summer and 93% of winter transects. We used call notes made by both sexes in assessing density.

During the study period, summer density was greatest in central Connecticut and least in northwestern Connecticut and Rhode Island (Kruskal-Wallis $\chi^2 = 21.0$, $n = 147$, $P = 0.001$; Fig. 1). In winter, density was also greatest in central Connecticut and least in northwestern Connecticut and Rhode Island (Kruskal-Wallis $\chi^2 = 31.2$, $n = 147$, $P < 0.001$; Fig. 2).

Populations showed no seasonal change for the region as a whole (Wilcoxon $Z = -0.81$, $n = 147$, $P = 0.42$). Similarly, duplicated data for eastern Connecticut showed no strong evidence of population change or north−south shift in densities (Craig 2012).

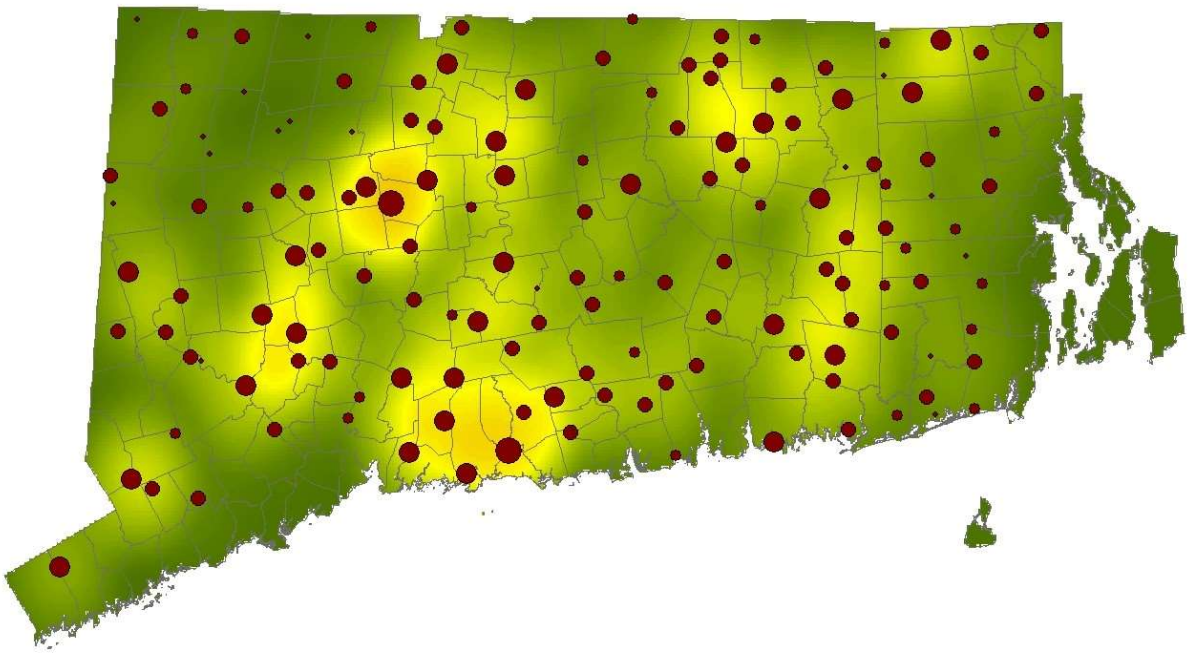


FIG. 1. Summer distribution.

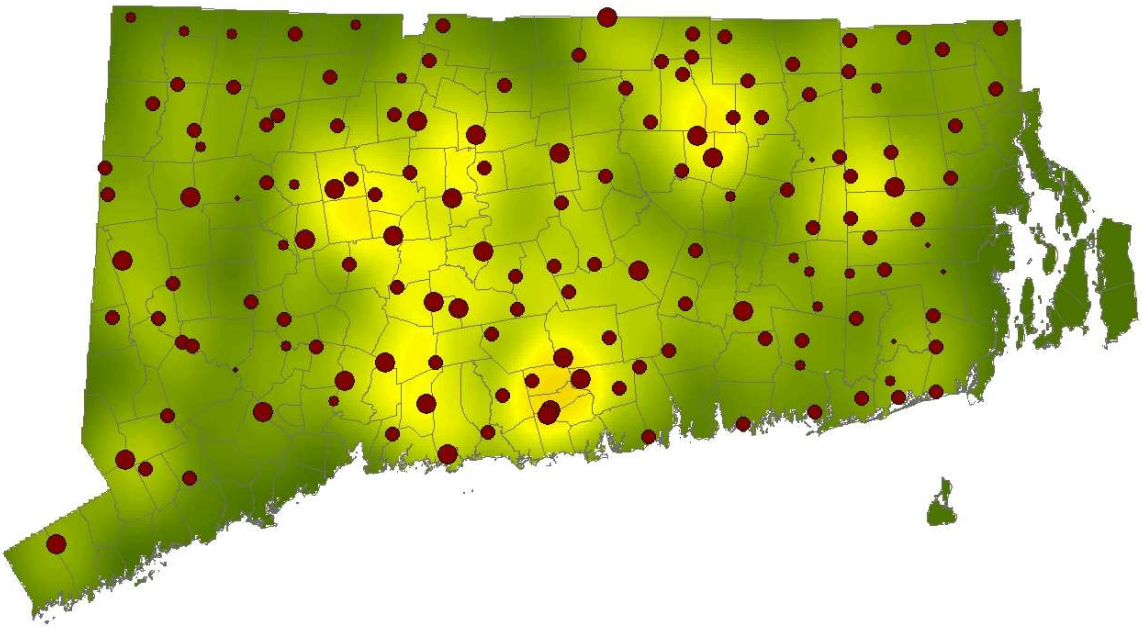


FIG. 2. Winter distribution.

HAIRY WOODPECKER

Picoides villosus

Summer	Winter
Density (birds/km^2): 3.29 (n = 152, 95% CI: ± 0.59)	Density (birds/km^2): 3.19 (n = 186, 95% CI: ± 0.58)
CT: 3.60	CT: 3.42
RI: 1.84	RI: 2.13
Population (birds): 30,021 (95% CI: ± 5,339)	Population (birds): 29,120 (95% CI: ± 5,288)
CT: 27,094	CT: 25,730
RI: 2,927	RI: 3,390

The Hairy Woodpecker appeared on 70% of summer and winter transects. We used call notes made by both sexes in assessing density.

During the study period, summer density was greatest in central Connecticut and least in Rhode Island (Kruskal-Wallis $\chi^2 = 15.9$, $n = 147$, $P = 0.007$; Fig. 1). In winter, density was also greatest in central Connecticut and least in Rhode Island, although differences among regions at this season were not significant (Kruskal-Wallis $\chi^2 = 5.8$, $n = 147$, $P = 0.32$; Fig. 2).

Populations showed no significant seasonal change for the region as a whole (Wilcoxon $Z = -1.26$, $n = 147$, $P = 0.21$). Similarly, duplicated data for eastern Connecticut showed no strong evidence of population change or north−south shift in densities (Craig 2012).

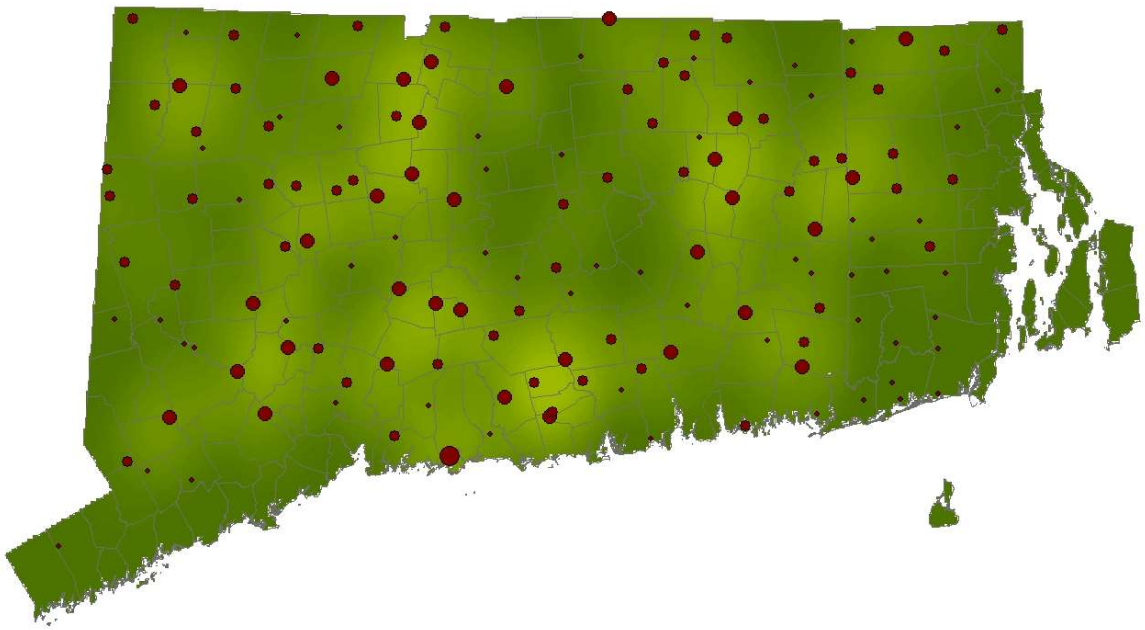


FIG. 1. Summer distribution.

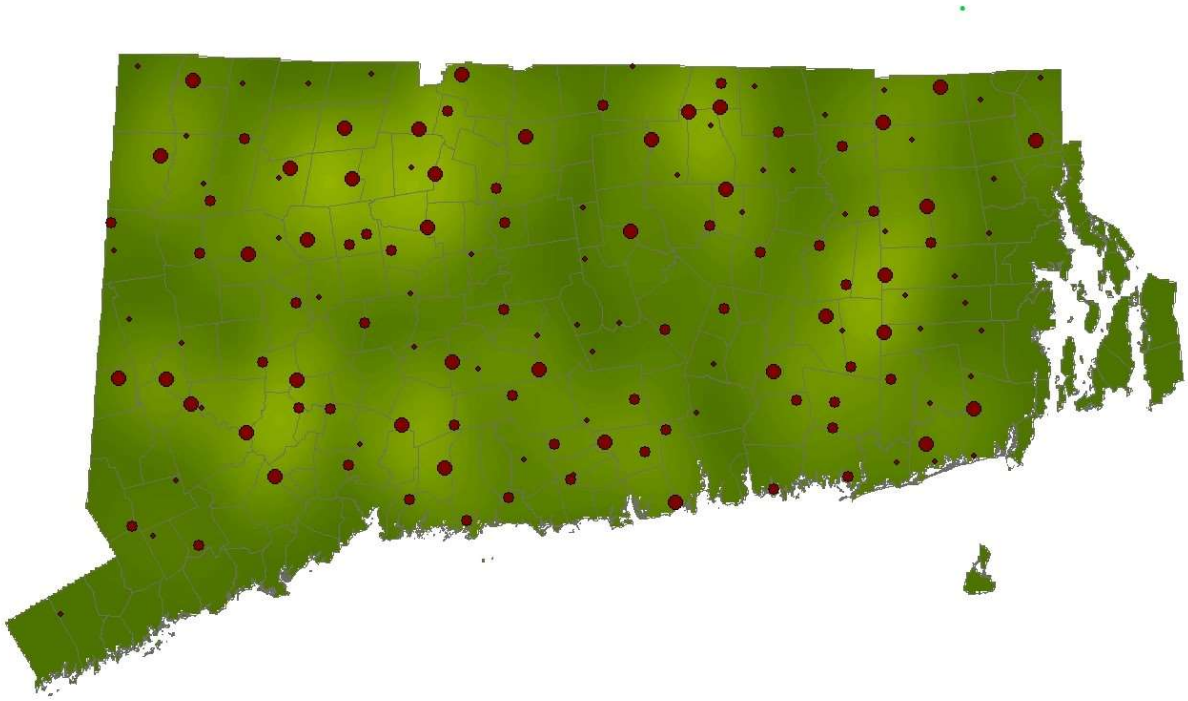


FIG. 2. Winter distribution.

NORTHERN FLICKER

Colaptes auratus

Summer	Winter
Density (birds/km^2): 1.21 (n = 135, 95% CI: ± 0.32)	Density (birds/km^2): 0.24 (n = 49, 95% CI: ± 0.07)
CT: 1.27	CT: 0.25
RI: 0.92	RI: 0.20
Population (birds): 10,993 (95% CI: ± 2,946)	Population (birds): 2,183 (95% CI: ± 612)
CT: 9,530	CT: 1,865
RI: 1,463	RI: 318

The Northern Flicker occurred on 51% of summer and 25% of winter transects. Because the species often inhabits less forested environments, densities reported here refer only to that portion of the population associated with primarily forested landscapes. We used call notes made by both sexes in assessing density. Winter estimates are based on <60 detections, so have greater variance.

Summer density was greatest by far in central Connecticut and least in southeastern Connecticut (Kruskal-Wallis $\chi^2 = 21.0$, $n = 147$, $P = 0.001$; Fig. 1). In winter, in contrast, density was greatest in southeastern Connecticut and least in northeastern and northwestern Connecticut, although the species occurred too infrequently at this season to perform statistical tests (Fig. 2). Populations showed a strong decline from summer to winter (Wilcoxon $Z = -5.43$, $n = 147$, $P < 0.001$).

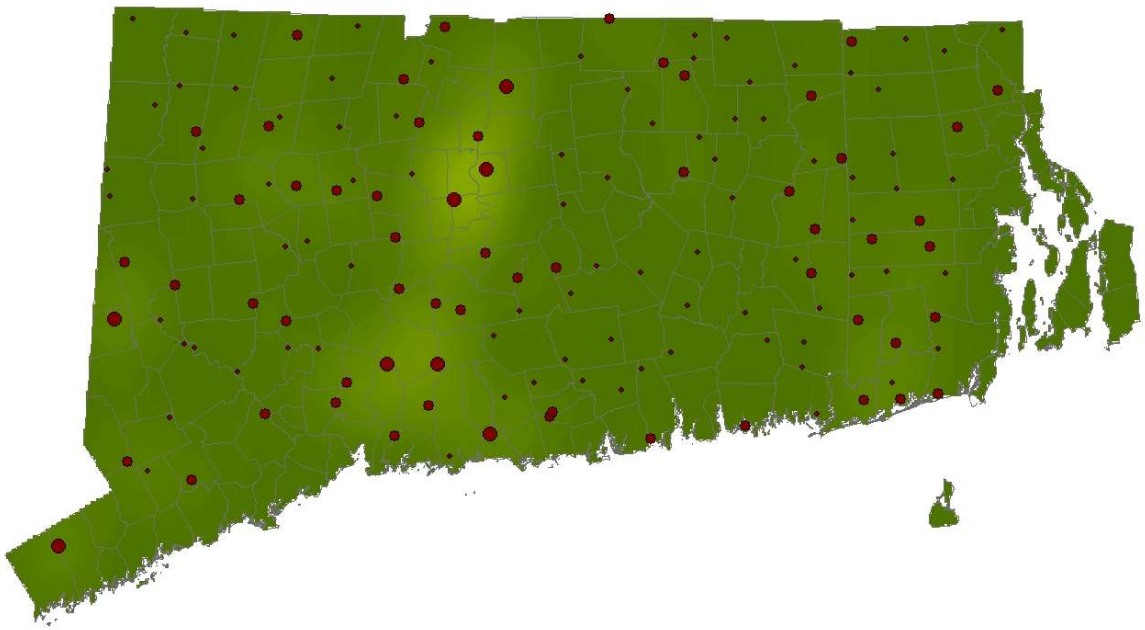


FIG. 1. Summer distribution.

FIG. 2. Winter distribution.

PILEATED WOODPECKER

Dryocopus pileatus

Summer	Winter
Density (birds/km^2): 0.25 (n = 103, 95% CI: ± 0.05)	Density (birds/km^2): 0.19 (n = 91, 95% CI: ± 0.06)
CT: 0.30	CT: 0.23
RI: 0.0.05	RI: 0.02
Population (birds): 2,307 (95% CI: ± 487)	Population (birds): 1,773 (95% CI: ± 589)
CT: 2,227	CT: 1,746
RI: 80	RI: 27

The Pileated Woodpecker occurred on 44% of summer and 35% of winter transects. We used call notes made by both sexes in assessing density. We regularly heard pairs communicating with calls at even great distances.

Summer density was greatest in western Connecticut and least in Rhode Island (Kruskal-Wallis $\chi^2 = 24.6$, $n = 147$, $P < 0.001$; Fig. 1). Winter density was greatest in southwestern Connecticut and least in Rhode Island (Kruskal-Wallis $\chi^2 = 30.1$, $n = 147$, $P < 0.001$; Fig. 2). Populations also declined significantly from summer to winter (Wilcoxon $Z = -2.21$, $n = 147$, $P = 0.03$). Notably, density in northwestern Connecticut dropped dramatically in winter.

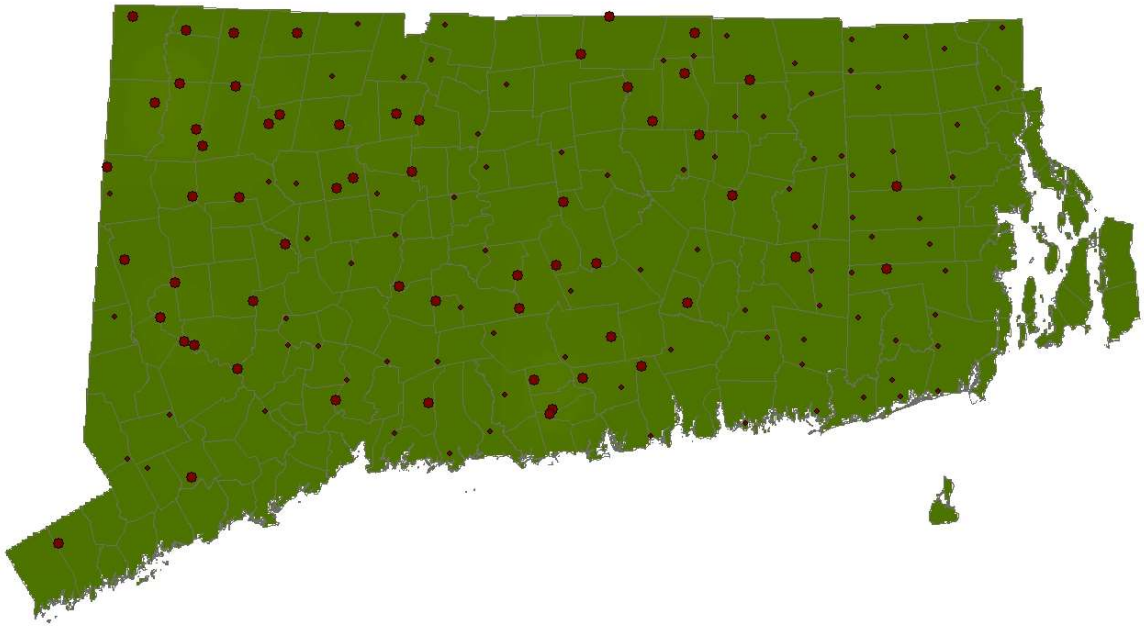


FIG. 1. Summer distribution.

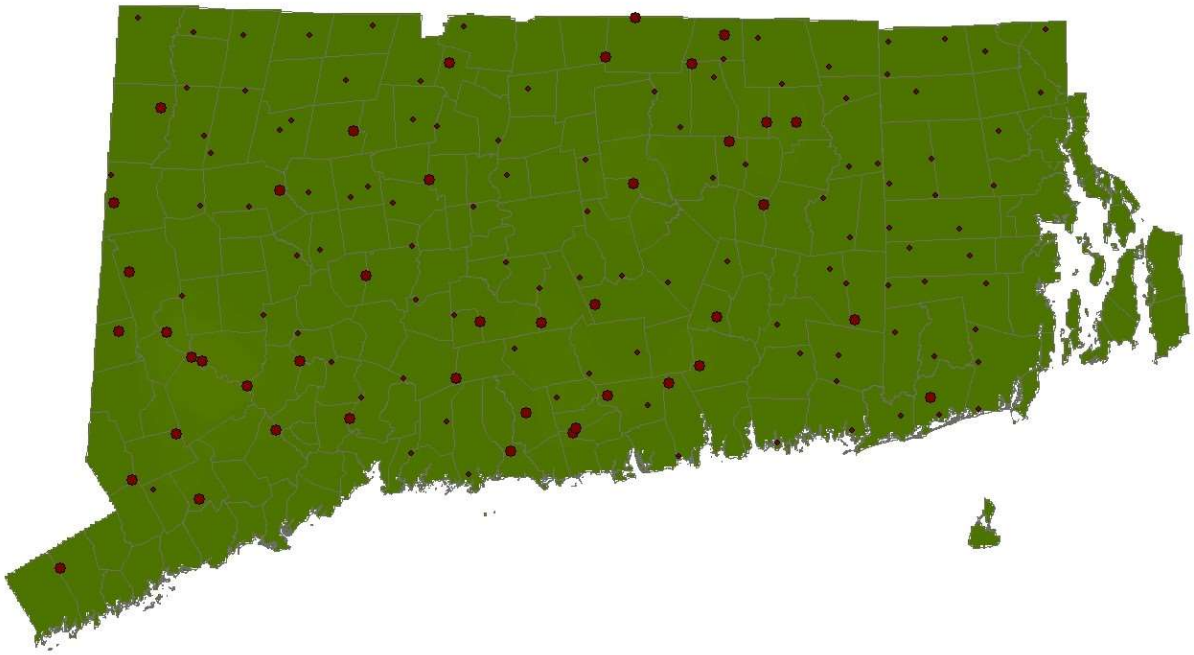


FIG. 2. Winter distribution.

Sponsored by Joan Dash

EASTERN WOOD-PEWEE

Contopus virens

Summer

Density (males/km^2): 15.38 (n = 1280, 95% CI: ± 1.36)
CT: 16.21
RI: 11.43

Population (males): 141,703 (95% CI: ± 12,406)
CT: 123,521
RI: 18,182

The Eastern Wood-Pewee was present on 97% of forest transects, with population estimates based on detections of singing males. Density was greatest in western Connecticut and least in Rhode Island (Kruskal-Wallis χ^2 = 11.1, n = 147, P = 0.050; Fig. 1).

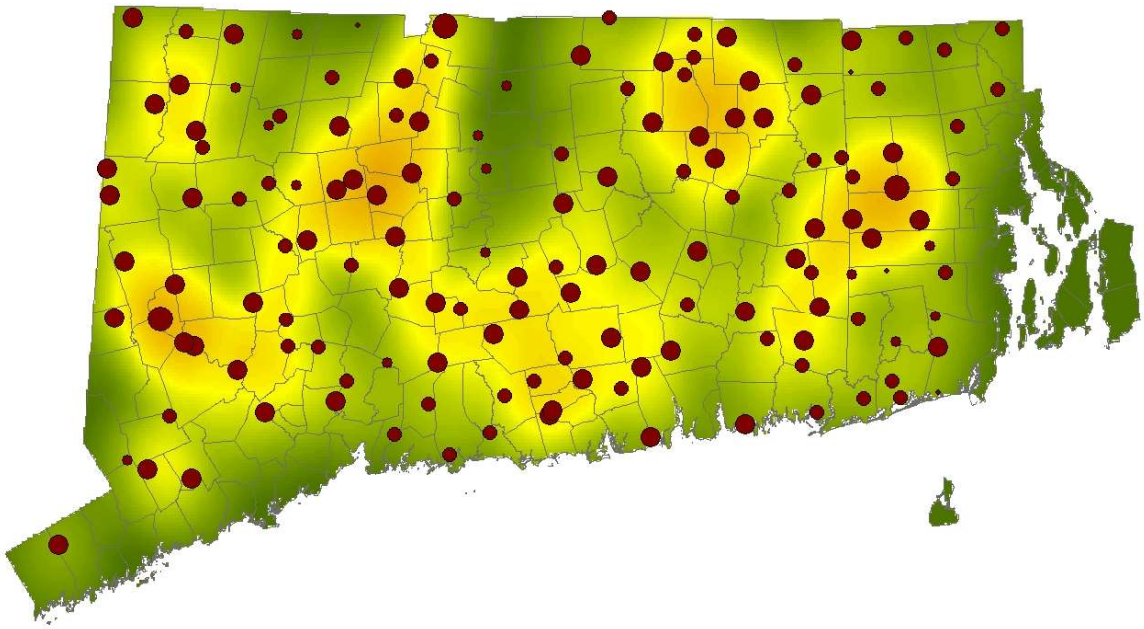


FIG. 1. Summer distribution.

ACADIAN FLYCATCHER

Empidonax virescens

Summer

Density (males/km^2): 1.21 (n = 63, 95% CI: ± 0.55)
CT: 1.47
RI: 0.15

Population (males): 10,906 (95% CI: ± 5,008)
CT: 10,675
RI: 231

The Acadian Flycatcher was present on only 22% of transects. Population estimates are based on detections of singing males.

Density was greatest in southeastern and western Connecticut and least in Rhode Island, where we recorded only one bird at great distance (Fig. 1). In density estimation, we truncated this latter bird out of detectability calculations, yielding a density of zero for Rhode Island. Hence, we also computed for Rhode Island an untruncated albeit less accurate detectability function that permitted estimation of species density there.

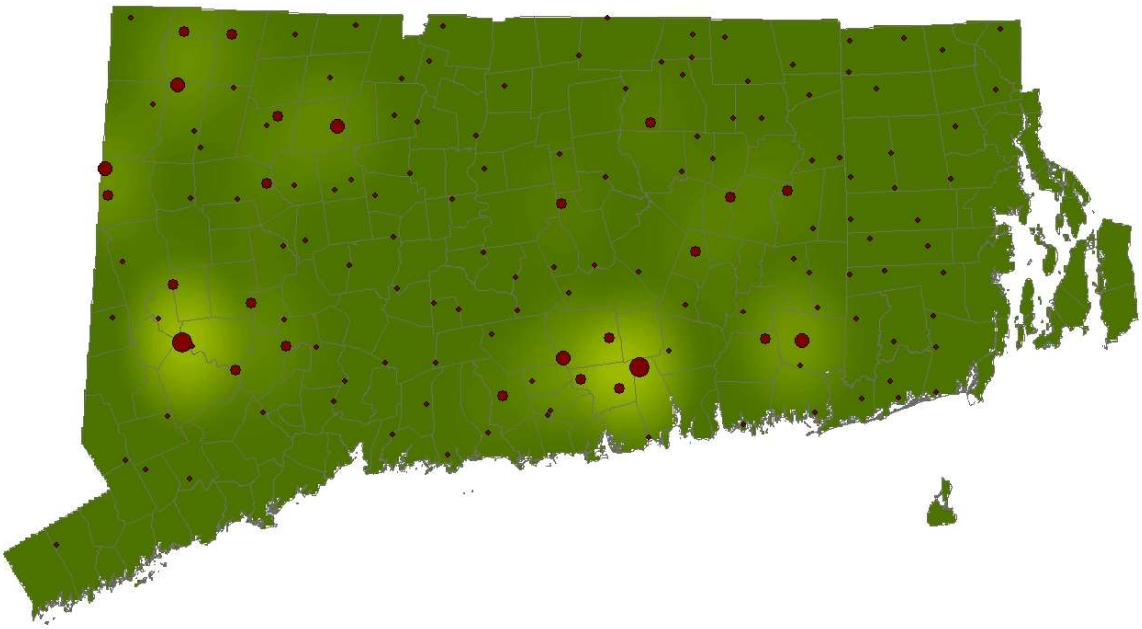


FIG. 1. Summer distribution.

LEAST FLYCATCHER

Empidonax minimus

Summer
Density (males/km^2): 0.56 (n = 36, 95% CI: ± 0.31)
CT: 0.53
RI: 0.71
Population (males): 5,140 (95% CI: ± 2,799)
CT: 4,018
RI: 1,122

The Least Flycatcher was present on only 15% of transects, with population estimates based on detections of singing males. Although we computed a detection function that fit the data well, estimates are based on less than 60 observations, so have greater variance.

Density was marginally greatest in northwestern Connecticut, although similar numbers appeared in northeastern Connecticut (but note also greater detections along Connecticut−Rhode Island border; Fig. 1). The species was absent on surveys in central and southwestern Connecticut.

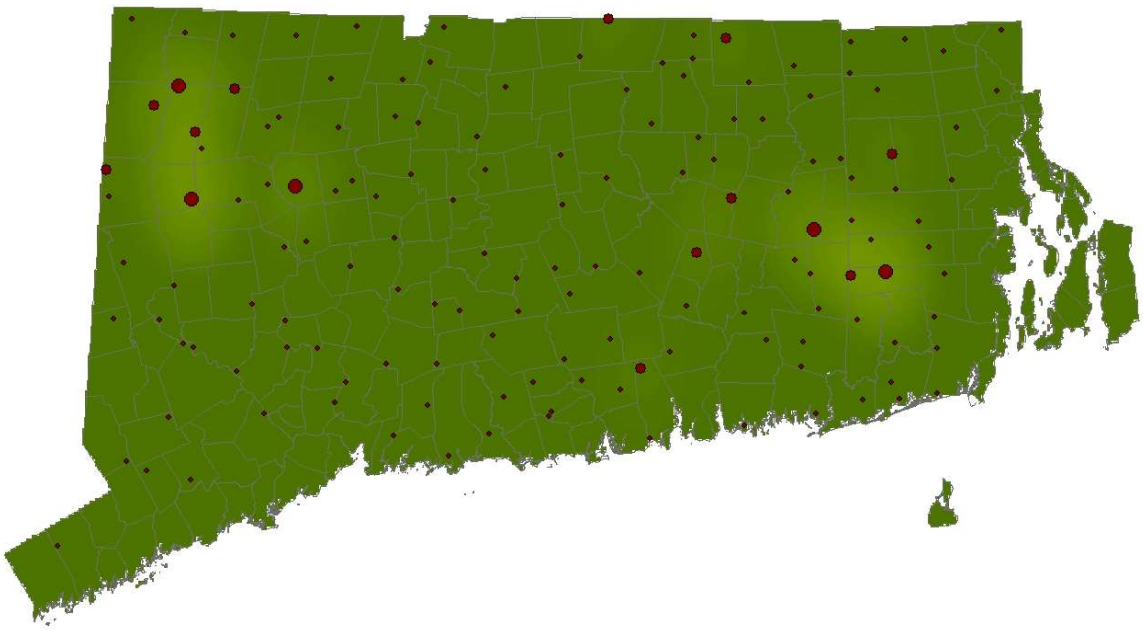


FIG. 1. Summer distribution.

EASTERN PHOEBE

Sayornis phoebe

Summer

Density (males/km^2): 0.92 (n = 114, 95% CI: ± 0.18)
CT: 1.00
RI: 0.54

Population (males): 8,392 (95% CI: ± 1,648)
CT: 7,533
RI: 859

The Eastern Phoebe was present on 54% of summer transects, with population estimates based on detections of singing males. It also appeared commonly outside of principally forested landscapes. Density was marginally greatest in southwestern Connecticut, although similar numbers appeared throughout the region (Kruskal-Wallis $\chi^2 = 11.4$, $n = 147$, $P = 0.05$; Fig. 1).

The species also occurs as a very rare winter resident, particularly in early winter. We found only one wintering individual on a transect and one other individual incidentally. We attempted no winter density estimate from such limited data.

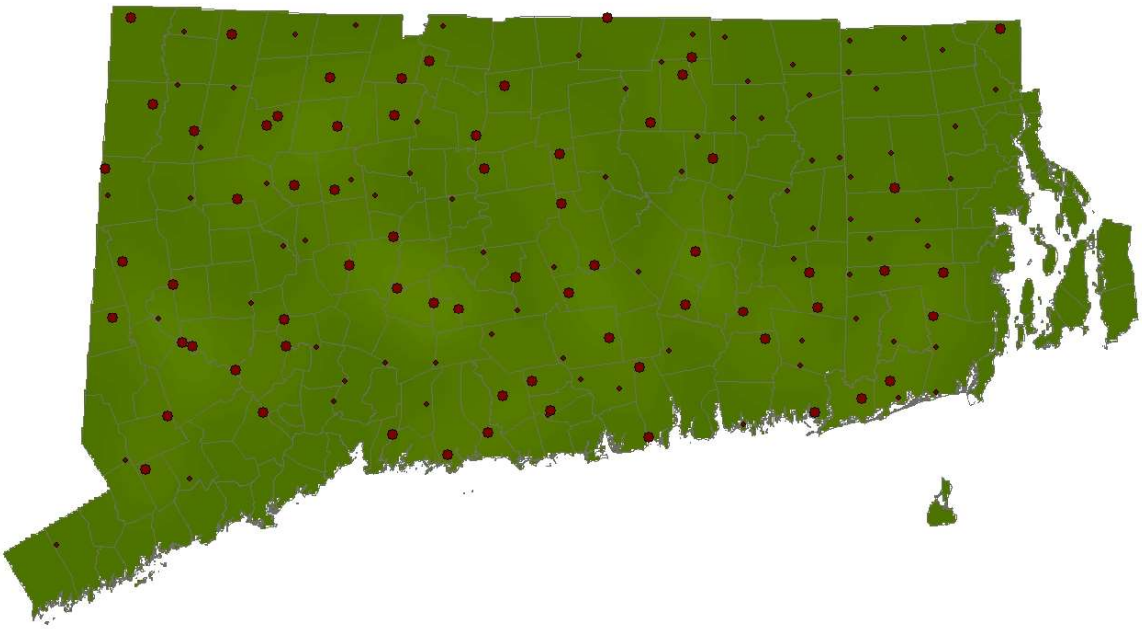


FIG. 1. Summer distribution.

