ATLAS DES OISEAUX NICHEURS DES MARITIMES BREEDING BIRD ATLAS

Final Report to the
Nova Scotia Habitat Conservation Fund

Maritimes Breeding Bird Atlas Year 5
Last chance to put Nova Scotia's bird biodiversity on the map!

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Introduction

The Maritimes Breeding Bird Atlas is a region-wide multi-stakeholder, project to determine the distribution, abundance and status of all birds breeding in the Maritimes Provinces. Five years of volunteer-based Atlas fieldwork were launched in 2006 and concluded in 2010. There are over 450 Nova Scotia volunteers participating in this important environmental initiative, and the information they have gathered will be used to identify conservation priorities and protect Nova Scotia bird biodiversity for years to come.

Our Objectives for 2010

1. The first overall objective of the Nova Scotia field work component of the second Maritimes Breeding Bird Atlas was to gather the information needed to map the distribution and abundance of all NS breeding bird species by September of 2010. To ensure even and sufficient survey data coverage across the province, one of every four Atlas squares was designated as a "priority" for survey efforts. In order to meet data coverage targets, we needed to thoroughly survey all NS priority squares by spending at least 20 survey hours, recording 95% of expected species, and completing 15 point counts in these squares. At the beginning of 2010, 113 of the 174 priority squares in NS had received 20 hours of survey effort, leaving 61 squares that still required attention. Our first objective for 2010 was to focus survey efforts in regions of Nova Scotia where survey coverage was low, and on the priority squares that had not received the minimum amount of survey effort. These areas were primarily located in 1) the Chignecto region,2) in south-western mainland Nova Scotia, and, 3) in south-western Cape Breton Island (Figure 1).

2. Another overall objective of the Nova Scotia field work component of the second Maritimes Breeding Bird Atlas was to ensure that the data collected during the second Atlas were comparable to the data from the first Atlas, to enable us to assess changes in bird populations over the 20 year period between Atlasses. To achieve this, we not only had to match the amount of survey time across priority squares from both Atlasses (Objective 1), but we also had to ensure that species and species guilds detected in priority squares during the first Atlas, were adequately surveyed for during the second Atlas. For each NS priority square a target number and type of species detections were determined based on the number and type of species detected in the square during the first Atlas. We analysed NS priority squares to determine where the targeted species numbers had not been reached and which species guilds were underrepresented. Our second objective for 2010, therefore, was to focus staff and volunteer efforts to survey for underrepresented species and guilds in NS priority squares.

3. Because Breeding Bird atlases are typically repeated every twenty years, our third overall objective was to establish a more comprehensive baseline for future atlas efforts. To do this, we needed to gain improved coverage in squares not well surveyed during the first Atlas effort. South-western Nova Scotia, for example, had relatively limited coverage during the first Atlas. Our third objective for 2010, then, was to not only match survey effort from the first Atlas, but to ensure that areas not well surveyed the first time receive greater survey effort during this second Atlas.

4. A key step to conserving Nova Scotia bird biodiversity is to relay the Maritimes Breeding Bird Atlas information to the Nova Scotia community so it can be used to inform management decisions and direct stewardship and conservation action for wild birds and their habitats. Before we can disseminate the Atlas results, however, we need to finalize the Atlas database so we can analyse the data gathered and transform it into accurate, easily understood and user-friendly informational products, including species distribution and abundance maps; an upgraded website with online database and query tools; and the hard-copy publication. Our final project objective for 2010 was to use funding from the NS HCF to help coordinate the data review and verification processes necessary to finalize the Atlas database.

2010 Activities and Results

1. **RC Strategic Planning Meeting:** A two-day meeting was held in Amherst, NS, in April of 2010 to highlight the survey coverage needs for the final Atlas field season throughout the province. The meeting was attended by 9 Regional Coordinators from Nova Scotia.

2. **Field Season Planning: Assigning Squares with Data Gaps:** Atlas Staff and volunteer Regional Coordinators reviewed the 61 Nova Scotia priority squares that needed additional survey effort and planned how to address this. Strategies included: 1) assigning squares that required additional coverage to local volunteers, 2) assigning squares to volunteers from other regions of the province, especially areas with sufficient coverage where volunteers had "finished" their squares, 3) assigning squares in areas with few volunteers to the full-time Atlas field crew for NS, and, 4) targeted communication about the need for additional survey effort in these squares to volunteers, in order to encourage volunteers to commit to Atlassing those squares still needing coverage.

