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Field Identification of Female and Immature Bullock's and Baltimore Orioles

ARTHUR MORRIS/BIRDS AS ART

This is a typical adult female Baltimore Oriole. Note the bright, orange-yellow underparts, which contrast with the dark, mottled head and back. The mottling on the head gives a distinctly "hooded" appearance. Note also the two bold wingbars which appear straight-edged as a result of squared-off feather centers. These wingbars contrast with the nearly black wings. Note also the bright orange rump. Photographed May 1997, in Rondeau Provincial Park, Ontario, Canada.

CIN-TY LEE* **and ANDREW BIRCH†**

THERE HAS BEEN AN INCREASE in the number of extralimital sight-reports of Bullock's *(Icterus bullockii)* and Baltimore *(I. galbula)* Orioles since Northern Oriole was split back into these two species (AOU 1995). Although such an increase may in part be explained by a renewed interest in split species, some of these new reports may be based on misidentifications. To illustrate, many recent extralimital records of female Bullock's on the East Coast have been identified solely on the basis of belly color, the conventional field mark for females and immatures emphasized in field guides (e.g., Robbins et al. 1966, Peterson 1980, National Geographic Society 1987). In general, female Bullock's should have a gray to white belly, and female Baltimore should have a yellowish-orange to orange belly. This may seem simple enough, but there are numerous observations of female or immature-male Baltimores with pale bellies, particularly during late fall and early winter. Even by experienced observers, these individuals can be mistaken for female Bullock's. The current understanding of the vagrancy patterns of these two species, particularly of Bullock's, may also be

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confused due to the possibility of misidentification.

Of the four vagrant Bullock's Orioles reported for the 1996–1997 winter in Massachusetts, for example, the only one critically examined turned out, after extended debate, to be a pale female Baltimore (Forster et al. 1997). A female oriole reported as the first Bullock's in Tennessee (17 December 1993) was identified on the basis of a light gray belly (Witt 1986), but some of the other descriptions by the observer, such as an "orange-yellow" head, "yellow-orange undertail coverts," and "black" wings are field marks more typical of Baltimore (as discussed herein). In reference to a purported female Bullock's in Québec, Bannon and David (1997) stated that "considering the lack of a modern and thorough review on field identification of these female orioles . . . we feel it is not possible at the present time to put a name on this bird unequivocally." Many other extralimital reports, particularly of Bullock's in any plumage except adult male, might need to be re-examined.

Here we present a new wingbar field mark which allows reliable separation of Bullock's and Baltimore Orioles in female and immature plumages when used in combination with more conventional field marks. The foundation for this article owes much to previous literature pertaining to the field identification of orioles (Sutton 1938, Hubbard 1974, Dunn 1975, Farrand 1983, Zimmer 1985, Kaufman 1987, Lewington et al. 1991). We also urge readers to refer to the seminal works of Sibley and Short (1964), Rising (1970, 1973), and Rohwer and Manning (1990) upon which the taxonomic revisions of these two species rest. The new information presented here is based on our field observations in North America and on our examinations of museum specimens from the Museum of Vertebrate Zoölogy at the University of California at Berkeley, the Museum of Comparative Zoölogy at Harvard University, the Peabody Museum at Yale University, and the Natural History Museum of Los Angeles County.

Taxonomy and Hybridization

Because of the extent of hybridization in the Great Plains (Sibley and Short 1964), the AOU recommended in 1973 that the two species be lumped (see also AOU 1983). Subsequent research, however, led to the discovery of morphological, behavioral, molt, and migratory differences which suggest restricted gene-flow (Rising 1969, 1970, 1973, 1983; Corbin and Sibley 1977; Rohwer and Manning 1990). Full specific status was again granted by the AOU Check-List Committee for both Baltimore and Bullock's Orioles (1995). A detailed survey of the technical background behind this decision is beyond the scope of this article, but readers should

In Brief

The splitting of Northern Oriole back into Baltimore and Bullock's Orioles and the consideration of extralimital records of female Bullock's on the East Coast have brought into question the conventional field mark for females and immatures emphasized in current field guides—Bullock's with a gray to white belly, and female Baltimore with a yellowish-orange to orange belly. It is clear that the range of variation in conventional field marks used to separate Bullock's and Baltimore has been greatly underappreciated. While identification of these two species in female and immature plumages may not be as straightforward as existing field guides might lead us to think, with careful study the species can be confidently distinguished based on a combination of wingbar pattern and other features. In particular, the appearance of the upper and lower wingbars of these two species constitutes an important field mark, usable in either fresh or worn plumage.