GREAT CRESTED FLYCATCHER

Myiarchus crinitus

Summer

Density (birds/km^2): 9.38 (n = 668, 95% CI: ± 1.29)
CT: 9.53
RI: 8.71

Population (birds): 85,524 (95% CI: ± 11,765)
CT: 71,675
RI: 13,849

The Great Crested Flycatcher occurred on 93% of transects. Because calls are made by both sexes, population estimates are based on detections of males and females. Density was greatest in southern and central Connecticut and least in northern Connecticut (Kruskal-Wallis χ^2 = 14.7, n = 147, P = 0.012; Fig. 1).

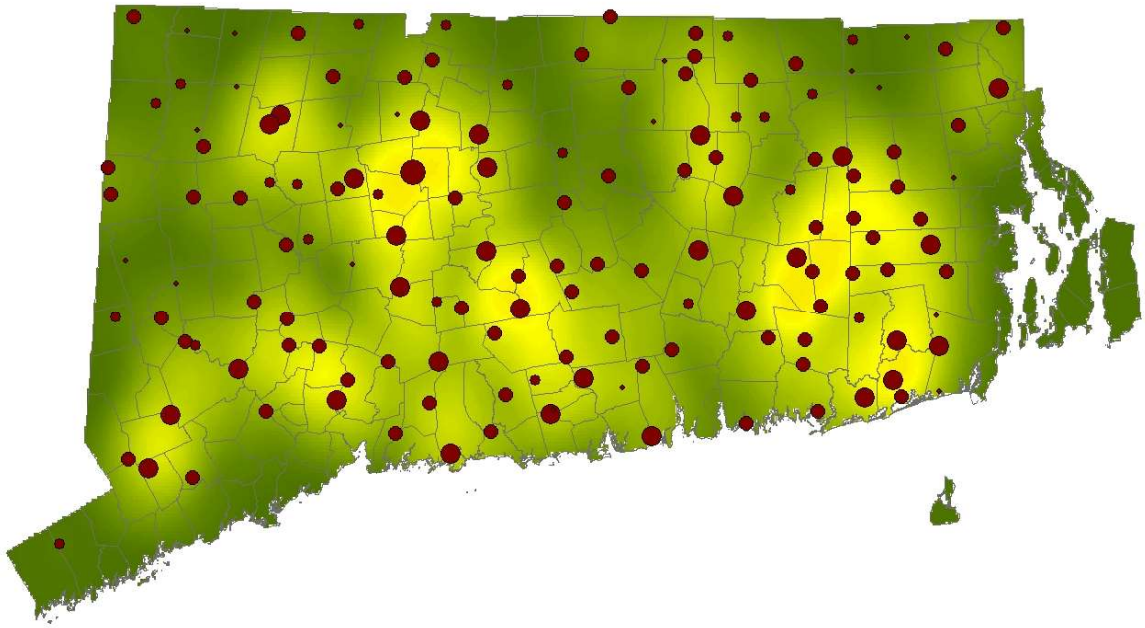


FIG. 1. Summer distribution.

EASTERN KINGBIRD

Tyrannus tyrannus

Summer

Density (birds/km^2): 0.54 (n = 68, 95% CI: ± 0.20)
CT: 0.48
RI: 0.82

Population (birds): 4,930 (95% CI: ± 1,800)
CT: 3,622
RI: 1,308

The Eastern Kingbird appeared on only 27% of transects, with population estimates based on detections of males and females. Density in principally forested habitats was greatest in northeastern Connecticut and Rhode Island and least in southwestern Connecticut, although differences among regions were not significant (Kruskal-Wallis χ^2 = 8.7, n = 147, P = 0.123; Fig. 1).

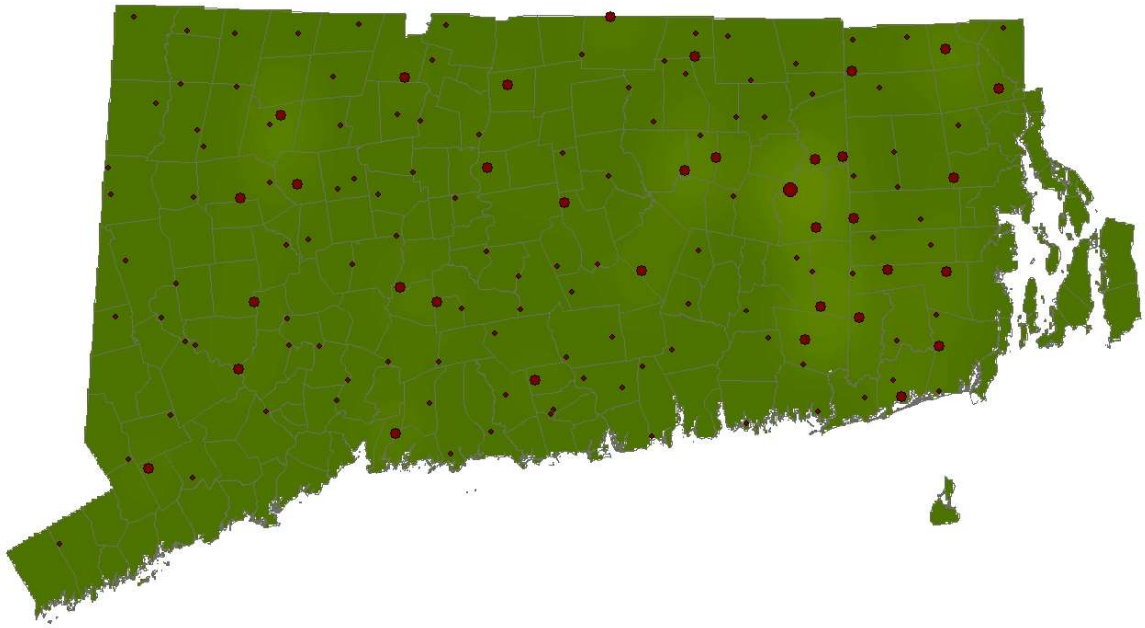


FIG. 1. Summer distribution.

WHITE-EYED VIREO

Vireo griseus

Summer

Density (males/km^2): 0.25 (n = 26, 95% CI: ± 0.23)
CT: 0.12
RI: 0.88

Population (males): 2,280 (95% CI: ± 2,141)
CT: 873
RI: 1,407

The White-eyed Vireo appeared on only 7% of transects from central Connecticut to Rhode Island. Population estimates are based on detections of singing males in principally forested habitats.

Although our sample was less than the 60 observations preferred for density estimation, our data fit a detectability curve well, so we believe our estimates are reasonable, albeit with high variance. Densities averaged greatest in Rhode Island and southeastern Connecticut (Fig. 1).

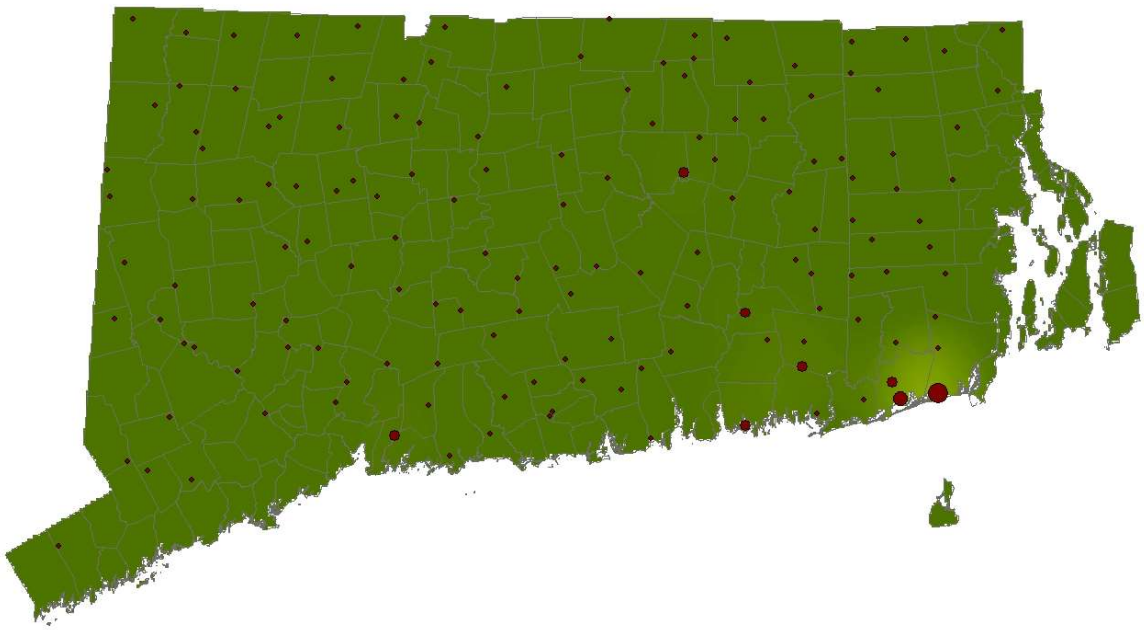


FIG. 1. Summer distribution.

YELLOW-THROATED VIREO

Vireo flavifrons

Summer

Density (males/km^2): 5.99 (n = 289, 95% CI: ± 1.21)
CT: 6.57
RI: 3.25

Population (males): 54,624 (95% CI: ± 11,004)
CT: 49,456
RI: 5,168

The Yellow-throated Vireo appeared on 73% of transects, with population estimates based on detections of singing males. Density was greatest in southeastern and northwestern Connecticut and least in central Connecticut and Rhode Island (Kruskal-Wallis χ^2 = 13.6, n = 147, P = 0.018; Fig. 1).

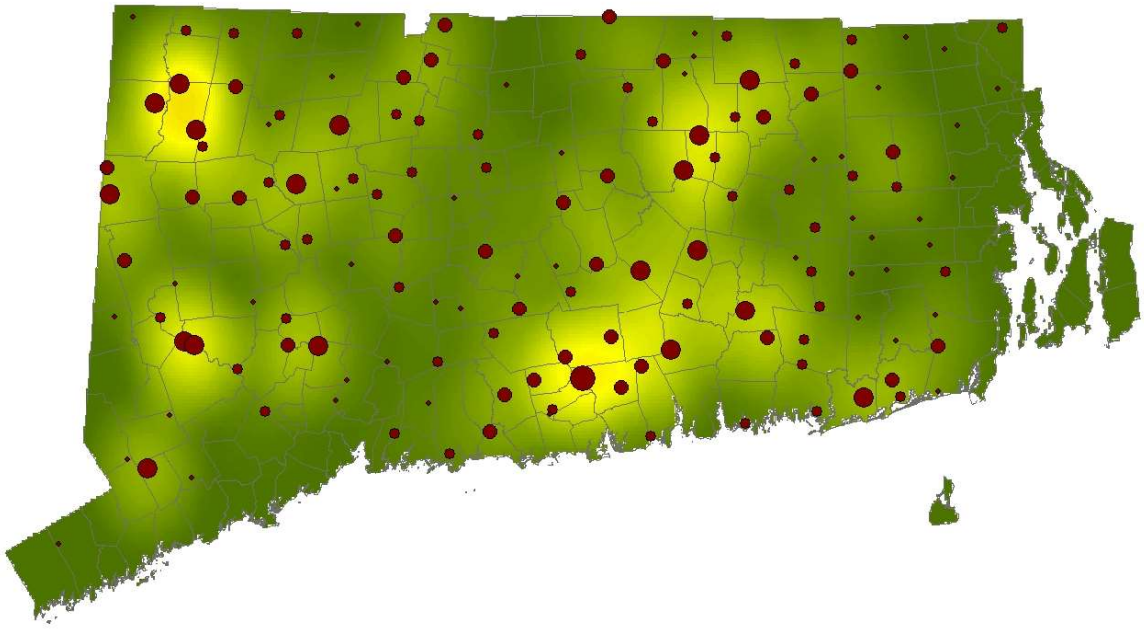


FIG. 1. Summer distribution.

BLUE-HEADED VIREO

Vireo solitarius

Summer

Density (males/km^2): 4.78 (n = 119, 95% CI: ± 1.21)
CT: 5.62
RI: 0.80

Population (males): 43,532 (95% CI: ± 14,359)
CT: 42,260
RI: 1,272

The Blue-headed Vireo occurred on 33% of transects, with population estimates based on detections of singing males. Density was greatest by far in northwestern Connecticut and least in southwestern Connecticut and Rhode Island (Kruskal-Wallis $\chi^2 = 51.3$, $n = 147$, $P < 0.001$; Fig. 1).

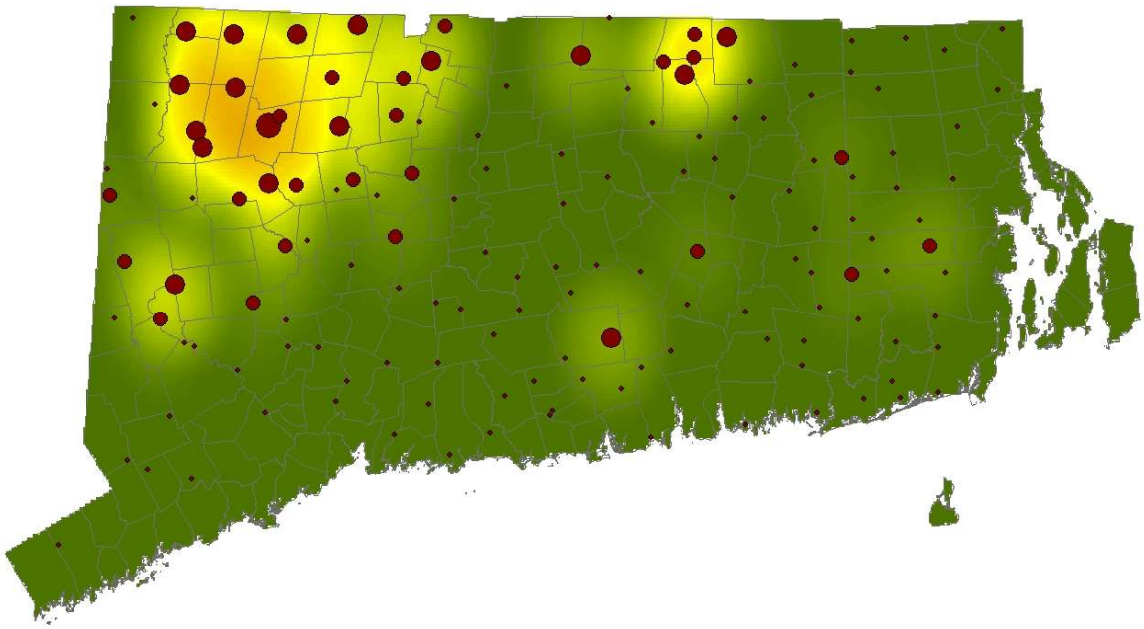


FIG. 1. Summer distribution.

WARBLING VIREO

Vireo gilvus

Summer

Density (males/km^2): 4.78 (n = 53, 95% CI: ± 1.09)
CT: 1.26
RI: 0.27

Population (males): 9,942 (95% CI: ± 4,886)
CT: 9,507
RI: 435

The Warbling Vireo was rather common outside of unbroken forest but appeared on only 26% of transects in the principally forested landscapes of southern New England. Population estimates are based on detections of singing males.

Although our sample was less than the 60 observations preferred for density estimation, our data fit a detectability curve well, so we believe our estimates of density are reasonable, albeit with high variance. Density was greatest in central Connecticut and least in southeastern Connecticut and Rhode Island (Fig. 1).

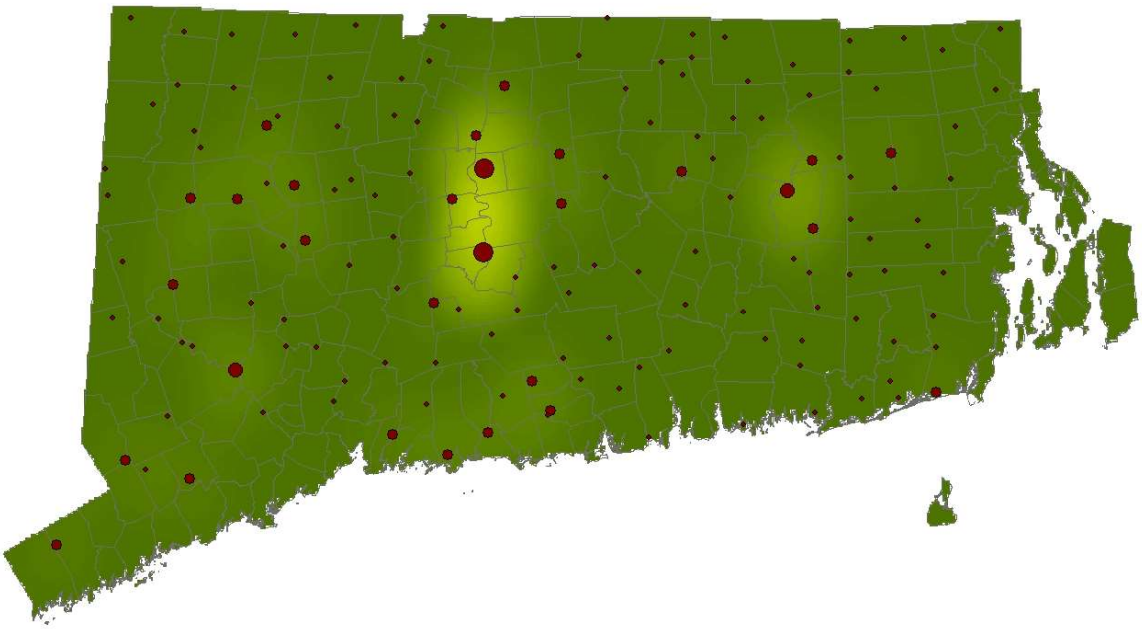


FIG. 1. Summer distribution.

RED-EYED VIREO

Vireo olivaceus

Summer
Density (males/km^2): 50.91 (n = 3,040, 95% CI: ± 3.82)
CT: 55.18
RI: 30.69
Population (males): 464,029 (95% CI: ± 34,825)
CT: 415,214
RI: 48,815

The Red-eyed Vireo occurred on 100% of transects, with population estimates based on detection of singing males. Densities were greatest in northwestern Connecticut and least in Rhode Island. (Kruskal-Wallis $\chi^2 = 50.4$, $n = 147$, $P < 0.001$; Fig. 1).

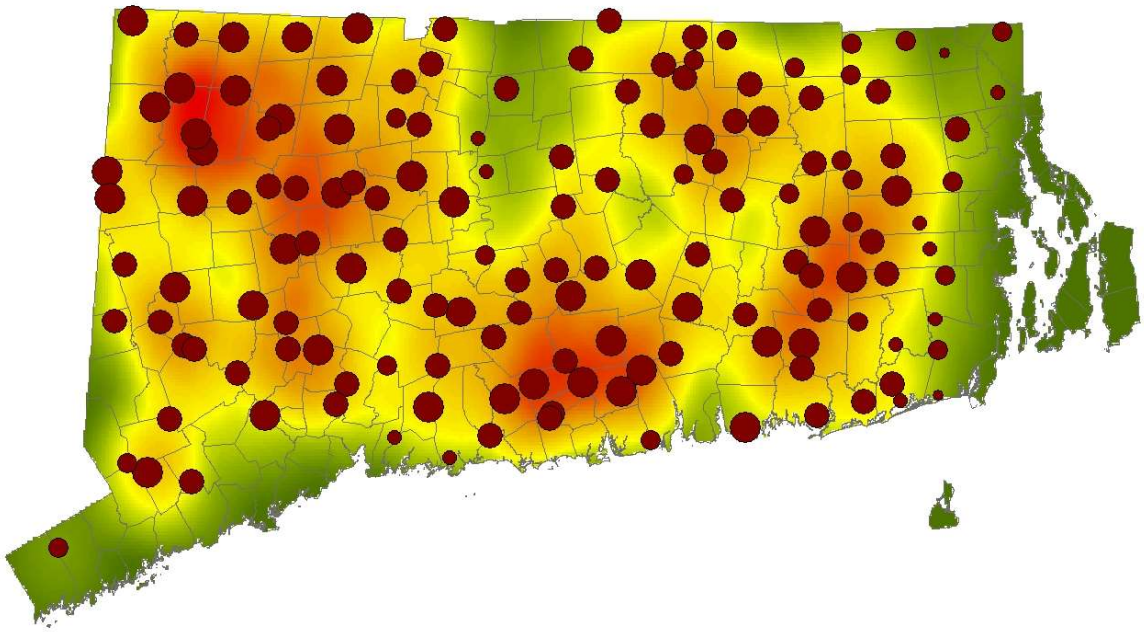


FIG. 1. Summer distribution.

Sponsored by Connecticut Audubon Society

BLUE JAY

Cyanocitta cristata

Summer	Winter
Density (birds/km^2): 4.45 (n = 963, 95% CI: ± 0.37)	Density (birds/km^2): 1.29 (n = 556, 95% CI: ± 0.25)
CT: 4.31	CT: 1.35
RI: 5.10	RI: 1.04
Population (birds): 40,542 (95% CI: ± 3,332)	Population (birds): 11,816 (95% CI: ± 2,279)
CT: 32,426	CT: 10,164
RI: 8,116	RI: 1,652

The Blue Jay appeared on 100% of summer and 82% of winter transects. It also appeared rather commonly outside of forest habitats. We used call notes made by both sexes of this flocking species in assessing density.

Summer density was greatest in southwestern Connecticut and least in southeastern Connecticut (Kruskal-Wallis χ^2 = 20.4, n = 147, P = 0.001; Fig. 1). In winter, density was greatest in central Connecticut and least in western Connecticut (Kruskal-Wallis χ^2 = 15.0, n = 147, P = 0.01; Fig. 2).

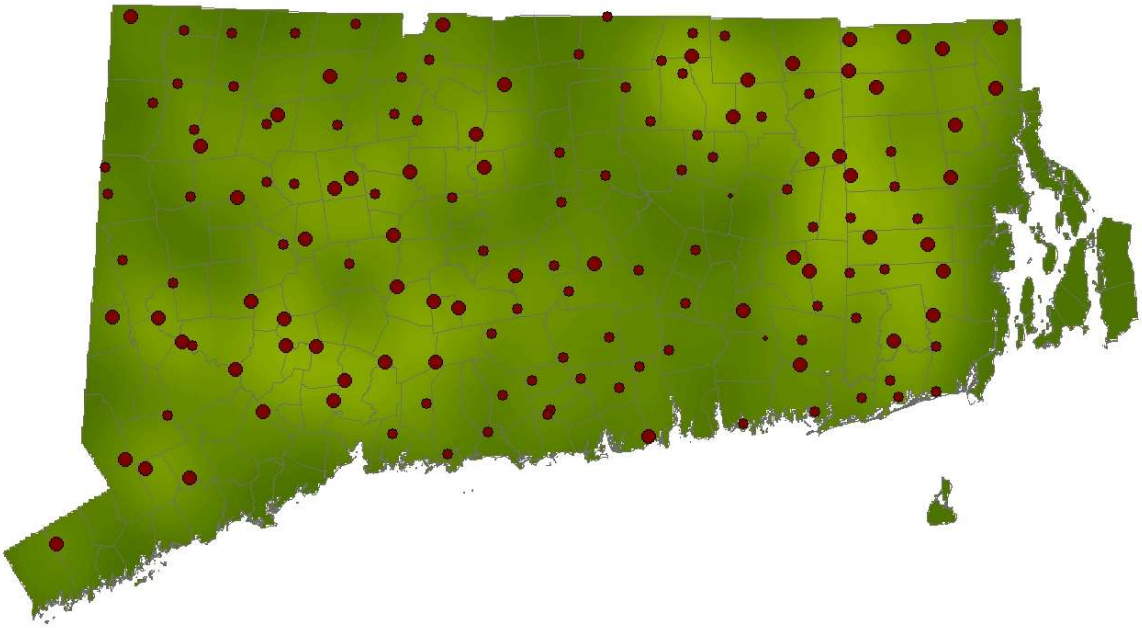


FIG. 1. Summer distribution.

FIG. 2. Winter distribution.

AMERICAN CROW

Corvus brachyrhynchos

Summer	Winter
Density (birds/km^2): 0.33 (n = 822, 95% CI: ± 0.04)	Density (birds/km^2): 0.33 (n = 973, 95% CI: ± 0.04)
CT: 0.31	CT: 0.39
RI: 0.40	RI: 0.08
Population (birds): 2,973 (95% CI: ± 381)	Population (birds): 3,047 (95% CI: ± 379)
CT: 2,334	CT: 2,926
RI: 639	RI: 121

The American Crow appeared on 98% of summer and 94% of winter transects. It also appeared commonly outside of forest habitats. We used call notes made by both sexes of this flocking species in assessing density. However, many detections were of birds seen or heard at great distances that may not have been in forest habitat. We observed other birds flying overhead, although we also observed individuals perch even on interior forest trees.

Summer density was greatest in southwestern Connecticut and least in central Connecticut (Kruskal-Wallis $\chi^2 = 45.1$, $n = 147$, $P < 0.001$; Fig. 1). In winter, density was again greatest in southwestern Connecticut and least in Rhode Island (Kruskal-Wallis $\chi^2 = 56.7$, $n = 147$, $P < 0.001$; Fig. 2). Populations showed little seasonal change for the region as a whole (Wilcoxon $Z = -1.12$, $n = 147$, $P = 0.26$).

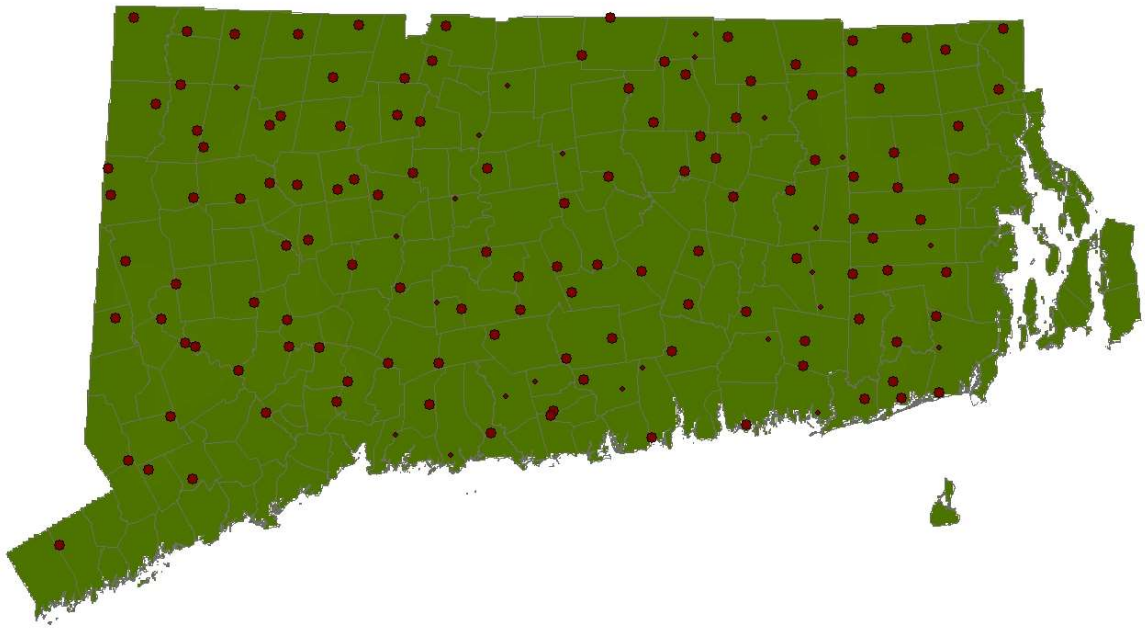


FIG. 1. Summer distribution.

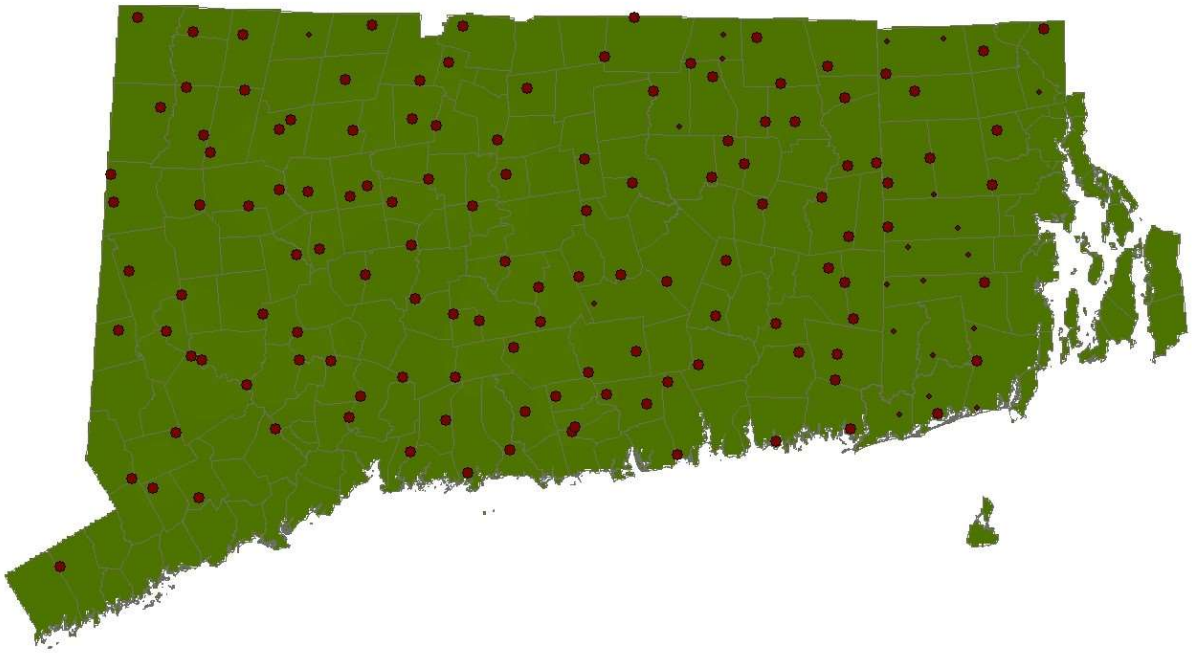


FIG. 2. Winter distribution.

FISH CROW

Corvus ossifragus

We found only eight summering (5% of transects) and two wintering (1% of transects) Fish Crows during this study, mostly in lower elevation and coastal Connecticut (Fig. 1). We make no estimate for winter populations, but tentatively estimate a summer population density of 0.01 birds/km^2 and a total population of 52 birds in principally forested landscapes. Since the conclusion of this study, in 2014 R. Craig (pers. obs.) also found a pair of summering birds inland at Mansfield.

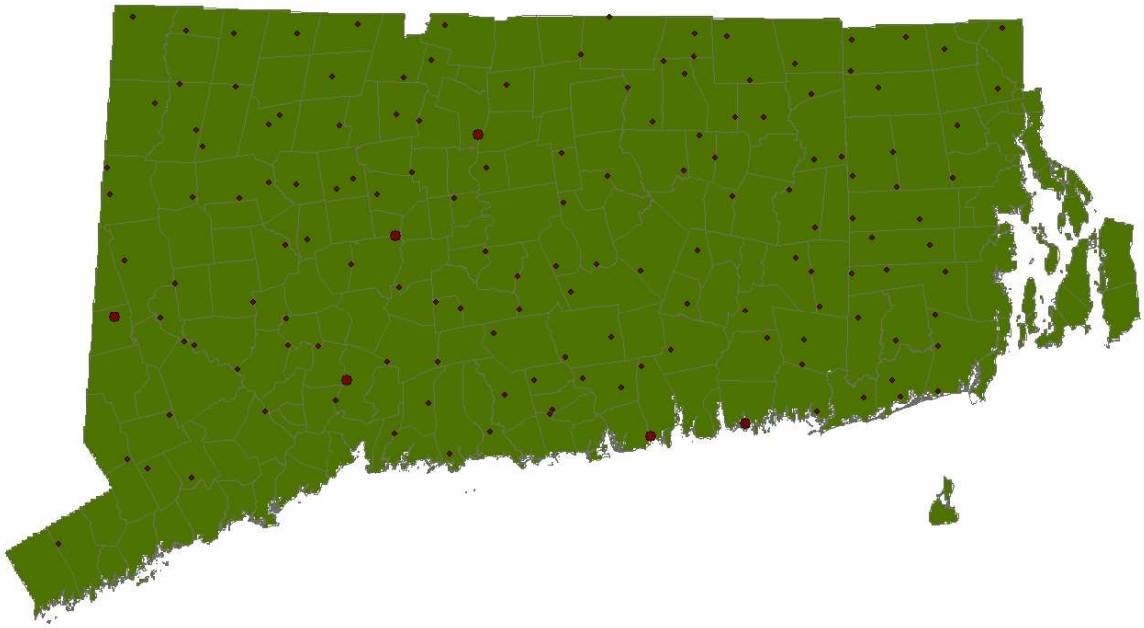


FIG. 1 Summer distribution.

COMMON RAVEN

Corvus corax

Summer	Winter
Density (birds/km^2): 0.02 (*n* = 66 pooled, 95% CI: ± 0.01)	Density (birds/km^2): 0.04 (*n* = 66 pooled, 95% CI: ± 0.02)
CT: 0.02	CT: 0.05
RI: 0.00	RI: 0.08
Population (birds): 268 (95% CI: ± 99)	Population (birds): 377 (95% CI: ± 155)
CT: 268	CT: 377
RI: 0	RI: 0

The Common Raven appeared on 10% of summer and 20% of winter transects. We used call notes made by both sexes of this flocking species in assessing density. Because behavior and vocalizations appeared the same in summer and winter, we pooled all observations in computing densities. However, many detections were of birds seen or heard at great distances that may not have been in forest habitat. We observed other birds flying overhead, although we also observed individuals perch on interior forest trees.

