

Carolina Chickadee: Second record for Ontario and Canada

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Introduction

On 13 May 2013 at roughly 0640 EDT, we were birding just south of the Sparrow Field at Point Pelee National Park, Essex County, when we spotted an unusual chickadee in close proximity to a typical Black-capped Chickadee (*Poecile atricapilla*). Our attention was immediately drawn to its grayscale, low-contrast appearance and slightly atypical GISS (general impression of size and shape). Our impression was that this was a Carolina Chickadee (*Poecile carolinensis*), yet both of us knew that there was only one previously accepted record of this species for Ontario and Canada: a single bird observed on 18 May 1983 at Long Point (Tip), Norfolk (Weir 1983, James 1984). This prompted us to begin taking ample photographs in an attempt to properly document the individual. Although we each had previous experience with Carolina Chickadee in the species' core range, the identification is notoriously difficult (Kaufman 1990). After several minutes of observation, the bird remained silent and we continued onwards with the morning's birding.

Later that day at the park's visitor centre, we queried the available references for new insight into this difficult identification. The popular field guides focused heavily on two features: a white vs gray nape and brighter vs paler edging on the flight feathers for Black-capped and Carolina, respectively (Sibley 2000, Peterson 2008). Review of our photographs revealed a bird with faint feather edging, suggesting Carolina, but inconclusive as the lighting and angle in various photographs seemed to change the appearance dramatically. Feeling stuck, we did little more in the short term, other than Holden posting some photos with a request for opinions on his web log (Holden 2013a).

We continued to bird in the Point Pelee area over the next two days and discussed the sighting with other birders. On 14 May, Peter S. Burke commented that the amount of white edging on the greater coverts was an excellent mark for helping to identify individuals of this complex, and that the bird in our photographs looked much better for Carolina. On the



Figure 1. Carolina Chickadee at Point Pelee National Park showing rounded head shape and small bill. 13 May 2013. *Photo: Brandon R. Holden.*

morning of 15 May, we were witnessing a moderate reverse migration at the Tip of Point Pelee when various observers (including Peter S. Burke) began arriving and informed us that they too had seen the subject chickadee at various times around the Tip area. All agreed that it was easily detected among Black-capped Chickadees due to its relatively distinctive appearance.

At roughly 0800 EDT on 15 May, we had the opportunity to observe the subject chickadee at the extreme Tip with two typical Black-capped Chickadees. Once again it stood out immediately due to its greyscale, low contrast appearance and different GISS. It was present for a short period of time before flying northwards

away from the Tip. Alan Wormington had independently recognized the bird from some distance to the south and simultaneously pursued the bird northwards. As various observers moved north, multiple Black-capped Chickadees were detected around the Point causing considerable confusion. Regrettably the subject chickadee was not observed again.

After additional information from the 15 May sighting was posted online (Holden 2013b), we received photographs of the subject bird taken just north of the Tip of Point Pelee on 12 May by Hayden J. Bilty. He was birding with R. Gordon Payne at the time, who also observed the bird (Burrell and Charlton 2015).

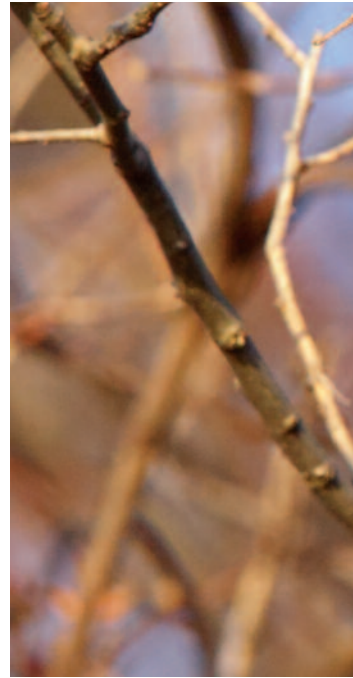


Figure 2. Carolina Chickadee at Point Pelee National Park showing rounded head shape and small bill. 13 May 2013. Photo: David M. Bell.