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refer to DeBenedictis (1982) for a review of some of the issues involved.

Records of hybrids away from the hybridization zone are scarce but may be underestimated due to our lack of knowledge of their identification. Vagrant hybrid males have been recorded in California (Jon Dunn, pers. comm.). Vagrant hybrid females also have been reported, but these reports are difficult to substantiate. For example, a bird reported to be a possible female hybrid in Missouri (26 May 1970) proved to be a second-year male Baltimore (Robbins and Easterla 1992). Identification of hybrids, particularly females, is beyond the scope of this article and will not be discussed further. For those who wish to pursue the topic, we note that there is an excellent color plate of intergrade plumages prepared by George Miksch Sutton (1938).

VIREO/ BARTH SCHORRE

This is a male Baltimore x Bullock's Oriole hybrid. Note that the upper wingbar resembles the orange shoulder of Baltimore, while the lower wingbar resembles the white wing-patch characteristic of Bullock's. Although male hybrids can be readily identified, it may in general be impossible to identify a female hybrid in the field. This male was photographed at Copano Bay, Texas, in May 1980. See the map and the accompanying sidebar for the limited zone of hybridization for the two species, which is in the Western Great Plains.

Plumage Variation

When identifying a "Northern" Oriole, it is important to consider how plumage varies according to age. Both species undergo a prebasic molt during summer (June–September). Such a molt is post-juvenal for the young or post-nuptial for the adults. Rohwer and Manning (1990) have shown that Bullock's begin molting during or even after fall migration, while Baltimore typically undergoes a complete molt on its breeding grounds before fall migration. Because Bullock's departs its breeding grounds earlier than Baltimore (see the sidebar discussion on distribution), the difference in prebasic molt strategy may lie only in the location in which molting takes place. Rohwer and Manning (1990) and Rohwer and Johnson (1992) have suggested that Baltimore undergoes a partial prealternate molt, while Bullock's does not. Pyle (1997) noted that prealternate molt in Baltimore may be more extensive in immatures.

Immature plumage in both species may be retained into the second calendar year. In Baltimore, the black coloration typical of adult males and females is acquired after the second prebasic molt (Pyle 1997). First-year females generally do not show any hints of blackish coloration. For males, hints of black coloration are usually acquired after the first prealternate molt, which can occur anytime from December to April (Rohwer and Manning 1990). However, first-fall males (e.g., first basic) usually lack black feathers altogether; these individuals may be difficult to distinguish from first-year females, although first-fall males tend to be more orange than immature females. In Bullock's, immature females and first-fall males generally resemble adult females. In males, full adult-like characteristics (e.g., blackish chin and transocular line) are acquired after the second prebasic molt. Limited black feathering on the center of the throat and lores is usually acquired during the first prebasic molt, which occurs during late fall.

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Identification

Adult Female. Adult females of the two species are generally not difficult to separate. Female Bullock's is paler overall than adult female Baltimore. Female Bullock's typically has a white-to-gray belly, contrasting with a lemon-yellow throat, upper chest, and undertail coverts. Some female Bullock's have blackish feathering on the center of the chin and throat, thus resembling some immature males. Adult female Baltimores are variable but distinctive, tending to have a continuous orange-yellow wash on their underparts and a dusky gray wash on their upperparts, particularly on the head, face, and back. The intensity of coloration varies from pale orange to yellowish-orange. The dusky tones on the upperparts of Baltimore are not uniform, giving rise to a blackish or splotchy appearance, especially on the throat and head. Overall, such birds have a dark, hooded appearance and are easily separable from female Bullock's, which have a pale yellow-to-gray head.

In some adult female Baltimores or in those "adults" not yet fully developed, the dark upperparts may be subdued, and there may be few or no dark feathers on the head. These individuals will resemble first-year females or juveniles, whose identification is discussed below.

Female Bullock's versus Immature Baltimore. Because adult female Baltimores have such a distinctive plumage, we focus our discussion on separating immature female Baltimores from female Bullock's in the fall and winter. As we said, first-basic male Baltimores resemble immature female Baltimores. The following descriptions can, therefore, be applied to first-basic male Baltimores. In Bullock's, immature and adult females are similar to each other. We have divided this section into the plumage areas which observers should focus on when seeking an identification.