Summer and winter density was greatest in northwestern Connecticut (Fig. 1, 2). During the study period, the species was absent in Rhode Island, although R. Craig (pers. obs.) has since observed it in the northwestern part of the state. Populations tended to increase from summer to winter.

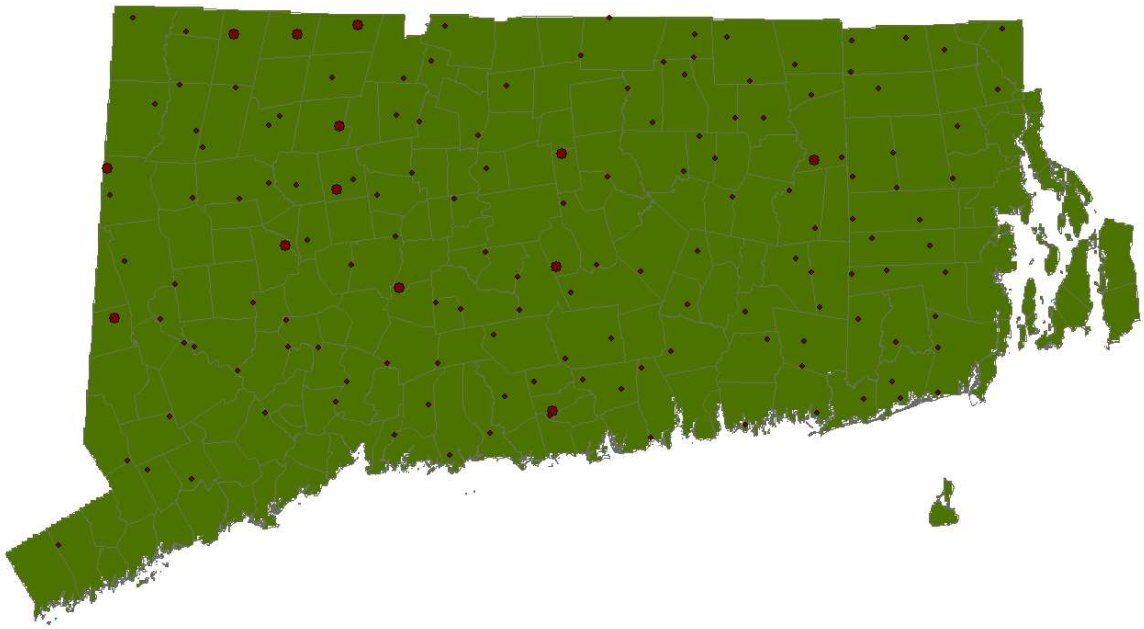


FIG. 1. Summer distribution.

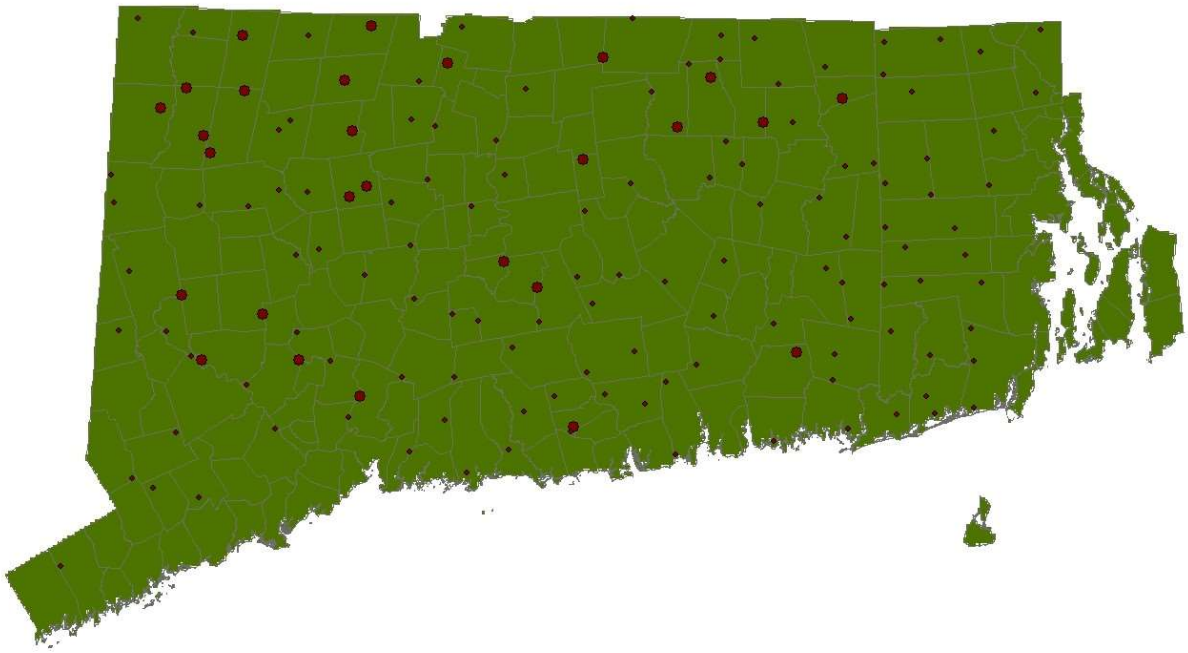


FIG. 2. Winter distribution.

BLACK-CAPPED CHICKADEE

Poecile atricapillus

Summer	Winter
Density (birds/km^2): 11.63 (n = 924, 95% CI: ± 1.01)	Density (birds/km^2): 14.86 (n = 1,185, 95% CI: ± 1.25)
CT: 11.24	CT: 14.44
RI: 13.42	RI: 16.84
Population (birds): 105,969 (95% CI: ± 9,236)	Population (birds): 135,434 (95% CI: ± 11,391)
CT: 84,632	CT: 108,651
RI: 21,337	RI: 26,783

The Black-capped Chickadee appeared on 99% of summer and 100% of winter transects. It also appeared rather commonly outside of primarily forested landscapes. We used call notes made by both sexes of this flocking species in assessing density.

Summer density was greatest in Rhode Island and least in western Connecticut (Kruskal-Wallis $\chi^2 = 12.6$, $n = 147$, $P = 0.03$; Fig. 1). In winter, density was greatest in central and southeastern Connecticut and Rhode Island and least in southwestern Connecticut (Kruskal-Wallis $\chi^2 = 15.0$, $n = 147$, $P < 0.001$; Fig. 2). Populations showed a strong summer−winter increase for the region as a whole (Wilcoxon $Z = -4.27$, $n = 147$, $P < 0.001$).

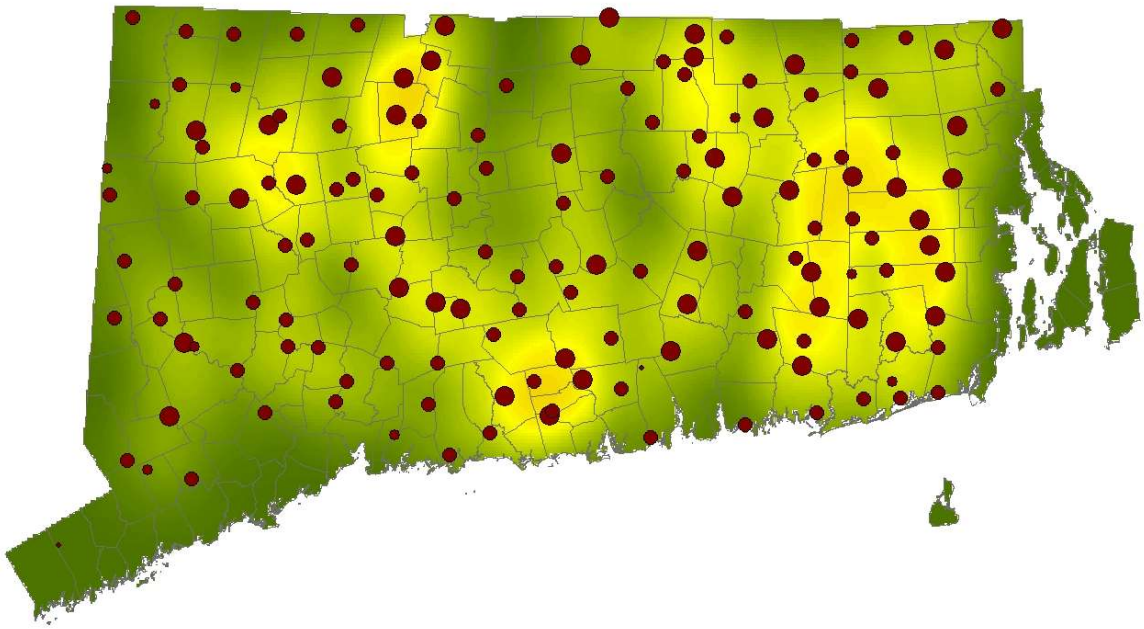


FIG. 1. Summer distribution.

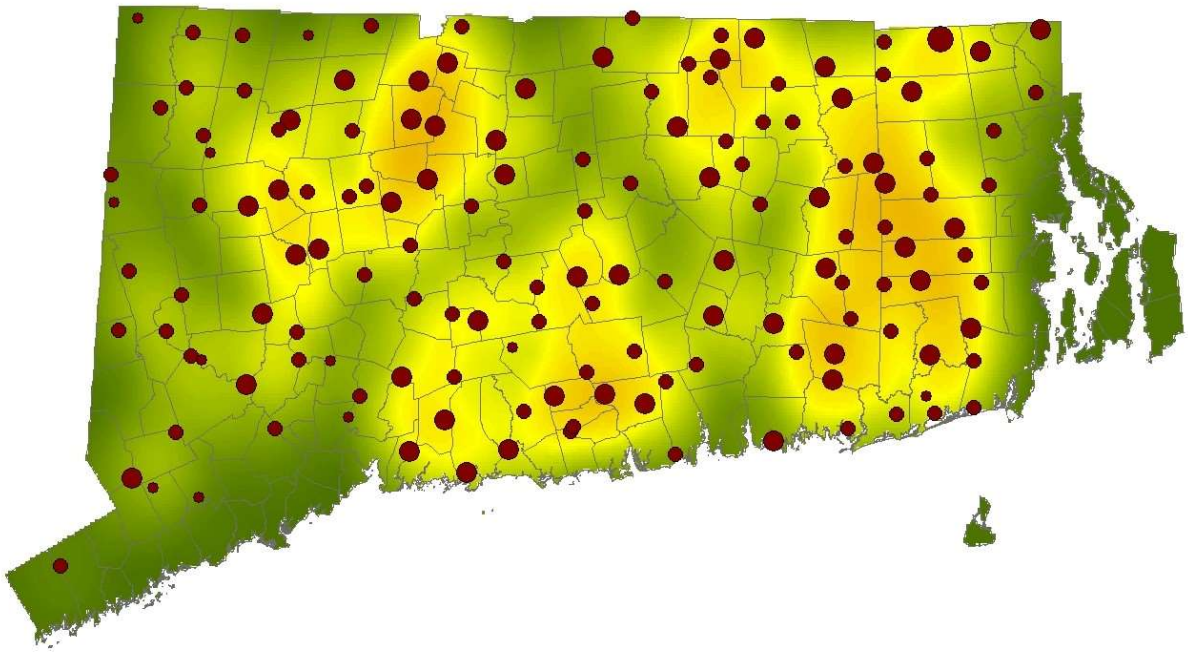


FIG. 2. Winter distribution.

TUFTED TITMOUSE

Baeolophus bicolor

Summer	Winter
Density (birds/km^2): 23.58 (n = 1,580, 95% CI: ± 1.58)	Density (birds/km^2): 16.39 (n = 853, 95% CI: ± 2.39)
CT: 22.62	CT: 16.74
RI: 26.52	RI: 14.75
Population (birds): 202,222 (95% CI: ± 14,444)	Population (birds): 132,696 (95% CI: ± 21,768)
CT: 160,044	CT: 109,236
RI: 42,178	RI: 23,460

The Tufted Titmouse appeared on 99% of summer and 90% of winter transects. It also appeared rather commonly outside of primarily forested landscapes. We used call notes made by both sexes of this flocking species in assessing density.

Summer density was greatest in lower elevation and southern regions and least in northwestern Connecticut (Kruskal-Wallis $\chi^2 = 28.7$, $n = 147$, $P < 0.001$; Fig. 1). In winter, density was greatest in central Connecticut and least in northwestern Connecticut (Kruskal-Wallis $\chi^2 = 37.4$, $n = 147$, $P < 0.001$; Fig. 2). Populations showed a significant winter decrease for the region as a whole (Wilcoxon $Z = -5.31$, $n = 147$, $P < 0.001$).

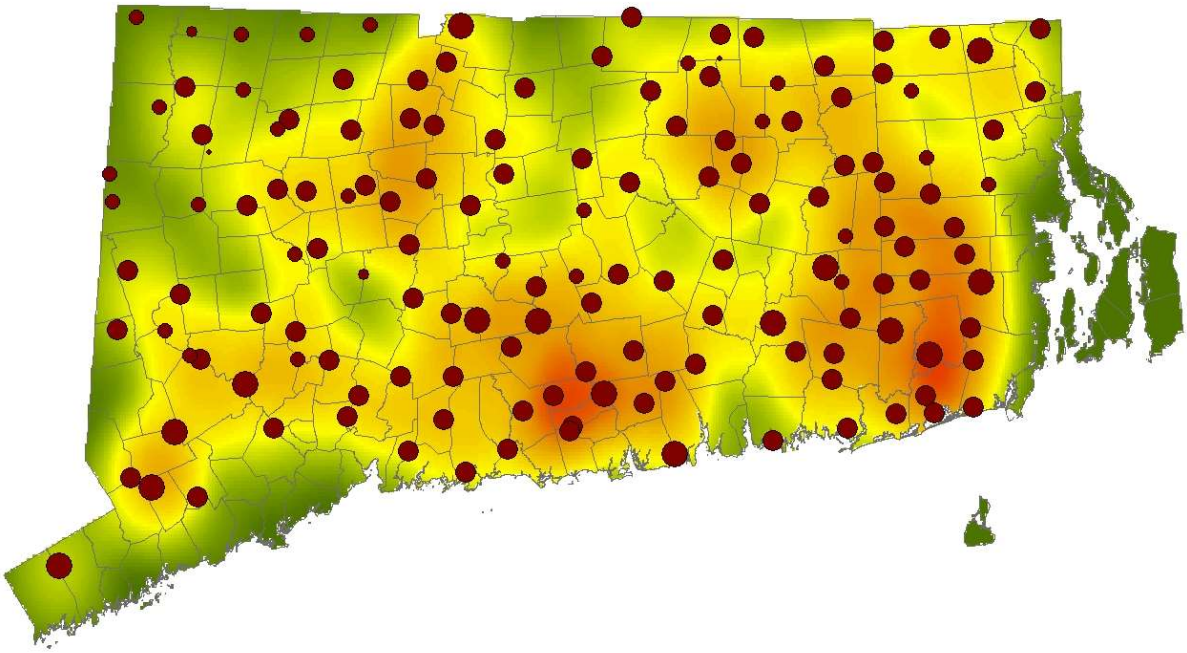


FIG. 1. Summer distribution.

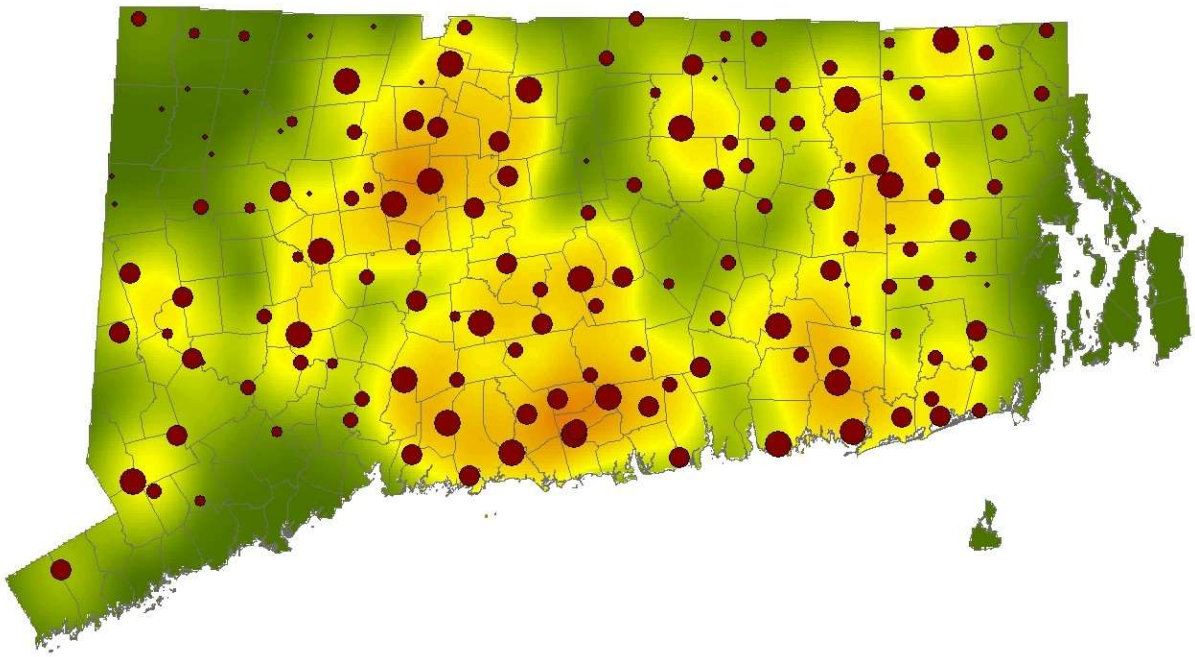


FIG. 2. Winter distribution.

RED-BREASTED NUTHATCH

Sitta canadensis

Summer	Winter
Density (birds/km^2): 0.57 (*n* = 92 pooled, 95% CI: ± 0.28)	Density (birds/km^2): 0.95 (*n* = 92 pooled, 95% CI: ± 0.58)
CT: 0.39	CT: 0.16
RI: 1.44	RI: 4.64
Population (birds): 5,240 (95% CI: ± 2,579)	Population (birds): 8,618 (95% CI: ± 5,261)
CT: 2,954	CT: 1,233
RI: 2,286	RI: 7,385

The Red-breasted Nuthatch appeared on 18% of summer and 14% of winter transects. We used call notes made by both sexes in assessing density and pooled observations of this uncommon, winter flocking species in computing detectability.

Summer density was greatest in Rhode Island and northern Connecticut and least in southern and lowland areas of Connecticut (Fig. 1). In winter, density was again greatest in Rhode Island but generally low throughout the rest of the region (Fig. 2). Populations tended to be greater in winter than summer although they showed considerable annual variation.

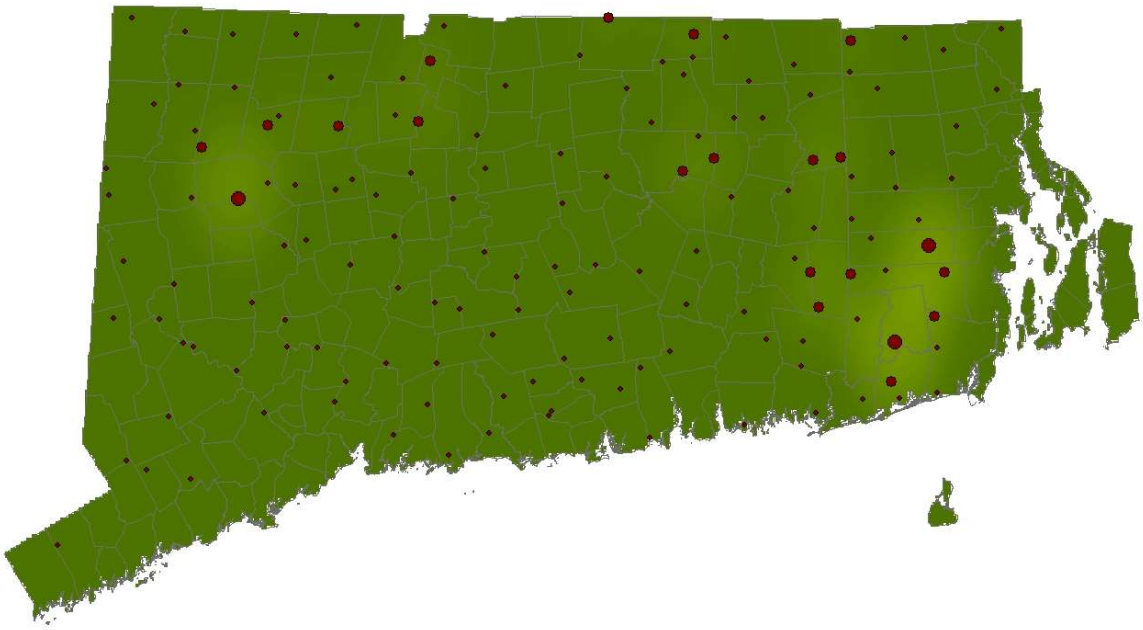


FIG. 1. Summer distribution.

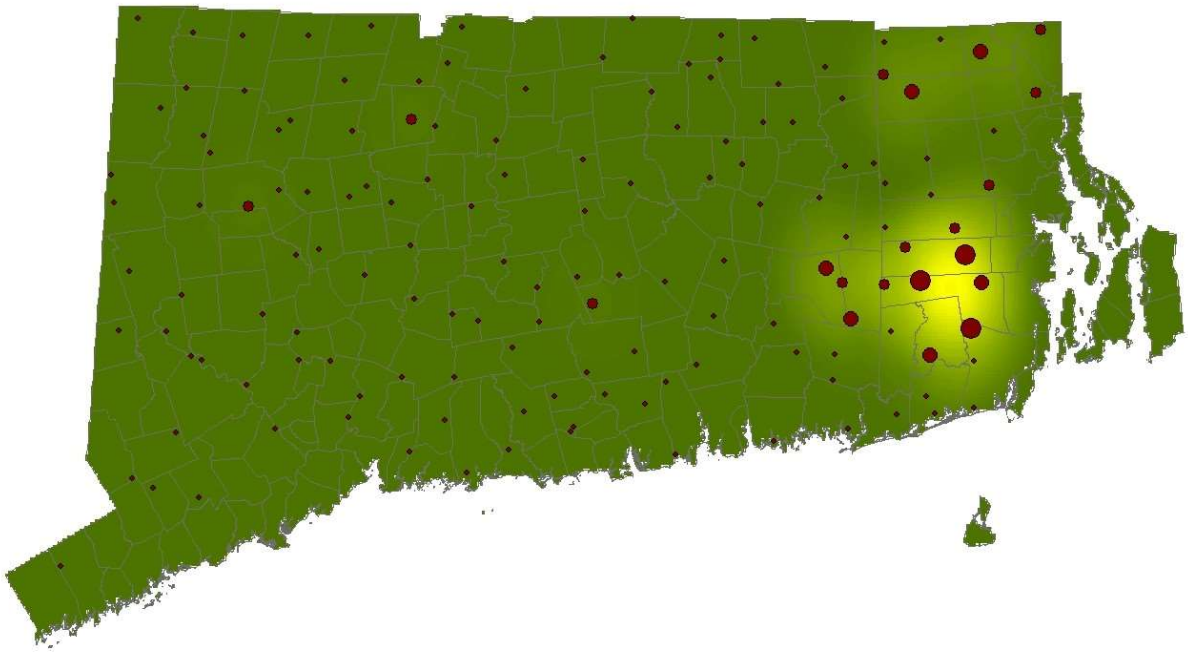


FIG. 2. Winter distribution.

WHITE-BREASTED NUTHATCH

Sitta carolinensis

Summer	Winter
Density (birds/km^2): 7.88 (n = 694, 95% CI: ± 0.94)	Density (birds/km^2): 9.89 (n = 915, 95% CI: ± 1.01)
CT: 8.13	CT: 10.06
RI: 6.66	RI: 9.10
Population (birds): 71,789 (95% CI: ± 8,531)	Population (birds): 90,166 (95% CI: ± 9,217)
CT: 61,202	CT: 75,696
RI: 10,587	RI: 14,470

The White-breasted Nuthatch appeared on 97% of summer and 98% of winter transects. It also appeared rather commonly outside of primarily forested landscapes, particularly in winter. We used call notes made by both sexes of this flocking species in assessing density.

Summer density was greatest in northeastern and central Connecticut and least in northwestern Connecticut (Kruskal-Wallis $\chi^2 = 26.4$, $n = 147$, $P < 0.001$; Fig. 1). In winter, density was greatest in central and least in northwestern Connecticut (Kruskal-Wallis $\chi^2 = 23.4$, $n = 147$, $P < 0.001$; Fig. 2). Populations showed a summer to winter increase (Wilcoxon $Z = -3.50$, $n = 147$, $P < 0.001$).

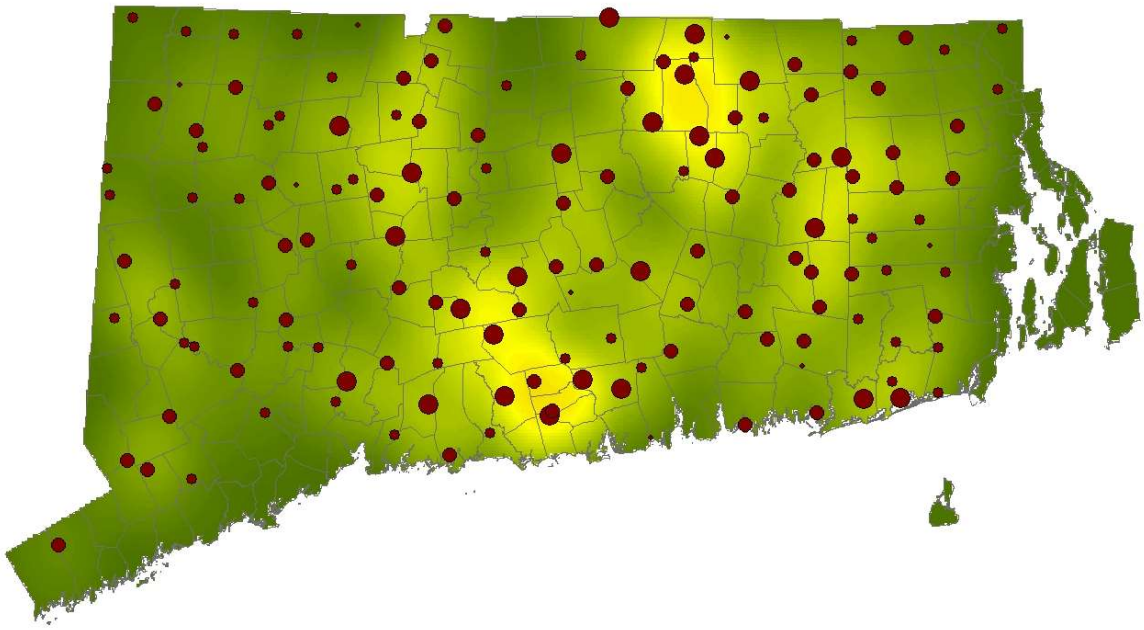


FIG. 1. Summer distribution.

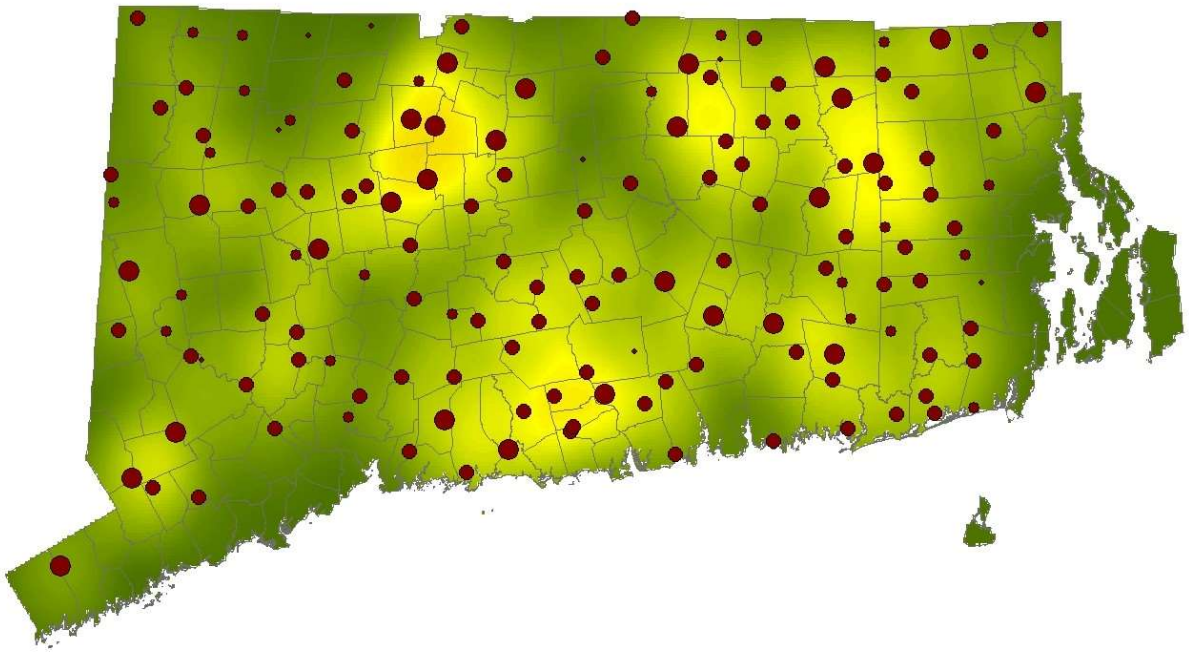


FIG. 2. Winter distribution.

BROWN CREEPER

Certhia americana

Summer	Winter
Density (males/km^2): 1.52 (n = 60, 95% CI: ± 0.52)	Density (birds/km^2): 9.84 (n = 87, 95% CI: ± 2.76)
CT: 1.54	CT: 9.93
RI: 1.47	RI: 9.40
Population (males): 13,895 (95% CI: ± 4,766)	Population (birds): 89,691 (95% CI: ± 25,138)
CT: 11,551	CT: 74,738
RI: 2,344	RI: 14,953

The Brown Creeper appeared on 27% of summer and 35% of winter transects. Summer population estimates are based on detections of singing males, whereas winter estimates are based on those of vocalizing males and females.

Summer density varied substantially among years and differences among regions were not significant (Kruskal-Wallis $\chi^2 = 5.1$, $n = 147$, $P = 0.40$; Fig. 1). In winter, density also varied greatly among years, although differences among regions were significant (Kruskal-Wallis $\chi^2 = 16.4$, $n = 147$, $P = 0.006$; Fig. 2). Because methods for assessing populations differed between seasons, we did not statistically test seasonal change in density, although density clearly grew in winter.

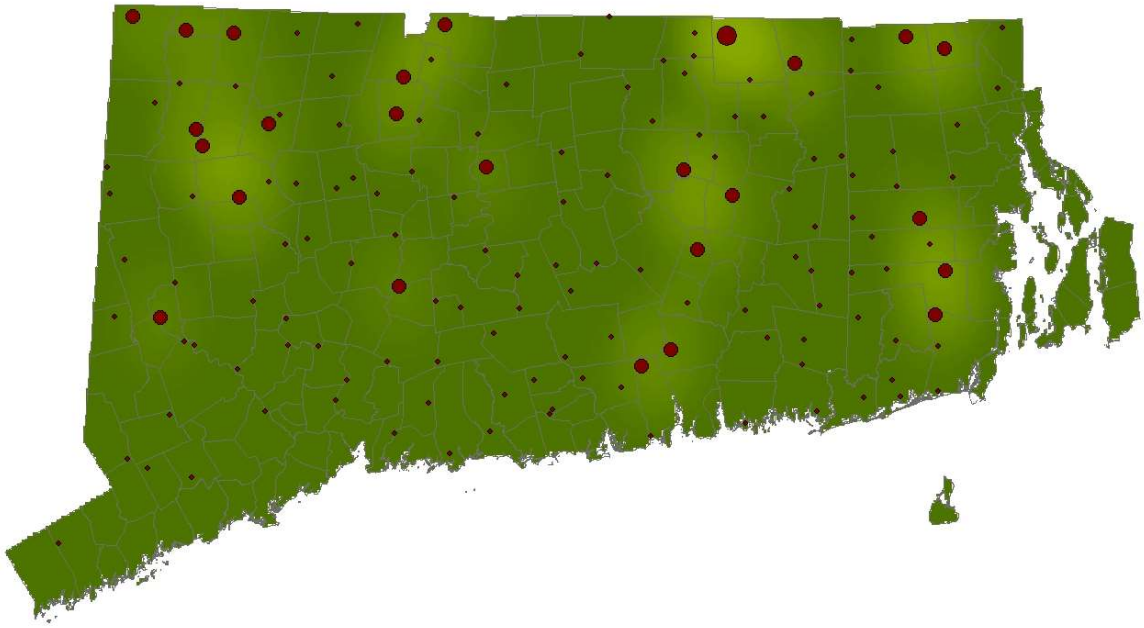


FIG. 1. Summer distribution.