3. **Volunteer outreach and communication materials:** In April all Nova Scotia volunteers received a spring mail out that included data forms and a letter to participants. A spring newsletter was produced and mailed in late May to Nova Scotia volunteers and was made available online in English at http://www.mba-aom.ca/english/spring2010_en.pdf and in French at: http://www.mba-aom.ca/francais/spring2010_fr.pdf . The newsletter highlighted areas of Nova Scotia that were in need of survey coverage (i.e. that were not yet "green") for the final Atlas field season. Between April and September, 16 articles appeared on the website's online latest news; topics included Nova Scotia (and Maritimes) areas still in need of Atlassing effort, tips to help Atlassers complete square coverage, and data collection updates. A fall newsletter was also produced for Atlassers in early December 2010, available on-line in English at: http://www.mba-aom.ca/english/Newsletter_Fall_2010_English.pdf and in French at: http://www.mba-aom.ca/francais/Newsletter_Fall_2010_francais.pdf This newsletter included articles to help Atlassers with data entry, provided an overview of database cleanup tasks undertaken by staff to help finalize the database, and gave an update on overall Atlas results from five field seasons.

4. **Undertake 5th and final Atlas field season:** During the past five years volunteers and staff have spent 49,000 hours surveying the Maritimes for breeding birds, with more than 30,600 hours of that time dedicated to Nova Scotia! Atlassers gathered 263,600 individual bird records, with 141,400 records collected from in Nova Scotia. This second Atlas total surpasses the overall number of 144,642 bird records submitted during the first Maritimes Breeding Bird Atlas! As well, over the course of the project volunteers completed 13,500 point counts in 700 squares; Nova Scotia Atlassers completed 6761 point counts in 468 squares. In 2010 alone, Atlassers

spent 12040 hours surveying for breeding birds, and collected over 65,640 individual bird records. In Nova Scotia in 2010, Atlassers surveyed for 7410 hours, submitted 36,705 bird records from 737 squares, and conducted 1269 point counts in 133 squares, an impressive and sustained effort for the last field season of a five-year project!

5. **Increasing coverage in the Chignecto Peninsula, southwestern NS and Cape Breton Island**: Planning the fifth and final field season of the Maritimes Breeding Bird Atlas was also featured at the NS Bird Society "Out-of-Area Meeting". This meeting was held in Economy NS to help focus additional Atlassing efforts on Region 15, Chignecto Peninsula, an area with fewer volunteers and several squares lacking survey coverage after the end of the fourth field season (See Figure 1). During the meeting, squares needing additional survey effort in Region 15 were highlighted in an Atlas presentation, and many Atlassers present volunteered to take on un-assigned squares. The following day, meeting participants and Bird Society members Atlassed in a number of nearby squares. As a result of the increased Atlassing effort focused in Region 15, all the priority squares in this region, and many un-surveyed non-priority squares, had received at least 10 hours of Atlas survey effort at the end of the final field season (Figure 2).

   Because Regions 17 and 18 in Southwestern NS have relatively fewer volunteers than other NS Regions, and were lacking survey coverage (Figure 1), Atlas staff paid special effort to surveying squares in this area of the province over the final field season. As a result, almost all the priority squares in these two regions, and many un-surveyed non-priority squares, had received at least 10 hours of Atlas survey effort by the end of 2010 (Figure 2). In addition, in south-western Nova Scotia, we were able to not only match survey effort from the first Atlas, but to increase the amount of survey coverage to a greater level than the first Atlas. We thereby met our third objective, to establish a more comprehensive baseline for future atlas surveys planned for 20 years from now.

   Throughout the 2010 field season, Regional Coordinators for the three Atlas regions in Cape Breton Island also focused extra effort on squares that required coverage, and mobilized additional volunteers to help survey in the often challenging terrain of Cape Breton. These regions, too, were well covered by the end of the summer. In all three under-surveyed regions, the priority squares species-analysis (Objective 2) helped focus our efforts not only on areas where target species numbers had not been reached, but also on underrepresented species guilds. Volunteers and staff concentrated their surveys on underrepresented species and guilds in all NS priority squares.

   The focus on Nova Scotia priority squares that needed additional survey effort paid off: A comparison of Figures 1 and 2 reveals the 2010 efforts of Nova Scotia volunteers and staff to raise levels of survey coverage of squares in these three target areas of the province: Figure 1 shows hours per square at the end of 2009, while Figure 2 shows hours per square at the end of 2010. With strategic field effort in 2010, more squares in Nova Scotia became "green" (i.e., had 10-19 hours, or >20 hours, of survey effort). Focused Atlassing during the final field season in these three areas of NS, increased their survey coverage to levels more equivalent to that achieved in the first Atlas (1986-1990). Because levels of effort are now similar, we are ultimately able to compare results of the first Maritimes Atlas to this second Atlas, and to detect changes in populations and ranges of breeding bird species throughout Nova Scotia over the last 20 years.

