

Identifying Juvenile Warblers

The Fun Really Begins Here

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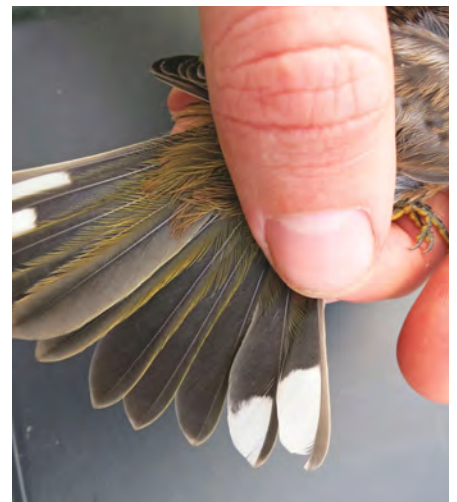
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The Monitoring Avian Productivity and Survivorship (MAPS) Program is a continent-wide collaborative effort among researchers and citizen scientists to assist the conservation of birds and their habitats through bird banding (tinyurl.com/MAPS-banding). Since 1989, more than 1,200 MAPS banding stations, spread across North America, have recorded more than 2 million bird captures. MAPS data enable assessment of avian demographic vital rates such as productivity, recruitment, survival, and intrinsic population growth, and these supplement other monitoring data by providing insights into what factors drive avian population declines. For example, low productivity indicates problems are occurring on breeding grounds whereas low survival suggests problems are occurring on winter grounds or during migration. MAPS data recently have been used in an important study documenting substantial long-term effects of West Nile virus on survivorship in North American birds (George et al. 2015). Up to seven vital rates from MAPS data, for 158 landbird species within various conservation regions and

other areas, are now available online (tinyurl.com/land-birds-vital and see DeSante et al. 2015).

In 2011 the Boreal MAPS Program was initiated in northeastern Alberta to evaluate landbird demographic rates in reclaimed habitats and other habitats subjected to varying levels of disturbance relative to those in natural boreal forests (Foster et al. 2012). Few demographic data on landbirds have been collected in the boreal forest (Wells 2011), making this program an important contributor to understanding bird populations and vital rates from local to continental scales. During July of our first field season we began to catch recently fledged juvenile wood-warblers (family Parulidae) in the mist nets. Frankly, we had a very difficult time, at first, with their identification.

Among passerines, “juveniles” are birds in “juvenile plumage,” the first pennaceous plumage (i.e., covered with standard-issue feathers with a shaft and barbs), acquired by nestlings and kept for some period after fledging. For some reason, wood



Featured Photo—Juvenile Palm Warbler. We thought at first that this might be a Cape May Warbler (see below) until we considered the tail pattern (right). The Palm Warbler is the only locally breeding species, other than the Black-and-white Warbler (see below), in which the white patches to the inner webs of the outer rectrices extend to the feather tips. The dark olive edging to the primaries and the dark soles of the feet are also of use for identifying juvenile Palm Warblers. *Northeastern Alberta, July 14, 2013. Photos courtesy of © Boreal MAPS Program.*

warblers remain in juvenile plumage for a very short period compared to other passerines, as little as a week or less following fledging, before undergoing the preformative molt and then becoming “confusing fall warblers.” Some individuals begin the preformative molt even before fledging! Birders encounter these birds in July throughout American forests, but the appearances of juvenile warblers are not well covered in field guides, including the specialty warbler guides by Dunn and Garrett (1997) and Stephenson and Whittle (2014). However, Curson et al. (1994) do illustrate juveniles of some species, and it must be noted that Chapman (1914) provides impressively accurate written descriptions of wood-warblers in what we today refer to as their juvenile plumage. As with all plumages of birds, we have discovered quite a bit of intraspecific variation in the juvenile appearance of each species, which does not make matters any easier.

