

The Mexican Duck in Colorado: Identification and Occurrence

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Most everything about the taxon known as Mexican Duck (*Anas diazi*) is controversial, confused, and conflated. The taxon has been considered by the American Ornithologists' Union (AOU) as conspecific with Mallard (*A. platyrhynchos*) since 1983 (AOU 1983), mostly on the basis of the arguments presented by Hubbard (1977). With that reduced taxonomic status, most birders have paid it little attention, so many were likely surprised when a male was found at Walden Reservoir, Jackson County, Colorado, in April 2006. That surprise may have been due both to the bird's distance from the species' known range and to wondering why anyone would care.

We here consider Mexican Duck to be specifically distinct from Mallard (following Banks 2010, Gill and Donsker 2012) and summarize three aspects of the current state of knowledge of the taxon: 1) its relationships within the clade of large, brown dabbling ducks; 2) its occurrence pattern in Colorado as elucidated by previous and recent field workers; and 3) the features allowing birders to separate it from similar taxa and hybrids. This last feature should be read in concert with the photographic material presented on page 299 and on the back cover (see back cover photo captions on p. 308).

Taxonomic History and Relationships

Hubbard (1977) concluded that "extensive hybridization [of Mexican Duck with Mallard] in southeastern Arizona, New Mexico, and west-central Texas compels merger into a single species." Hubbard's treatise was shortly followed by that of Scott and Reynolds (1984), which reached the same conclusion. Both studies used a scale developed by Hubbard (1977) that combined 18 characters to classify birds from pure Mallard (score = 0) to pure Mexican Duck (score = 36). Not even at the southern edge of the Mexican Duck's range in central Mexico did the population consist entirely of "pure" birds, as the average score there was 34.5, and at the northernmost study site near the U.S. border in northwestern Chihuahua, the average score was still high at 28.3 (Scott and Reynolds 1984). For the most part, plumage and structural characters showed a fairly smooth cline (Scott and Reynolds 1984).

If at least some Mexican Ducks throughout the species' range have some Mallard genes, then one would expect that there must have

been substantial long-term hybridization between these two taxa. But there is very little overlap in breeding range between Mallards and Mexican Ducks in Arizona (Webster 2007), New Mexico (Ligon 1961), and Texas (AOU 1998). Additionally, Mexican Ducks likely pair early, before migrant wintering Mallards arrive (Brown 1985, Corman 2005), and they may have a tendency to form stronger bonds than most other ducks, lasting over multiple years (Williams 1980, Brown 1985). Finally, Bevill (1970) found assortative mating in a portion of New Mexico where both taxa occur (though it should be noted that extra-pair copulations could potentially produce hybrid young in a nest tended by pure parents). Data from Kulikova et al. (2004, 2005) suggest that in the past, Mallards may have hybridized more extensively than they do today with Mexican Duck and other New World Mallard-like species (Mottled Duck, *A. fulvigula*; American Black Duck, *A. rubripes*), and such might explain the phenotypic cline found by Hubbard (1977) and Scott and Reynolds (1984).

Certainly, Mallards hybridize with Mexican Ducks currently (see Fig 1). However, Mallards also hybridize extensively with other taxa that are still considered separate species. For example, hybridization with introduced Mallards has had a substantial negative impact on populations of the Hawaiian Duck (*A. wyvilliana*) in most of Hawaii (Drilling et al. 2002, Pyle and Pyle 2009) and the Gray Duck (*A. superciliosa*) in New Zealand (Drilling et al. 2002).

This circumstance bears a striking resemblance to the situation between Mallard and Mottled Duck in both Florida and Texas, and that between Mallard and American Black Duck throughout the latter species' range and beyond. For instance, in 1977 an estimated 13.2% of "American Black Ducks" shot by hunters were actually hybrids (Longcore et al. 2000).

Additionally, Christopher L. Wood (pers. comm.) found that virtually all large, dark dabbling ducks along the Upper Rio Grande in Texas in April 2012 appeared to be Mexican \times Mottled Duck hybrids.