Over the next several months, we conducted extensive research on our observation. Presented below are the results of that research and why it supports the identity of this bird as a Carolina Chickadee (as concluded by the Ontario Bird Records Committee (OBRC, see Burrell and Charlton 2015)).

Identification

In this section, we highlight the following identification criteria, derived from numerous sources: head size and shape, bill size and shape, bib size and shape, nape colouration, cheek patch vs breast colouration, secondary and tertial edging, greater coverts base shade and edging, tail feather edging and tail length/wing chord ratio. Regrettably no vocalizations were heard by any observers. Our analysis

compares the Point Pelee individual with the criteria for known Carolina Chickadee and Black-capped Chickadee. A detailed comparison of each trait with photo examples was submitted to the OBRC (Holden 2013b, Holden 2013c, Holden and Bell 2014) and is archived at the Royal Ontario Museum (ROM).

Head Size and Shape: A review of many photographs of Black-capped and Carolina chickadees showed that Carolina frequently appears to have a smaller and rounder head in contrast to Black-capped Chickadee which frequently shows a proportionately larger head, appearing as a horizontal oval in shape. The Point Pelee individual was a better match to known Carolina Chickadees (Figures 1, 2).



Figure 3. Carolina Chickadee at Point Pelee National Park. 13 May 2013. The small and well defined bib is revealed in a rare instance where the bird was not in motion. The bird was distinctive in having only three rectrices. *Photo: Brandon R. Holden.*

Bill Size and Shape: This is difficult to properly quantify from photos. After reviewing hundreds of Black-capped Chickadee photographs from southern Ontario, my impression was that the Point Pelee bird had a smaller and shorter bill (Figures 1, 2). It does not appear to show any dramatic differences from known Carolina Chickadees when compared to photographs from various online sources. Pyle (1997) lists the exposed culmen of Black-capped as measuring 7.6-10.5mm and of Carolina as 6.6-9.5mm.

Bib Size and Shape: In some identification guides, Carolina Chickadee is described as having a smaller and more sharply defined bib than Black-capped Chickadee (e.g., National Geographic 2002). Approximately 100 photos were

taken of the Point Pelee individual by the authors, which revealed a remarkable range in bib size and shape. This range was most pronounced during periods of activity, with the bird stretching or twisting its neck to obtain food or move to a new perch. During the few moments when the bird was at rest, the bird's bib size and shape was well defined and small and was a better match for Carolina Chickadee than examples of Black-capped Chickadee (Figure 3).

Nape Colouration: Although this character is frequently referenced in field guides (e.g., Peterson 2008), we had a difficult time assessing this feature when using images. Variations in exposure settings yielded results from pure white to neutral gray. We felt that this feature was not useful when studying photographs although perhaps it would be a better feature when scrutinized with a live specimen in hand.

Cheek Patch vs Breast Colouration: During formal review of the record by the OBRC, Peter S. Burke identified a potential feature of Carolina Chickadee on the Point Pelee individual stating that the breast appeared to be a duller gray than the bright white cheek patches (Sibley 2014). Photos of Black-capped Chickadee often show a breast that is as bright/white as the cheek patches. This feature



Figure 4. Carolina Chickadee at Point Pelee National Park. 13 May 2013. This frozen moment in time provides the best available view of the greater coverts, displaying their uniform gray appearance.

Photo: Brandon R. Holden.

was not examined on skins or as extensively with photographs as other field marks noted here, yet it appears to support the identification of the Point Pelee bird as a Carolina Chickadee.

Secondary and Tertial Edging: Examination of photographs online and of the Point Pelee bird shows that this feature is variable depending on angle and camera settings, even with a single individual. Carolina Chickadee is reported to show a more muted pattern, compared to Black-capped Chickadee (Sibley 2000). When considering the approximately 100 images of the Point Pelee individual, our overall

impression was of a bird that fell within the range for Carolina Chickadee (Figure 2), but appearing as an outlier in the variation observed in Black-capped Chickadee.