The preformative molt in most North American warblers is partial, including all body feathers and secondary coverts but no flight feathers, that is, the primaries, primary coverts, secondaries, and rectrices (Pyle 1997a, 1997b). Thus, the flight feathers we see on juveniles are the same ones that help us identify confusing fall warblers in formative plumage, and these differ only subtly—primarily in shape, wear, and fading—from the flight feathers of adults. It follows, then, that the best way to identify juvenile warblers is by looking at the flight feathers, in particular patterns to the rectrices and the color of the edges of the primaries, secondaries, and primary coverts. The color of the “soles of the feet” (technically, the toe pads) can also provide a clue.

With these pointers in mind, we turn now to matter of actual juvenile warblers. Our featured photo is of a **Palm Warbler**, identified as such by the dark soles of the feet, the dark olive edging to

the primaries, and especially the pattern of the white spots on the rectrices. Additional images of 12 familiar warblers in their unfamiliar juvenile plumages appear in the gallery on pp. 60–61, followed by discussion of their identification and that of two other species. See if you can identify these warblers before checking the answers!

Acknowledgments

We thank the Boreal MAPS Program banders, including E. Blackburn, J. Bosman, B. Carnes, G. Coulombe, R. Dudgragne, B. Fried, S. Gray, E. Hentsch, J. Johnston, C. Kelly, P. Lai, D. Maynard, L. McDonald, R. McLaughlin, K. Morgan, C. Murray, L. Parker, K. Prince, G. Rand, A. Rosien, L. Villamil, C. Wagner, and K. Wetten, for their excellent work and for taking most of the images used for this article. Funding in support of this project was provided by Syncrude Canada, Ltd., Hammerstone Corporation, Canadian Natural Resources Limited, Cenovus Energy, ConocoPhillips Canada, Devon Energy, Husky Oil Operations, Ltd., Imperial Oil, Ltd., Suncor Energy, TOTAL E&P Canada, Nexen Energy ULC, and the Oil Sands Developers Group. This is Contribution no. 521 of the Institute for Bird Populations.

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The advertisement features a vibrant photograph of a Palm Warbler with its characteristic blue-green back and yellow throat. In the foreground, a pair of black Leica Ultravid HD-Plus binoculars is shown. The Leica logo is visible in the top left corner. A red banner in the top right corner says "NEW!". The text reads: "Ultravid HD-Plus. The astute observer — for razor-sharp images. Discover more at www.leica-birding.com Join the conversation on Facebook at /LeicaBirding".

Can You Identify These Juvenile Warblers?

Hint: Consider the Wings and Tail

ANSWERS AND ANALYSES ON PAGES 62–67





All of these juvenile warblers were mist-netted by researchers with the Boreal MAPS Program in northeastern Alberta.



A Although the body plumage does not leave much of a clue as to this warbler's identification, it is one of the easiest of our juveniles to identify based on the unique tail pattern, with white oval-shaped spots to all but the central pair of rectrices. Not only can we confirm this bird as a juvenile **Magnolia Warbler** by the tail pattern, but the extent of white in the tail allows us to sex it as a male. Note also the dull grayish-brown edging to the primaries; and, although the mark is not visible in this image, juvenile and older Magnolia Warblers have yellow soles to the feet. *Northeastern Alberta; July 17, 2013. Photos courtesy of © Boreal MAPS Program.*



B This species begins the preformative molt around or slightly before the fledging date, and the bright pattern of yellow around the eyes led us to believe that this was a Canada Warbler. However, juvenile Canada Warblers have gray edging to the primaries and brighter yellow feet both above and below. Thus, the green edging to the primaries and duller yellow feet (often restricted in this species to the soles), identify this as a juvenile **Wilson's Warbler**. *Northeastern Alberta; July 12, 2011. Photos courtesy of © Boreal MAPS Program.*





C As with juvenile Palm and Magnolia warblers, tail pattern, wing edging, and the color to the soles of the feet help identify this bird. It is a juvenile **Cape May Warbler**. The wing edging is a brighter olive-green than in Palm and other ex-*Dendroica* (*Setophaga* now) warblers, and the tail spots are restricted and do not reach the tips of the outer rectrices. The soles of the feet are yellow in the Cape May Warbler, helping to distinguish it from the Western Palm Warbler (see Featured Photo, p. 58). *Northeastern Alberta; July 16, 2015.* Photos courtesy of © Boreal MAPS Program.