Introggression on a similar scale also exists in several better-studied taxon pairs, such as Glaucous-winged and Western gulls, American and Black oystercatchers, and Blue-winged and Golden-winged warblers. The only real difference is that the AOU currently considers Mexican Duck to be "just" a subspecies of Mallard; the gulls, warblers, oystercatchers, and the other large dark ducks are all considered full species. This treatment is inconsistent, particularly considering the body of published evidence not only supporting specific status for Mexican Duck, but also demonstrating that Mallard is not Mexican Duck's closest relative! Livezey (1991) found Mexican Duck to be a species distinct from Mallard based on morphological characters, and

Figure 1: Male Mexican Duck \times Mallard (front). The “bimaculated” head showing green crown with pale or buffy cheek is typical of many F1 (first-generation) Mallard hybrids. If extensive hybridization were currently taking place between Mexican Ducks and Mallards, one would expect the majority of males of mixed ancestry to resemble this one, but very few do, suggesting that most “hybrids” are products of many generations of back-crossing with “pure” Mexican Duck (gene introgression). Indeed, since Hubbard (1977) found that many birds at even the southern end of Mexican Duck range were not quite “pure” by his phenotypic evaluation, the definition of what constitutes a “pure” Mexican Duck is unclear. Photograph by Steven G. Mlodinow at Tucson, Pima County, Arizona, 9 December 2010.

Figure 2: Alternate-plumaged adult male Mallard. Often a conundrum to the inexperienced, male Mallards in alternate plumage, which they wear from mid-summer to late fall, are not what most birders think of as male Mallards. However, the bright yellow bill, strongly white-edged speculum, and nearly all-white tail are excellent characters allowing differentiation from most other large, brown dabbling ducks. Alternate-plumaged male Mexican Ducks are similar, but lack the Mallard’s white tail. Photograph by Scott Whittle, Cape May Point State Park, Cape May County, New Jersey, 8 October 2011.

Figures 3 and 4: Female American Black Duck \times Mallard hybrid. This bird might easily hide among American Black Ducks in eastern North America, but should stand out as something to study more closely here in Colorado. The bird’s darkness and dark tail might cause consideration of Mexican Duck, but the bird is too dark and has too little white in the tips of the secondaries and greater coverts. Finally, the bird’s bill color would make it a male if it were a Mexican Duck, but the middle of the bill has the ghost of a female Mallard’s dark saddle, which should rule out that possibility. Photographs by Christopher L. Wood, Monroe County, New York, 24 December 2008.

Figure 5: Female American Black Duck. The lack of internal pale markings on the body feathers, the lack of white borders to the speculum, the all-dark tail, the olive-colored bill, and the very dark coloration all point to American Black Duck, and the olive-colored bill lets us know that it is a female. Photograph by Christopher L. Wood, Ithaca, Tompkins County, New York, 19 June 2009.

Figure 6: Female and male Mottled Ducks. In this species, both sexes sport a distinctive black patch at the gape (the angle at which the two halves of the bill meet), while males add a black border at the base of the bill. Both sexes also appear quite buffy-headed, a feature that shows up at surprising distances. At close range, the dearth of streaking on the head makes for a great confirmatory feature for the species. Finally, the internal markings on the body feathers in both sexes are strong and tend to form distinct ‘V’s, unlike the generally rounded and less-notable markings on these feathers in Mexican Duck and Mallard. Photograph by Christopher L. Wood at Wakodahatchee Wetlands, Palm Beach County, Florida, on 16 January 2009.



Fig. 1. Male Mexican Duck × Mallard (front)



Fig. 2. Alternate-plumaged adult male Mallard



Figs. 3 and 4. Female American Black Duck × Mallard hybrid



Fig. 5. Female American Black Duck



Fig. 6. Female and male Mottled Ducks

several studies using mtDNA have agreed, most finding that Mexican Duck appears more closely related to Mottled Duck than to Mallard (Johnson and Sorenson 1999, McCracken et al. 2001, Kulikova et al. 2004, Gonzales et al. 2009). This evidence has led the International Ornithologists' Union to split Mexican Duck from Mallard (Gill and Donsker 2012), and led Banks (2010) to recommend that the American Ornithologists' Union split Mexican Duck from Mallard, a recommendation the AOU has not yet followed.