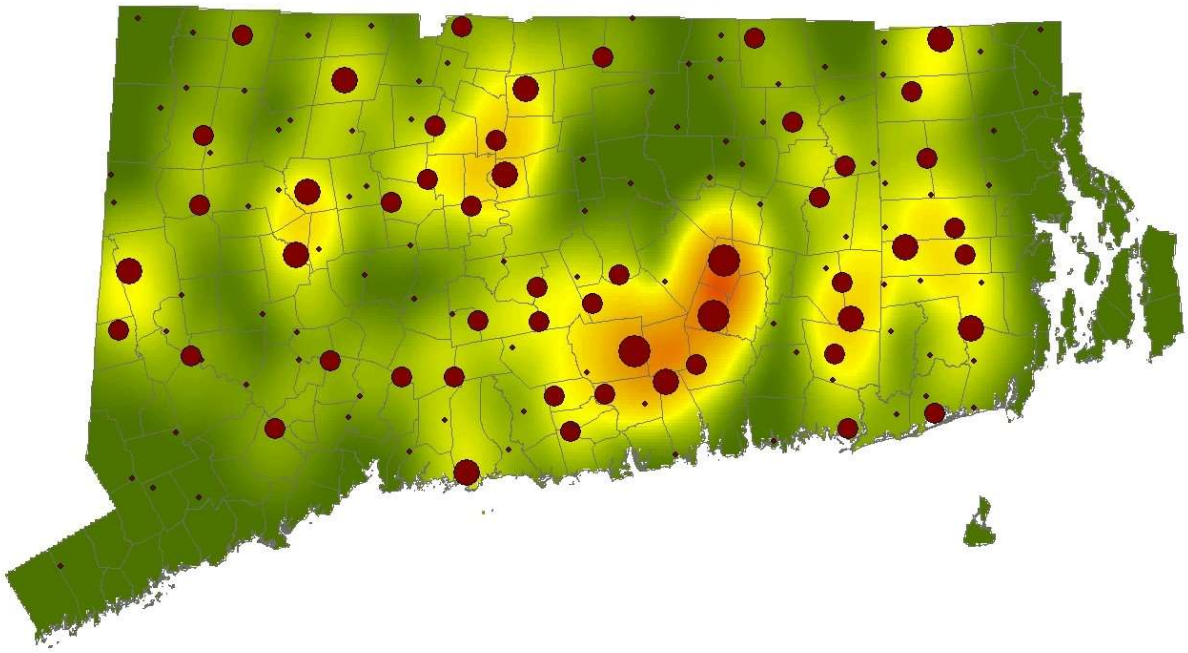


FIG. 2. Winter distribution.

Sponsored by Juan and Diane Sanchez

HOUSE WREN

Troglodytes aedon

Summer

Density (males/km^2): 0.67 (n = 47, 95% CI: ± 0.36)
CT: 0.77
RI: 0.21

Population (males): 6,125 (95% CI: ± 3,273)
CT: 5,789
RI: 336

The House Wren appeared on 18% of summer transects, with population estimates based on detections of singing males. Population estimates rely on <60 detections, so have reduced accuracy, although our computed detectability function fit data well. Summer densities in principally forested landscapes averaged greatest in central and southwestern Connecticut and least in northwestern Connecticut and Rhode Island (Fig. 1).

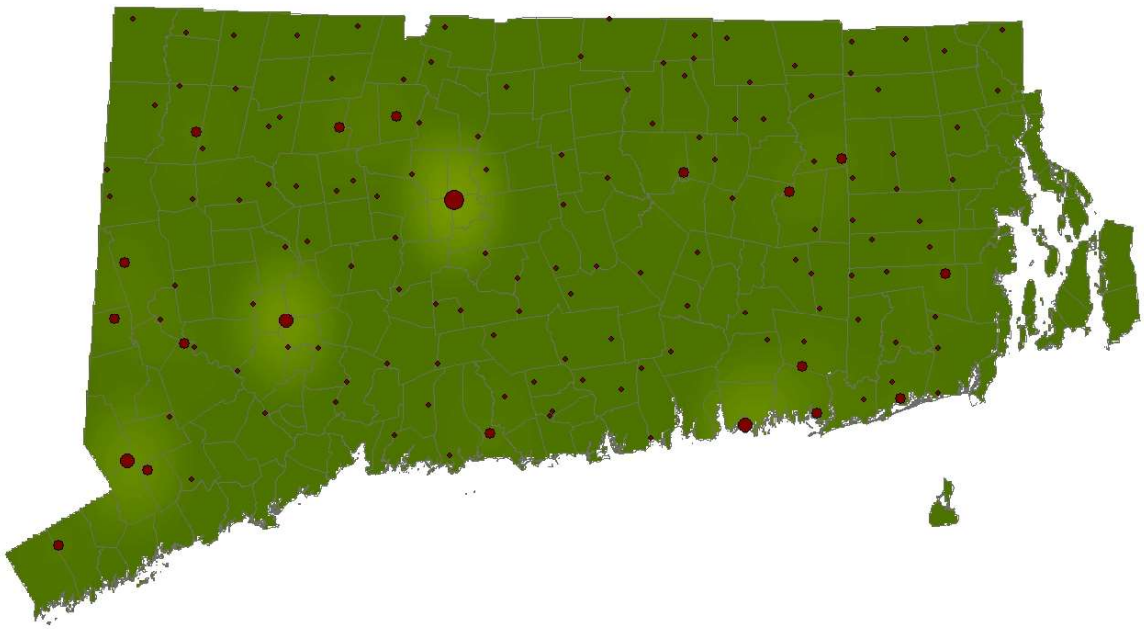


FIG. 1. Summer distribution.

WINTER WREN

Troglodytes hiemalis

Summer	Winter
Density (males/km^2): 0.40 (n = 44, 95% CI: ± 0.15)	Density (birds/km^2): 0.38 (n = 23, 95% CI: ± 0.21)
CT: 0.49	CT: 0.37
RI: 0.00	RI: 0.44
Population (males): 3,673 (95% CI: ± 1,356)	Population (birds): 3,506 (95% CI: ± 1,921)
CT: 3,673	CT: 2,804
RI: 0	RI: 702

The Winter Wren appeared on 19% of summer and 14% of winter transects. Summer population estimates are based on detections of singing males, whereas winter estimates are based on those of vocalizing males and females. Estimates use <60 detections, so have reduced accuracy.

Summer densities averaged greatest in more mountainous, northern regions and least in southern locations (Fig. 1). Winter densities, in contrast, averaged greatest in southern locations (Fig. 2). Densities appeared greater in summer than winter but were not statistically testable because samples were small and seasonal differences existed in method of estimation.

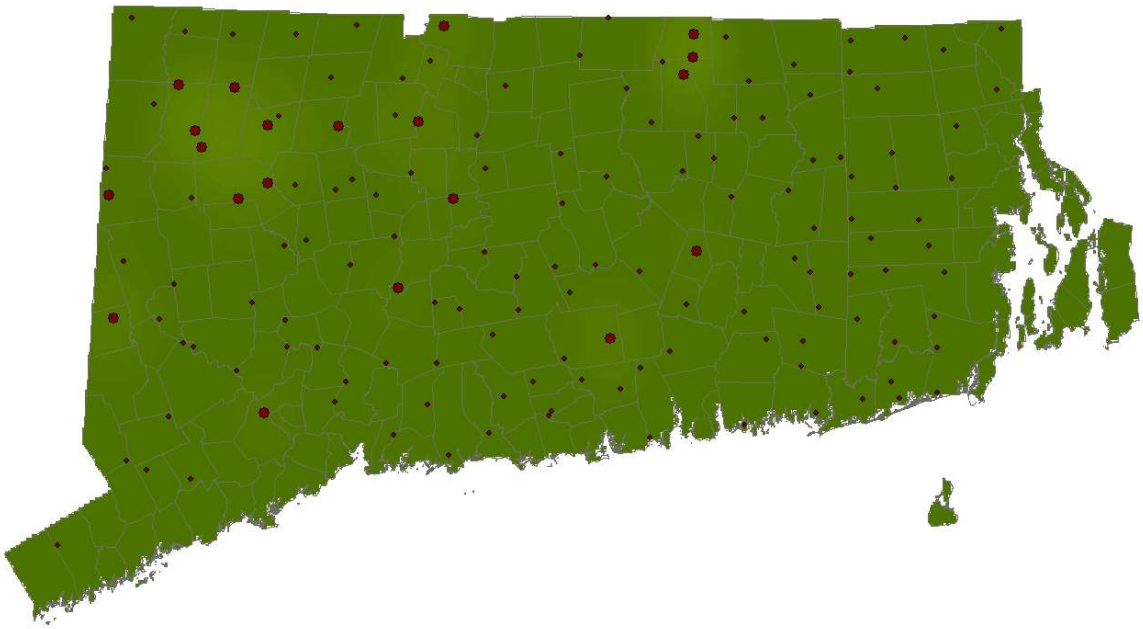


FIG. 1. Summer distribution.

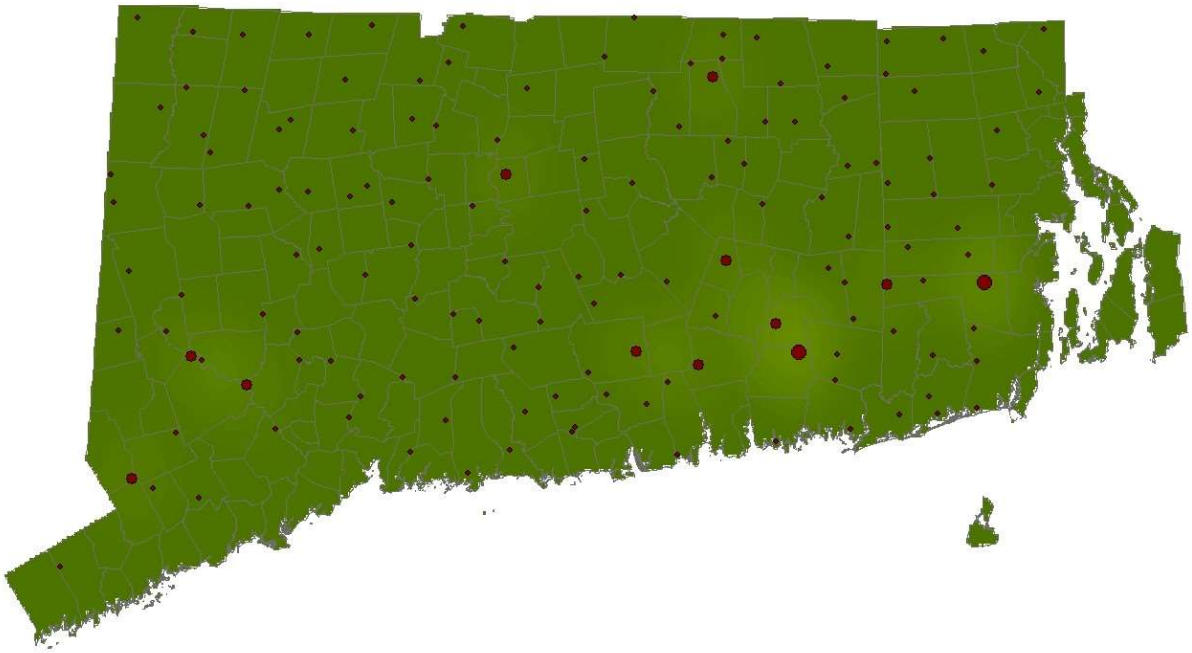


FIG. 2. Winter distribution.

CAROLINA WREN

Thryothorus ludovicianus

Summer	Winter
Density (males/km^2): 1.17 (n = 122, 95% CI: ± 0.31)	Density (birds/km^2): 0.64 (n = 92, 95% CI: ± 0.28)
CT: 1.23	CT: 0.73
RI: 0.85	RI: 0.21
Population (males): 10,647 (95% CI: ± 2,747)	Population (birds): 5,837 (95% CI: ± 2,520)
CT: 9,287	CT: 5,507
RI: 1,360	RI: 330

The Carolina Wren appeared on 38% of summer and 33% of winter transects. Summer population estimates are based on detections of singing males, whereas winter estimates are based on those of vocalizing males and females.

Summer densities in principally forested landscapes averaged greatest in southern and low elevation regions and least in northern areas (Kruskal-Wallis $\chi^2 = 41.6$, $n = 147$, $P < 0.001$; Fig. 1). Winter densities also averaged greatest in southern and low elevation regions and least in northern areas (Kruskal-Wallis $\chi^2 = 26.0$, $n = 147$, $P < 0.001$; Fig. 2). Because methods for assessing populations differed between seasons, we did not assess seasonal change in density, although density appeared to drop substantially in winter.

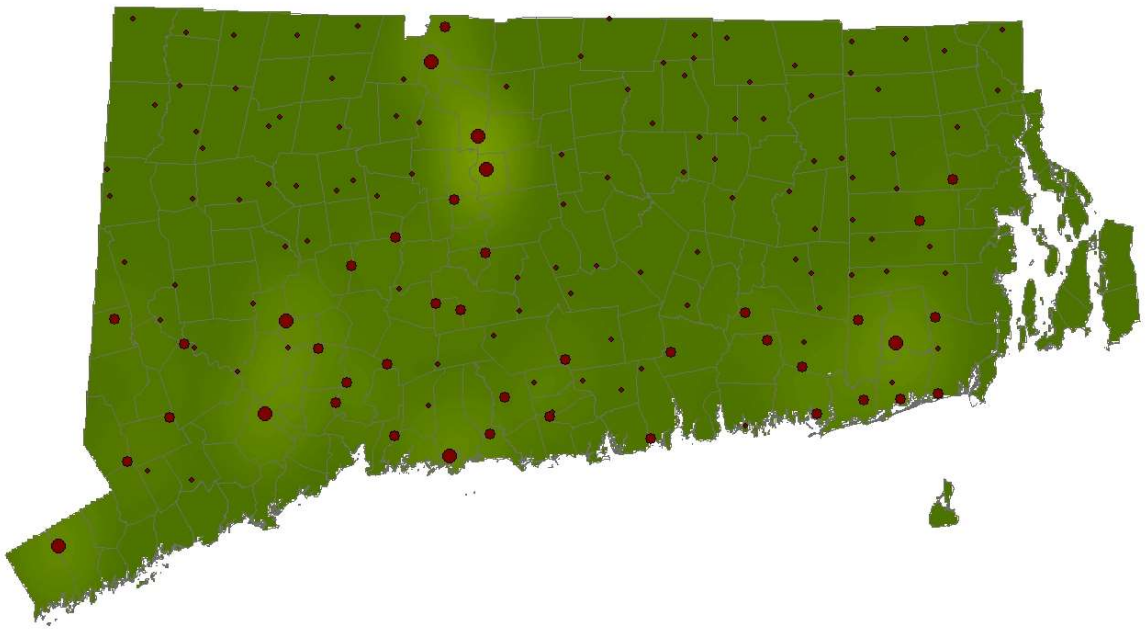


FIG. 1. Summer distribution.

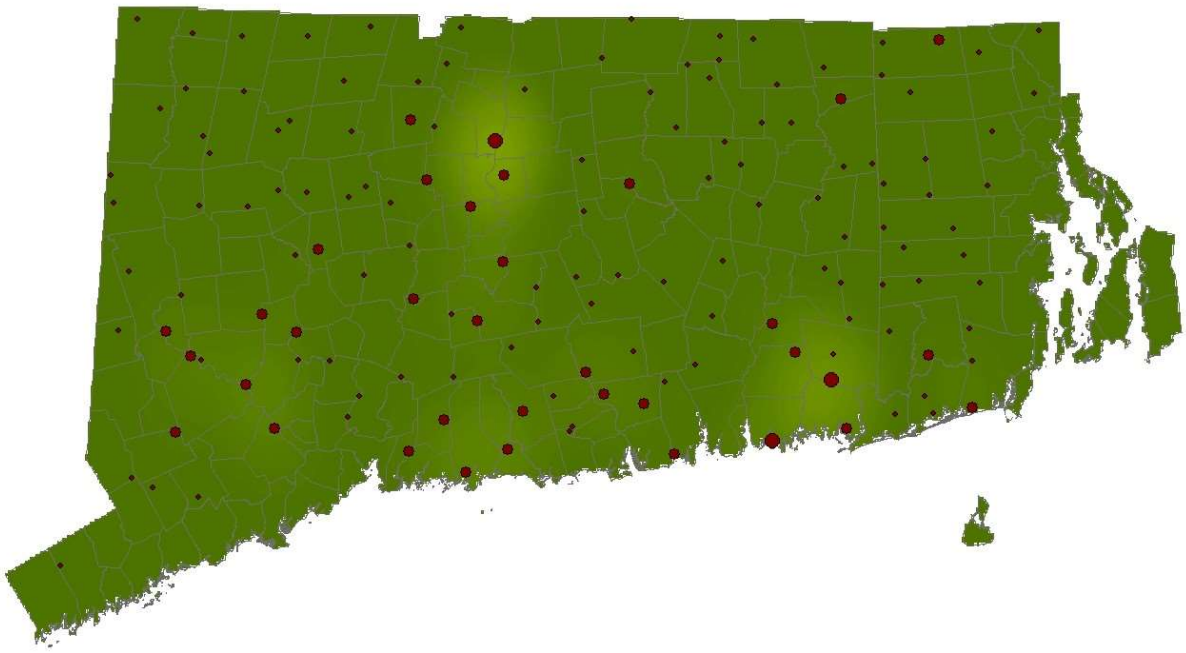


FIG. 2. Winter distribution.

BLUE-GRAY GNATCATCHER

Polioptila caerulea

Summer

Density (birds/km^2): 11.56 (n = 340, 95% CI: ± 2.01)
CT: 11.47
RI: 12.00

Population (birds): 105,396 (95% CI: ± 18,349)
CT: 86,304
RI: 19,092

The Blue-gray Gnatcatcher appeared on 68% of summer transects, with population estimates based on detections of vocalizing males and females. Density of this southerly−distributed species was greatest in southeastern Connecticut and least in central Connecticut (Kruskal-Wallis χ^2 = 11.7, n = 147, P = 0.039; Fig. 1).

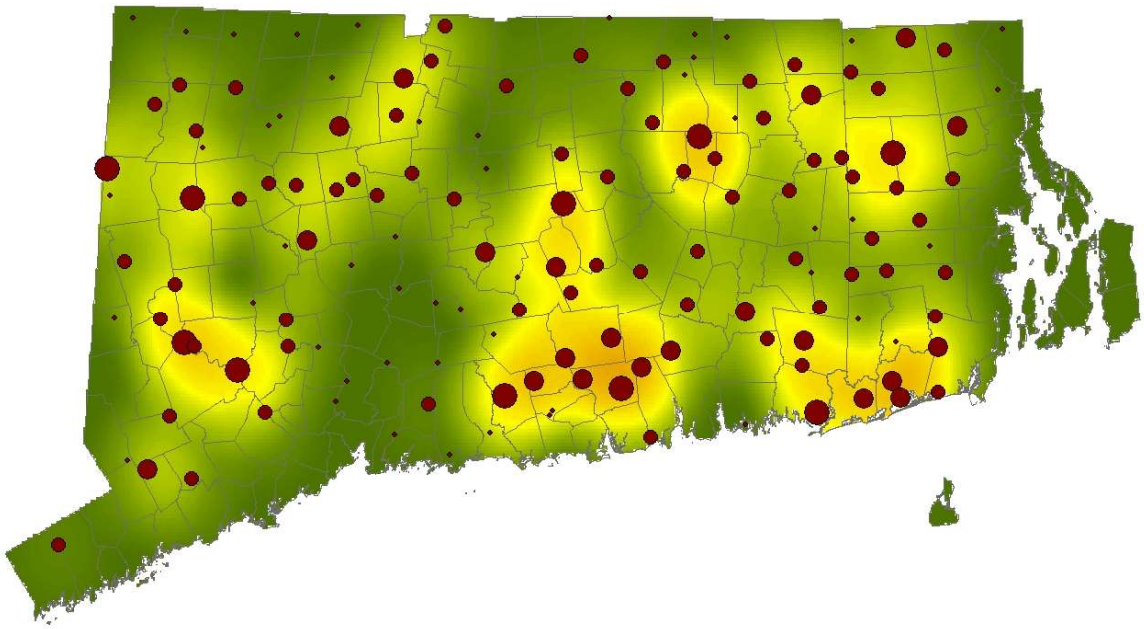


FIG. 1. Summer distribution.

GOLDEN-CROWNED KINGLET

Regulus satrapa

Winter

Density (birds/km^2): 29.83 (n = 362, 95% CI: ± 4.64)
CT: 22.16
RI: 66.12

Population (birds): 271,918 (95% CI: ± 3,273)
CT: 166,763
RI: 105,155

The Golden-crowned Kinglet appeared on 80% of winter transects. Winter population estimates are based on the occurrence of vocalizing flocks of males and females. This northerly−distributed species also appeared once in summer on a northwestern Connecticut transect, although we make no summer estimate for it. Winter density was greatest in Rhode Island and least in southwestern Connecticut (Kruskal-Wallis χ^2 = 23.38, n = 147, P < 0.001; Table 1).

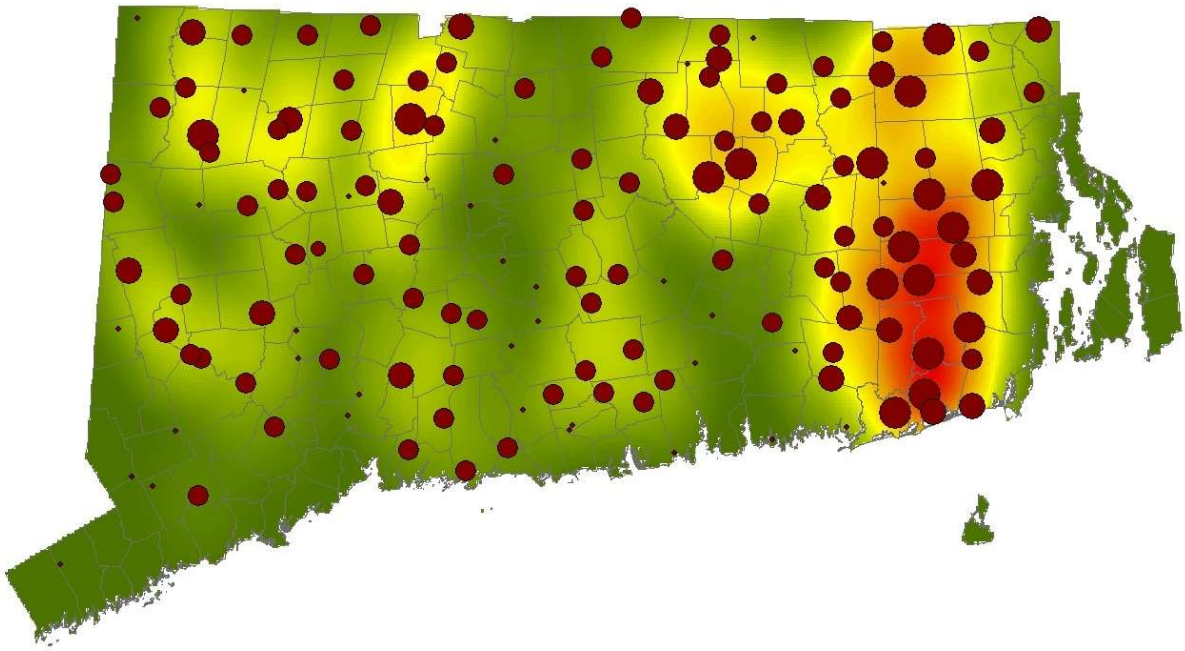


FIG. 1. Winter distribution.

EASTERN BLUEBIRD

Sialia sialis

Summer	Winter
Density (birds/km^2): 0.35 (*n* = 77 pooled, 95% CI: ± 0.23)	Density (birds/km^2): 0.74 (*n* = 77 pooled, 95% CI: ± 0.30)
CT: 0.35	CT: 0.76
RI: 0.33	RI: 0.65
Population (birds): 3,149 (95% CI: ± 2,126)	Population (birds): 6,752 (95% CI: ± 2,773)
CT: 2,629	CT: 5,713
RI: 520	RI: 1,039

The Eastern Bluebird appeared on 12% of summer and 25% of winter transects. Although we detected singing males even outside the breeding season, we found that the frequent call notes made by family groups and winter flocks made males and females similarly detectable. Hence, population estimates are based on detections of flocks of vocalizing males and females.

Summer densities in principally forested landscapes averaged slightly greater in lowland and southern locations (Fig. 1). Winter densities showed little pattern, however (Fig. 2). Although populations appeared to grow substantially from summer to winter, samples were insufficient for performing statistical tests.

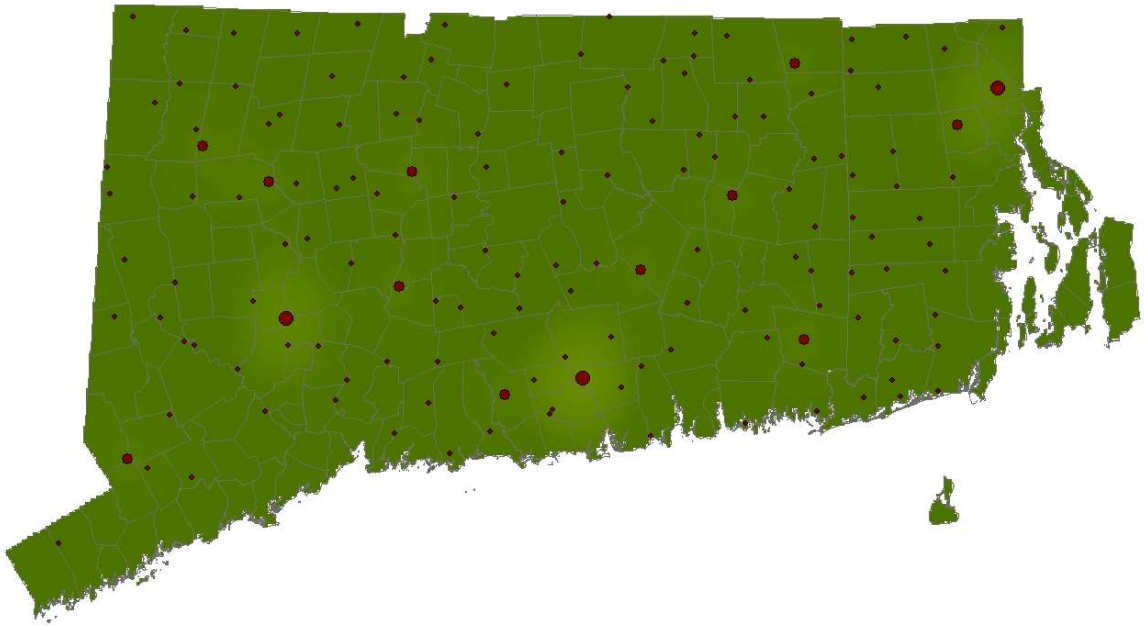


FIG. 1. Summer distribution.

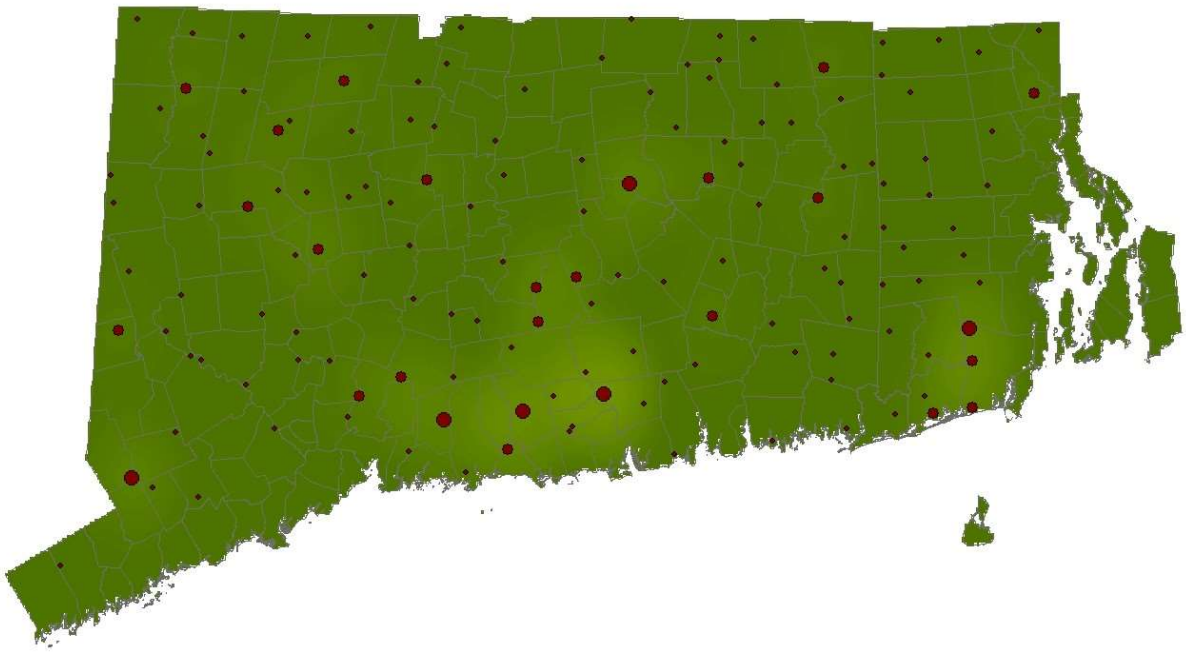


FIG. 2. Winter distribution.

Sponsored by Ron and Gwenyth Tillen

VEERY

Catharus fuscescens

Summer

Density (males/km^2): 24.04 (n = 1,457, 95% CI: ± 2.10)
CT: 24.25
RI: 23.07

Population (males): 219,139 (95% CI: ± 19,199)
CT: 182,446
RI: 36,693

The Veery appeared on 93% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in northern, more mountainous regions and least in lowlands (Kruskal-Wallis $\chi^2 = 39.7$, $n = 147$, $P < 0.001$; Fig. 1).

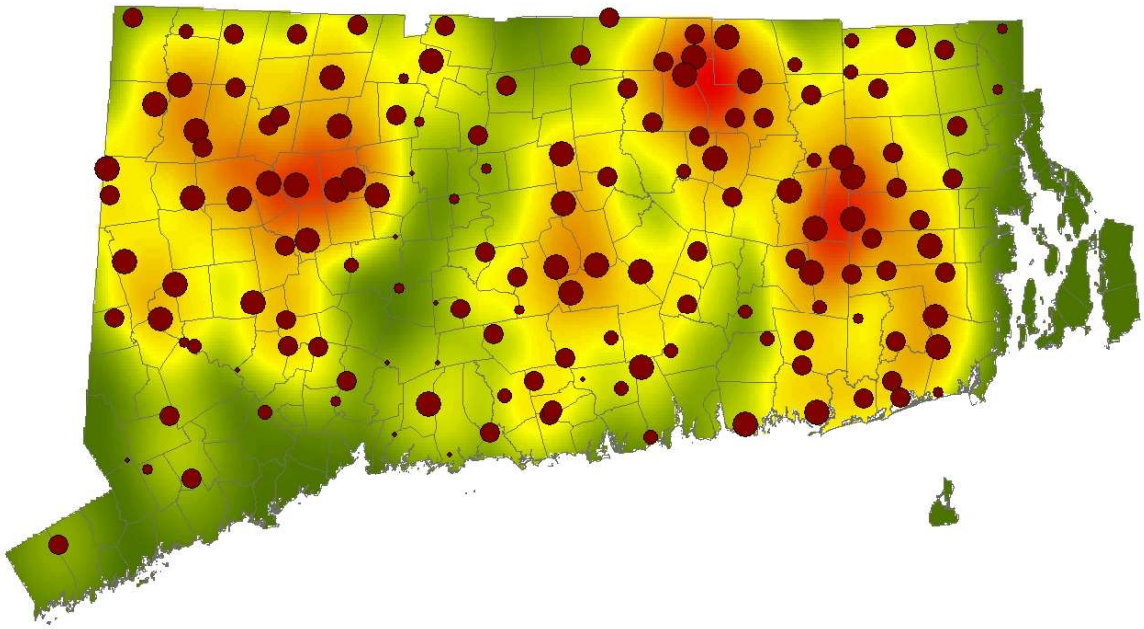


FIG. 1. Summer distribution.

HERMIT THRUSH

Catharus guttatus

Summer

Density (males/km^2): 1.57 (n = 288, 95% CI: ± 0.34)
CT: 1.42
RI: 2.29

Population (males): 14,303 (95% CI: ± 3,085)
CT: 10,662
RI: 3,641

The Hermit Thrush appeared on 57% of summer and 6% of winter transects. Summer population estimates are based on detections of singing males. Densities averaged greatest in northern, more mountainous regions and least in lowlands, although they were also frequent in the xeric, conifer−dominated forests of Rhode Island (Kruskal-Wallis $\chi^2 = 60.3$, $n = 147$, $P < 0.001$; Fig. 1).

The species appeared in winter primarily at more southern locations (Fig. 2). From our few observations, we tentatively estimate a winter density of 0.82 birds/km^2 and total population of 7474. Although we detected birds infrequently at this season, they were present at close range, which led to this comparatively high density estimate.

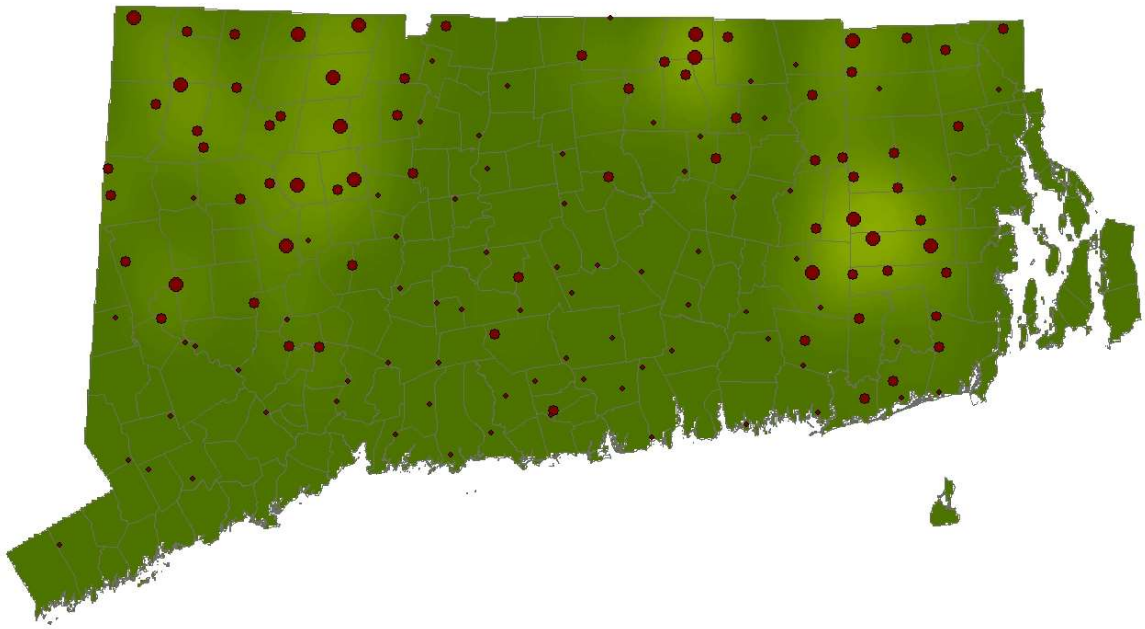


FIG. 1. Summer distribution.