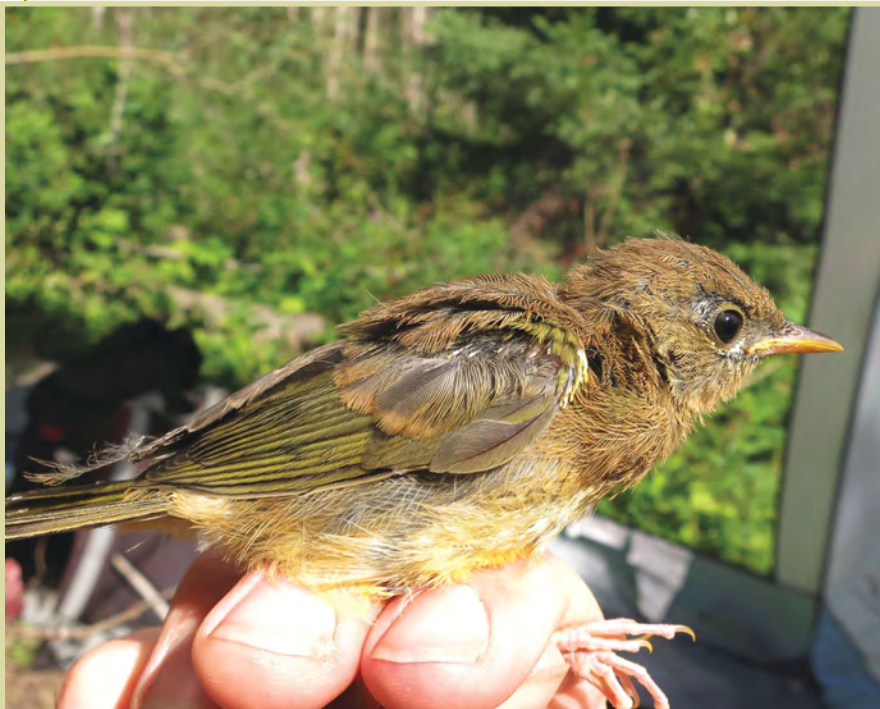


D It is hard to believe that the blazing yellow alternate-plumage males of this species start out like this! But **Yellow Warblers** are actually among the easiest of juveniles to identify, as no other warbler shows yellow patches like this to the rectrices. Note that these yellow inner webs are visible, even in the stub tail of the bird in the hand. The inset represents a different juvenile Yellow Warbler with longer, growing rectrices, which can be sexed as a male by the size of the yellow patches. *Northeastern Alberta; July 3, 2014 and (inset) July 1, 2015.* Photos courtesy of © Boreal MAPS Program.





E The proportionally large and dark bill and legs helps identify this as a waterthrush, and the dusky olive wing and tail feathers points to a **Northern Waterthrush**, the only species of *Parkesia* found in Alberta boreal forests. We suppose that a juvenile Louisiana Waterthrush would show a paler and perhaps larger bill, browner wings, and may also differ in the tone to the body plumage. Confirmation of this from banders within the breeding range of Louisiana Waterthrush would be helpful. *Northeastern Alberta; July 1, 2014. Photos courtesy of © Boreal MAPS Program.*



F The deep olive wing edging and broad, pointed, green rectrices without markings identifies this bird as a juvenile **Mourning Warbler**, the common ex-*Oporornis* (*Geothlypis* now) in our study area. Connecticut Warbler (the only remaining *Oporornis* "survivor") is a lot less common and we have yet to capture a juvenile for comparison, but it could pose an identification challenge. Note that this juvenile Mourning Warbler lacks the partial eye ring of formative plumage, indicating that juvenile Connecticut Warblers may also lack an eye ring. *Northeastern Alberta; July 16, 2013. Photos courtesy of © Boreal MAPS Program.*