The Problem of Mallard × Mexican Duck Hybrids

With various authors (e. g., Hubbard 1977, Scott and Reynolds 1984, Sibley 2000) describing a high degree of Mallard gene introgression into Mexican Duck populations, can anyone be certain of the genetic makeup of any individual purported Mexican Duck? The answer is simple: no.

From a birding point of view, one simply cannot be certain of the parentage and ancestry of any individual bird. The best that birders (or bird records committees) can do is to determine the visible and audible features of a bird. This is as true for Mexican Duck as it is for Glaucous-winged Gull, Blue-winged Warbler, and Eastern Towhee. It is also true of Masked Booby, Dunlin, Western Screech-Owl, Yellow-throated Warbler, Nelson's Sparrow, and Flame-colored Tanager, all of which are among the minimum of 299 ABA-area species (split equally between non-passerines and passerines) for which there are documented cases of hybridization (mostly from Pyle 1997, 2008). And those are the documented cases! In order to put a name on any bird, we have to be willing to ignore the possibility that it may have genes of multiple species, at least until there is a way to remotely assay a bird's genes. Therefore, we believe that any bird exhibiting no sign of gene introgression should be acceptable to us as an individual of the species that it appears to be, else we are forced to use circumlocution in our reporting (e. g., "I saw an apparent phenotypically pure Common Eider at Antero Reservoir, but since there are known hybrids with that species and at least four other species, I cannot be sure that it was genetically pure").

However, this situation does call for close scrutiny of any duck that might be a Mexican Duck, particularly in Colorado, where our understanding of the taxon's occurrence is far from complete. We recommend that the CBRC require complete descriptions and, preferably, photographic evidence of any submitted report of Mexican Duck, as there is a high likelihood of hybrids or back-crosses occurring in the state. Such provides most of the impetus for penning this essay.

Record of Colorado Occurrence

Bailey and Niedrach (1965) report three specimens of Mexican Duck from Colorado in addition to a sight report (see listing, below). Andrews and Righter (1992) did not treat this taxon, as it had been lumped with Mallard (AOU 1983). We note, though, that Andrews and Righter (1992) discounted Bailey and Niedrach's two records of Mottled Duck from Colorado (both in Larimer Co., Nov. 1907 and Sep. 1962) because both Andrews (1978) and Gent (1986) considered both birds to be "probable hybrids." These two specimens and the three of Mexican Duck should be re-assessed given our current state of knowledge of these taxa.

In the listing below, those records preceded by a dagger (†) are represented by a specimen housed at the Denver Museum of Nature and Science (DMNS); the specimen accession number is listed for each of these. Records preceded by an asterisk (*) have been accepted as valid by the Colorado Bird Records Committee.

† 29 Oct 1939; female; near Henderson, Adams County; A. Bailey, B. Niedrach; DMNS 20557

† 19 Nov 1944; male; Mile High Duck Club, Adams County; A. Bailey; DMNS 24392

† 4 Mar 1947; female; Jumbo Reservoir, Sedgwick County; G. I. Crawford; DMNS 25374

16 May 1950; pair; Spring Creek, Rio Grande County; R. Ryder (Ryder 1951)

* 20 Apr 2006; male; Walden Reservoir, Jackson County; B. Gibbons, M. Iliff, C. Sheely (photo)

* 16 May 2006; female; near Arboles, Archuleta County; J. Beatty

* 15 Apr 2009; male; Lower Latham Reservoir, Weld County; D. Lane (photo)

28 Mar 2011; female; Russell Lakes, Saguache County; T. Floyd

* 12 May 2011; male; Boulder Reservoir, Boulder County; S. Mlodinow, T. Floyd

* 12 May 2011; male; near Firestone, Weld County; S. Mlodinow (photo)