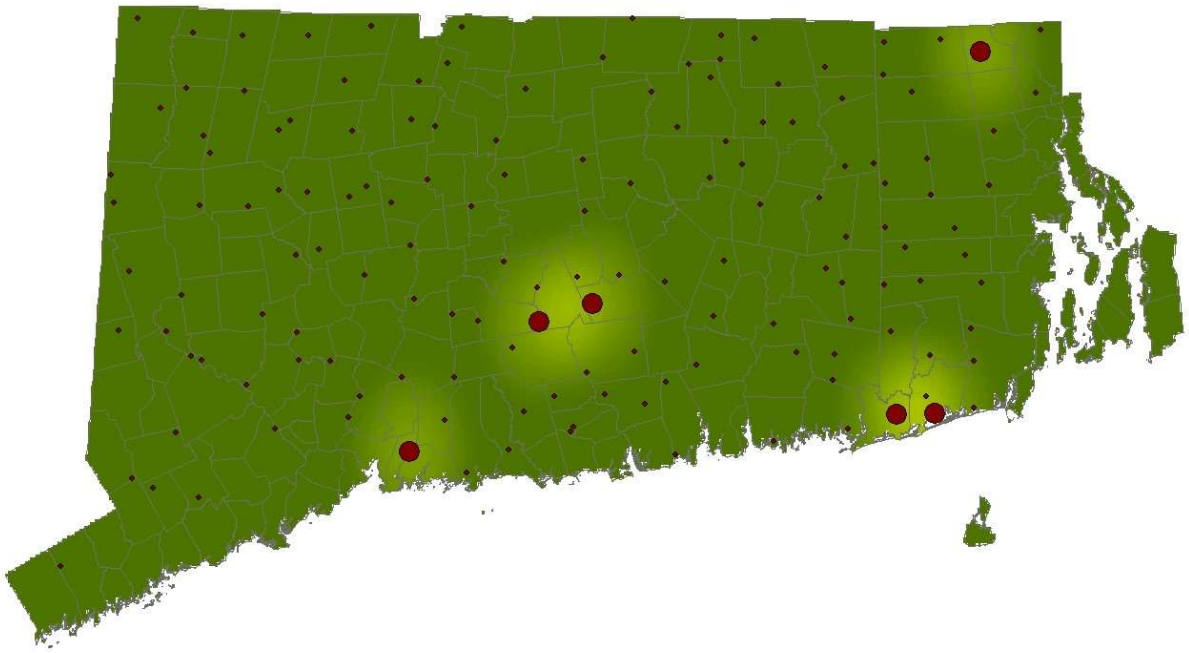


FIG. 2. Winter distribution.

WOOD THRUSH

Hylocichla mustelina

Summer

Density (males/km^2): 14.32 (n = 1,425, 95% CI: ± 1.48)
CT: 15.83
RI: 7.21

Population (males): 130,545 (95% CI: ± 13,522)
CT: 119,071
RI: 11,474

The Wood Thrush appeared on 98% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in lowlands and least at higher elevations and in the xeric, conifer−dominated forests of Rhode Island (Kruskal-Wallis $\chi^2 = 51.2$, $n = 147$, $P < 0.001$; Fig. 1).

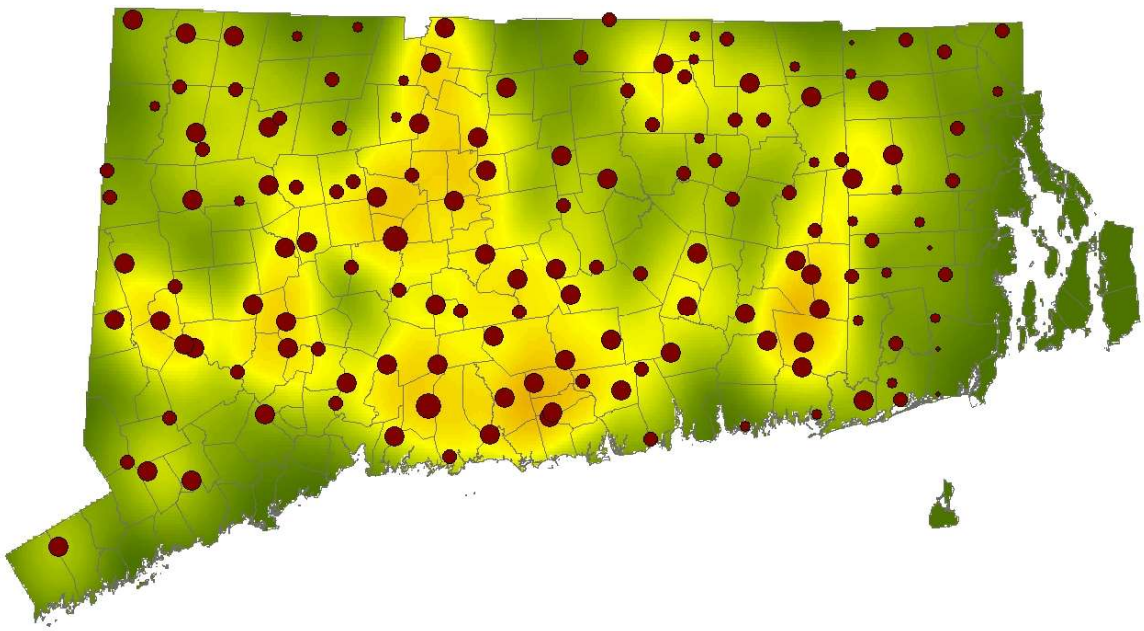


FIG. 1. Summer distribution.

AMERICAN ROBIN

Turdus migratorius

Summer	Winter
Density (birds/km^2): 16.03 (n = 749, 95% CI: ± 2.66)	Density (birds/km^2): 4.46 (n = 289, 95% CI: ± 0.30)
CT: 16.26	CT: 4.73
RI: 14.95	RI: 3.23
Population (birds): 150,484 (95% CI: ± 24,279)	Population (birds): 40,694 (95% CI: ± 7,606)
CT: 126,712	CT: 35,555
RI: 23,772	RI: 5,139

The American Robin appeared on 97% of summer and 74% of winter transects. Although it occurred frequently even in interior forests, population estimates computed here do not account for birds of non-forest habitats.

Even though males sang from late winter into summer, we observed that males and females were conspicuous and appeared to be about equally detectable. In winter, birds generally occurred in flocks. Hence, summer density estimates are based on detections of males and females and winter estimates are based on the occurrence of flocks.

Summer densities averaged greatest in lowlands and least at higher elevations (Kruskal-Wallis $\chi^2 = 20.1$, $n = 147$, $P = 0.001$; Fig. 1). Winter densities averaged greatest in southeastern Connecticut but were otherwise similar throughout (Kruskal-Wallis $\chi^2 = 19.5$, $n = 147$, $P = 0.002$; Fig. 2).

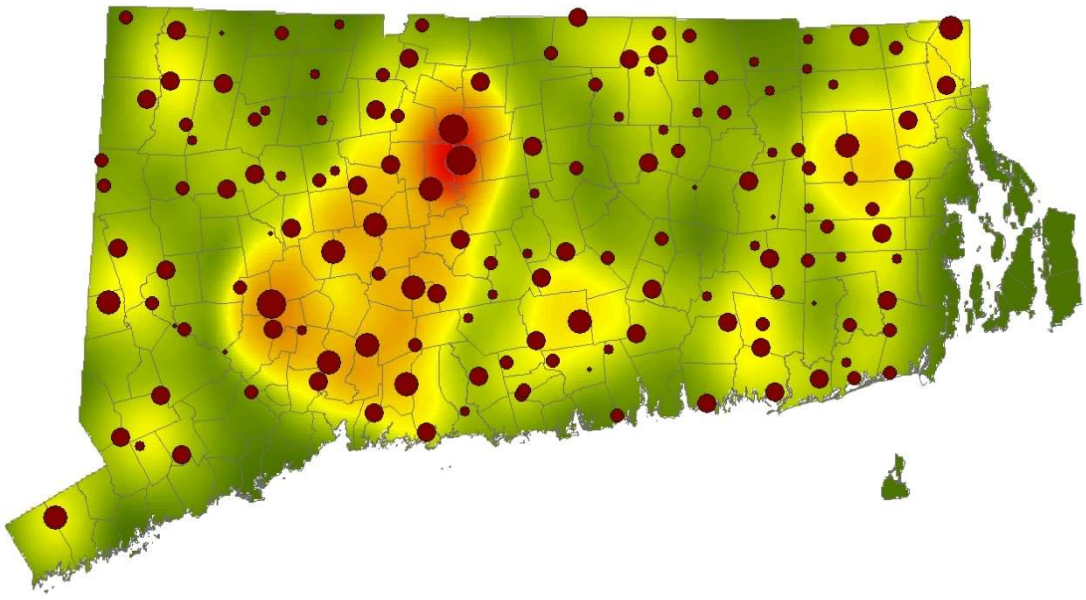


FIG. 1. Summer distribution.

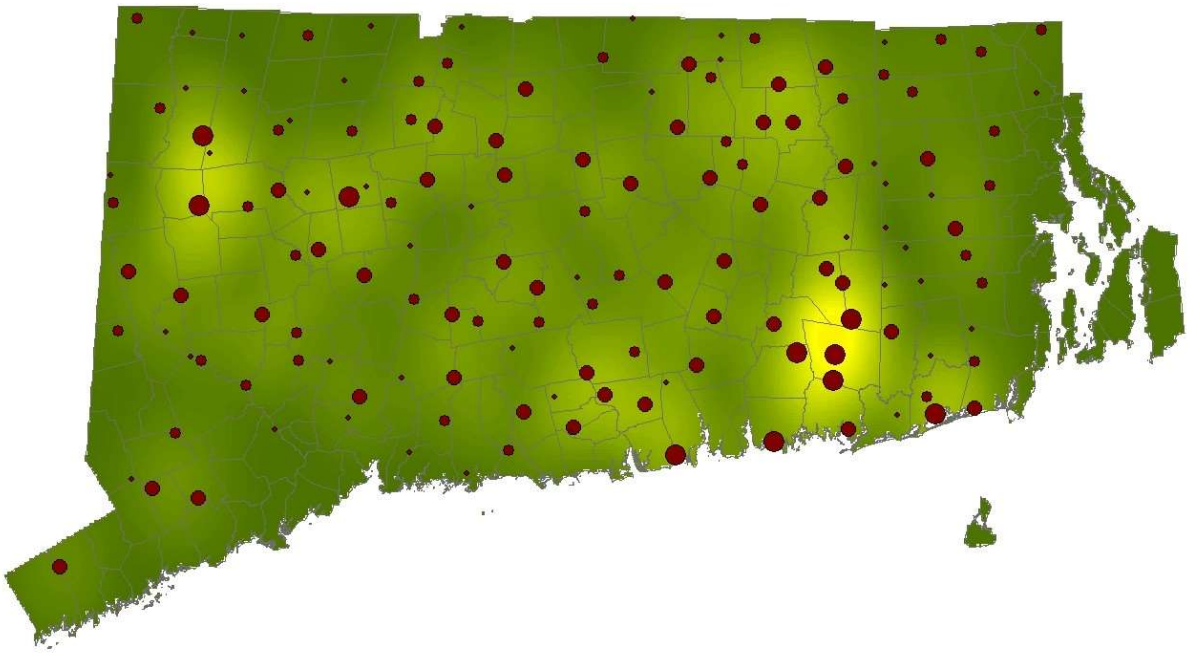


FIG. Winter distribution.

GRAY CATBIRD

Dumatella carolinensis

Summer

Density (males/km^2): 24.90 (n = 530, 95% CI: ± 4.96)
CT: 21.58
RI: 40.62

Population (males): 226,995 (95% CI: ± 45,219)
CT: 162,392
RI: 64,603

The Gray Catbird appeared on 82% of summer and 5% of winter transects. Although the species occurs commonly in nonforest habitats, population estimates computed here refer only to those birds inhabiting primarily forested landscapes. Summer population estimates are based on detections of singing males.

Summer densities averaged greatest in the lowlands of southeastern Connecticut and Rhode Island and least in more mountainous northwestern Connecticut (Kruskal-Wallis $\chi^2 = 20.4$, $n = 147$, $P = 0.001$; Fig. 1). The species appeared in winter primarily at more southern locations (Fig. 2). From our few observations, we tentatively estimate a winter density of 0.94 birds/km^2 and total population of 8568. Although we detected birds infrequently at this season, they were usually found at close range, which led to this comparatively high density estimate.

FIG. 1. Summer distribution.

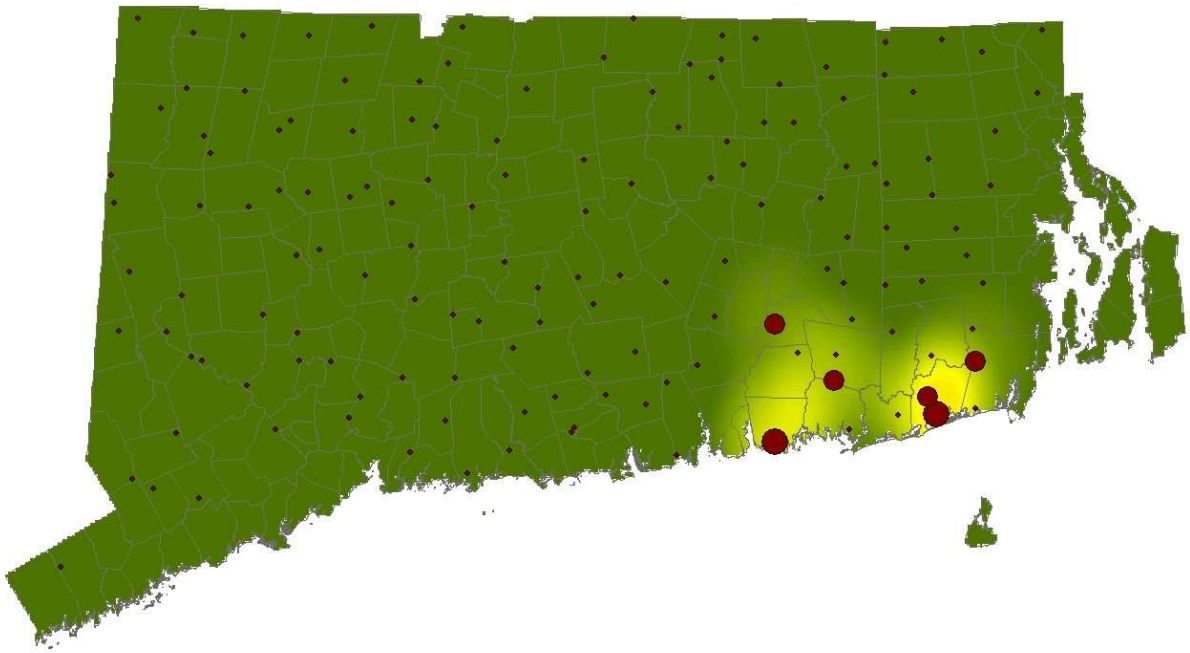


FIG. 2. Winter distribution.

CEDAR WAXWING

Bombycilla cedrorum

Summer	Winter
Density (birds/km^2): 9.34 (n = 247, 95% CI: ± 1.82)	Density (birds/km^2): 1.08 (n = 32, 95% CI: ± 0.59)
CT: 9.80	CT: 0.89
RI: 7.13	RI: 2.00
Population (birds): 85,085 (95% CI: ± 16,555)	Population (birds): 9,853 (95% CI: ± 5,342)
CT: 73,740	CT: 6,670
RI: 11,345	RI: 3,183

The Cedar Waxwing appeared on 69% of summer and 16% of winter transects. Although winter detections were below the recommended 60, the data fit a detection function well, so we still report density estimates for this season. Population estimates are based on detections of flocks and refer only to that portion of the population inhabiting primarily forested landscapes.

Summer densities averaged greater in some lowlands but were variable and showed little clear pattern (Kruskal-Wallis $\chi^2 = 5.9$, $n = 147$, $P = 0.31$; Fig. 1). Winter populations (Fig. 2) were too sparse and annually variable to evaluate.

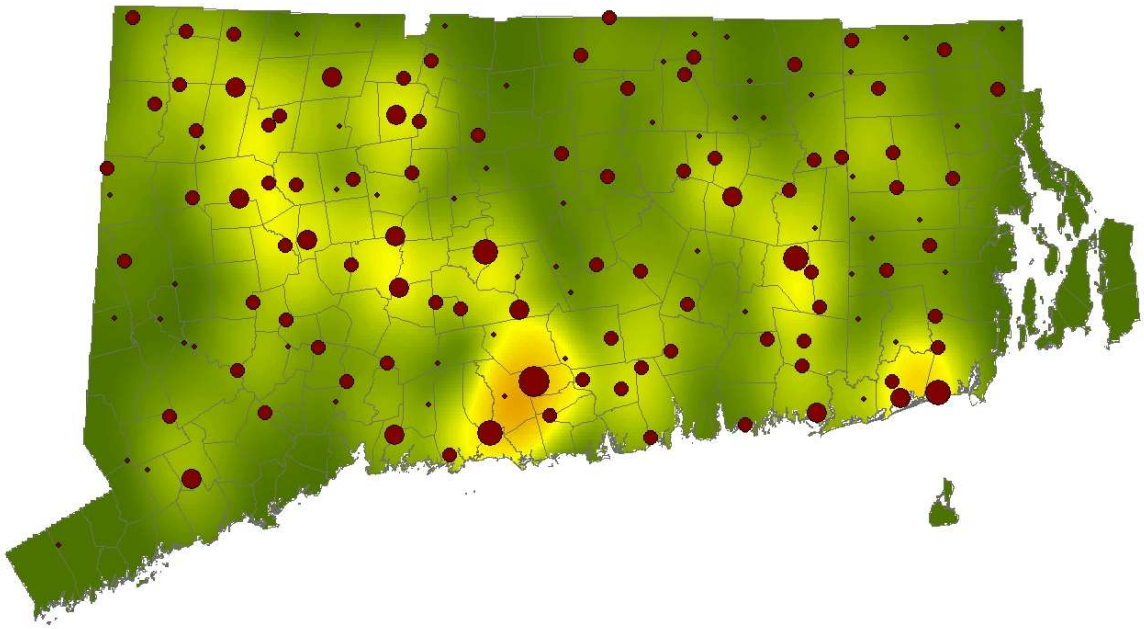


FIG. 1. Summer distribution.

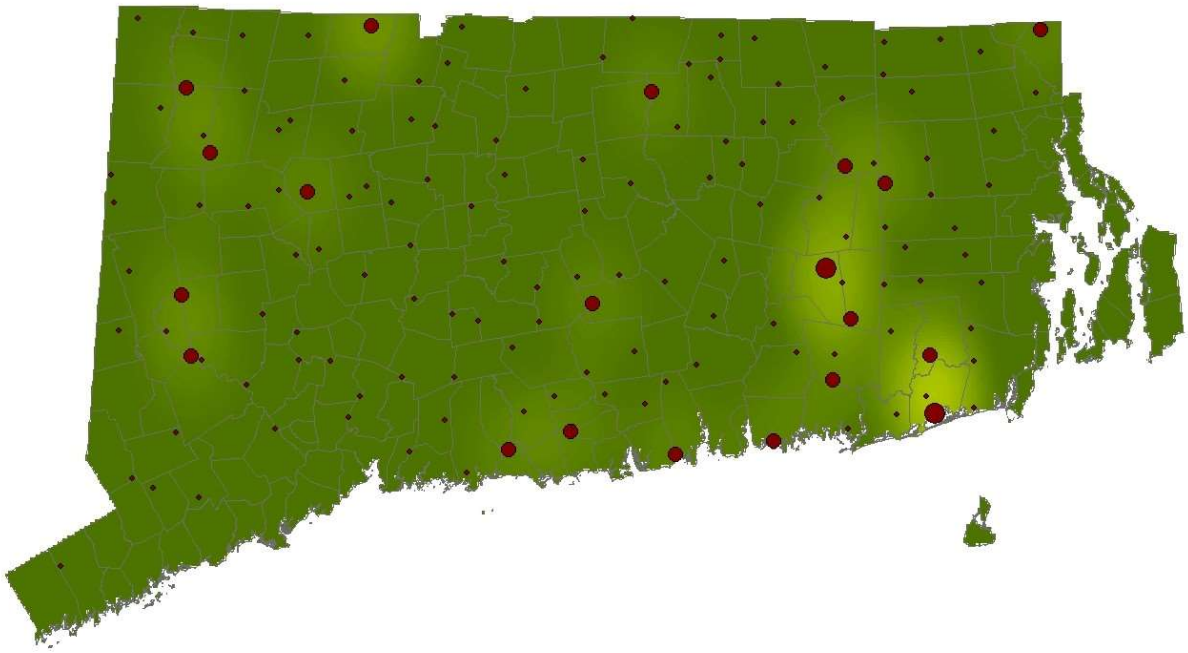


FIG. 2. Winter distribution.

Sponsored by Barbara Lussier

OVENBIRD

Seiurus aurocapilla

Summer

Density (males/km^2): 66.43 (*n* = 4,067, 95% CI: ± 5.02)
CT: 62.74
RI: 83.94

Population (males): 605,524 (95% CI: ± 45,716)
CT: 472,028
RI: 133,496

The Ovenbird appeared on 99% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in northwestern Connecticut and Rhode Island and least in southwestern and central Connecticut (Kruskal-Wallis $\chi^2 = 36.0$, $n = 147$, $P < 0.001$; Fig. 1).

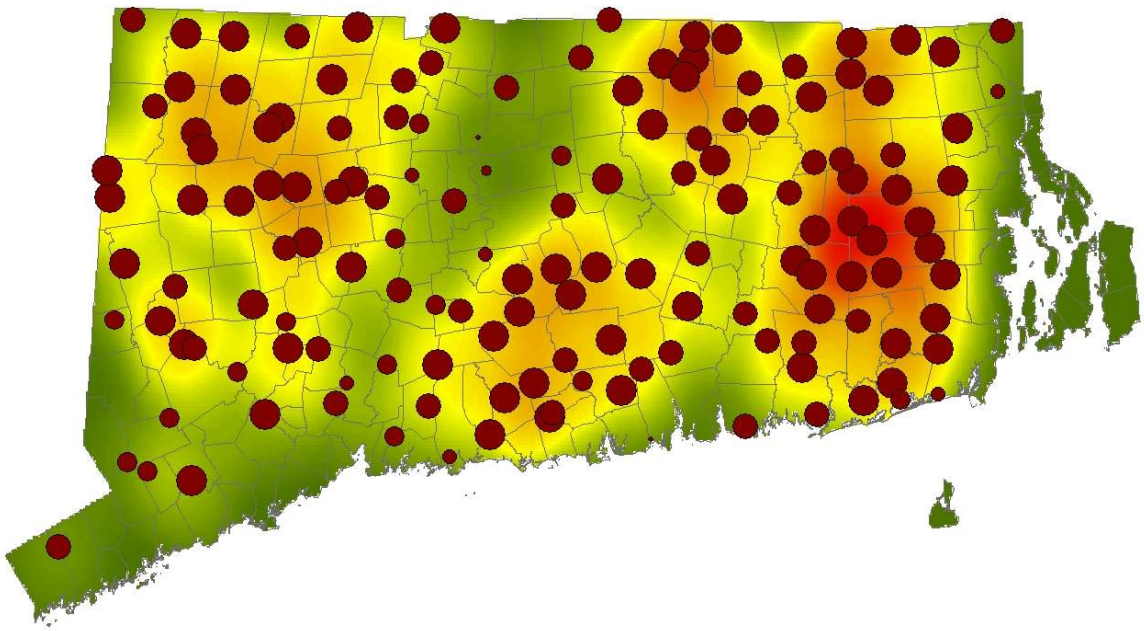


FIG. 1. Summer distribution.

WORM-EATING WARBLER

Helmitheros vermivorum

Summer
Density (males/km^2): 7.30 (n = 405, 95% CI: ± 1.58)
CT: 8.38
RI: 2.16
Population (males): 66,513 (95% CI: ± 14,367)
CT: 63,085
RI: 3,428

The Worm-eating Warbler appeared on 56% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in lowland areas and least in more mountainous portions of northern Connecticut (Kruskal-Wallis $\chi^2 = 48.5$, $n = 147$, $P < 0.001$; Fig. 1).

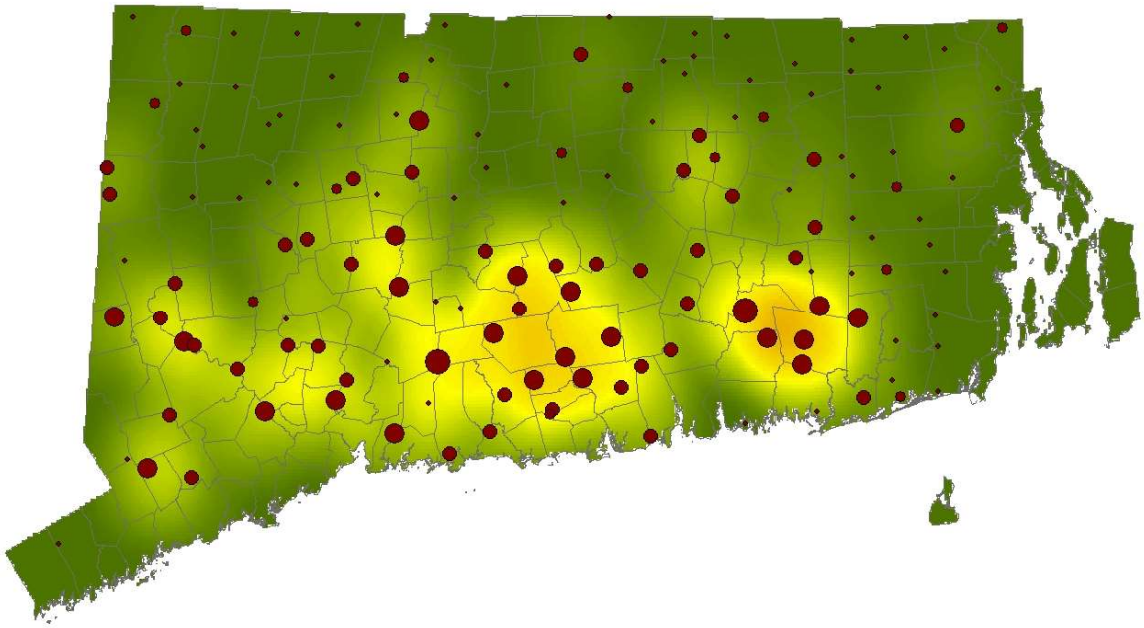


FIG. 1. Summer distribution.

LOUISIANA WATERTHRUSH

Parkesia motacilla

Summer

Density (males/km^2): 2.64 (n = 148, 95% CI: ± 0.61)
CT: 3.17
RI: 0.14

Population (males): 24,094 (95% CI: ± 5,559)
CT: 23,877
RI: 217

The Louisiana Waterthrush appeared on 49% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in southwestern Connecticut, although it was similarly frequent in much of the study area outside of Rhode Island, where it was least common by far (Kruskal-Wallis $\chi^2 = 26.0$, $n = 147$, $P < 0.001$; Fig. 1).

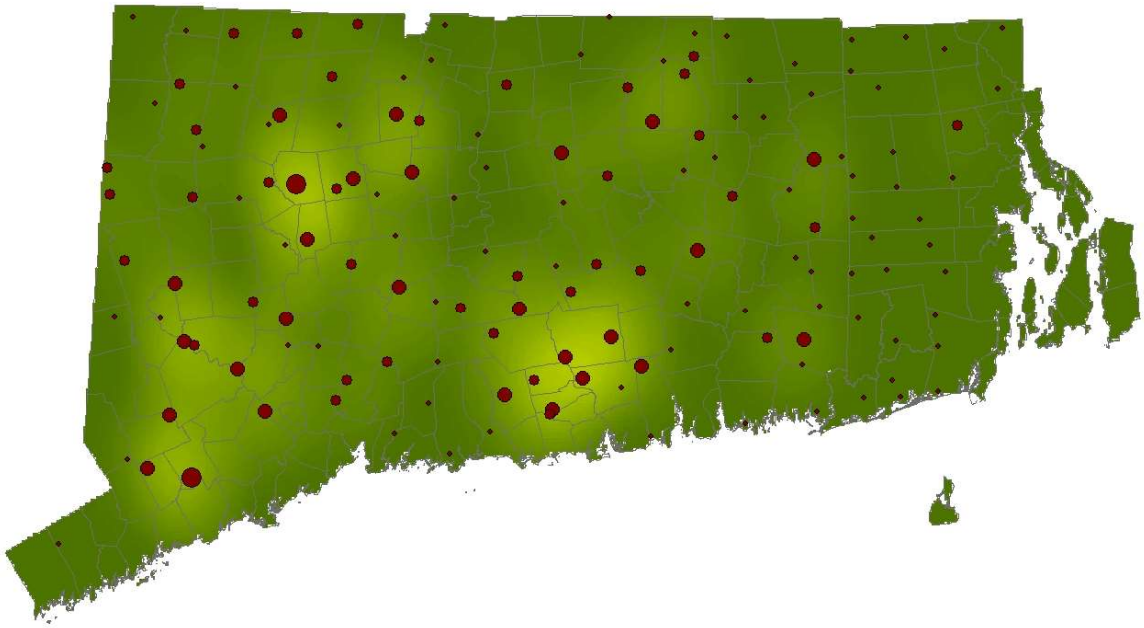


FIG. 1. Summer distribution.

Sponsored by David Fiorio

NORTHERN WATERTHRUSH

Parkesia noveboracensis

Summer

Density (males/km^2): 0.85 (*n* = 60, 95% CI: ± 0.32)
CT: 0.66
RI: 1.73

Population (males): 7,707 (95% CI: ± 2,909)
CT: 4,961
RI: 2,746

The Northern Waterthrush appeared on 24% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in northwestern Connecticut and Rhode Island and least in southwestern and central Connecticut (Fig. 1).

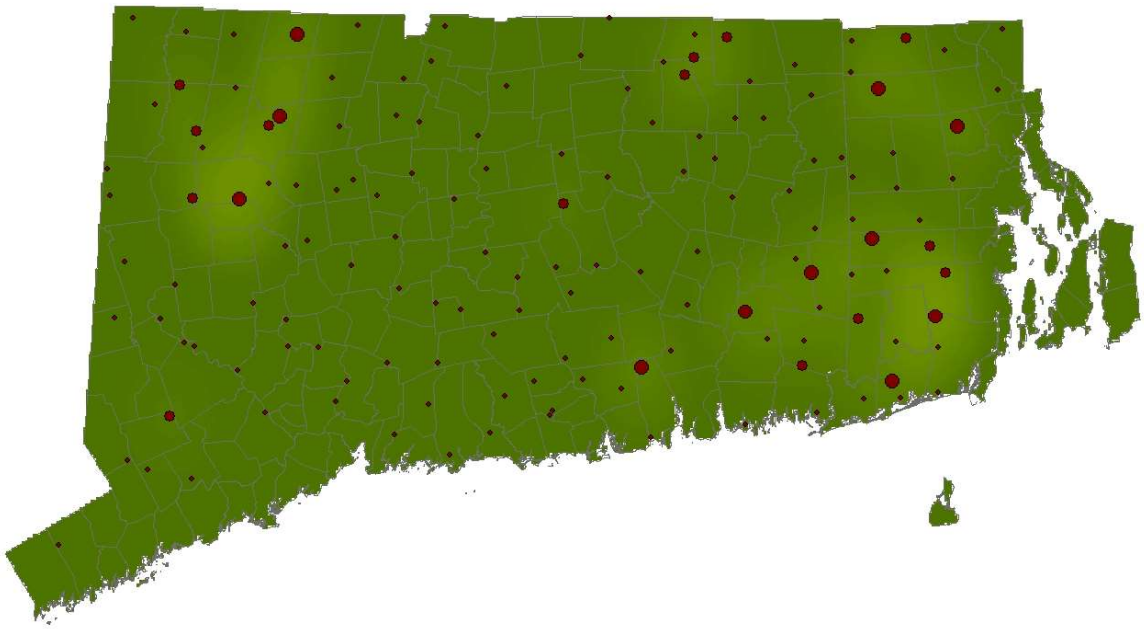


FIG. 1. Summer distribution.

Sponsored by Gerard Gagne

BLUE-WINGED WARBLER

Vermivora cyanoptera

Summer

Density (males/km^2): 0.97 (n = 77, 95% CI: ± 0.39)
CT: 0.85
RI: 1.55

Population (males): 8,881 (95% CI: ± 3,548)
CT: 6,409
RI: 2,472

The Blue-winged Warbler appeared on 24% of summer transects. Population estimates are based on detections of singing males and refer only to that portion of the population inhabiting primarily forested landscapes. Densities averaged greatest in southeastern Connecticut and Rhode Island and were generally greater in lowlands than in mountainous portions of the study area (Fig. 1).