6. **Data entry:** All Atlas data have now been entered online by volunteers and Atlas staff.

7. **Data review and finalization**: The volunteer Nova Scotia Data Verification Committee reviewed many Atlas records that needed expert examination in late winter 2011, after the data entry deadline had passed. Nova Scotia rare and colonial species records were then systematically reviewed a second time by Atlas staff. The Nova Scotia Data Verification committee is conducting a final data review of the remaining unusual and questionable records. When this is complete, the Atlas database will be finalized and the final maps of breeding evidence per square and contour maps of abundance will be produced.

8. **Breeding evidence maps**: A complete set of maps of breeding evidence per square is available on our website at http://www.mba-aom.ca/jsp/map.jsp?lang=en (in English) and at http://www.mba-aom.ca/jsp/map.jsp?lang=fr (in French). Individual species can be chosen from the drop down species list on the page to see the desired map. The breeding evidence maps available on-line also indicate changes in species distribution between the first Atlas and the second Atlas, highlighting species whose Nova Scotia distribution has declined or contracted, or species whose range has increased, since the fist Atlas. For example, Figure 3 shows Cliff Swallow current breeding distribution, as well as distributional changes since the first Maritimes Breeding Bird Atlas. Black dots indicate squares where Cliff Swallow was detected during the first Atlas but not during the second Atlas, whereas yellow dots indicate squares where Cliff Swallow was found during the second Atlas but not during the first Atlas effort, despite having been surveyed. The prevalence of black dots in the Maritimes indicates that Cliff Swallow distribution has declined throughout the region.

9. **Draft maps of species abundance:** Draft maps of species relative abundance from point count data have been produced by Andrew Couturier at Bird Studies Canada. Figures 4 to 8 are draft maps of relative abundance for a number of Maritimes species which are abundant in Nova Scotia, including Willet (Figure 4), Greater Yellowlegs (Figure 5), Belted Kingfisher (Figure 6), Olive-sided Flycatcher (Figure 7), and Eastern Wood-Peewee (Figure 8). These abundance maps will help identify “hotspots”, or areas within the province that are especially important for a relatively greater number of bird species, and can be used to direct species and habitat conservation efforts.

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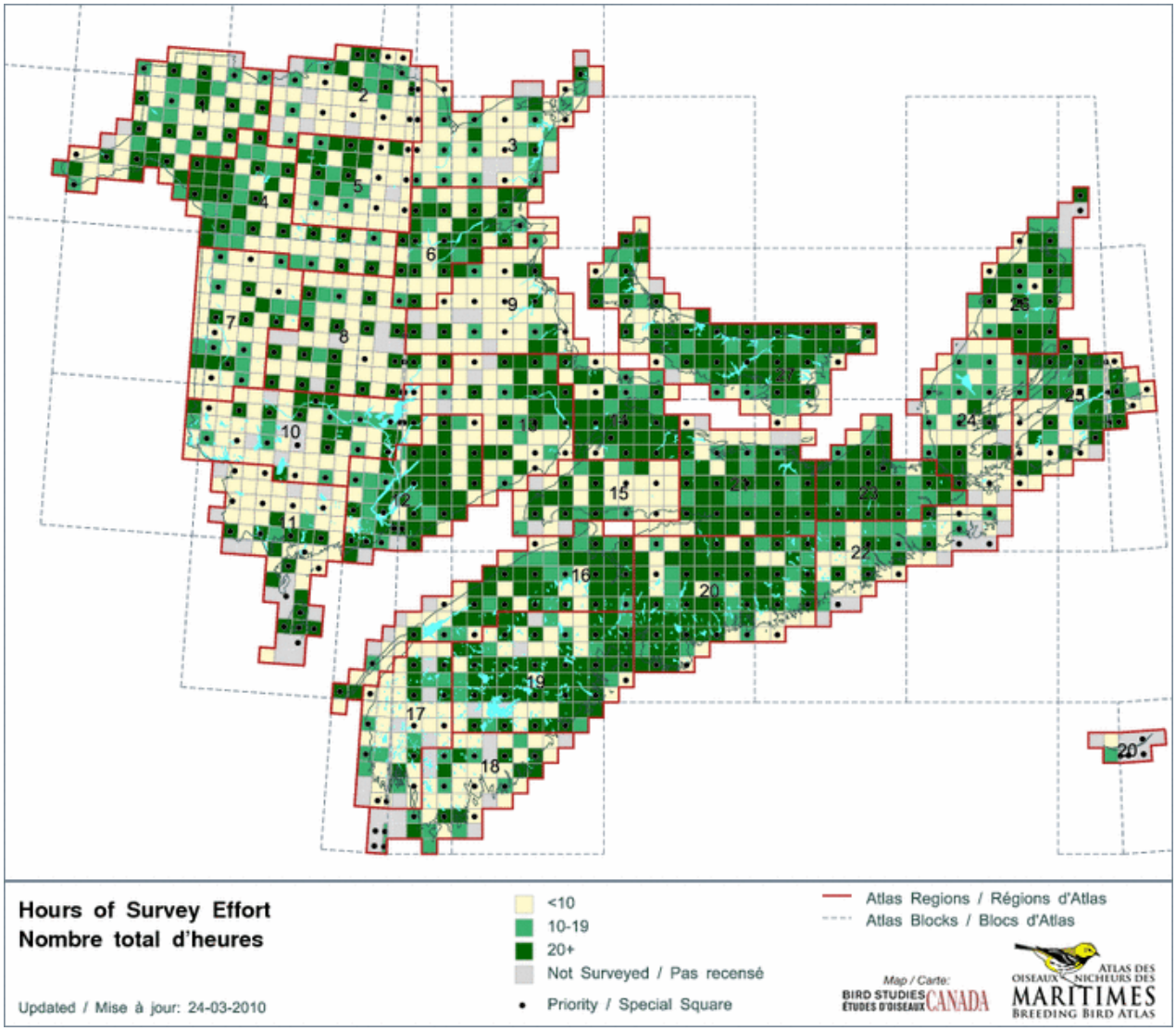