Underparts. In fresh plumage (spring and fall migration), the underparts of first-year female Baltimores are typically continuously washed with orange-yellow. Female Bullock's also have yellow underparts, but the yellow usually has a lemon tone, and the belly is generally white to gray. In most Bullock's, there is a sharp contrast between the white or gray belly and the yellow chest and undertail coverts. Although the belly of Baltimore can often be paler or less orange than the rest of its underparts, the transition to the paler belly is more gradual than in Bullock's, and the paleness usually does not approach the gray or white belly coloration of a typical Bullock's. There is almost always a trace of orange on Baltimore, which is usually lacking on female Bullock's. Beware, however: immature male Bullock's can have an orange wash to the head as well as a yellowish belly (typically, second-calendar-year males). Fortunately, these Bullock's tend to have a hint of black on the chin and a dark transocular line, resembling adult male plumage (Jon Dunn, pers. comm.).

Although belly coloration may be a fairly reliable field mark, many Baltimores seen during winter or late fall have grayish bellies and exceedingly pale overall coloration. These birds superficially resemble Bullock's and are usually the source of erroneous reports of vagrant Bullock's. Our examination of female Baltimore specimens collected in Mexico in December and January (Museum of Comparative Zoölogy) revealed that such individuals can become exceedingly pale. Half of these specimens had gray bellies; of these, many had no trace of orange in the plumage. Our observations of wintering female Baltimores and of Baltimores collected in New England in the winter (Peabody Museum) also revealed many "gray-bellied" Baltimores. Many of these specimens, especially those collected in Mexico, so closely resemble female Bullock's that at first we believed that they were mislabeled! However, Baltimores usually have some hint of yellow on the undertail coverts (Jaramillo, pers. comm.). This feature seems to hold even for the palest Baltimores. In addition, traces of yellow are often retained in the flanks in most pale Baltimores. Because Bullock's often possess extremely pale yellow to gray undertail coverts, the absence of yellow in this region may suggest Bullock's. But because Bullock's can also have yellow undertail coverts, undertail covert color may not be a diagnostic feature at all times. Clearly, underpart coloration can be highly variable, especially in Baltimore. Therefore, underpart coloration should be used only as a supporting field mark.

Face. There are other field marks that permit reliable identification of individuals in female or female-like plumage. One field mark that is often illustrated but seldom discussed in field guides is

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facial pattern. First-year Baltimore tends to have a plain face, uniformly washed with dusky yellow to orange. The crown is usually uniform in coloration with the cheeks and varies from dusky yellow to greenish. The head may often appear slightly duskier than the underparts, and the cheek may be slightly duskier than the throat. This may give a subtle, hooded appearance. In contrast, female Bullock's has a more-patterned face, owing to the presence of a dark transocular line and a pale yellow supercilium. The transocular line continues through the lores to the base of the bill; the lores may be paler in Baltimore than in Bullock's (Jon Dunn, pers. comm.), and this point certainly deserves further investigation. In addition, the head and crown of Bullock's tend to be yellower or paler than those of Baltimore. The yellow wash on the underparts often extends onto the cheek and behind the auriculars in Bullock's. In fresh plumage, the yellow appears to flow to the sides of the neck, which in some instances gives a slight collared look. Due to variability in coloration, facial field marks should be used cautiously by observers lacking extensive experience with both species.

Back and Rump. The pattern and color of the back and scapulars is also a useful field mark (Hubbard 1974). In first-year female Baltimore, the back has an olive-green ground color and often appears mottled or splotchy due to the presence of black feathers with yellowish edges. In female Bullock's, the back is usually uniform gray, occasionally with a yellow-green wash on the brightest individuals. In general, Bullock's lacks the mottled

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Adult male Baltimore. *Identified by black head, orange scapulars and upper wingbar, and white lower wingbar.*

Adult male Bullock's. *Identified by distinct facial pattern, orange face with contrasting black transocular line, black crown, and black throat. Whitish feathering in median and greater coverts forms a conspicuous white wing-patch.*

Adult female Baltimore. *The dark head, face, and back are typical of adult female Baltimore. Mottling of the upperparts occurs on most birds but is highly variable. Note the bold and straight-edged wingbars, which contrast with the darker wing. Underparts are orange, not yellow as in female Bullock's.*