Greater Covert Base Shade: A field mark rarely referenced is the base shade or colour of the centres of the greater primary and secondary coverts. It is reported to be gray in Carolina Chickadee, whereas in Black-capped Chickadee it is black (Crossley 2011). The greater coverts in photographs of the Point Pelee individual in which the bird had spread wings are a medium gray, matching Carolina Chickadee (Figure 4), although the sample

size was small. Holden studied nearly 300 skins of both species at the ROM and found that this feature is not reliable in direct comparison. We presume it is simply a difference in impression, with Black-capped appearing more contrasting than the uniform gray of Carolina.

Greater Covert Edging: Another field mark that is occasionally referenced is the contrasting white edges to the greater coverts of Black-capped Chickadee whereas Carolina shows a uniform gray edge. While it appears possible for Black-capped Chickadee to lose these white edges due to feather wear (especially in spring as chickadees do not do a prealternate molt (Pyle 1997)), our examination of photographs has shown it to be rare. The Point Pelee individual shows a uniform gray edge on all feathers on each wing, matching known examples of Carolina Chickadee (Figure 5).

Rectrices: Pyle (1997) states that Black-capped Chickadee can be separated from Carolina Chickadee “by the [presence of] white edging to the outer rectrs.” Despite only retaining three rectrices, the Point Pelee individual clearly shows a white edge, which was originally identified as a problem in the identification of this bird as a Carolina Chickadee. We set out to confirm the validity of this feature and discovered that many Carolina Chickadees from the central and northern parts of the species range show white edges on the rectrices (Holden 2013d). Thus the white edging on the Point Pelee bird appears well within the variation shown by pure Carolina Chickadee and does not contradict that identification. Review of specimens at the ROM also showed that this is a feature frequently shown by Carolina Chickadee including the first provincial record (Holden 2014). Review of Black-capped

Figure 5. Carolina Chickadee at Point Pelee National Park. 13 May 2013. The greater coverts show a uniform gray edge on the folded wing. The white edging can be seen on the tail. *Photo: Brandon R. Holden.*



Chickadee photographs has shown a bolder and more prominent edge to the rectrices than Carolina Chickadee.

Tail Length/Wing Chord Ratio: Pyle (1997) states that tail length is the most useful character in separating Black-capped from Carolina Chickadees. Although impossible to accurately measure without a bird in-hand, tail length relative to wing chord can be useful as the “tail/wing ratio can then provide further means for separation: 0.886-1.032 (usually >0.9) for Black-capped, 0.819-0.922 (usually <0.9) for Carolina” (Pyle 1997: 335). Using photographic samples of 10 known Black-capped Chickadees, 10 known Carolina Chickadees and 15 of the Point Pelee bird, we set out to see if the tail/wing ratio could be useful in this case. For this analysis to be conducted, photos that showed the bird in profile

were chosen because the wing and tail were held at approximately the same angle to the photographer. We used the ruler tool in Adobe Photoshop CS4 to determine lengths of wing chord and tail for each photo. These values were then inserted into a Microsoft Excel spreadsheet which calculated the tail/wing ratio (tail length divided by wing chord). We then sorted the values into Black-capped Chickadee (BCCH), Carolina Chickadee (CACH) and examined them (Table 1).

Four (of 10) photos of Black-capped Chickadee resulted in values that were within the overlap range (0.886-0.922), but still above the ‘usual’ cut-off of 0.9. Three (of 10) photos of Carolina Chickadee resulted in values that were similarly within the overlap range, with one (CACH5) being above the ‘usual’ cut-off of 0.9 but still within variation for Carolina Chickadee (Table 1). All other photos fell within the expected range for their respective species. The 15 photos of the Point Pelee bird showed an average tail/wing ratio of 0.8667 and a standard deviation of 0.0086 (1%) showing that measuring error (possibly due to differences in posture) was minimal. The values obtained for the Point Pelee bird were all within the variation for Carolina Chickadee, and more importantly, all were below the minimum ratio for Black-capped Chickadee. Figure 6 shows the average tail/wing ratios and the 95% confidence limits (CL) for the ten individual Black-capped and Carolina Chickadees and the average tail/wing ratio for the Point Pelee bird. The Point Pelee bird was within the 95% CL for the Carolina Chickadee.