Figure 1. Hours of survey effort submitted to the Atlas online database (www.mba-aom.ca) at the end of 2009. Square colour indicates the number of hours spent in a 10 x 10 km square surveying for breeding birds (grey: no survey effort; yellow: <10 hours; light green: 10-19 hours; dark green ≥20 hours). In Nova Scotia in 2010 we concentrated staff and volunteer efforts in areas with yellow and grey squares that had fewer than 10 hours of survey effort, especially in the Chignecto Peninsula (Region 15), in southwestern Nova Scotia (Regions 17 and 18) and in parts of Cape Breton Island (Regions 24 and 25).

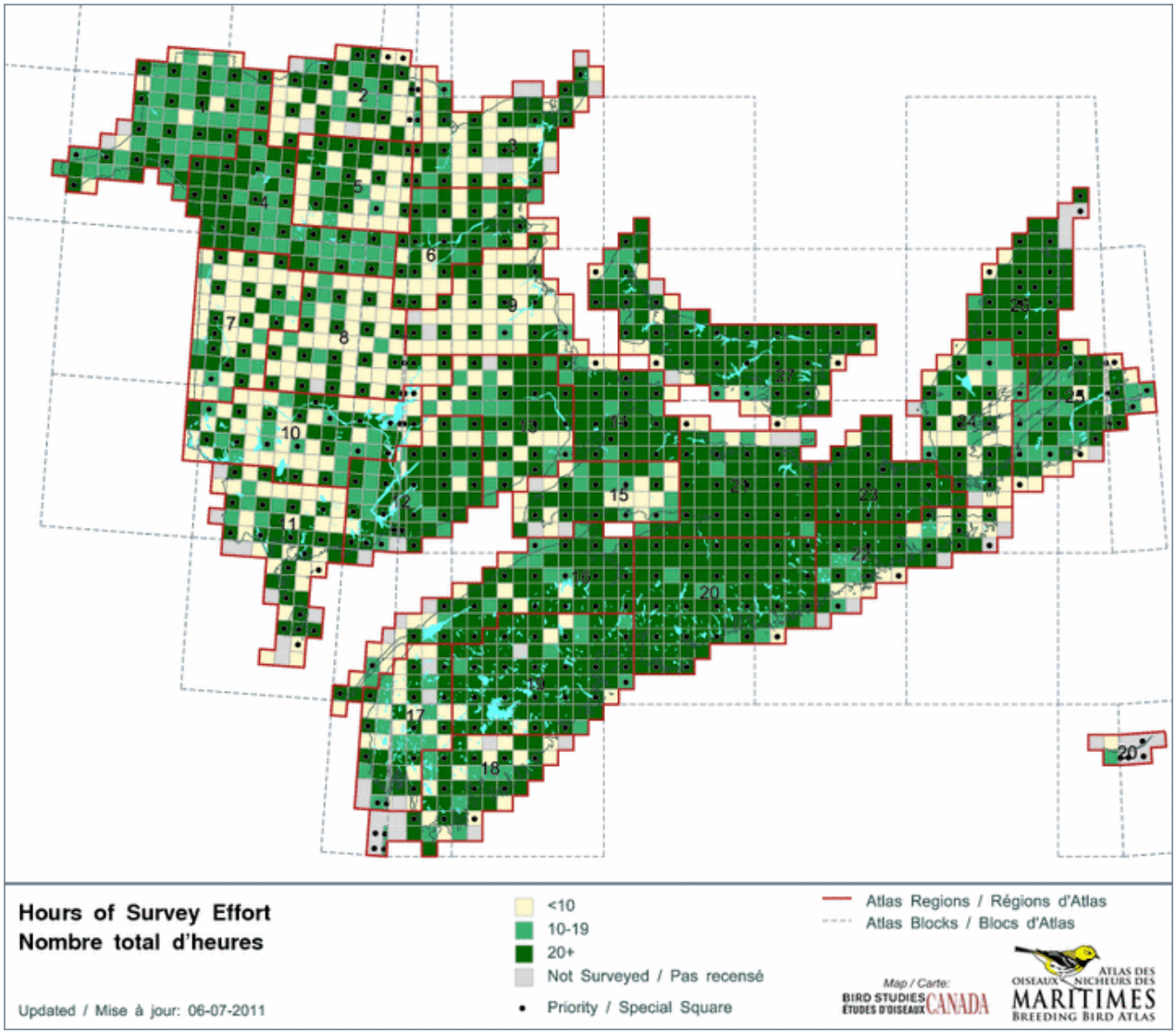

Figure 2. Hours of survey effort submitted to the Atlas online database (www.mba-aom.ca) at the end of last field season in 2010. Square colour indicates the number of hours spent in a 10 x 10 km square surveying for breeding birds (grey: no survey effort; yellow: <10 hours; light green: 10-19 hours; dark green ≥20 hours). With strategic volunteer and staff field effort in 2010, almost all priority squares in the Chignecto Peninsula (Region 15), southwestern Nova Scotia (Regions 17 and 18) and Cape Breton Island became "green" (light green with 10-19 hours, or dark green with >20 hours of survey effort).