G When we first viewed the image on the left, we did not even know what family of bird was involved! However, the olive-brown edging to the primaries and broad, pointed rectrices without tail spots are matched in our study area only by the **Ovenbird**; indeed, these features are unique among wood-warblers in the ABA Area, and can help identify even younger birds, such as that at top right. *Northeastern Alberta; July 9, 2012 (left and bottom) and July 7, 2014 (top). Photos courtesy of © Boreal MAPS Program.*



H The distinct white wing bars on this juvenile warbler may hinder identification, as the formative coverts, once replaced, lack distinct white tips. In addition, the bill in this image looks disproportionately large for the species, perhaps due to the body's being not quite fully developed or to the angle of the photo. Nevertheless, the green edging to the wings and the gray rectrices with an indistinct (or sometimes no) white patch to the outermost rectrix (only) help to identify this as a **Tennessee Warbler**. This amount of white in the outer juvenile rectrix suggests it is a male. *Northeastern Alberta; July 16, 2014. Photos courtesy of © Boreal MAPS Program.*



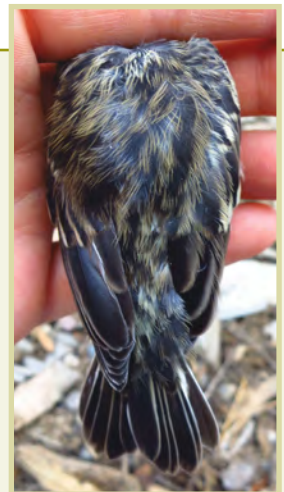


Juvenile **Common Yellowthroats** are uniformly brown (the yellow on the underparts of this bird are formative feathers), but they maintain the distinctive head and bill shape of the species, and the greenish-olive wing edging and pointed rectrices are also unique among juvenile wood-warblers. The sexes look the same in juvenile plumage, whereas males gain a partial black mask in formative plumage. *Northeastern Alberta; August 4, 2015. Photos courtesy of © Boreal MAPS Program.*



This species can retain juvenile plumage a bit longer than some of the other warblers, often being found away from breeding grounds, in western North America at least. Juvenile **Yellow-rumped** (in this case **Myrtle**) **Warblers** are most difficult to separate from juvenile Blackpoll and Bay-breasted warblers, each of which can look very similar in body plumage.

The fact that juvenile Yellow-rumped Warblers lack yellow rumps (right), as also confirmed through our specimen examination, doesn't help! See Figs. M–O on pp. 68–69 for notes on separating juvenile Myrtle, Blackpoll, and Bay-breasted warblers. *Northeastern Alberta; August 7, 2013. Photos courtesy of © Boreal MAPS Program.*





K Only one North American warbler has such black-and-white wings (that's a hint), and the visible bright white outer edges to the longest tertial confirms this as a **Black-and-white Warbler**. Besides the very-different-looking Palm Warbler (see Featured Photo, p. 58), none of our warblers has white extending to the tail tip on the outer rectrices. Black-and-white Warblers have muted brownish-yellow soles to the feet. *Northeastern Alberta; June 17, 2015. Photos courtesy of © Boreal MAPS Program.*



L Compare the color of the flight-feathers and wing edging of this bird to that of the juvenile Wilson's Warbler (Fig. B). The only North American warbler with unmarked grayish wings and tail, with or without brownish edging to the remiges and wing coverts when fresh, is the **Canada Warbler**. Note also the bright yellow feet, barely visible in this image, brighter and more extensively yellow than in Wilson's and other warblers. *Northeastern Alberta; July 15, 2014. Photos courtesy of © Boreal MAPS Program.*



Identifying Juvenile Myrtle, Blackpoll, and Bay-breasted Warblers

Years ago, when the senior author was teaching a July banding workshop for the Alaska Bird Observatory, we captured a juvenile warbler that we could not identify. It was either a Myrtle or a Blackpoll warbler, and the lack of



yellow in the rump and yellow soles to the feet led us to believe that it may have been a Blackpoll. But we left it unidentified. On August 7th, 2013, we captured a similar juvenile as part of the Boreal MAPS program—a bird that also lacked yellow in the rump (see Fig. L) and had yellow soles to the feet. A check of museum specimens confirmed that juvenile Myrtle Warblers lack yellow rumps, although yellow feathers apparently can grow in rather quickly after fledging.