22 Jul 2011; male; near Punkin Center, Lincoln County; T. Floyd

1 Jan – 8 Apr 2012; male; Pueblo, Pueblo County; S. Mlodinow (photo) [in review by CBRC]

4 Mar – 2 Jun 2012; male, near Firestone, Weld County; S. Mlodinow [in review by CBRC]

11 Apr 2012; male; St. Vrain State Park, Weld County; S. Mlodinow [in review by CBRC]

Identification

While considered by some authorities to be conspecific with Mallard, Mexican Duck is not necessarily most readily confused with that species. The darkness of the plumage also encourages confusion with American Black Duck and Mottled Duck, the other large, dark-brown dabbling ducks of the genus *Anas* found in the U.S. However, the greatest challenge is posed by birds showing mixed Mexican Duck-Mallard ancestry. Such birds can closely resemble either parental taxon.

The key features differentiating Mexican Duck from its confusion species are noted in Table 1, and many of the more critical features are discussed in the captions to Figs. 1-10. We here follow Pyle (2005) in considering the so-called “eclipse plumage” of ducks to be an alternate plumage, rather than a basic plumage.

Determining Sex

Of these four species (American Black Duck, Mallard, Mottled Duck, and Mexican Duck), only Mallard is strongly sexually dimorphic; in the other three, differentiation of males from females typically requires close study. Males of all four species tend to have flatter crowns with a decided tendency toward a peak to the crown forward of the eyes. Bill color is also diagnostic for sex determination once individuals achieve adult bill color; all begin life with blackish bills. Other characters providing clues for determining sex of individuals may be gleaned from Table 1.

Determining Age

As in nearly all duck species, age can occasionally be determined (particularly in worn plumages, thus from late winter into early summer) by the paleness and/or raggedness of the tail. First-cycle ducks retain their juvenile tails until they are around one year old; those tails can bleach quite pale and can become quite frayed.

Summary

Mexican Duck is closer in plumage color to Mallard than it is to Mottled Duck or American Black Duck, being just slightly darker than Mallard. Thus, tail coloration is of extreme importance in differentiating Mexican Duck from Mallard, particularly in combination with bill color and pattern.

Mexican Duck is somewhat paler than is Mottled Duck, but lacks the latter species' strong buff tones and nearly unstreaked head and neck. Mottled Duck lacks (or nearly lacks) the white or pale borders to the speculum shown by Mexican Duck, and the internal markings

on the body feathers tend to form sharp and obvious 'V's, unlike the rounded markings on Mexican Duck. Both species share the distinctive trait of a black gape spot (Bellrose 1980), though this feature is much more distinct and pronounced on Mottled Duck than on Mexican Duck, in which it is often, or even usually, absent. At medium and close range, this spot is noticeable and well-defined on Mottled Duck, while, when present on Mexican Duck, it is ill-defined and less noticeable. The black basal border of the bill on male Mottled Ducks is distinctive.

Mexican Duck is obviously paler than American Black Duck. The darker face of American Black Duck contrasts less with the dark crown than in Mexican Duck, but this feature may require experience to use accurately. American Black Duck also differs from Mexican Duck in lacking any (or nearly any) white or pale border to the speculum, cinnamon tones in the body-feather fringes, and internal pale markings on the body feathers.

We encourage great caution in identifying Mexican Duck in Colorado, primarily due to the problems caused by Mallard × Mexican Duck hybrids and Mallard × American Black Duck hybrids. Male Mallard features that seem to persist through successive generations of back-crossing with other species include green on the head (occasionally present in very small amounts), curled-up tips to the central uppertail coverts, and white in the tail. Obviously, female birds with mixed ancestry are much more difficult to detect, but color and pattern of bill and tail can indicate the presence of Mallard genes. Correctly assessing tail features, however, requires excellent views in multiple postures, preferably with a view from behind of the spread tail. Note the difference in apparent tail color due to change in lighting and angle on the two pictures of the same flying Mexican Duck on the back cover (Figs. 9-10).

ACKNOWLEDGMENTS

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Table 1. Identification features of brown ducks in the Mallard group.