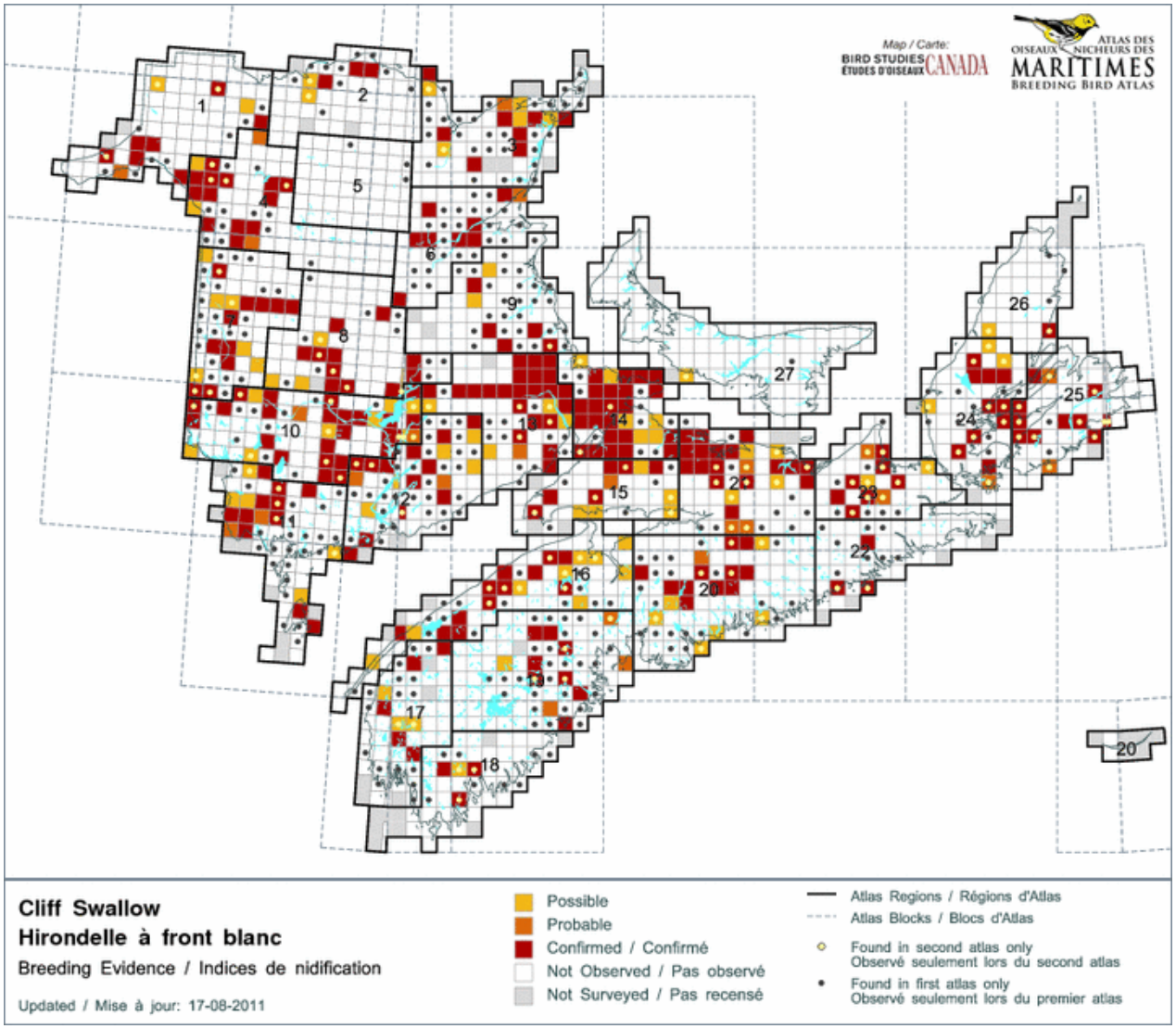

Figure 3. Breeding Evidence Map showing Cliff Swallow current distribution, as well as distributional changes since the first Maritimes Breeding Bird Atlas. Black dots indicate squares where Cliff Swallow was detected during the first Atlas but not during the second Atlas. Yellow dots