Both Blackpoll and Bay-breasted Warblers are uncommon in the Boreal MAPS area, and we have yet to capture full juveniles of these species. We have also yet to examine a juvenile Bay-breasted Warbler specimen. However, by combining characters of Blackpoll and Bay-breasted warblers molting out of juvenile plumage with information from specimen examination of juvenile Myrtle and Blackpoll warblers, we believe that we can develop a preliminary key to separating juveniles of these three species based on body plumage, wing edging, and foot color. These characters are outlined in Figs. M–O. The pattern of white in the rectrices is similar among these three species. Although the extent of white varies somewhat, averaging least in Bay-breasted, followed by Myrtle and Blackpoll warblers (Audubon's Warbler has distinctly more white), the extent also varies by sex in juveniles. This sex-specific and individual variation results in enough overlap among our three target species to render this character of little value.

To summarize, grayish or brownish edging to the flight feathers, a streaked look to the body plumage, and fringed juvenile upper-wing coverts will first separate a juvenile Myrtle Warbler from juvenile Blackpoll and Bay-breasted warblers, and Myrtles also can show medium–bright yellow to grayish soles of the feet, the yellow color not extending to the top of the feet or the legs. Blackpoll and Bay-breasted

M. Juvenile Myrtle Warbler (top) and Blackpoll (middle) and Bay-breasted (bottom) warblers undergoing the preformative molt out of juvenile plumage. The remaining juvenile feathering on the Blackpoll and Bay-breasted warblers suggests that they may resemble juvenile Myrtle Warblers before the molt, as confirmed for Blackpoll, at least, through specimen examination (Fig. O). Note the edging to the juvenile primaries, however, grayish to brownish in Myrtle Warbler (including Fig. J), but greenish in Blackpoll and Bay-breasted Warblers. *Northeastern Alberta; July 22, 2012 (top), July 15, 2013 (middle), and July 26, 2015 (bottom).* Photos courtesy of © Boreal MAPS Program.



N. Juvenile Myrtle Warbler (left) and molting Blackpoll (center) and Bay-breasted (right) warblers showing the soles of the feet. The much brighter and yellower foot color in Blackpoll vs. Bay-breasted warbler is well known, as this is an important field mark distinguishing these two species in formative plumage (when they are “confusing fall warblers”). However, foot color in Myrtle Warbler is not as well described. Photographs from our Boreal MAPS program indicate that juvenile Myrtle Warblers can show yellow soles to the feet, as bright as the bird shown here (the same bird as in Fig. J), but that they become grayer as they age and typically lack yellow as adults. *Northeastern Alberta; August 7, 2013 (left), July 15, 2013 (center), and July 26, 2015 (right).* Photos courtesy of © Boreal MAPS Program.

warblers both have greenish edging to the flight feathers, while Blackpoll (and probably Bay-breasted) Warbler also shows a more checkered appearance to the body plumage and more extensive and squared white tips to the upper-wing coverts than Myrtle Warbler. Separation of juvenile Blackpoll from Bay-breasted warblers may rely almost entirely on foot color, extensively bright yellow in Blackpoll Warbler but with little or no very dull yellow in Bay-breasted Warbler, confined to the soles of the feet, if present at all.

O. Specimens of juvenile Myrtle (left bird in each image) and Blackpoll (right) warblers at the Museum of Vertebrate Zoology, Berkeley, California (MVZ 127949 and 44939, respectively). Note the wing edging, grayish or brownish in Myrtle Warbler but greenish in Blackpoll Warbler, and the body plumage and wing coverts, appearing more streaked in Myrtle Warbler but more checkered in Blackpoll Warbler. Note also the lack of yellow in the rump of the juvenile Myrtle Warbler. The appearance of remaining juvenile feathers on the molting Bay-breasted Warbler (Fig. M) suggests that juvenile body plumage may be more similar to Blackpoll than to Myrtle warblers, but confirmation of this is needed. *Vermont, July 3, 1924 (left) and British Columbia, July 17, 1924 (right).* Photos by © Peter Pyle.