Adult female Bullock's. *Distinguished from adult female Baltimore by its light gray back, pale belly, more defined facial pattern, and different wingbar pattern. The upper wingbar appears serrated, unlike the bold, straight-edged wingbar of Baltimore. Note also that the lower wingbar pattern is more diffuse than in Baltimore. The grayish belly usually contrasts with the yellowish chest, head, and undertail coverts. The face is dull yellow and characterized by a distinct transocular line. Note also that the gray back contrasts with the yellowish head, giving it a "saddled" appearance. In many individuals the yellow in the face appears to flow behind the auriculars, giving a slightly "collared" appearance.*

Immature female Baltimore *(before second prebasic molt) usually lacks any hint of the blackish coloration in adults. Such individuals will appear pale yellow and may occasionally have a pale belly, suggesting female Bullock's. However, the bold, straight-edged appearance of the wingbars is diagnostic of Baltimore. In addition, Baltimore lacks the transocular line found in female Bullock's. Note also that the rump is slightly orange, contrasting with the dark, mottled back.*

Immature male Baltimore *(before prealternate molt). This first-fall male Baltimore resembles immature female Baltimore except that it appears more orange. Again, diagnostic features include wingbar pattern and lack of transocular line. After first prealternate molt, blackish feathering on the throat, head, and rest of upperparts will appear (not pictured in plate). Birds with blackish feathering on the center of the throat may look superficially like immature Bullock's. However, wingbar pattern should prove diagnostic.*

Immature male Bullock's *(after first prebasic molt). Resembles female Bullock's, except for the presence of blackish feathering on the chin and throat, and darker transocular line. Wingbar pattern is again diagnostic. The upper wingbar appears serrated, while the lower wingbar resembles the white wing-patch of adult male. Note that the back is uniformly gray to olive-gray, unlike the mottled appearance of Baltimore. Fully adult-like characters are obtained after second prebasic molt.*

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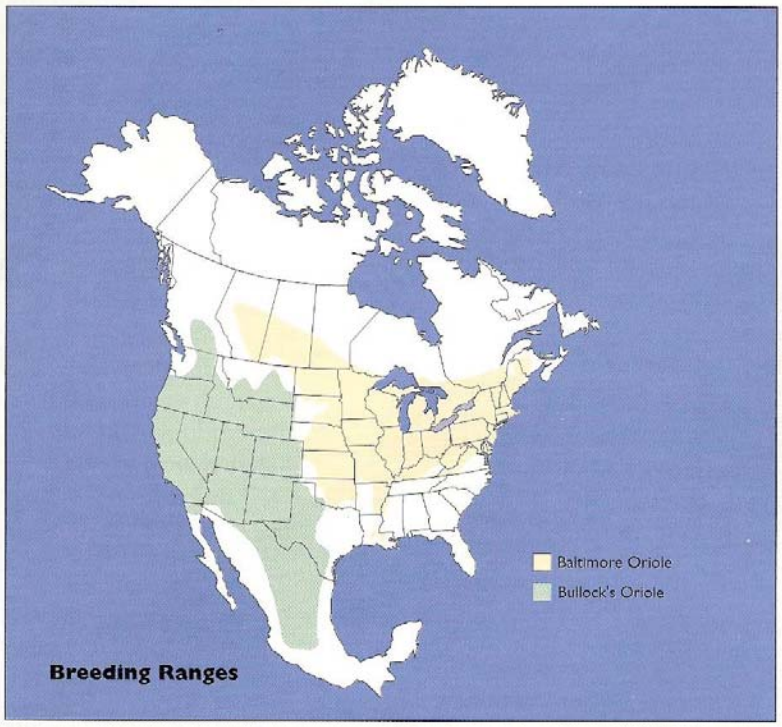
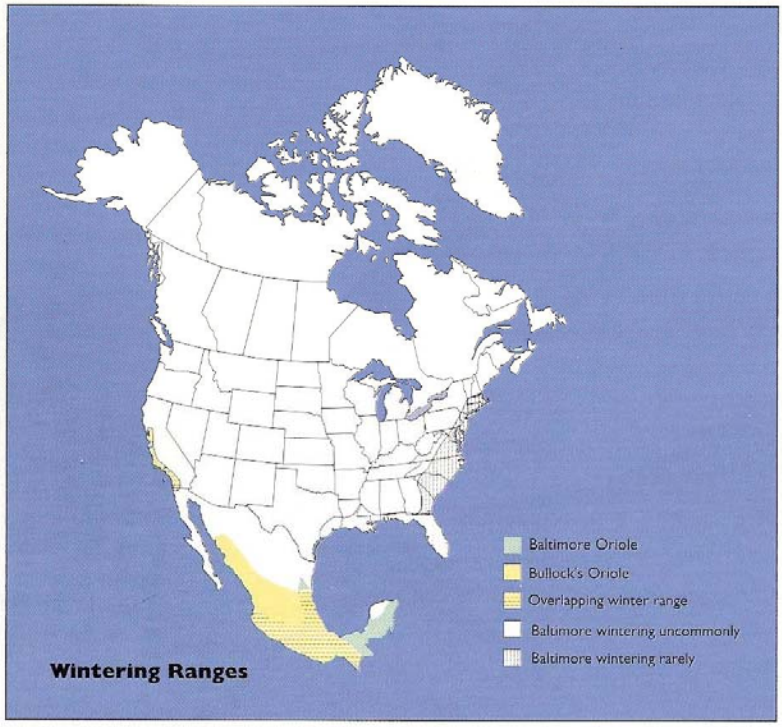
Distribution of Baltimore and Bullock's Orioles