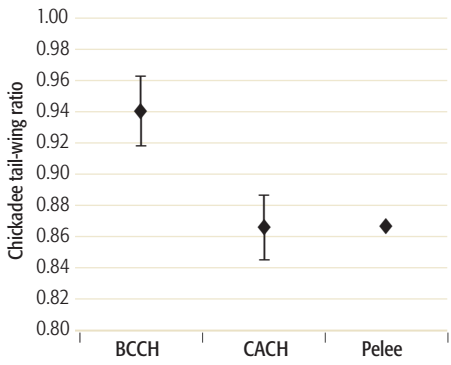


Figure 6. Average tail/wing ratios for 10 Black-capped and Carolina Chickadees and the Point Pelee individual. Whiskers show 95% confidence limits (CL). Averages and CL were calculated from photo measurements (pixels) in Table 1. A tail/wing ratio of 0.9 separates the two chickadee species; the Black-capped Chickadee has a proportionally longer tail (Pyle 1997).

Table 1. Measurements of wing chord and tail length from photographs of the Point Pelee chickadee and Black-capped and Carolina Chickadees. Note that the Point Pelee photo numbers correspond to the photo numbers posted on Holden's web log (Holden 2013c).

Photo #	Wing Chord (pixels)	Tail Length (pixels)	Tail/Wing Ratio	Species Supported
Point Pelee 3	235.51	207.96	0.8830	CACH
Point Pelee 10	237.31	203.54	0.8577	CACH
Point Pelee 34	215.47	184.1	0.8544	CACH
Point Pelee 39	312.44	269.05	0.8611	CACH
Point Pelee 47	298.52	259.82	0.8704	CACH
Point Pelee 49	286.82	249.24	0.8690	CACH
Point Pelee 61	332.5	287.33	0.8642	CACH
Point Pelee 62	334.5	292.85	0.8755	CACH
Point Pelee 66	333.65	292.83	0.8777	CACH
Point Pelee 73	299.45	259.61	0.8670	CACH
Point Pelee 82	579.27	495.54	0.8555	CACH
Point Pelee 87	475.53	416.91	0.8767	CACH
Point Pelee 88	567.97	489.45	0.8618	CACH
Point Pelee 89	551.24	479.41	0.8697	CACH
Point Pelee 91	554.94	475.67	0.8572	CACH
BCCH 1	209.75	192.63	0.9184	BCCH
BCCH 2	203.06	187.27	0.9222	BCCH
BCCH 3	199.85	186.26	0.9320	BCCH
BCCH 4	264.2	250.73	0.9490	BCCH
BCCH 5	1407.48	1339.43	0.9517	BCCH
BCCH 6	319.64	329.07	1.0295	BCCH
BCCH 7	203.02	187.17	0.9219	BCCH
BCCH 8	222.69	207.55	0.9320	BCCH
BCCH 9	587.31	529.35	0.9013	BCCH
BCCH 10	233.5	221.06	0.9467	BCCH
CACH 1	119.76	105.42	0.8803	CACH
CACH 2	96.5	86.44	0.8958	CACH
CACH 3	147.85	123.23	0.8335	CACH
CACH 4	405.09	332.71	0.8213	CACH
CACH 5	265.52	241.96	0.9113	BCCH
CACH 6	209.3	182.8	0.8734	CACH
CACH 7	645.34	541.6	0.8392	CACH
CACH 8	259.08	232.55	0.8976	CACH
CACH 9	429.88	377.74	0.8787	CACH
CACH 10	300.13	247.43	0.8244	CACH

General Impression (GISS): A final thought, which is once again difficult to quantify, we and other observers were readily able to detect the bird when it was present, due to its distinctive GISS. The general colour, low contrast appearance and atypical shape combined to produce a very noteworthy individual. Many field marks presented here were unknown to us at the time of observation, and have been correlated with the Point Pelee bird only after additional research was conducted.

Conclusion: While many features listed above are overlapping, there is no single feature present on the bird that is outside the range of Carolina Chickadee.