indicate squares where Cliff Swallow was found during the second Atlas but not during the first Atlas effort, despite having been surveyed.

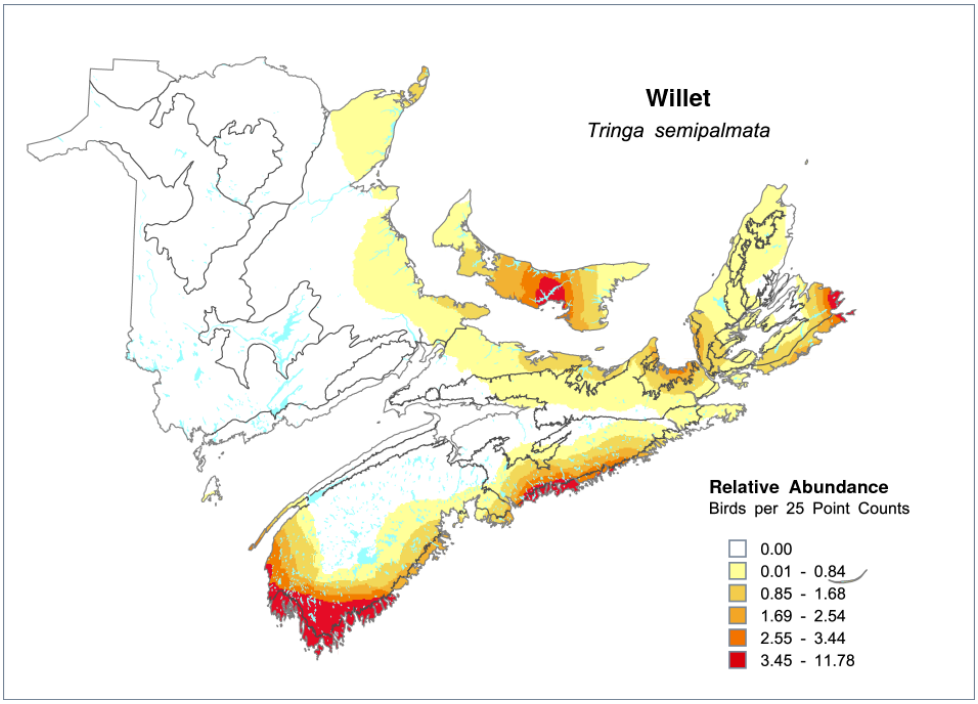

Figure 4. Relative abundance of Willet throughout the Maritimes from point count data collected during the second Maritimes Breeding Bird Atlas.