Baltimore Oriole

Baltimore Oriole breeds throughout most of the central and northeastern U.S.and southern Canada, west to the western Great Plains (North and South Dakota, Nebraska, Iowa, Oklahoma), east to New England and the mid-Atlantic states (New Jersey, Delaware, Maryland, West Virginia, and western Virginia), and south to Kentucky, Tennessee, northern Arkansas, and extreme northern Texas (Price et al. 1995). It is generally absent as a breeder in the Atlantic coastal plain (North and South Carolina and Georgia), the Gulf coast (Texas and most of Alabama and Mississippi), and Florida, but it breeds locally along the Mississippi River valley in Louisiana, Arkansas, and Alabama. In the northeastern portion of its range, it occurs north through Maine and into the extreme southern portions of Québec and Ontario (Speirs 1985). In the northwestern portion of its range, it occurs as far north as southern Alberta, Saskatchewan, and Manitoba (Godfrey 1986).

Spring migrants pass through the Gulf States to their breeding grounds from the first week of April through the end of May (Imhof 1976, James and Neal 1986, Pulich 1988). Arrival dates for southerly breeding grounds range from mid-to-late April (Mengel 1965, Hall 1983, Robinson 1990, Robbins and Easterla 1992, Thompson and Ely 1992, Kent and Dinsmore 1996), and for northerly breeding grounds the dates range from the first week of May in New Jersey through Massachusetts (Stone 1965, Veit and

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Petersen 1993) to mid-May in Vermont and southern Canada (Laughlin and Kibbe 1985, Sadler and Myers 1976).

Most birds depart their breeding grounds by the end of September, sometimes as late as early October. Along the Gulf coast, fall migrants are recorded as early as the end of July and as late as through October (Imhof 1976). Along the Atlantic coast, peak migration occurs in late August and early September; reports of hundreds of Baltimores passing through during the first week of September at Cape May, New Jersey, are common (Stone 1965, Sibley 1997).

In winter, Baltimores are largely absent from the U.S., occurring mostly along the Caribbean coast from southern Mexico south to northern Colombia and Venezuela (Howell and Webb 1995). However, there are numerous reports of stragglers attempting to overwinter in the U.S. Typically, a few are found every winter in the northeastern U.S. Most reports cluster around November to mid-January and usually involve immatures frequenting feeders (e.g., Veit and Petersen 1993, Bannon and David 1997). Larger numbers of individuals may be found locally in the Gulf coast states and Florida, where the species also congregates around feeders (Imhof 1976, Root 1988).

Baltimore is a rare but regular winterer and spring and fall vagrant to the Pacific coast, with most records spanning from late August to late May (Garrett and Dunn 1981, Small 1994). In Oregon, most records are from spring (Gilligan et al. 1994). In eastern California and Arizona, it is a rare but regular spring vagrant but extremely rare during fall (Monson and Phillips 1981, Rosenberg et al. 1991, Small 1994).

Bullock's Oriole

Bullock's Oriole breeds throughout the western U.S. east to Montana, central Texas, and the Great Plains, north to southern British Columbia, and south through Mexico (Howell and Webb 1995, Price et al. 1995). In spring, Bullock's normally arrives in southern California during late March and by early April in northern California (Grinnell and Miller 1944, Webster et al. 1980, Garrett and Dunn 1981, Roberson 1985, Small 1994, Lehman 1994, Lee 1995), although in the deserts it may arrive by mid-March (Matt Heindel, pers. comm.). Elsewhere in the southwestern U.S., it arrives by mid-March, sometimes as early as the first week of March (Rosenberg et al. 1991, Tucson Audubon Society 1995). In the interior U.S., it arrives by the first week of April in southwestern Texas (Wauer 1973) and by mid-April in northern Texas (Pulich 1988).