Subspecific Identity

Pyle (1997) noted that geographic variation in Carolina Chickadee is weak and clinal where the ranges of subspecies meet. Mostrom *et al.* (2002) list four subspecies, following Snow (1967) and Phillips (1986) which are detailed below.

P. c. atricapilloides. A large, gray subspecies that occurs from south Kansas through central Texas.

P. c. agilis. A medium sized, gray subspecies occurring from south Arkansas to southeast Texas and south Louisiana.

P. c. carolinensis. A small, dark gray subspecies with an olive tinge occurring from north Arkansas-southeast Louisiana through to southeast Virginia-Florida, synonymous with *P. c. impiger*.

P. c. extima. A large and slightly more colourful subspecies, noted as having more extensive white on the secondaries, sides and flanks. This subspecies occurs north of *P. c. carolinensis* west to eastern Missouri. Subspecific name formerly “*extimus*” (AOU 2000).

We compiled approximately 300 photos of Carolina Chickadees from various online and published sources. Study of *P. c. carolinensis* reveals the strongest differences from the Point Pelee individual, being darker and less contrasting overall. An examination of birds from within the ranges of *P. c. atricapilloides* and *P. c. agilis* also showed differences, especially as few individuals showed white on their outer retrices as well as showing a more uniform gray appearance overall. The white on the outer rectrix of the Point Pelee Carolina Chickadee matches known individuals from the northern tier of the species range such as Illinois, Ohio, Indiana and Pennsylvania — all of which would fall within the range of *P. c. extima*. After further examination, there were no differences between the Point Pelee bird and photos of birds within the range of *P. c. extima*, leading us to believe that it is the appropriate subspecific identification for this bird.

Hybridization

Hybrids between the Black-capped and Carolina Chickadees have been detected wherever the contact zone between them has been studied (Sibley 2009). The same article states that hybrids are less fit than pure birds, leaving hybrid populations small and stable. Given that the Point Pelee bird showed no outward sign of



Carolina Chickadee at Point Pelee National Park. 13 May 2013. Photo: Brandon R. Holden.

hybridization in the form of intermediate characteristics of head size and shape, bill size and shape, bib size and shape, cheek patch vs breast colouration, secondary and tertial edging, greater coverts base shade and edging, tail feather edging and tail length/wing chord ratio, the authors felt it was reasonable to identify it as a pure Carolina Chickadee.

Discussion

Canada's first Carolina Chickadee record, initially listed as *P. c. impiger* by James (1984), was later published as the synonymous subspecies *P. c. carolinensis* by Gustafson (1987). After a thorough examination of the specimen, Parkes (1988) changed the subspecific identity to *P. c. extimus* (now *P. c. extima*), which is the same as our identification of the Point Pelee individual. A query of the eBird database shows the stable northern

boundary of the Carolina Chickadee range surprisingly close to our observations at Point Pelee, measured to as little as 80km SSW at Findlay, Ohio (eBird 2014). With other records of vagrants occurring in northern Illinois (American Ornithologists Union 1998), southeast Michigan (Reinoehl 1997), northern Ohio (Williams 1944) and western New York (Bent 1946), the Carolina Chickadee has a well-established pattern of short-distance vagrancy in the Great Lakes region. The contact zone between Carolina and Black-capped chickadees has been slowly moving northwards (Taylor *et al.* 2014) and has a female biased dispersal. While impossible to know, the quiet nature of the Point Pelee bird may have been due to the possibility that it was a wandering female. It is not outlandish to suggest that future records will materialize in southern Ontario. Perhaps

the only limiting factor is the high degree of difficulty in detecting, identifying and properly documenting any future observations.

The sighting from 12-15 May 2013 at Point Pelee National Park was accepted by the OBRC as the second record for Ontario and Canada (Burrell and Charlton 2015).

Note. A possible occurrence of Carolina Chickadee in Ontario has been published (Jarvis 1965), based on song only, the bird was never seen. However, this report was not accepted by the OBRC (Wormington 1985).

Acknowledgements

The authors would like to recognize Rod Brook for making Figure 6.

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