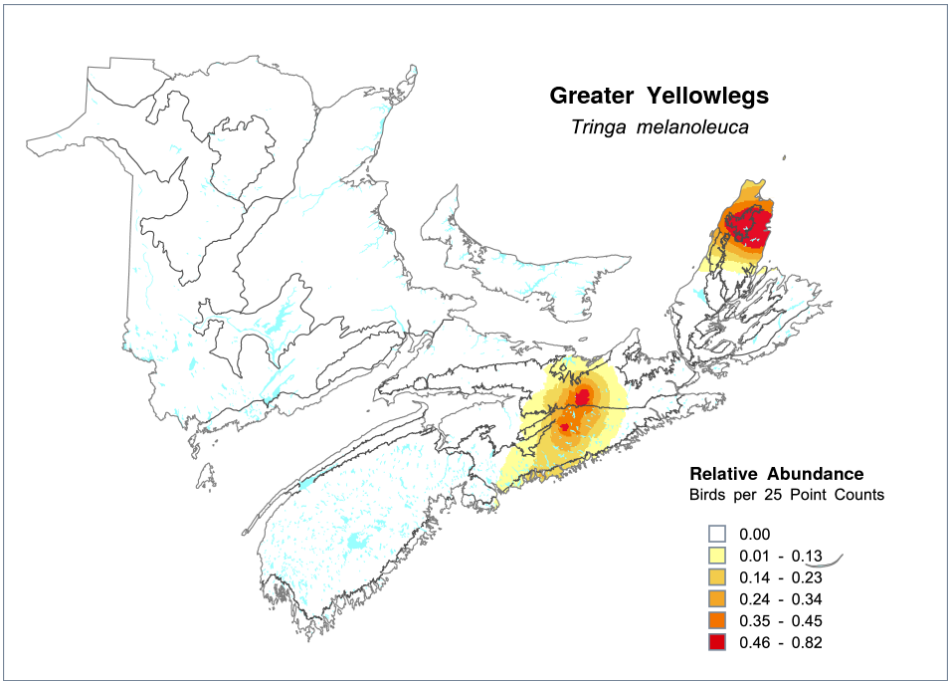

Figure 5. Relative abundance of Greater Yellowlegs throughout the Maritimes from point count data collected during the second Maritimes Breeding Bird Atlas.

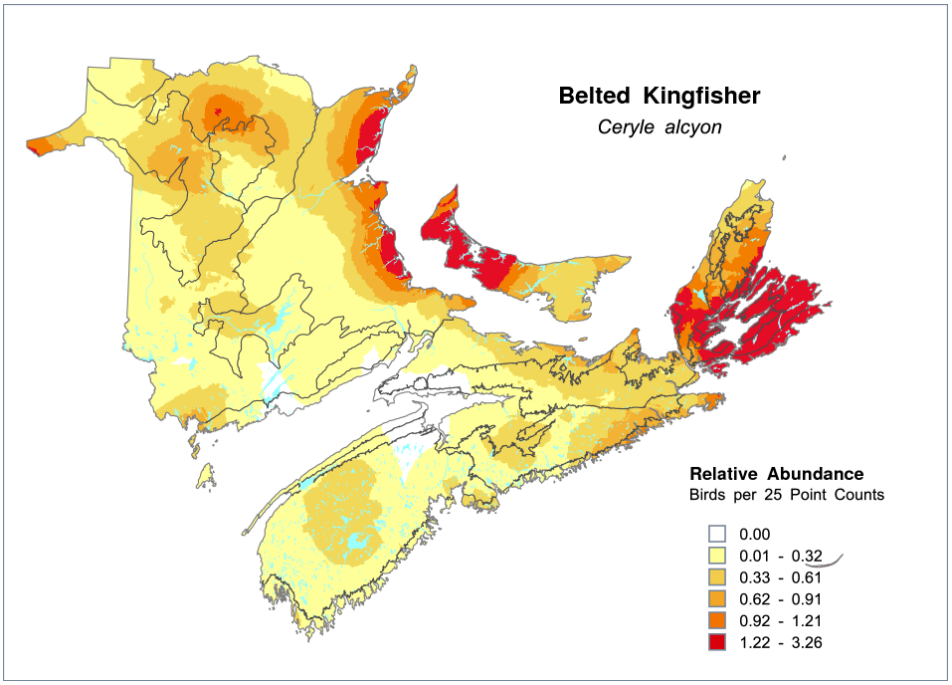

Figure 6. Relative abundance of Belted Kingfisher throughout the Maritimes from point count data collected during the second Maritimes Breeding Bird Atlas.