Fall migration commences fairly early throughout its breeding range. Indeed, Bullock's will depart its breeding range earlier than will Baltimore. In California, individuals are on the move by late July, peaking in mid-to-late August, and continuing into early September (Garrett and Dunn 1981, Small 1994). DeSante and Ainley (1980) have recorded fall migrants as early as 3 July on Southeast Farallon Island, which

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appearance of the back held by Baltimore, but first-year males may possess dark feather centers which may give rise to a slight mottled appearance due to differences in feather details (Pyle 1997). In Baltimore, the scapular feathers have broader, more oval-shaped black feather centers. In Bullock's, the same feathers have very thin black feather centers. Although these minute details are unlikely to be discernible in the field, their overall effect on back color and pattern is important.

Because Baltimore has a darker crown and head, it usually has little or no contrast between the head and the back. On the other hand, the yellow head of Bullock's tends to contrast with the gray back. Overall, Bullock's may appear to have a gray "saddle." We also noticed that rump color may be diagnostic. Although the rump contrasts with the darker back in both species, the rump of Baltimore almost always has a trace of orange or yellow in it, while that of Bullock's is generally gray. This feature may be useful for flying birds or for perched birds with wings drooped.

Wings and Wingbars. From our examination of museum specimens, photographs, and field observations, we discovered that the pattern of the wingbars and the color of the wings can be used to separate the two oriole species at all times. Female Baltimore at any age has two bold white wingbars due to white feather tips in the median and greater coverts. In Baltimore, the bases of the white

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Distribution (continued)

suggests that Bullock's may actually begin departing breeding grounds much sooner than we currently believe. In the Mojave Desert in California, migrants have been recorded as early as 15 July (Matt Heindel, pers. comm.), indicating that Bullock's may, indeed, leave earlier than Baltimore. By middle September, it has largely departed from the U.S. to its wintering grounds in Central America (northern Mexico to Guatemala: Howell and Webb 1995).

A few individuals regularly winter in the U.S., particularly in coastal and southern California, where it can be locally uncommon. Wintering birds are usually found in urban areas where flowering eucalyptus trees are abundant. The ratio of wintering Bullock's to Baltimore Orioles is about two to one along the central California coast (Roberson 1985) but much larger (up to ten to one) in southern California (Matt Heindel, pers. comm.).

There are numerous reports of vagrant Bullock's in eastern North America. Most observations are of females or immature males, but all such reports should be considered suspect. Nevertheless, there are enough reports of adult males to suggest that Bullock's may indeed be at least an irregular vagrant and winterer in eastern North America. Our very cursory compilation revealed that adult males have been seen on 27 May 1970 in Alberta (Sadler and Myers 1976), on 30 May 1971 in Missouri (Robbins and Easterla 1992), and on 12 May 1993 and 3 September 1995 in Iowa (Kent and Dinsmore 1996). The latter two sightings are Iowa's only two records of Bullock's. Veit and Pe-

WINGBARS IN THE TWO SPECIES

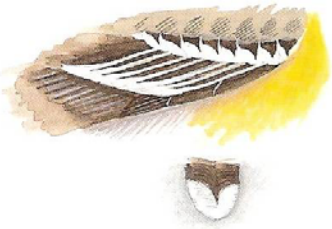
Baltimore. *Female and immature male Baltimores have two bold, white wingbars representing white feather-tips to the median and greater coverts. In Baltimore, the bases of the white tips on the median covert feathers are shallowly indented by the black feather centers, particularly for those feathers nearest to the leading edge of the wing. This gives the black feather centers a squared-off appearance. As a result, the upper wingbar on female Baltimore appears to have a smooth upper border, giving the appearance of a bold, straight-edged stripe. The feather-tips on the greater coverts are also distinctive. Unlike Bullock's, the white on the feather-tips does not extend up the leading edge of the feather, and is best described as terminating abruptly. The overall effect is to produce a second straight-edged wingbar.*