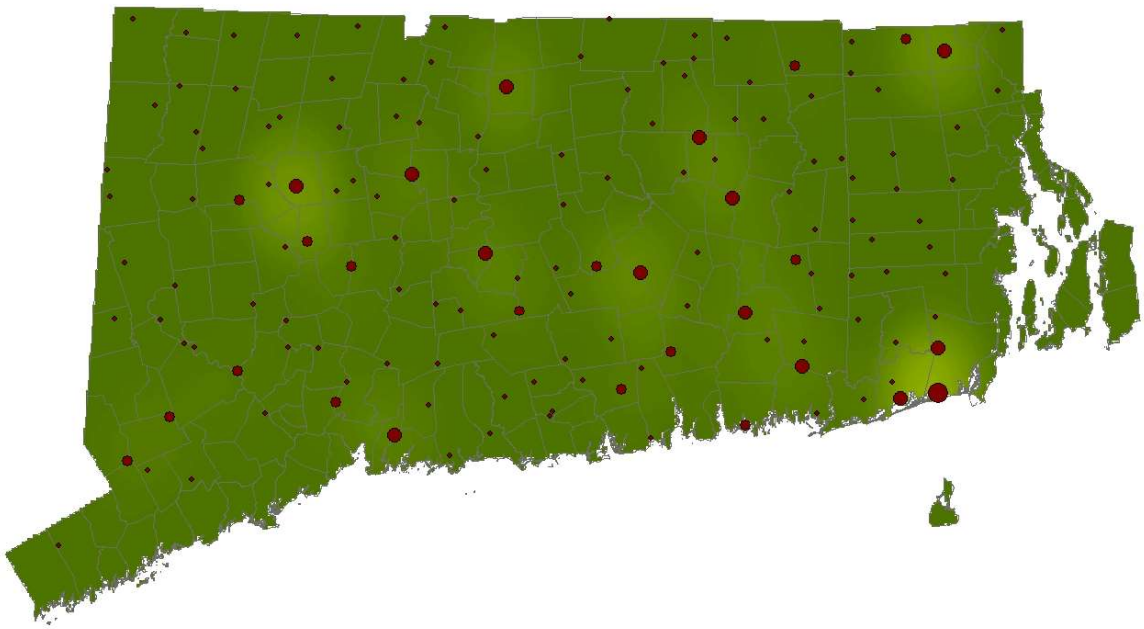


FIG. 1. Summer distribution.

BLACK-AND-WHITE WARBLER

Mniotilta varia

Summer

Density (males/km^2): 11.74 (n = 530, 95% CI: ± 1.70)
CT: 11.12
RI: 14.67

Population (males): 106,996 (95% CI: ± 15,510)
CT: 83,663
RI: 23,333

The Black-and-white Warbler appeared on 87% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in northwestern Connecticut and Rhode Island and least in central Connecticut (Kruskal-Wallis $\chi^2 = 24.0$, $n = 147$, $P < 0.001$; Fig. 1).

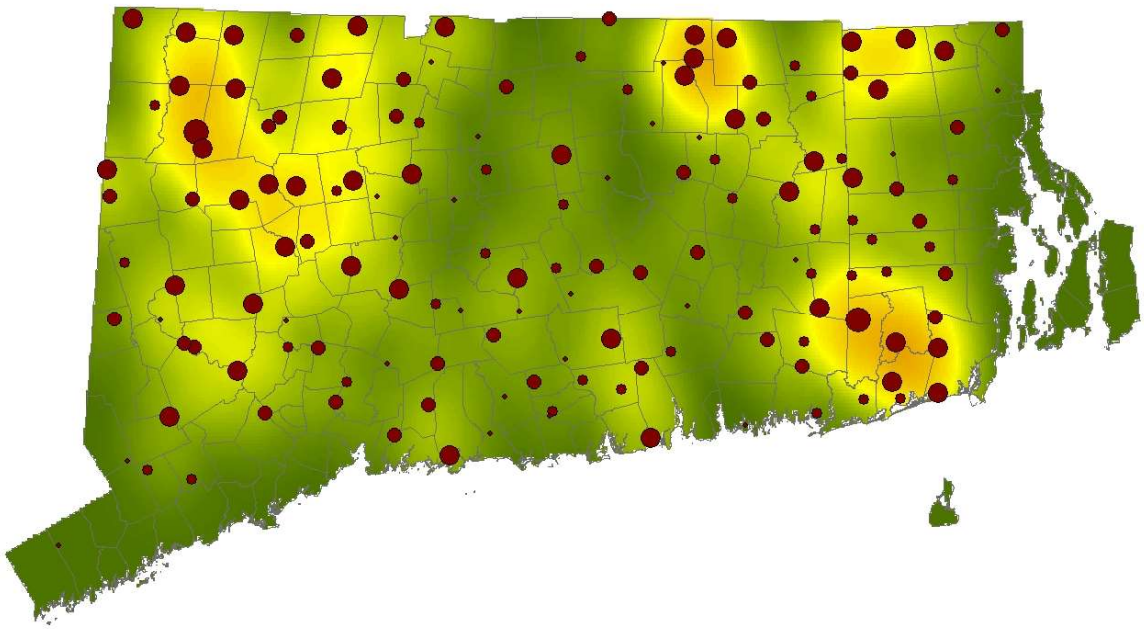


FIG. 1. Summer distribution.

COMMON YELLOWTHROAT

Geothlypis trichas

Summer

Density (males/km^2): 4.57 (n = 541, 95% CI: ± 0.93)
CT: 4.17
RI: 6.43

Population (males): 41,617 (95% CI: ± 8,444)
CT: 31,392
RI: 10,225

The Common Yellowthroat appeared on 74% of summer transects, with population estimates based on detections of singing males. Because the species inhabits environments other than forest, densities reported here refer only to that part of the population associated with primarily forested regions. Densities averaged greatest in Rhode Island and least in southwestern Connecticut (Kruskal-Wallis $\chi^2 = 13.9$, $n = 147$, $P = 0.02$; Fig. 1).

During the study period, we also observed a single wintering bird near a transect in Connecticut coastal scrub. As the species is essentially accidental at this season, we make no winter population estimate for it.

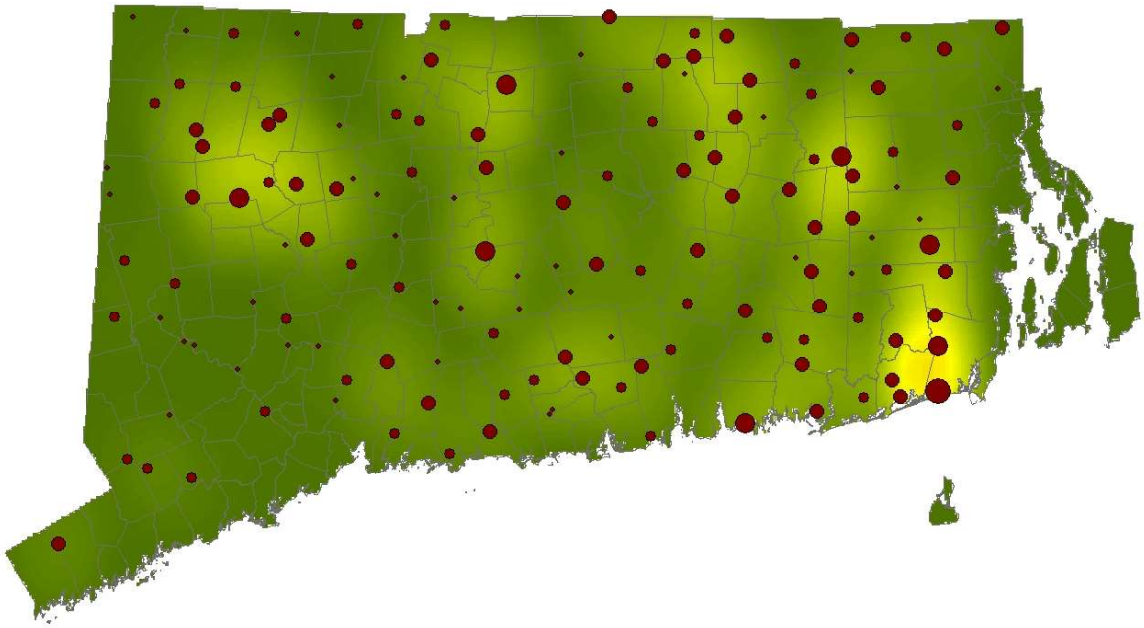


FIG. 1. Summer distribution.

HOODED WARBLER

Setophaga citrina

Summer

Density (males/km^2): 1.07 (n = 92, 95% CI: ± 0.39)
CT: 1.01
RI: 1.32

Population (males): 9,717 (95% CI: ± 3,599)
CT: 7,610
RI: 2,107

The Hooded Warbler appeared on 26% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in southeastern Connecticut and least in northeastern Connecticut (Fig. 1).

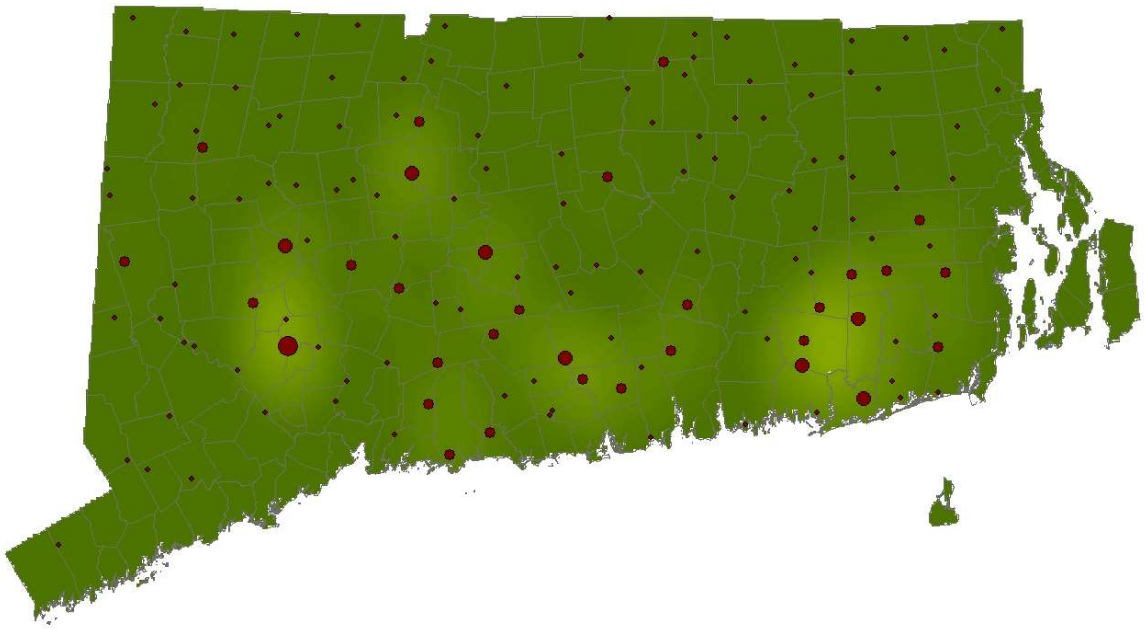


FIG. 1. Summer distribution.

Sponsored by Aaron Dollar

AMERICAN REDSTART

Setophaga ruticilla

Summer

Density (males/km^2): 7.47 (n = 382, 95% CI: ± 2.01)
CT: 8.44
RI: 2.88

Population (males): 68,130 (95% CI: ± 18,275)
CT: 63,537
RI: 4,593

The American Redstart appeared on 60% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in northwestern Connecticut and least in Rhode Island (Kruskal-Wallis χ^2 = 14.3, n = 147, P = 0.014; Fig. 1).

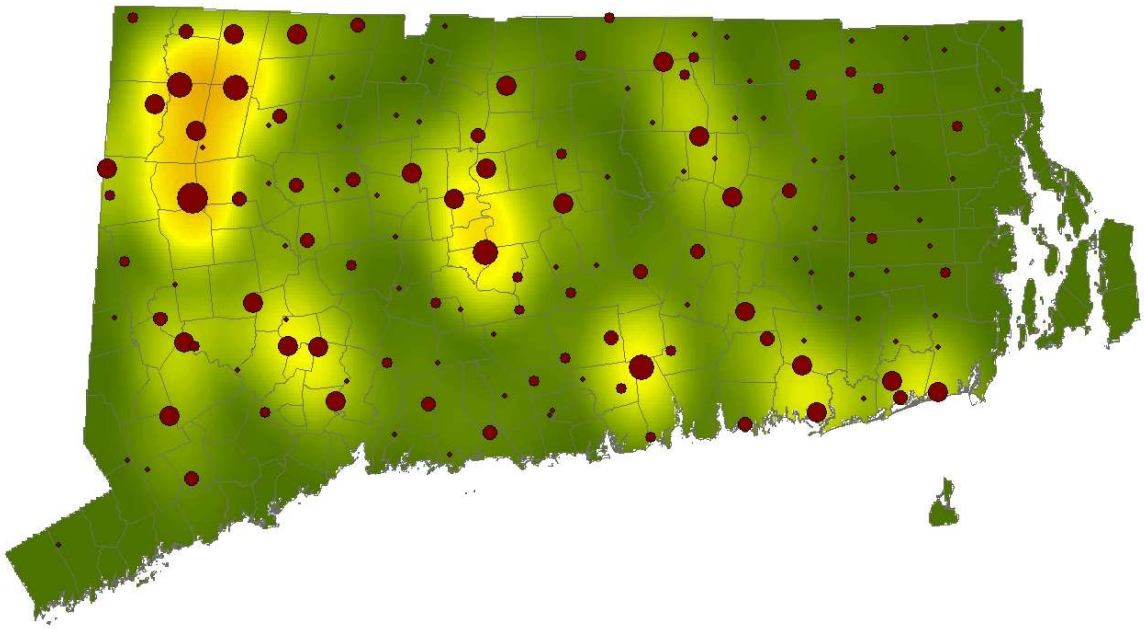


FIG. 1. Summer distribution.

CERULEAN WARBLER

Setophaga cerulea

Summer

Density (males/km^2): 0.68 (n = 43, 95% CI: ± 0.56)
CT: 0.83
RI: 0.00

Population (males): 6,229 (95% CI: ± 5,088)
CT: 6,229
RI: 0

The Cerulean Warbler appeared on only 5% of summer transects, with population estimates based on detections of singing males. Although detections were below the recommended 60, the data fit a detection function well, so we report tentative density estimates here. We found birds only in eastern and northwestern Connecticut, with greatest densities consistently occurring in southeastern Connecticut (Fig. 1).

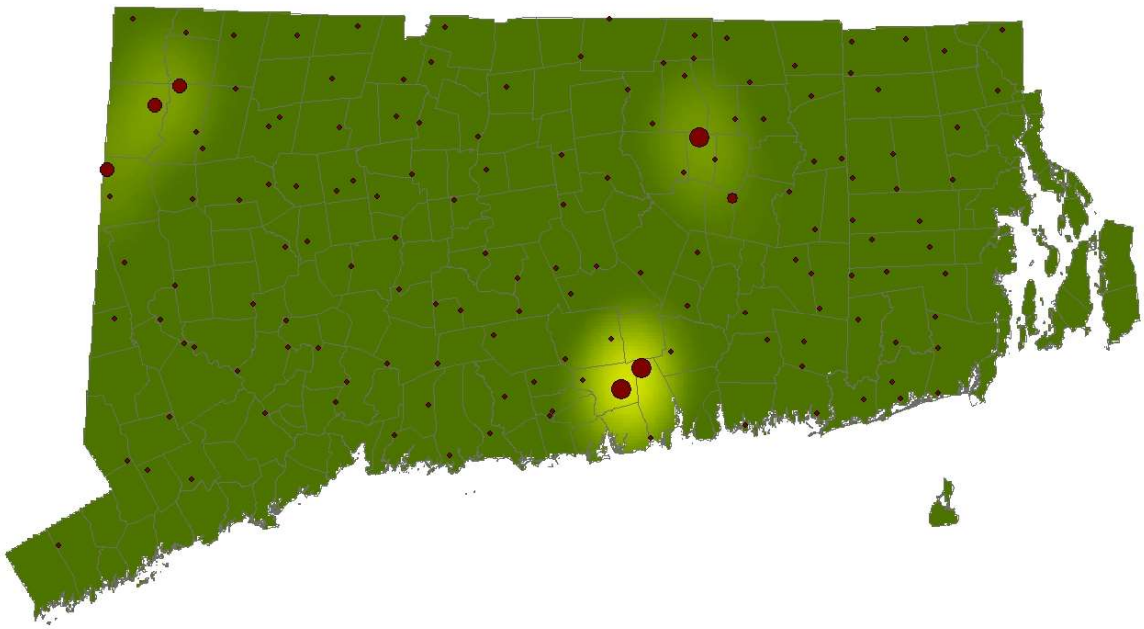


FIG. 1. Summer distribution.

Sponsored by Anthony Zemba

MAGNOLIA WARBLER

Setophaga magnolia

Summer

Density (males/km^2): 0.96 (n = 23, 95% CI: ± 0.73)
CT: 1.16
RI: 0.00

Population (males): 8,716 (95% CI: ± 6,648)
CT: 8,716
RI: 0

The Magnolia Warbler appeared on 10% of summer transects. Although detections were below the recommended 60, the data fit a detection function well, so we report tentative density estimates here. Estimates are based on detections of singing males and refer only to that portion of the population inhabiting primarily forested landscapes. Densities averaged greatest in more mountainous northwestern Connecticut (Fig. 1).

During the survey period, we found a single wintering bird near a Connecticut transect in a coastal scrub thicket. We consider this bird to be of accidental occurrence, so make no winter population estimate for the species.

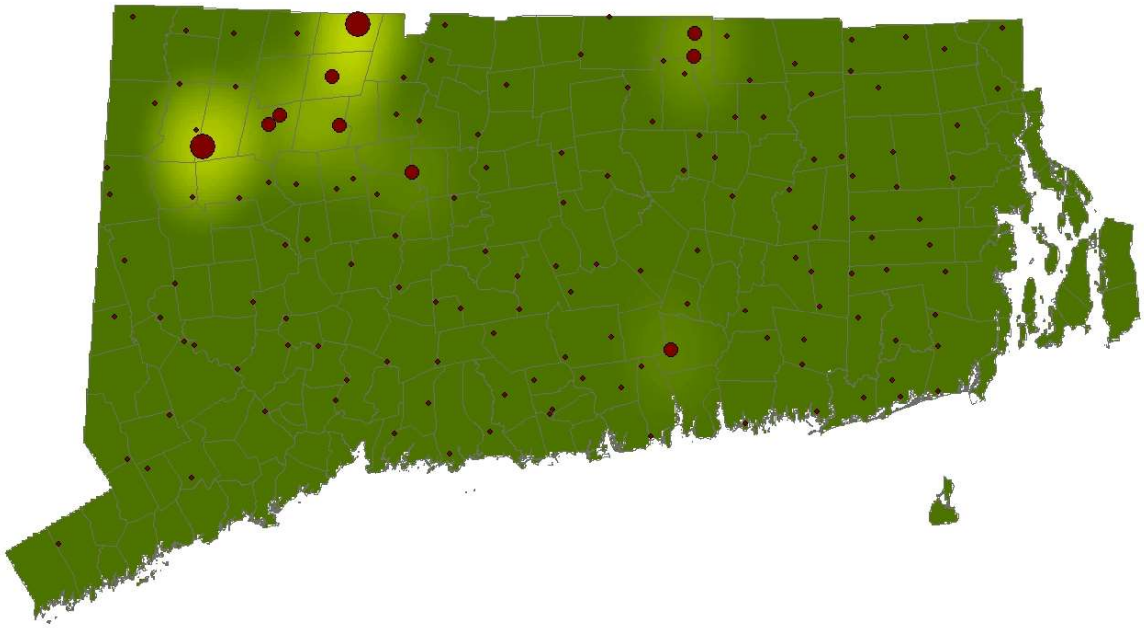


FIG. 1. Summer distribution.

BLACKBURNIAN WARBLER

Setophaga fusca

Summer
Density (males/km^2): 6.70 (n = 98, 95% CI: ± 2.91)
CT: 8.01
RI: 0.46
Population (males): 61,029 (95% CI: ± 26,513)
CT: 60,290
RI: 739

The Blackburnian Warbler appeared on 22% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in more mountainous portions of particularly northwestern Connecticut and least in lowlands and Rhode Island (Fig. 1).

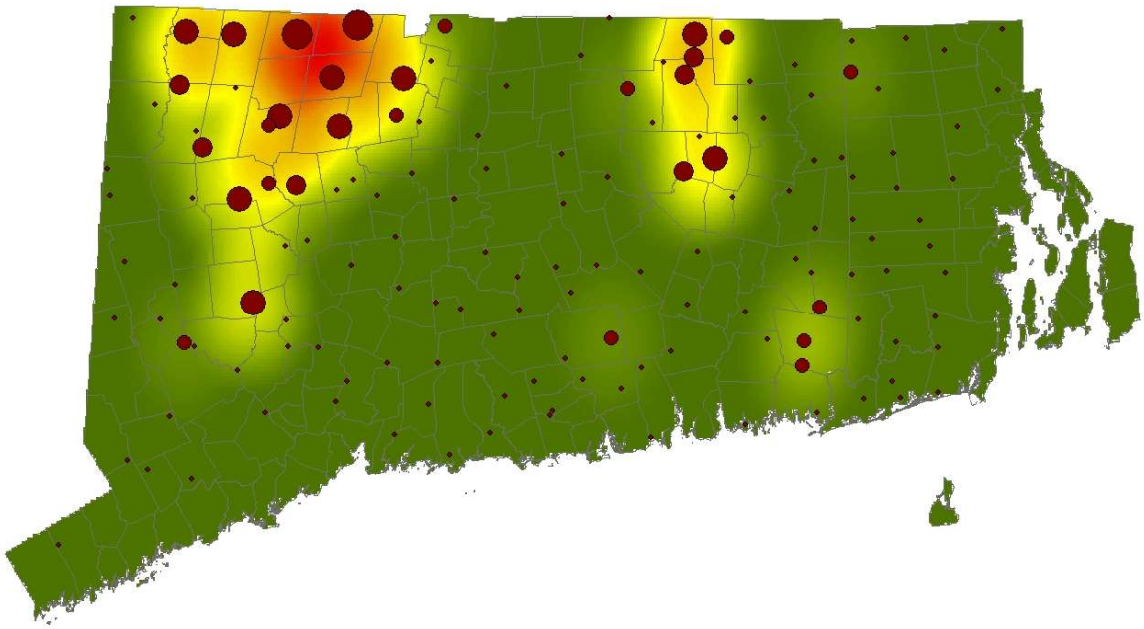


FIG. 1. Summer distribution.

CHESTNUT-SIDED WARBLER

Setophaga pensylvanica

Summer

Density (males/km^2): 1.52 (n = 94, 95% CI: ± 0.55)
CT: 1.44
RI: 1.91

Population (males): 13,880 (95% CI: ± 5,008)
CT: 10,847
RI: 3,033

The Chestnut-sided Warbler appeared on 30% of summer transects. Population estimates are based on detections of singing males and refer only to that portion of the population inhabiting primarily forested landscapes.

Summer densities averaged greatest in more mountainous, northern portions of the study area and least in lowlands, although birds were present in Rhode Island in numbers similar to those for northern areas (Kruskal-Wallis $\chi^2 = 16.7$, $n = 147$, $P = 0.01$; Fig. 1).

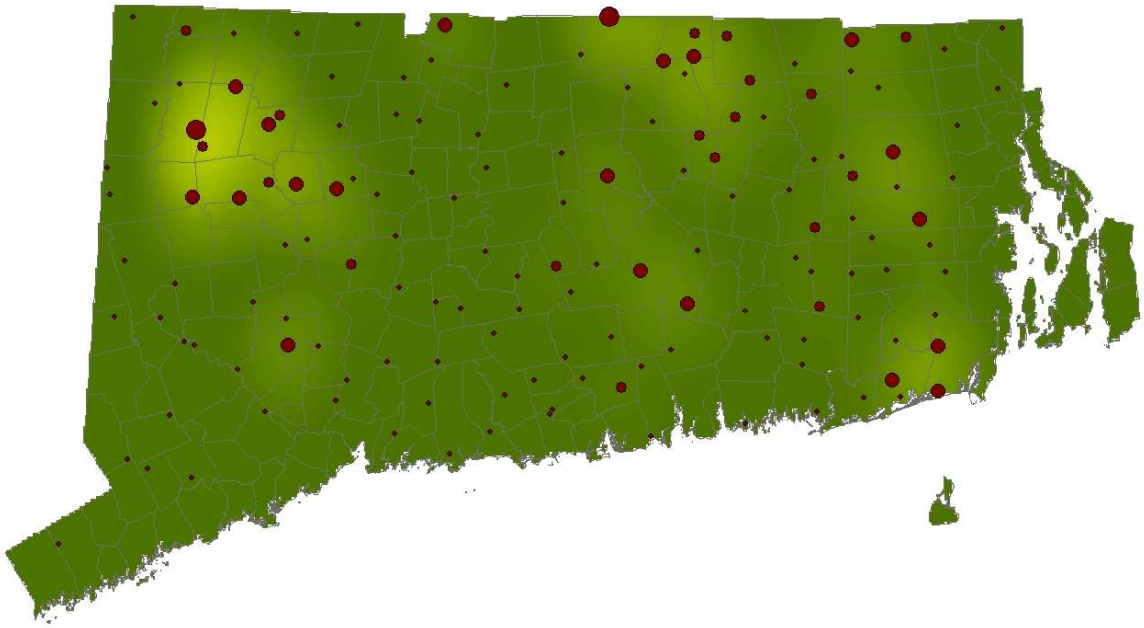


FIG. 1. Summer distribution.

BLACK-THROATED BLUE WARBLER

Setophaga caerulescens

Summer

Density (males/km^2): 4.76 (n = 213, 95% CI: ± 1.61)
CT: 5.59
RI: 0.84

Population (males): 43,383 (95% CI: ± 14,653)
CT: 42,050
RI: 1,333

The Black-throated Blue Warbler appeared on 31% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in more mountainous portions of particularly northwestern Connecticut and least in southeastern Connecticut (Kruskal-Wallis χ^2 = 83.7, n = 147, P = 0.001; Fig.1).

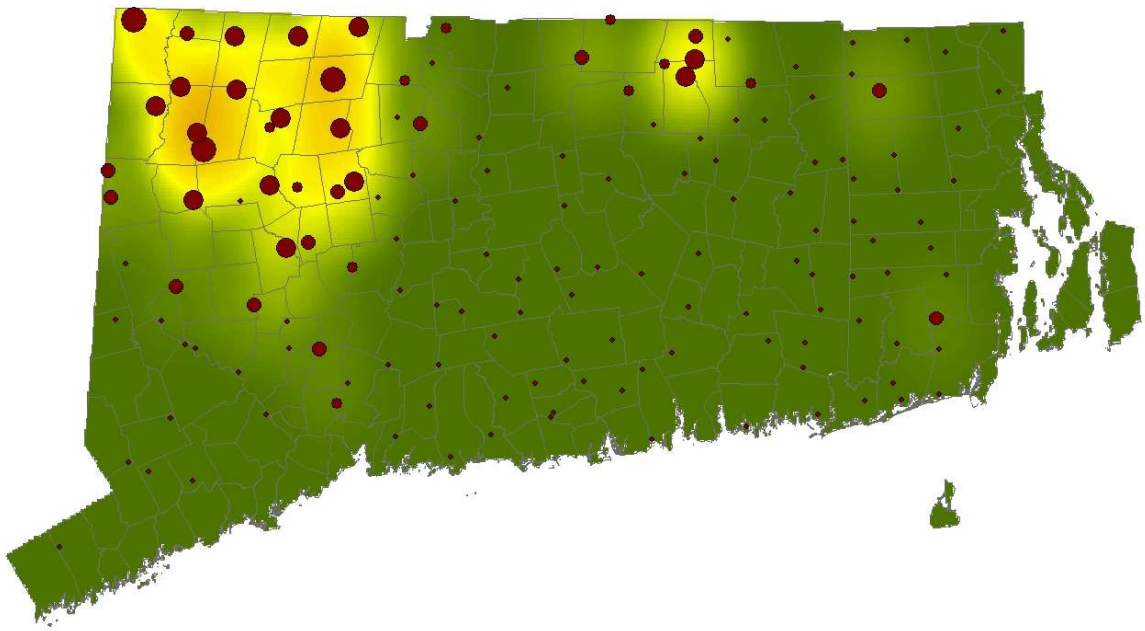


FIG. 1. Summer distribution.

Sponsored by Heath Drury Boote

PINE WARBLER

Setophaga pinus

Summer

Density (males/km^2): 10.37 (n = 396, 95% CI: ± 3.06)
CT: 7.60
RI: 23.46

Population (males): 94,507 (95% CI: ± 27,926)
CT: 57,191
RI: 37,316

The Pine Warbler appeared on 50% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in Rhode Island and least in southwestern Connecticut (Kruskal-Wallis $\chi^2 = 21.8$, $n = 147$, $P = 0.001$; Fig. 1).

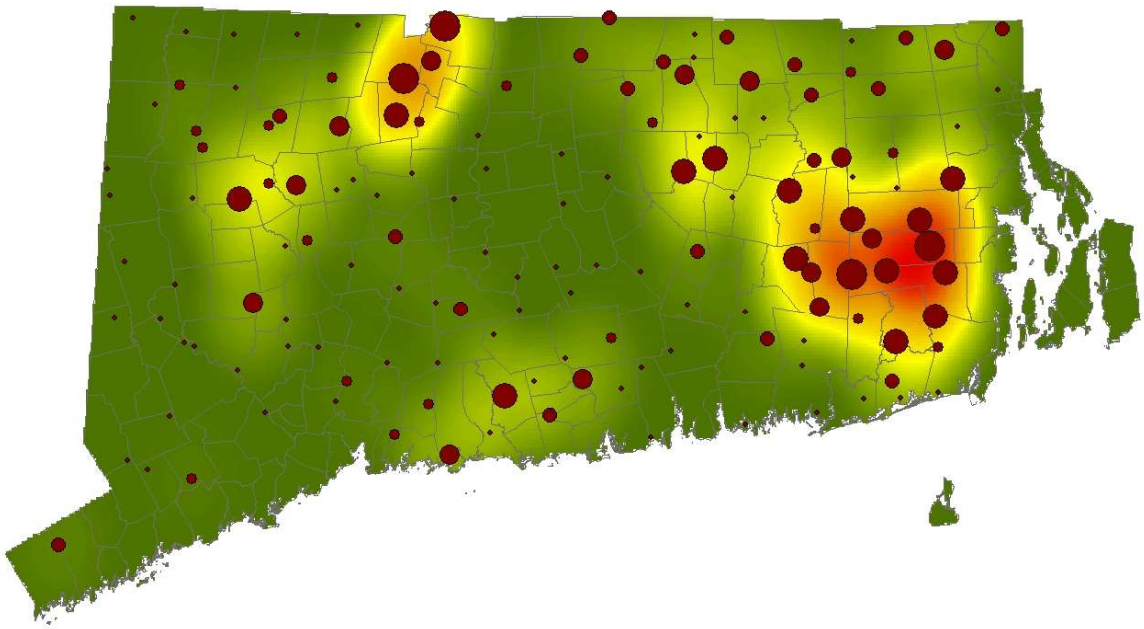


FIG. 1. Summer distribution.

YELLOW-RUMPED WARBLER

Setophaga coronata

Summer	Winter
Density (males/km^2): 1.25 (n = 69, 95% CI: ± 0.49)	Density (birds/km^2): 0.63 (n = 22, 95% CI: ± 0.42)
CT: 1.13	CT: 0.36
RI: 1.81	RI: 1.89
Population (males): 11,394 (95% CI: ± 4,442)	Population (birds): 5,729 (95% CI: ± 3,843)
CT: 8,516	CT: 2,723
RI: 2,878	RI: 3,006

The Yellow-rumped Warbler appeared on 22% of summer and 7% of winter transects. Breeding population estimates are based on detections of singing males and winter estimates are based on those of calling birds in flocks.

Breeding densities averaged greatest in more mountainous portions of particularly northwestern Connecticut and were largely absent in lowland areas, although the heavily coniferous forests of Rhode Island supported strong populations (Fig. 1). Winter individuals concentrated in coastal and lowland areas (Fig. 2).

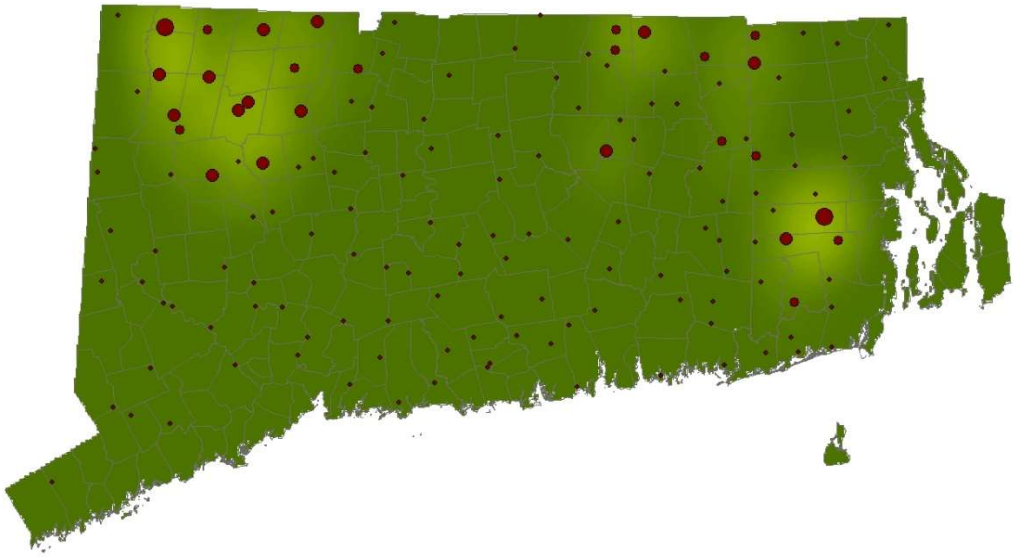


FIG. 1. Summer distribution.