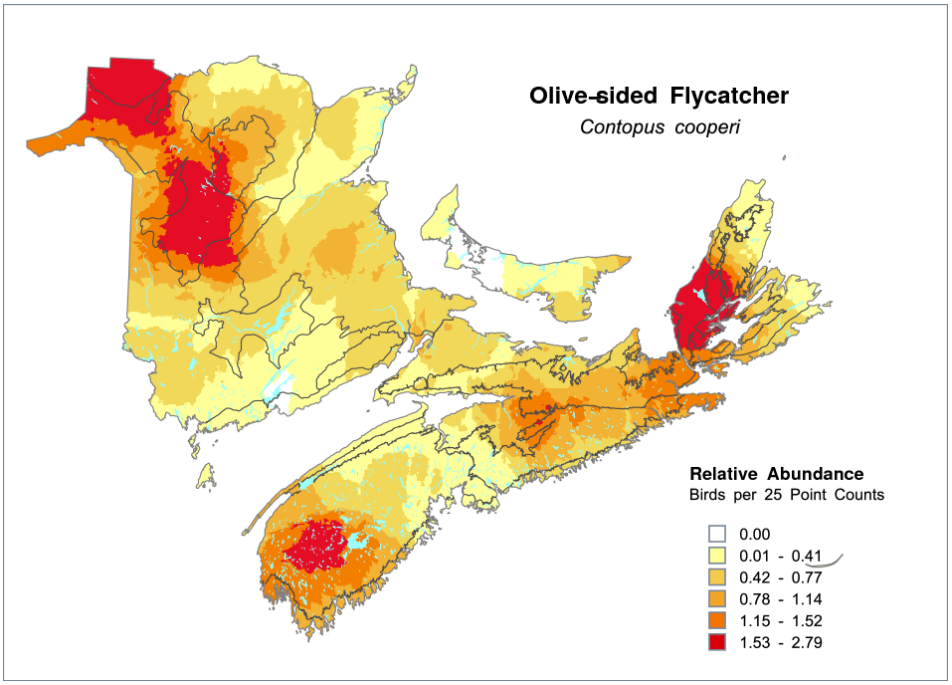

Figure 7. Relative abundance of Olive-sided Flycatcher throughout the Maritimes from point count data collected during the second Maritimes Breeding Bird Atlas.

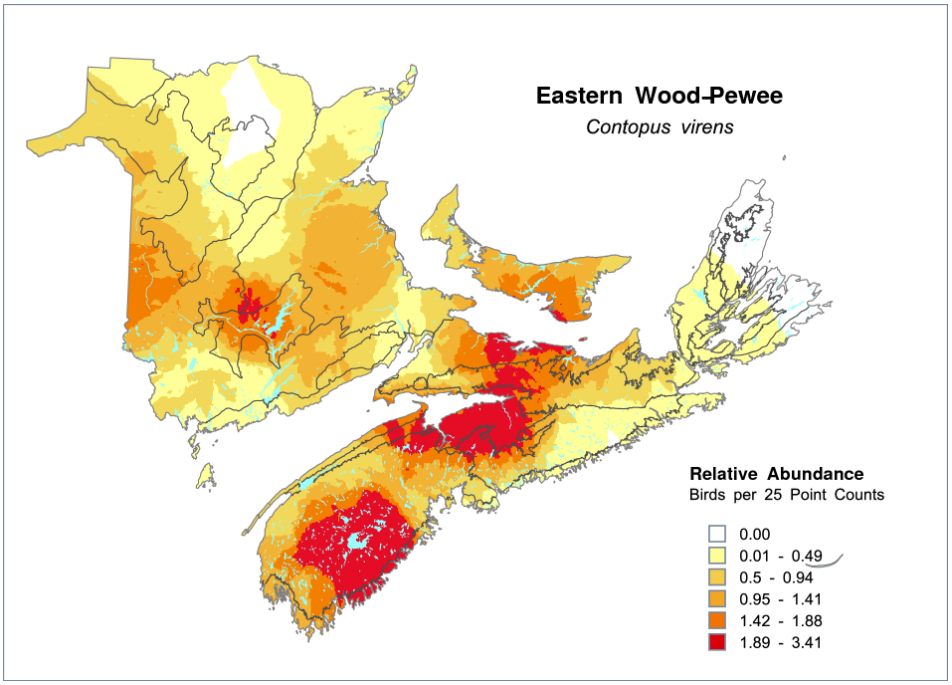

Figure 8. Relative abundance of Eastern Wood-Peewee throughout the Maritimes from point count data collected during the second Maritimes Breeding Bird Atlas.