Baltimore Oriole

median covert

Bullock's. *Females possess two white wingbars. The bases of the white tips on the median covert feathers are more deeply indented by black feather centers than are those of Baltimore. Instead of forming a squared-off edge, the black feather centers on Bullock's tend to form tapered, triangular points. As a result, the upper wingbar has a distinctive serrated appearance in the field. The feather-tips on the greater coverts are also different from Baltimore's. Instead of ending abruptly as in Baltimore, the white feather edges extend far up the leading edge of the greater covert feathers. The result is a diffuse lower wingbar and a smeared effect between the pair of wingbars.*

Bullock's Oriole



median covert

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GREG W. LASLEY

This immature male Bullock's Oriole is probably in its second year, judging from its nearly fully-developed adult facial pattern: black chin, throat, and transocular line. The lack of black upperparts and orange underparts makes this bird otherwise resemble female Bullock's. Note the distinctly serrated upper wingbar, a result of deeply indented feather centers. The lower wingbars have white edges at the tip and along the leading edge of the feathers, somewhat hinting at the white wing-patch of adult male Bullock's. Note also the grayish rump and uppertail coverts would be oranger or yellower. Photographed on 25 May 1996 near San Isidro, Starr County, Texas.

tips on the median covert feathers are shallowly indented by the black feather centers, particularly for those feathers nearest to the leading edge of the wing. This gives the black feather centers a squared-off appearance. As a result, the upper wingbar on female Baltimore appears to have a smooth upper border, giving the appearance of a *bold, straight-edged stripe*. The feather tips on the greater coverts are also distinctive. These feathers are edged with white, but the extent to which the white extends up the leading edge of the feather is limited and is best described as terminating abruptly. The overall effect is to produce another straight-edged wingbar.

Female Bullock's also possesses two white wingbars. The bases of the white tips on the median covert feathers are more deeply indented by black feather centers than are those of Baltimore. Instead of forming a squared-off edge, the black feather centers on Bullock's tend to form tapered triangular points. As a result, the upper wingbar has a distinctive *serrated* appearance in the field. Overall, this feather also reduces the boldness of the white wingbar. The feather tips on the greater coverts (lower wingbars) are also different from Baltimore's. Instead of ending abruptly as in Baltimore, the white feather edges on the lower wingbars of Bullock's extend far up the leading edge of the feathers, producing thin veneers of white. The result is a more diffuse second wingbar and a smeared effect between the two wingbars. This wing pattern reminds one of the white wing-patch of adult male Bullock's.

A more elusive difference is the

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Distribution (continued)

tersen (1993) report nine records of Bullock's in Massachusetts substantiated by photographs or specimens, all prior to 1970. Four of these were adult males sighted on the following dates: 1 January–15 April 1954, 24 April 1954, 28 February–3 March 1959, and 27 December 1961 (Snyder, 1964). The remaining five were immature males recorded between September and February, with one staying until April. Undoubtedly, there are more records of Bullock's in the East (e.g., New York and Connecticut) than our limited compilation indicates; by considering only adult males, we may have also discredited an unknown number of reports of true female or immature male Bullock's. However, the fact that the recent resurgence of extralimital Bullock's sightings have been almost exclusively of non-adult-males and that many of these have been shown to be pale Baltimores, makes all such reports disturbingly suspicious. Although Bullock's may indeed be a vagrant to the East, it may be much rarer than we currently perceive. In particular, reports of vagrant Bullock's to northeastern U.S. (AOU 1983) and of regularly wintering Bullock's along the Gulf coast and Florida may need to be re-examined.

Hybridization

Hybridization occurs in a narrow belt in the western Great Plains (North and South Dakota, eastern Colorado, Nebraska, western Kansas, western Oklahoma, north–central Texas) where the breeding ranges of the two species overlap (Sutton 1938, Sibley and Short 1964, Rising 1970, Pulich 1988).

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VICTOR WILLIAMS

This feeder-bird from Carrolton, Georgia, was a problem for many birders. With its white belly and yellow chest, it suggested a Bullock's Oriole to many. However, the bird has no sign of a transocular line, nor a pale eyebrow, indicative of a Bullock's. Also, it appears to be too brightly colored for a typical Bullock's. Note that there is a trace of orange or yellow on the flanks. In Bullock's, the yellow is confined to the undertail coverts and does not usually bleed onto the flanks. Although the wingbars are difficult to see from this angle, the upper wingbar is bold and has a straight upper edge. All of these features indicate that this is a pale first-year female Baltimore. This photograph was taken in February 1998.

color of the wings. In most female and immature male Baltimores, the wing feathers are subtly darker or blacker than those in Bullock's (this is not always the case for juveniles or very worn birds). This attribute can accentuate the bolder wing pattern of female Baltimores.