FIG. 2. Winter distribution.

PRAIRIE WARBLER

Setophaga discolor

Summer

Density (males/km^2): 0.38 (n = 71, 95% CI: ± 0.17)
CT: 0.40
RI: 0.28

Population (males): 3,484 (95% CI: ± 1,562)
CT: 3,035
RI: 449

The Prairie Warbler appeared on 25% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in southeastern and southwestern Connecticut and least in northwestern Connecticut (Fig. 1). Because the Prairie Warbler inhabits environments other than forest, densities reported here refer only to that part of the population associated with primarily forested landscapes.

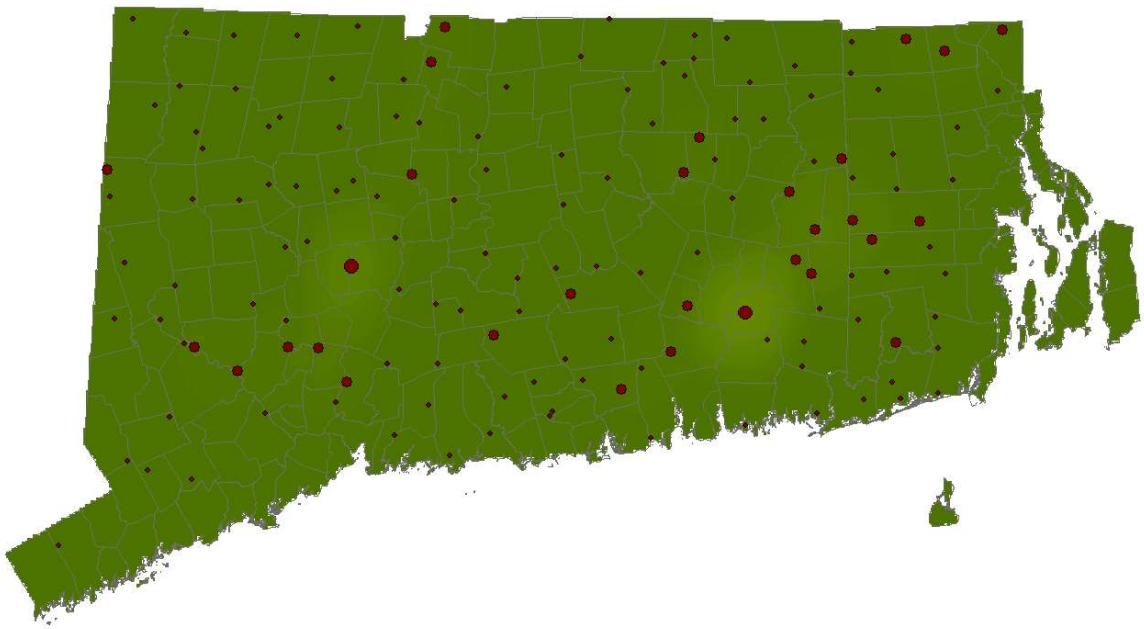


FIG. 1. Summer distribution.

BLACK-THROATED GREEN WARBLER

Setophaga virens

Summer

Density (males/km^2): 7.92 (n = 449, 95% CI: ± 1.77)
CT: 8.08
RI: 7.15

Population (males): 72,150 (95% CI: ± 16,129)
CT: 60,785
RI: 11,365

The Black-throated Green Warbler appeared on 57% of transects, with population estimates based on detections of singing males. Densities averaged greatest in more mountainous portions of particularly northwestern Connecticut and least in southern and central Connecticut (Kruskal-Wallis $\chi^2 = 27.1$, $n = 147$, $P = 0.001$; Fig. 1).

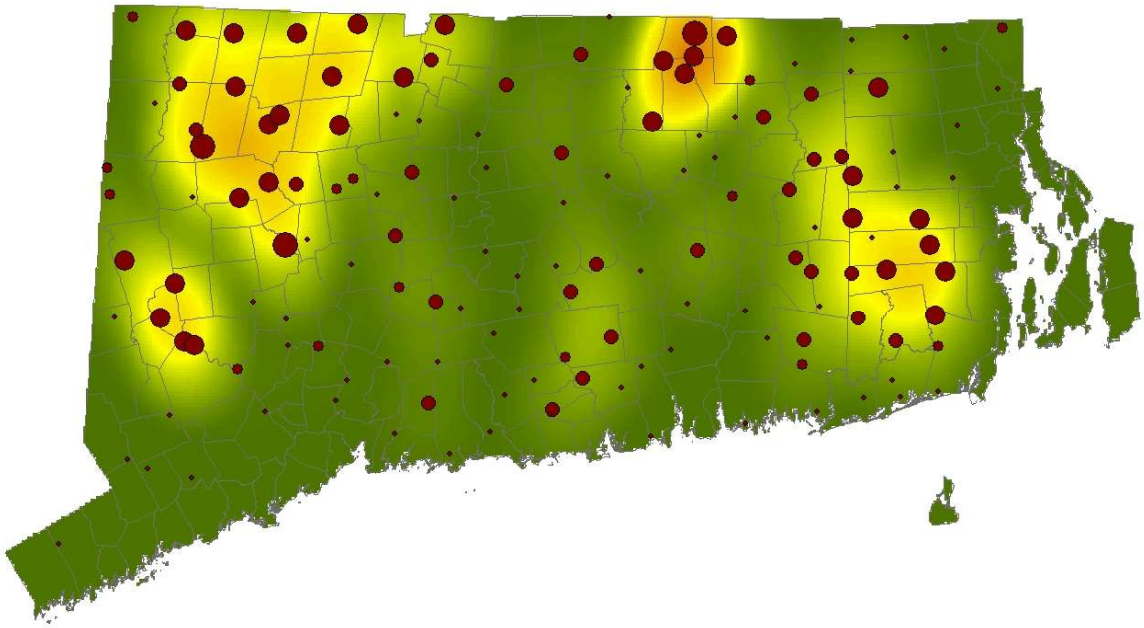


FIG. 1. Summer distribution.

CANADA WARBLER

Cardellina canadensis

Summer

Density (males/km^2): 1.03 (*n* = 79, 95% CI: ± 0.34)
CT: 0.98
RI: 1.30

Population (males): 9,419 (95% CI: ± 3,120)
CT: 7,357
RI: 2,062

The Canada Warbler appeared on 24% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in northern Connecticut and least in central Connecticut (Fig. 1).

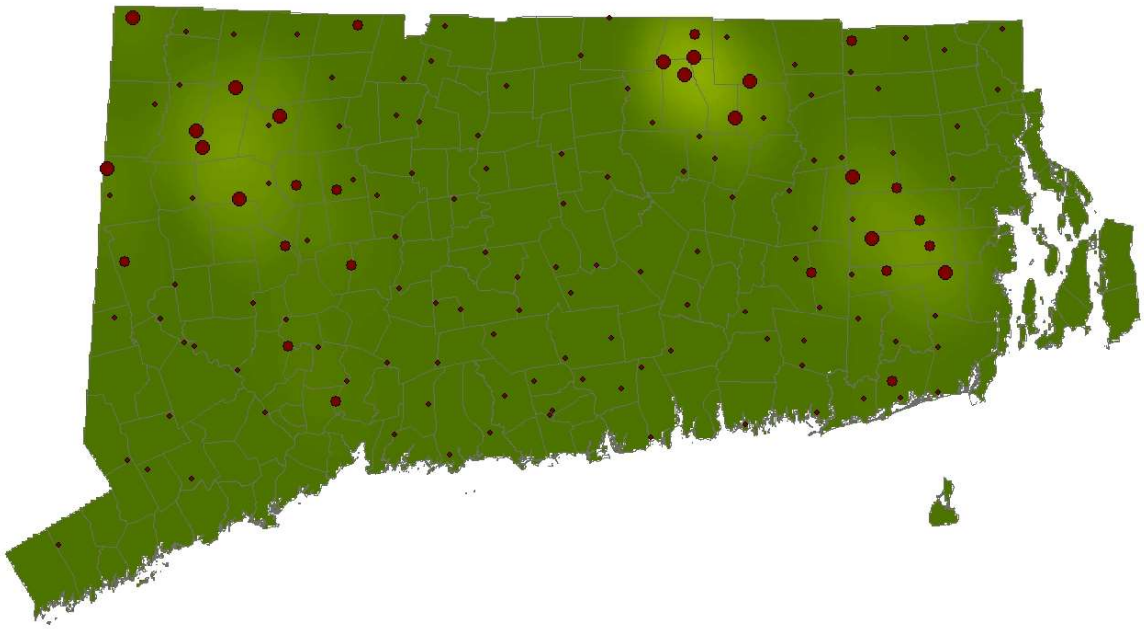


FIG. 1. Summer distribution.

EASTERN TOWHEE

Pipilo erythropthalmus

Summer

Density (males/km^2): 10.90 (n = 917, 95% CI: ± 1.91)
CT: 8.68
RI: 21.40

Population (males): 99,335 (95% CI: ± 17,406)
CT: 65,301
RI: 34,034

The Eastern Towhee appeared on 73% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in eastern Connecticut and especially Rhode Island, and were uniformly much lower in western Connecticut (Kruskal-Wallis $\chi^2 = 49.4$, $n = 147$, $P < 0.001$; Fig. 1).

We also encountered birds on 2% of winter transects in southeastern Connecticut and Rhode Island, particularly in coastal locations. From eight detected birds, we tentatively estimate a density of 0.14 birds/km^2 and total population of 3,327 for this season.

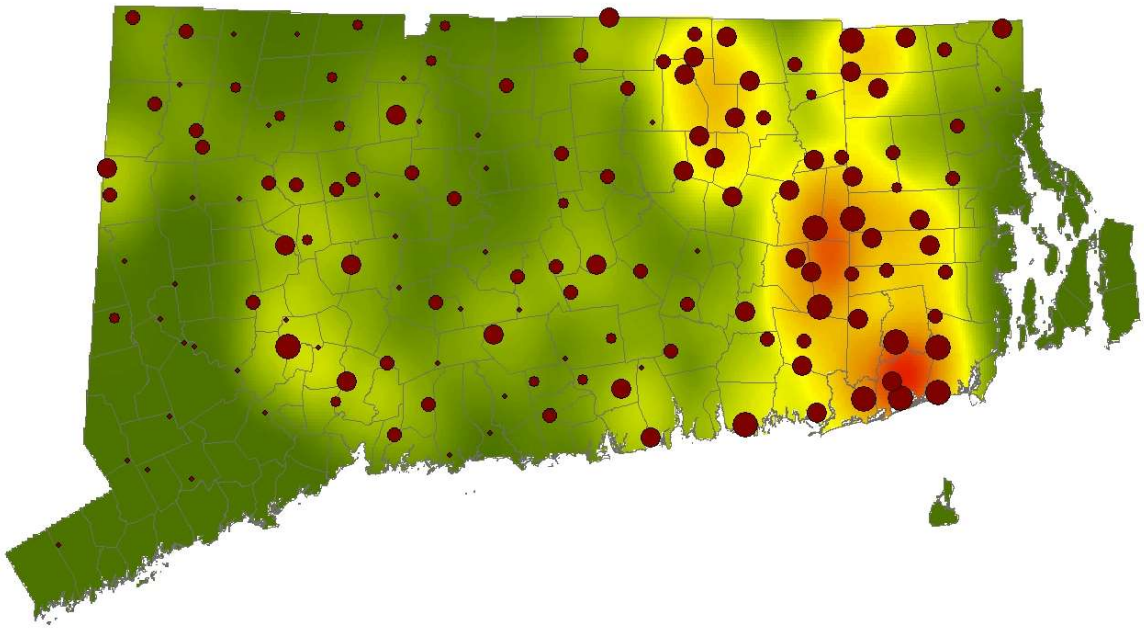


FIG. 1. Summer distribution.

CHIPPING SPARROW

Spizella passerina

Summer

Density (males/km^2): 1.21 (n = 140, 95% CI: ± 0.26)
CT: 1.24
RI: 1.11

Population (males): 11,069 (95% CI: ± 2,376)
CT: 9,297
RI: 1,772

The Chipping Sparrow appeared on 51% of summer transects, with population estimates based on detections of singing males. Densities showed no clear regional pattern (Kruskal-Wallis χ^2 = 3.4, n = 147, P = 0.64; Fig. 1). Because the species commonly inhabits environments other than forest, densities reported here refer only to that part of the population associated with primarily forested landscapes.

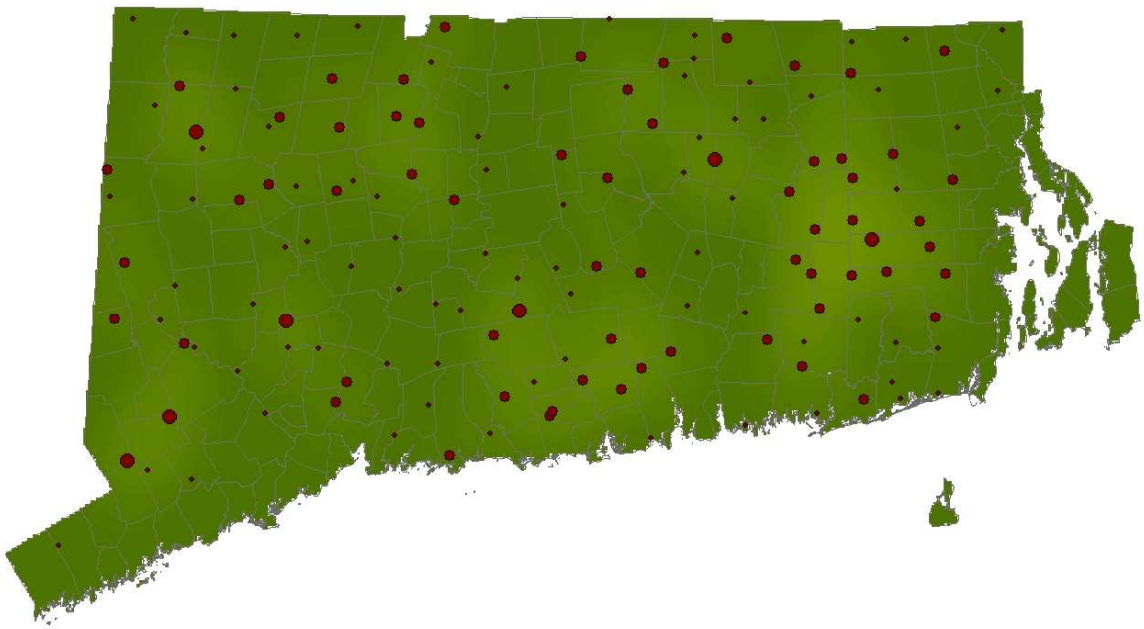


FIG. 1. Summer distribution.

SONG SPARROW

Melospiza melodia

Summer	Winter
Density (males/km^2): 1.48 (n = 196, 95% CI: ± 0.48)	Density (birds/km^2): 1.62 (n = 28, 95% CI: ± 0.85)
CT: 1.50	CT: 1.54
RI: 1.38	RI: 1.97
Population (males): 13,514 (95% CI: ± 4,381)	Population (birds): 14,742 (95% CI: ± 7,715)
CT: 11,320	CT: 11,604
RI: 2,194	RI: 3,138

The Song Sparrow appeared on 47% of summer transects, with population estimates based on detections of singing males. Birds were also present on 13% of winter transects, with estimates at this season based on detections of all individuals encountered.

Summer densities were greatest in central Connecticut and least in northwestern Connecticut, although these regional differences were not significant (Kruskal-Wallis $\chi^2 = 4.0$, $n = 147$, $P = 0.56$; Fig. 1). Because the species commonly inhabits environments other than forest, densities reported here refer only to that part of the population associated with primarily forested landscapes.

Winter density estimates are based on a sample of about half the 60 observations preferred for density estimation, but data fit a detectability curve well, so we believe density estimates are reasonable, albeit with high variance. Densities at this season tended to be greatest in lowland and coastal areas and least in northern, more mountainous locations, indicating a population shift to lowlands during this season (Fig. 2).

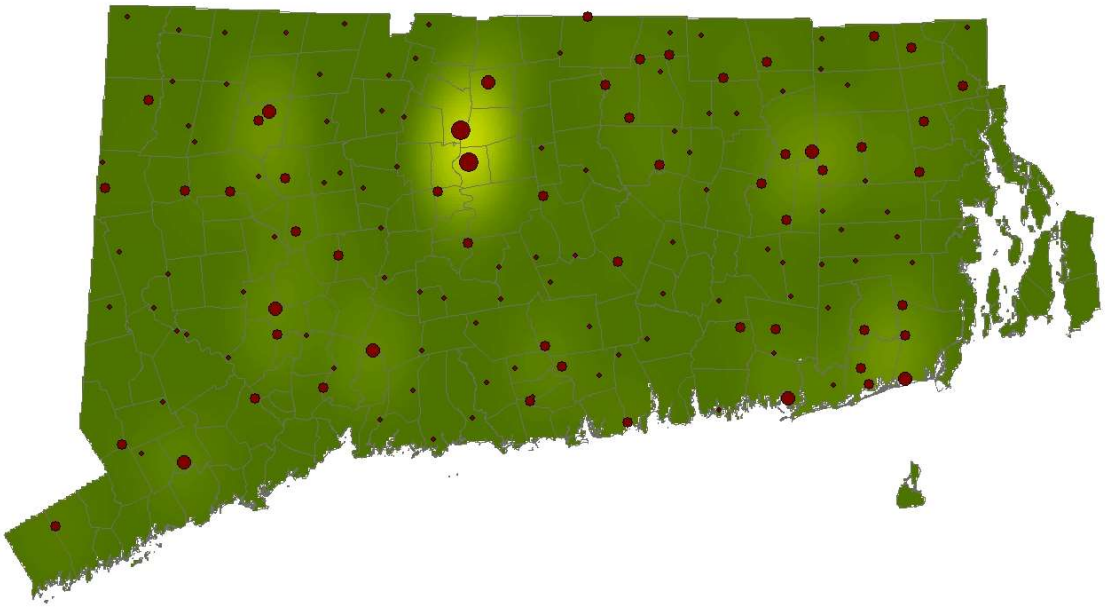


FIG. 1. Summer distribution.

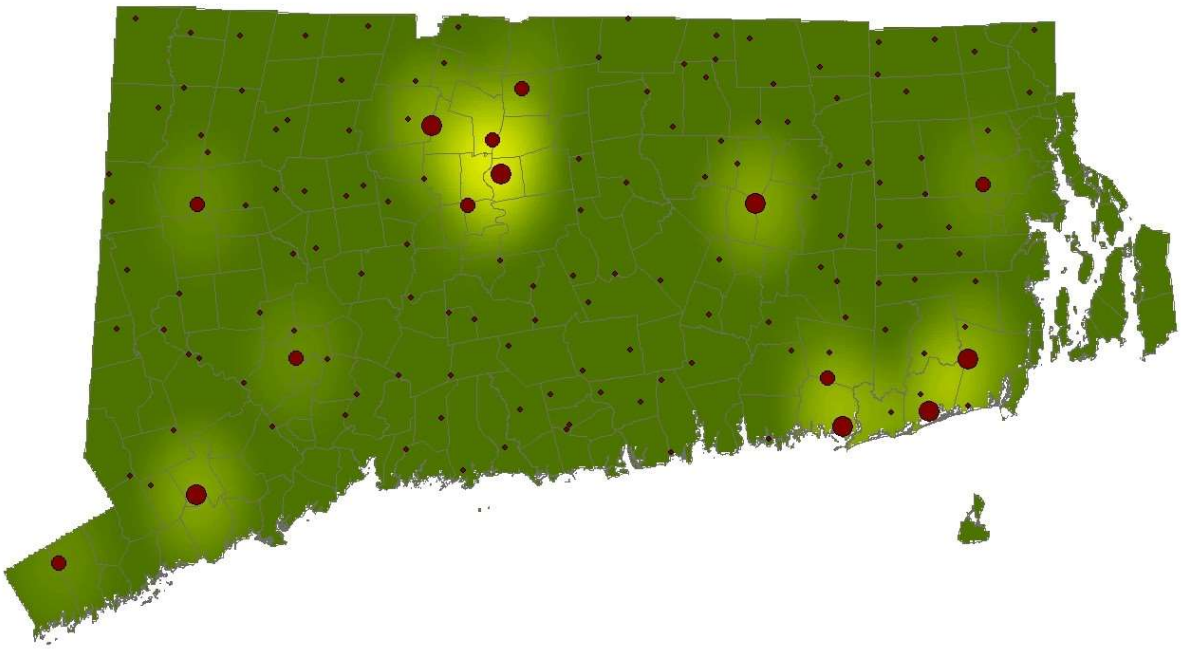


FIG. Winter distribution.

WHITE-THROATED SPARROW

Zonotrichia albicollis

Winter

Density (birds/km^2): 2.32 (n = 42, 95% CI: ± 0.94)
CT: 2.09
RI: 3.42

Population (birds): 21,171 (95% CI: ± 8,563)
CT: 15,773
RI: 5,438

The White-throated Sparrow appeared on only one summer transect in northwestern Connecticut, so we had insufficient data for assessing breeding density. Birds were also present on 21% of winter transects, with estimates at this season based on detections of flocking individuals. Winter densities were greatest in central Connecticut and least in northeastern Connecticut, although populations were present at too few locations to assess whether these differences were significant (Fig. 1). Because the species commonly inhabits environments other than forest, densities reported here refer only to that part of the population associated with primarily forested landscapes.

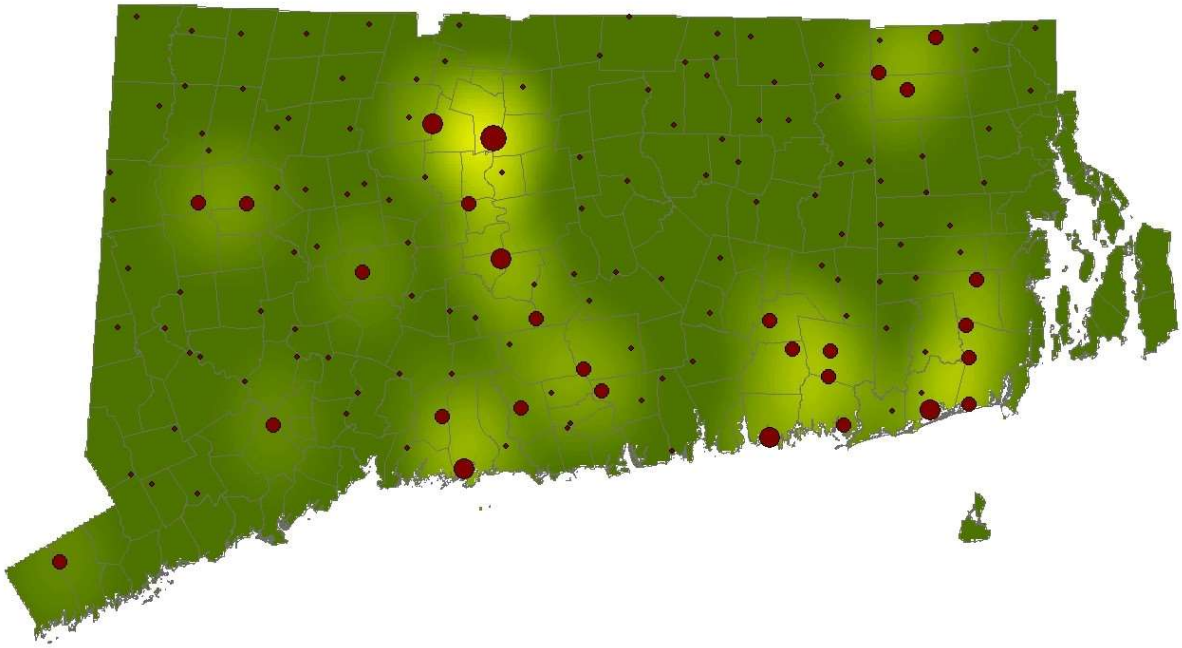


FIG. 1. Winter distribution.

DARK-EYED JUNCO

Junco hyemalis

Summer	Winter
Density (males/km^2): 1.13 (n = 37, 95% CI: ± 0.78)	Density (birds/km^2): 8.25 (n = 124, 95% CI: ± 1.97)
CT: 1.37	CT: 6.47
RI: 0.00	RI: 16.64
Population (males): 10,320 (95% CI: ± 7,067)	Population (birds): 75,173 (95% CI: ± 17,996)
CT: 10,320	CT: 48,708
RI: 0.00	RI: 26,465

The Dark-eyed Junco appeared on 7% of summer transects, with population estimates based on detections of singing males. Birds were also present on 47% of winter transects, with estimates at this season based on detections of flocking birds. Summer density estimates have below the 60 observations preferred for density estimation, but our data fit a detectability curve well, so we believe estimates are reasonable, albeit with high variance.

In summer, we detected populations only in northern, more mountainous regions of Connecticut (Fig. 1). Winter populations were greatest in Rhode Island and central Connecticut and least in northern, more mountainous regions (Kruskal-Wallis $\chi^2 = 43.7$, $n = 147$, $P < 0.001$; Fig. 2). Because wintering birds commonly inhabit environments other than forest, densities reported here refer only to that part of the population associated with primarily forested landscapes.

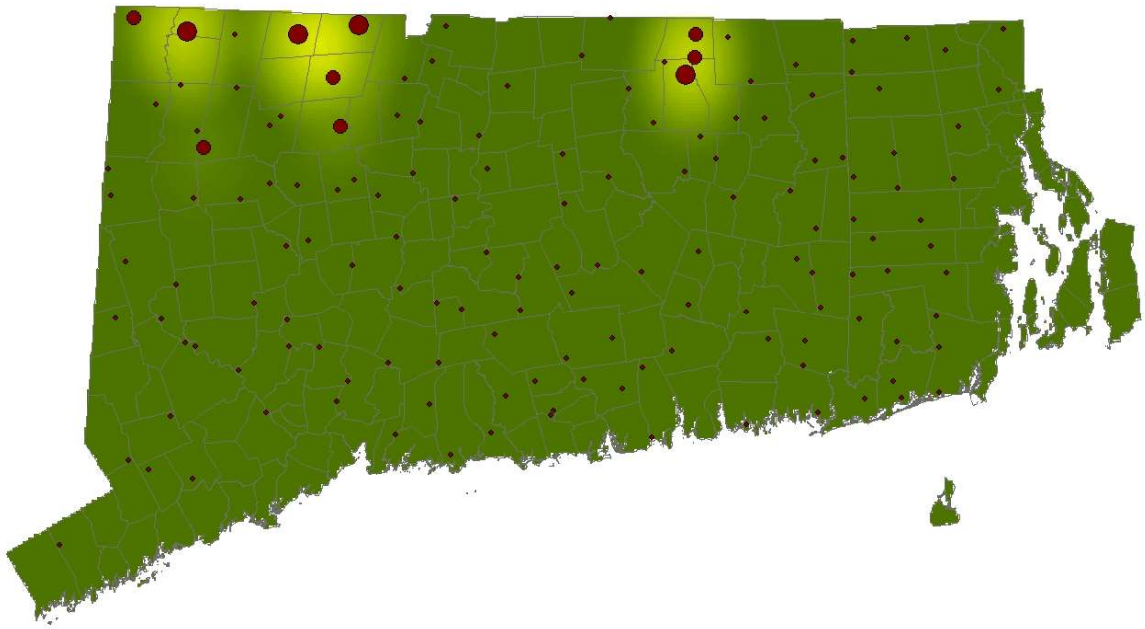


FIG. 1. Summer distribution.

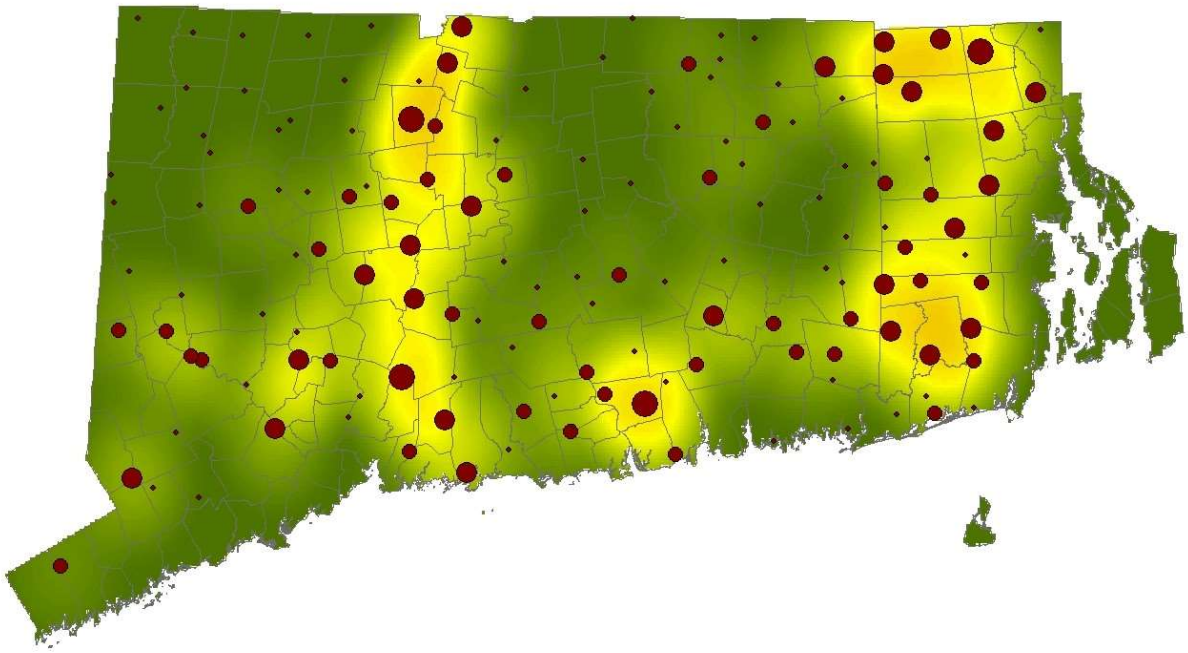


FIG. 2. Winter distribution.

SCARLET TANAGER

Piranga olivacea

Summer
Density (males/km^2): 21.93 (*n* = 1,564, 95% CI: ± 1.56)
CT: 22.52
RI: 19.12
Population (males): 199,865 (95% CI: ± 14,246)
CT: 169,450
RI: 30,415

The Scarlet Tanager appeared on 99% of summer transects, with population estimates based on detections of singing males. Densities averaged least in Rhode Island, although differences among regions were not significant (Kruskal-Wallis $\chi^2 = 3.9$, $n = 147$, $P = 0.56$; Fig. 1).

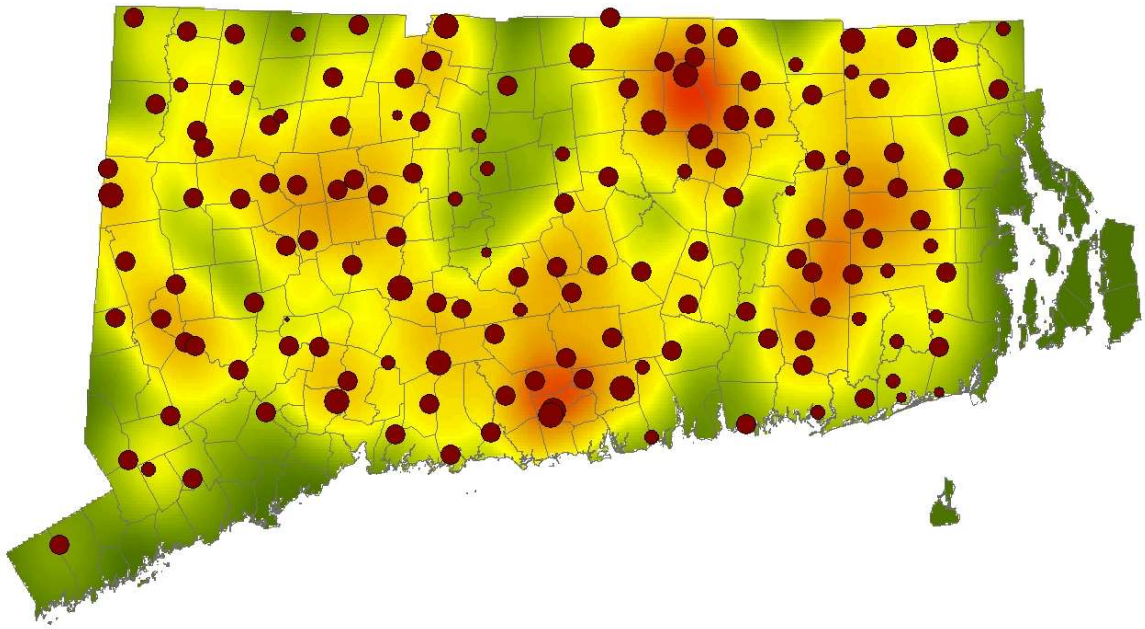


FIG. 1. Summer distribution.

Sponsored by Ann and Dr. Peter Jones

NORTHERN CARDINAL

Cardinalis cardinalis

Summer	Winter
Density (birds/km^2): 7.32 (n = 568, 95% CI: ± 1.16)	Density (birds/km^2): 4.04 (n = 185, 95% CI: ± 1.18)
CT: 7.15	CT: 4.38
RI: 8.09	RI: 2.44
Population (birds): 66,684 (95% CI: ± 10,553)	Population (birds): 36,862 (95% CI: ± 10,741)
CT: 53,812	CT: 32,983
RI: 12,872	RI: 3,879

The Northern Cardinal appeared on 86% of summer transects and 54% of winter transects, with estimates at both seasons based on detections of individual birds. Because the species commonly inhabits environments other than forests, densities reported here refer only to that part of the population associated with primarily forested landscapes.

Summer populations were greatest in southern, low elevation regions and least in northern, more mountainous regions (Kruskal-Wallis $\chi^2 = 28.2$, $n = 147$, $P < 0.001$; Fig.1). Winter populations were greatest by far in central Connecticut and least in northern, more mountainous regions (Kruskal-Wallis $\chi^2 = 31.6$, $n = 147$, $P < 0.001$; Fig.2). Populations also showed a significant summer−winter decline (Wilcoxon $Z = -6.21$, $n = 147$, $P < 0.001$).

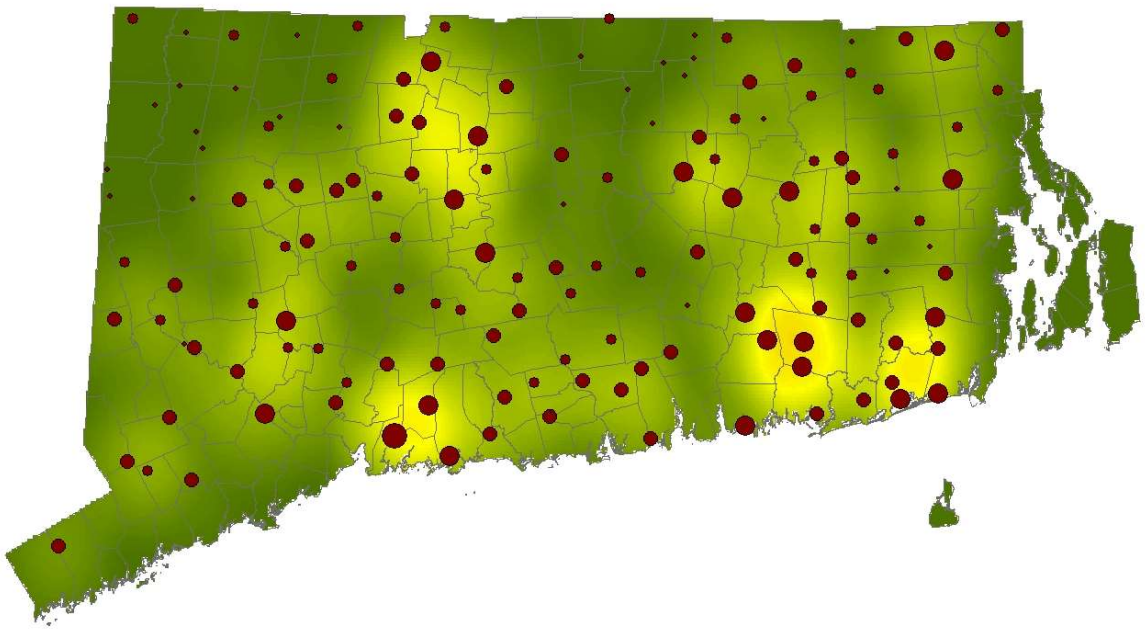


FIG. 1. Summer distribution.

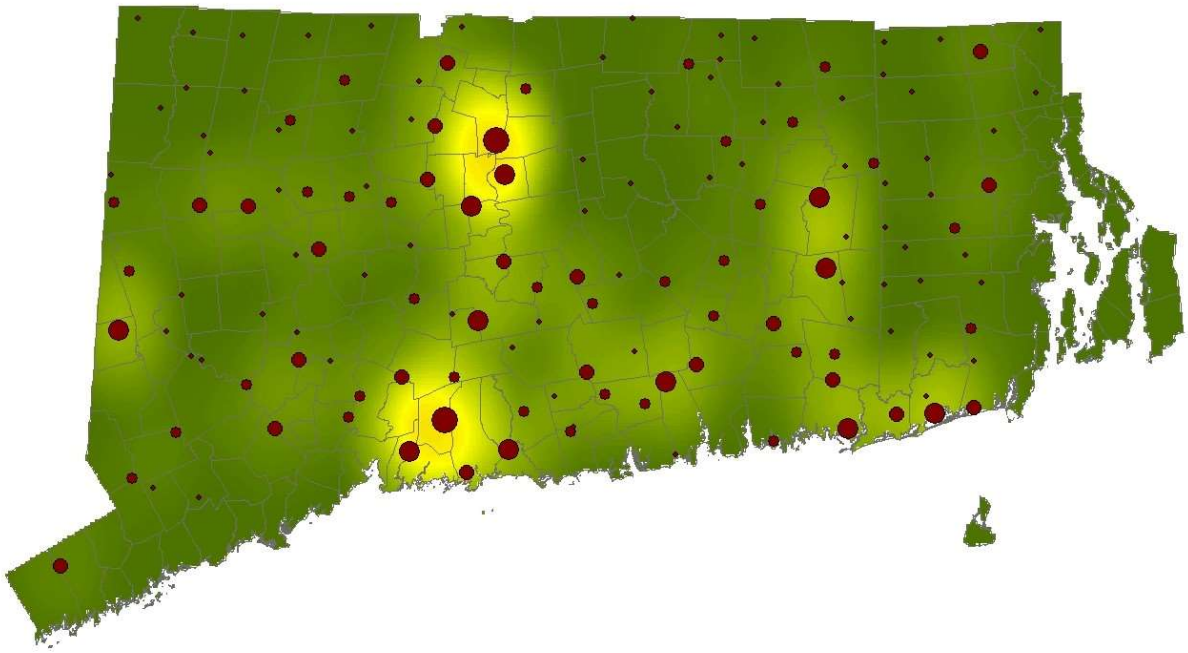


FIG. 2. Winter distribution.

ROSE-BREASTED GROSBEAK

Pheucticus ludovicianus

Summer

Density (males/km^2): 5.93 (n = 245, 95% CI: ± 0.1.25)
CT: 6.75
RI: 2.08

Population (males): 54,067 (95% CI: ± 11,395)
CT: 50,765
RI: 3,302

The Rose-breasted Grosbeak appeared on 67% of summer transects, with population estimates based on detections of singing males. Densities averaged greatest in central Connecticut and least in Rhode Island (Kruskal-Wallis χ^2 = 14.8, n = 147, P = 0.01; Fig. 1).

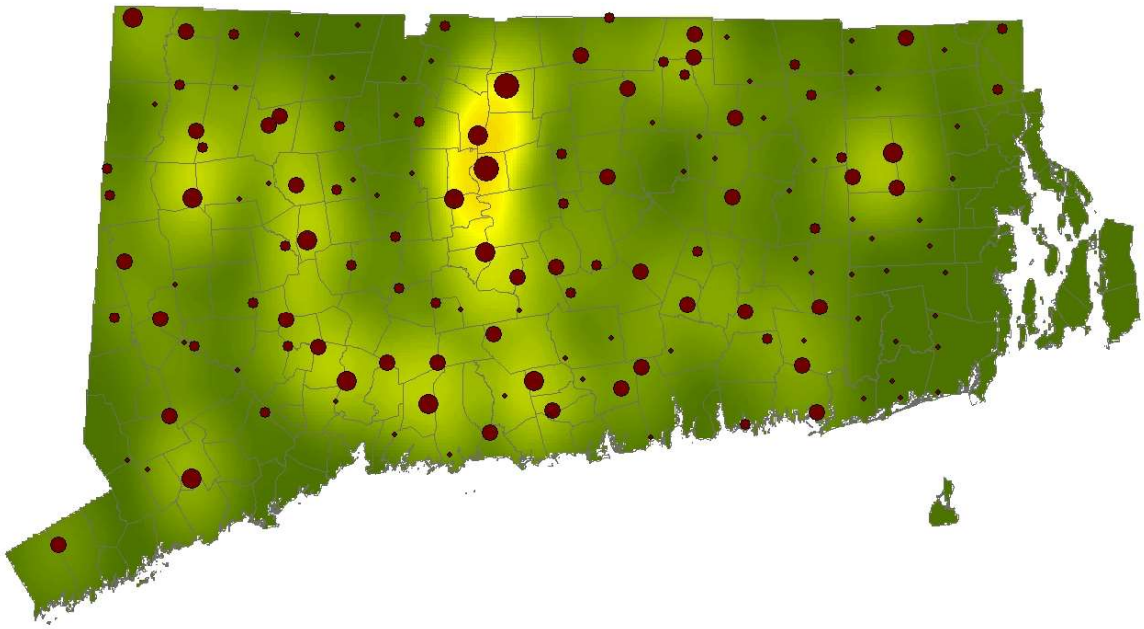


FIG. 1. Summer distribution.

Sponsored by Ken Goldsmith

INDIGO BUNTING

Passerina cyanea

Summer

Density (males/km^2): 0.54 (*n* = 58, 95% CI: ± 0.17)
CT: 0.61
RI: 0.21

Population (males): 4,946 (95% CI: ± 1,565)
CT: 4,611
RI: 335

The Indigo Bunting appeared on 27% of summer transects, with population estimates based on detections of singing males. Because the species commonly inhabits environments other than forest, densities reported here refer only to that part of the population associated with primarily forested landscapes. Densities averaged greatest in central Connecticut and least in Rhode Island (Fig. 1).

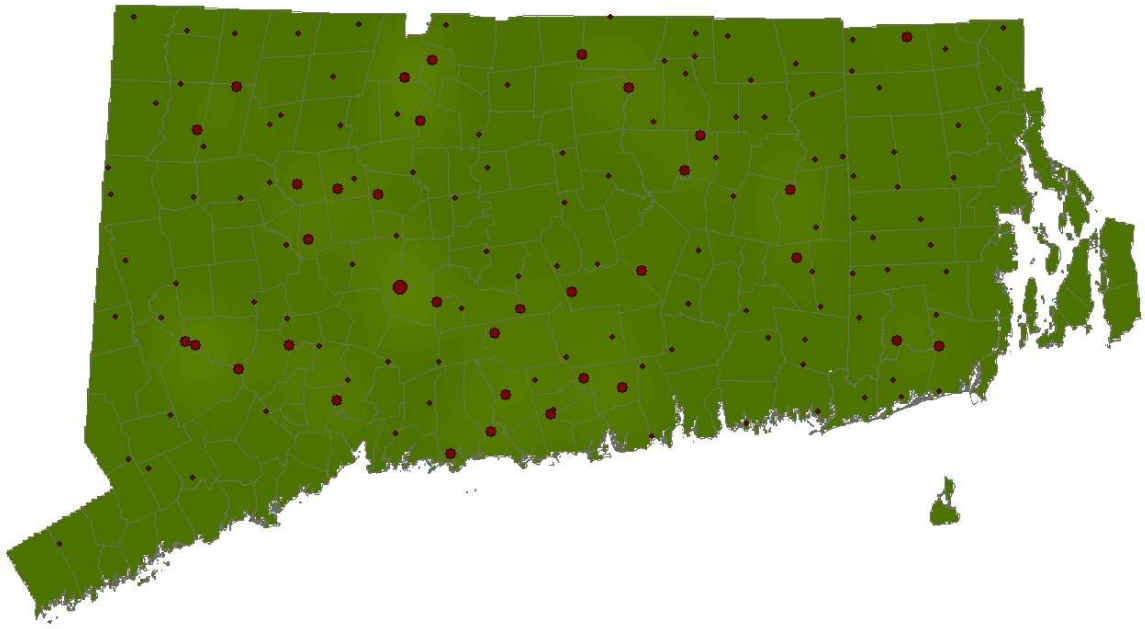


FIG. 1. Summer distribution.

Sponsored by Mary Cheyne

BROWN-HEADED COWBIRD

Molothrus ater

Summer

Density (birds/km^2): 17.36 (n = 821, 95% CI: ± 1.92)
CT: 17.92
RI: 14.68

Population (birds): 158,203 (95% CI: ± 17,532)
CT: 134,863
RI: 23,340

The Brown-headed Cowbird appeared on 97% of summer transects, with population estimates based on detections of calling birds. Birds are also present occasionally in winter, primarily in non-forested habitats, although we detected only one in central Connecticut forest during this study.

Because the species commonly inhabits environments other than forest, densities reported here refer only to that part of the population associated with primarily forested landscapes. Summer densities averaged greatest in southeastern and central Connecticut but were similar elsewhere (Kruskal-Wallis $\chi^2 = 23.9$, $n = 147$, $P < 0.001$; Fig. 1). We make no estimate of winter density.

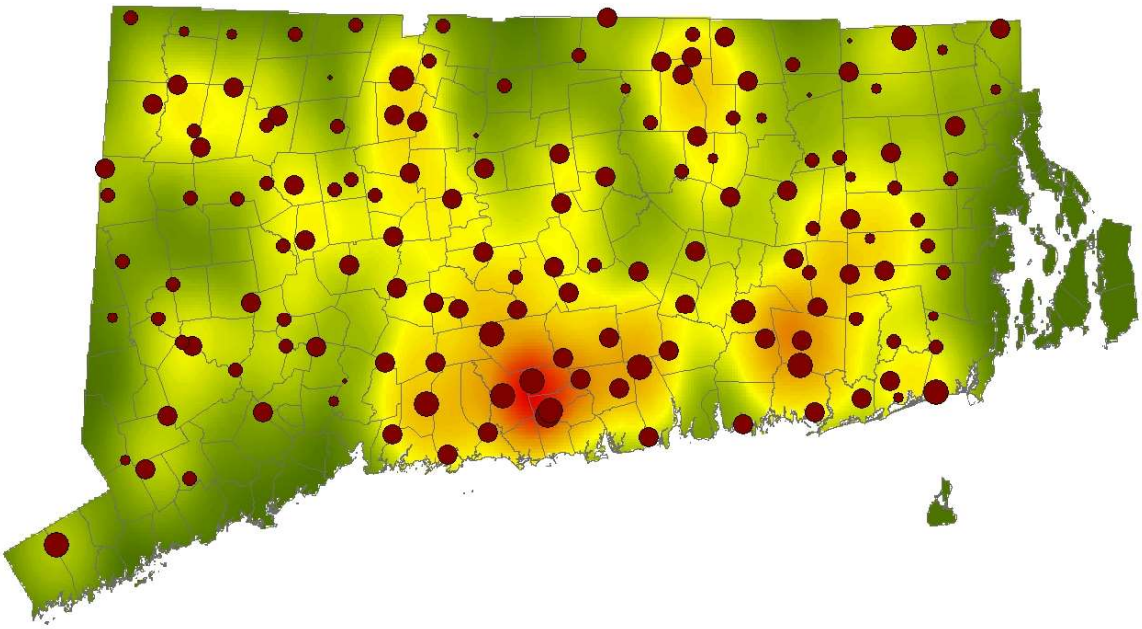


FIG. 1. Summer distribution.

BALTIMORE ORIOLE

Icterus galbula

Summer

Density (males/km^2): 9.35 (n = 261, 95% CI: ± 1.95)
CT: 10.02
RI: 6.19

Population (males): 85,217 (95% CI: ± 17,819)
CT: 75,380
RI: 9,837

The Baltimore Oriole appeared on 72% of summer transects, with population estimates based on detections of singing males. Wintering birds can also be present in non-forested habitats, although we detected none during this study.

Because the species commonly inhabits environments other than forest, densities reported here refer only to that part of the population associated with primarily forested landscapes. Densities averaged greatest in central and southwestern Connecticut but were similarly lower elsewhere in the study area (Kruskal-Wallis $\chi^2 = 18.4$, $n = 147$, $P < 0.001$; Fig. 1).

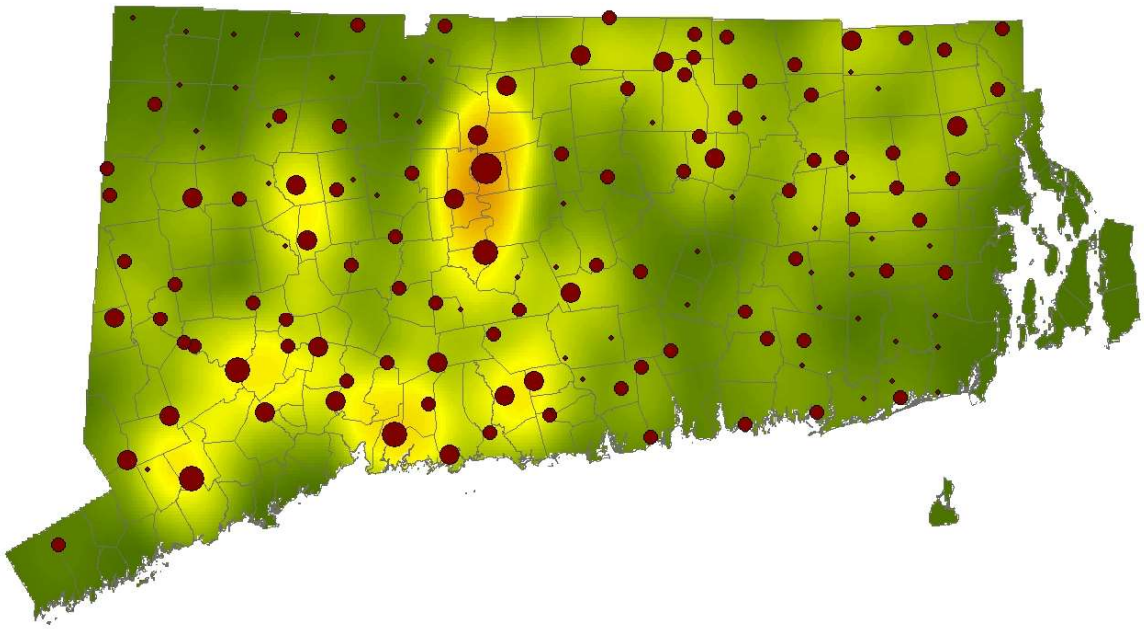


FIG. 1. Summer distribution.

PURPLE FINCH

Haemorhous purpureus

Summer

Density (males/km^2): 0.20 (n = 19, 95% CI: ± 0.10)
CT: 0.15
RI: 0.45

Population (males): 1,820 (95% CI: ± 947)
CT: 1,102
RI: 718

The Purple Finch appeared on 12% of summer transects and only once on a southeastern Connecticut winter transect. Summer population estimates are based on detections of singing males, and we make no estimate for winter populations.

Although our sample was less than the 60 observations preferred for density estimation, data fit a detectability curve reasonably, albeit with high variance, so we report density estimates here. Summer densities averaged greatest in Rhode Island and least in southern, lower elevation portions of the study area (Fig. 1).

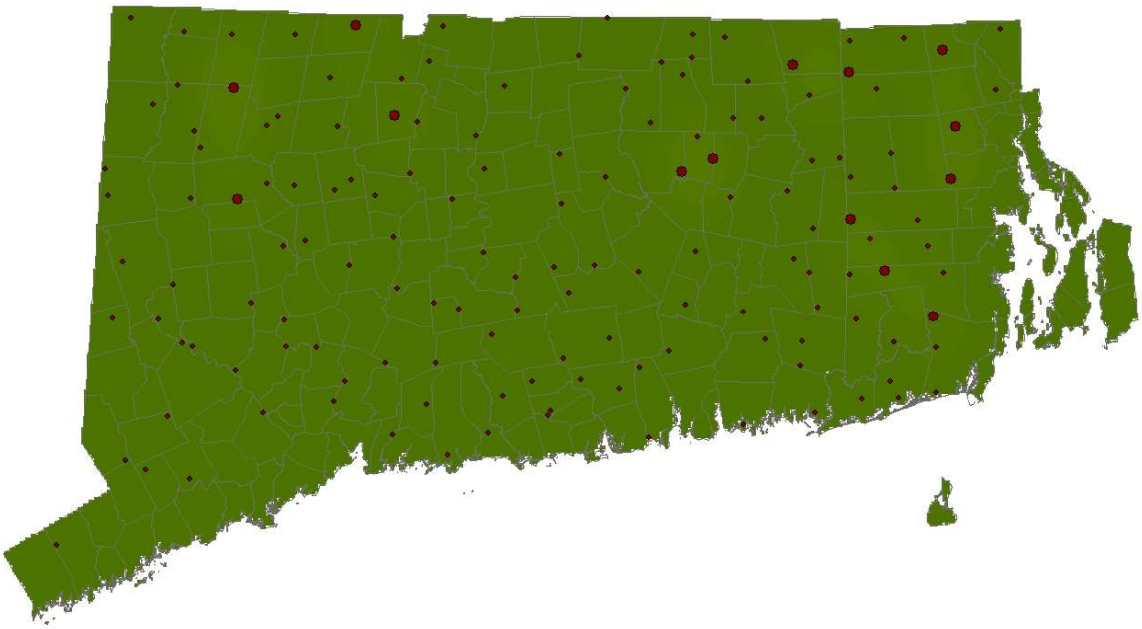


FIG. 1. Summer distribution.

COMMON REDPOLL

Acanthus flammea

Winter

Density (birds/km^2): 1.97 (n = 46, 95% CI: ± 0.84)
CT: 1.70
RI: 3.24

Population (birds): 17,943 (95% CI: ± 7,611)
CT: 12,796
RI: 5,147

The Common Redpoll appeared on 19% of winter transects. Although our sample was less than the 60 observations preferred for density estimation, data fit a detectability curve reasonably, albeit with high variance, so we report density estimates here. Estimates are based on detections of flocking birds, represent populations occurring during the study years and refer only to that part of the population inhabiting primarily forested landscapes.

Although common during some winters, this irruptive winter visitor occurred variably during the study period, and population differences among regions should be interpreted in light of this variable winter occurrence. Winter densities averaged greatest in southwestern Connecticut and least in southeastern Connecticut (Kruskal-Wallis $\chi^2 = 91.6$, $n = 147$, $P < 0.001$; Fig. 1). The winter of 2008−2009, when we surveyed southwestern Connecticut, was notable in being a major flight year for this and other finch species.

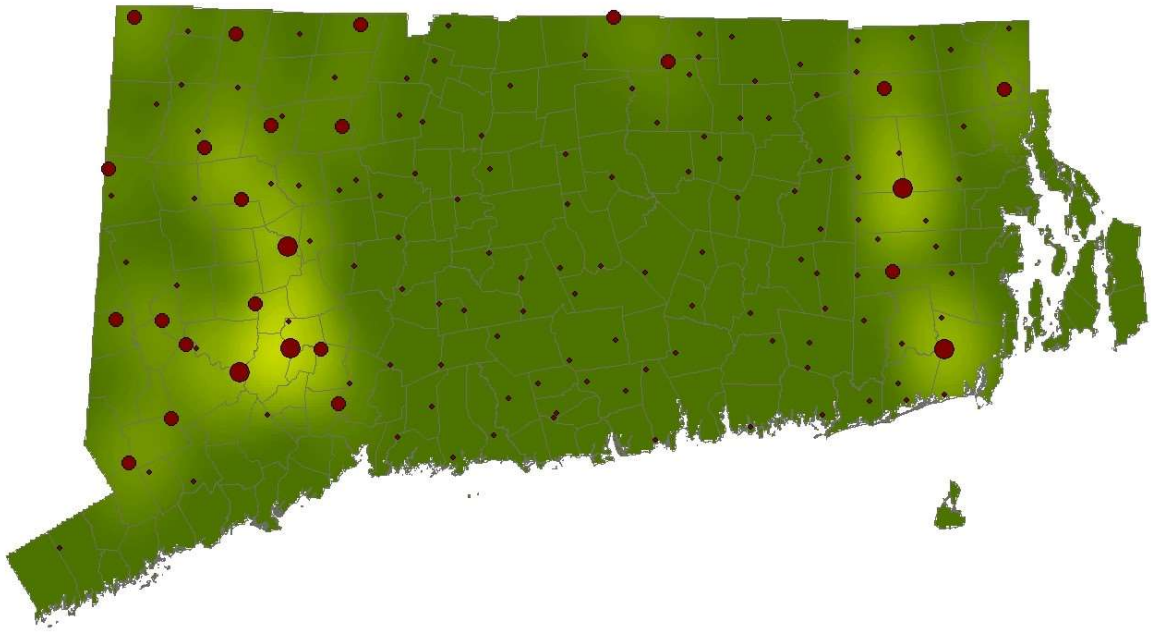


FIG. 1. Winter distribution.

PINE SISKIN

Spinus pinus

Winter

Density (birds/km^2): 4.38 (n = 134, 95% CI: ± 1.74)
CT: 4.91
RI: 1.90

Population (birds): 39,938 (95% CI: ± 15,831)
CT: 36,910
RI: 3,028

The Pine Siskin appeared on 30% of winter transects, with population estimates based on detections of flocking birds. Although common during some winters, this irruptive winter visitor occurred variably during the study period, and population differences among regions should be interpreted in light of this variable winter occurrence. Although individuals occasionally remain to breed, particularly after years of large winter incursions, we found no breeders during this study.

Winter densities averaged greatest in southwestern Connecticut and least in central Connecticut, although the species failed to occur on transects in three years. The winter of 2008−2009, when we surveyed southwestern Connecticut, was notable in being a major flight year for this and other finch species (Fig. 1). Densities represent those occurring during the study years and refer only to that part of the population inhabiting primarily forested landscapes.

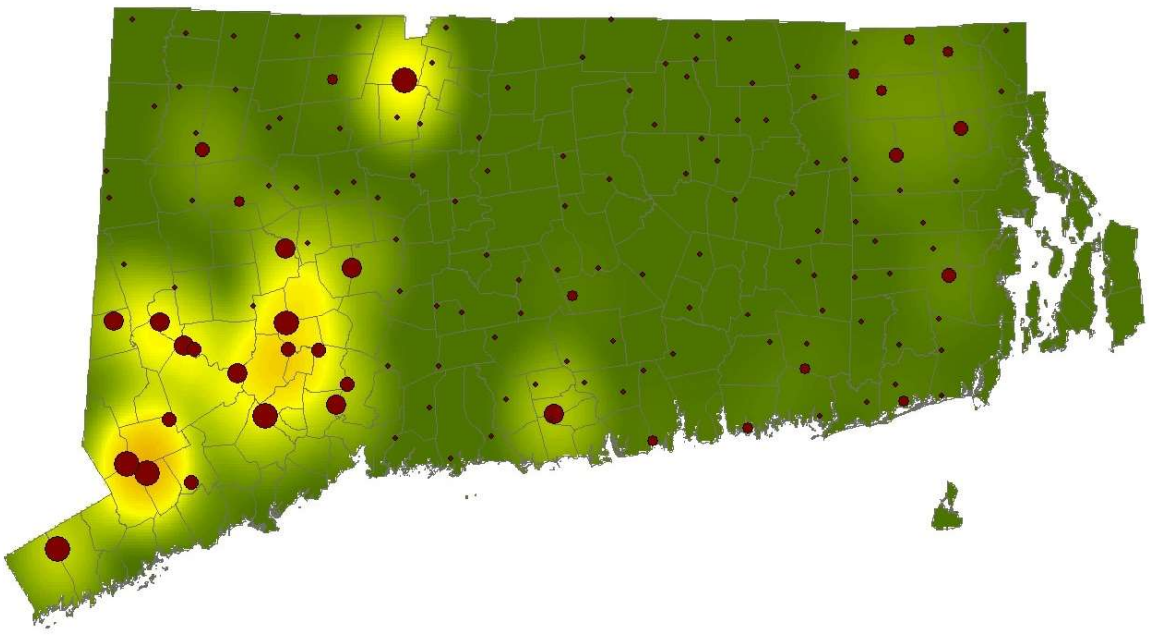


FIG. 1. Winter distribution.

AMERICAN GOLDFINCH

Spinus tristis

Summer	Winter
Density (birds/km^2): 23.79 (n = 770, 95% CI: ± 2.40)	Density (birds/km^2): 15.25 (n = 551, 95% CI: ± 2.52)
CT: 22.77	CT: 15.07
RI: 28.63	RI: 16.10
Population (birds): 216,853 (95% CI: ± 21,864)	Population (birds): 138,982 (95% CI: ± 22,962)
CT: 171,327	CT: 113,379
RI: 45,526	RI: 25,603

The American Goldfinch appeared on 97% of summer and 83% of winter transects, with population estimates at both seasons based on detections of flocking birds. Because the species commonly inhabits environments other than forest, densities reported here refer only to that part of the population associated with primarily forested landscapes.

Summer populations were most dense in central Connecticut and least dense in northwestern Connecticut (Kruskal-Wallis χ^2 = 119.6, n = 147, P = 0.001; Fig. 1). Winter populations were greatest by far in southern and low elevation portions of the study area and least in more mountainous, northern areas (Kruskal-Wallis χ^2 = 57.8, n = 147, P < 0.001; Fig. 2).

Populations also showed a summer−winter decline (Wilcoxon Z = −5.16, n = 147, P < 0.001). Duplicated data from eastern Connecticut showed that northern populations declined from summer to winter but southern populations remained similar seasonally.

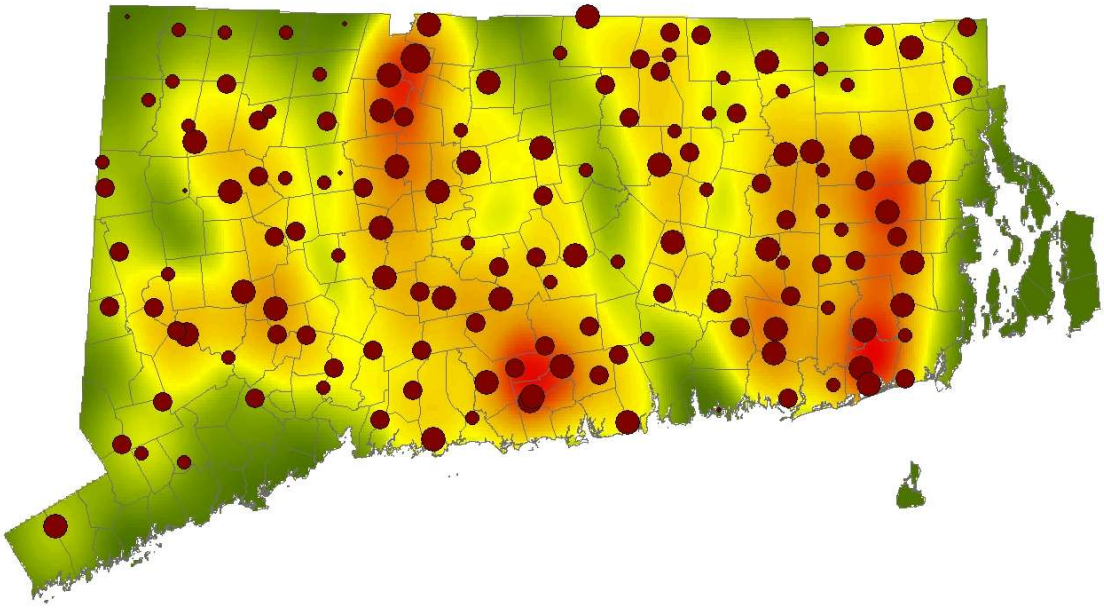


FIG. 1. Summer distribution.

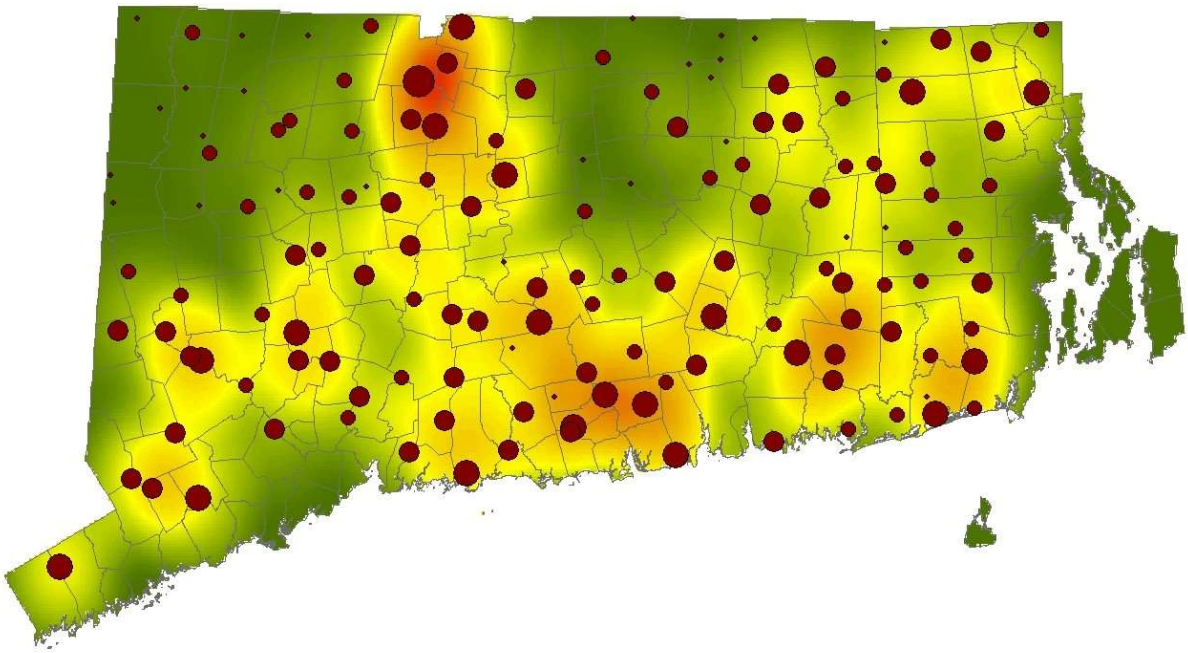


FIG. 2. Winter distribution.

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Index