Of the hundreds of specimens which we examined, this new wingbar field mark proved to be successful in identification to species of all ages and sexes. Because the discriminating factor involves the feather centers, we believe that this field mark can be used for birds in both fresh and worn plumage. In worn plumage, the feather tips will wear down before the feather centers, thus preserving this field mark even when overall coloration has been lost. We also note that this feature has been improperly illustrated in almost all field guides. However, it was accurately portrayed in both species in Lewington et al. (1991).

Males. The identification of adult males is straightforward. Adult Bullock's has a thin black eye-line that runs from the lores to the nape, contrasting with an orange supercilium and cheek. The wings are black with a broad white patch formed by white greater and middle wing coverts. The tail is black with white outer-tail feathers. Adult Baltimore has a uniformly black hood and back. Its wings are black with an orange shoulder-bar and a single white wingbar. The tail is black and orange, with the orange forming two broad triangular regions on the end of the tail. Both the orange shoulder bar and orange tail corners are distinctive in flight.

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NORA AND RICK BOWERS

Note the serrated upper wingbar and dull yellow face, characterized by a dark transocular line and pale supercilium, indicating Bullock's Oriole. The pale belly and gray back are also typical of Bullock's. This individual is an immature in the beginning of its first year based on its extremely fresh plumage, as shown by the dark wings, buffy wingbars, and overall brighter coloration. The photograph was taken in July 1994 in Portal, Arizona.

GEORGES DREMEAUX

This is an immature Baltimore Oriole, probably in its first year and undergoing its first prealternate molt. The black chin and white belly suggest female Bullock's, but the dark head, lack of a dark transocular line, the bold and straight-edged wingbars, the blackish wings, and the strong orange tones are diagnostic of Baltimore. This bird was discovered at feeders in Westchester County, New York, during the winter of 1997–1998. Immature Baltimores with pale bellies, such as this one, have probably been the source of most reports of vagrant Bullock's to the East in the last few years. It is likely that the numbers of true vagrant Bullock's to the East have been overestimated. Photographed on 4 December 1997. (This is also the Photo Quiz bird "C" in this month's answer. See page 298.)

The identification of immature males is more difficult. They resemble females but may acquire some adult-like plumage characters as a result of the first prebasic molt. After the second prebasic molt, dark eye-line and dark throat in Bullock's are usually fully developed. By first pre-alternate molt (varies from November to April), Baltimore acquires patches of blackish feathers on its head or throat, reminiscent of the black hood in adults. Juvenile or first-basic male Baltimores that have not developed any adult-like features will resemble females. In such cases, the above field marks mentioned for female plumages should be used. Caution is warranted because immature male Bullock's can be more brightly colored than females. As a result, the entire underparts, including the belly, may be washed with yellow in immature male Bullock's. Also, some immatures can possess an orange tint. If adult-like facial features are absent, such individuals could be mistaken for Baltimores. It is thus important to base identification on a combination of the above-mentioned field marks. In particular, the pattern of the wingbars should prove diagnostic.

Voice. Both species have distinct songs. The song of Baltimore consists of continuous fluted or whistled notes and is often described as being more musical than Bullock's. The song of Bullock's consists of a series of short whistles often introduced by or containing gruff chatter-notes (Peterson 1992). Unlike most other songbirds, both males and females of these two species will sing on territory (Beletsky 1982).

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Both species emit loud chatters. Baltimore emits a series of very rapid chatter-notes. Bullock's also emits a rapid series of chatter-notes, the chattering typically being slower than in Baltimore (Peterson 1992). Other calls given by both species include a clear *whuit* whistle and a *chuck* call (Howell and Webb 1995). Differences in these calls are slight, but differences in verbal descriptions are large (e.g., Peterson 1980, Farrand, Jr. 1983, Howell and Webb 1995).

Conclusion

The range of variation in conventional field marks used to separate Bullock's and Baltimore Orioles has been underappreciated. Identification of these two species in female and immature plumages is not as straightforward as existing field guides might lead us to believe. (Some field guides illustrate differences in features such as head and face patterns well, but the text often focuses on misleading field marks.) However, with careful study, the two species in female and immature plumages can be confidently distinguished based on a combination of wingbar pattern and other features.

Until recently, detailed descriptions of extralimital sightings of Bullock's and Baltimore Orioles have not been emphasized. As a result, some historical reports may be erroneous, and a full re-assessment of the vagrancy status of both species may be warranted.

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