Character	Mallard (male features are those of alternate plumage ¹ , also known as “eclipse” plumage)	
	Mexican Duck	
Crown	Blackish, extensive; strong contrast with supercilary	Dark brown to blackish, extensive; strong contrast with supercilary
Eyeline	Blackish, extending nearly to nape	Blackish, extending nearly to nape
Bill	Female: Olive-yellow with brighter yellow edges Male: Bright yellow	Female: Orange with extensive black saddle Male: Bright yellow, some with olive cast
Cheek	Grayish-tan, vague darker streaking	Female: Pale brown with vague dark streaking Male: Gray with black streaking
Unstreaked subloral area	Female: Medium-sized, grayish-tan Male: Small, tan	Female: Large, grayish Male: Medium-sized, grayish-white
Gape	Usually pale, but ill-defined dark spot sometimes present	Pale
Throat	Tan, vaguely streaked	Whitish, mostly unstreaked
Chest	Warm brown with blackish streaking	Female: Ruddy brown, with dark streaking Male: Maroon, with dark marbling
Upperparts feather fringes	Cinnamon	Female: Orangish-tan, fading to off white Male: Buff, though vague and thin
Tertials	Grayish-brown, vague grayish-tan fringes	Female: Brownish-gray with whitish fringes Male: Gray
Speculum	Medium metallic blue, some (males?) with greenish aspect; white tips to greater coverts and secondaries thin, similar in width to upper and lower black borders to metallic blue section	Medium metallic blue; white tips to greater coverts and secondaries wide, noticeably wider than upper and lower black borders to metallic blue section
Undertail coverts	Female: Medium brown with blackish markings Male: Medium brown with extensive blackish centers	Whitish to cream, with darker markings (males similar to females, but more variable depending on state of molt)
Tail	Grayish-brown with variable gray markings	Female: Outer rectrices mostly white with variable dark markings; central rectrices mostly dark with variable whitish areas Male: White with few or no darker markings

¹As per Pyle (2005)

Character	Mottled Duck	American Black Duck
Crown	Female: Brown, narrow; medium contrast with superciliary Male: Dark brown; low contrast with superciliary	Black, extensive; low contrast with superciliary
Eyeline	Female: Blackish, short; obvious gap between eyeline and nape Male: Blackish, medium-length; gap between eyeline and nape	Black, extending nearly to nape
Bill	Female: Olive with vague yellowish edges Male: Bright yellow with black basal border	Female: Olive Male: Dull yellow, some with olive cast
Cheek	Female: Warm buff with little or no dark streaking Male: Buff with vague darker streaking at rear	Tan with extensive dark streaking
Unstreaked subloral area	Large, not contrasting with unstreaked cheek	Female: Small, tan Male: Essentially non-existent
Gape	Small, triangular, contrasting black spot	Dark
Throat	Warm buff, unstreaked	Tan with grayish streaking
Chest	Dark brown with blackish streaking	Dark brown with extensive blackish streaking, more so in males
Upperparts feather fringes	Cinnamon	Female: Medium brown, thin Male: Medium brown, but nearly lacking
Tertials	Dark brown with cinnamon fringes	Female: Blackish with medium brown fringes Male: Blackish with little or no pale fringing
Speculum	Dark metallic blue; very thin white tips to secondaries and, occasionally, greater coverts	Dark metallic purplish-blue; some with very thin pale tips to greater coverts
Undertail coverts	Female: Medium brown with blackish markings Male: Blackish with some brown areas	Blackish with some dark brown fringes
Tail	Grayish-brown with variable gray markings averaging less extensive than those of Mexican Duck	Blackish, some (particularly females) with some grayish markings

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Captions for back cover photos:

Figure 7 (Back cover, top left). Male Mexican Duck. This male can be differentiated from Mallard by the richer, chestnut-buff internal feather markings on body, the sharp contrast between dark body and paler neck and head (though only head visible), dark tail lacking white markings, and narrow white speculum borders, particularly posteriorly. Mottled Duck would have more prominent internal feather markings and more limited (or no) pale border to speculum. Note that this bird does have a small black spot at gape, present on many Mexican Ducks (see text). The fairly bright bill places this bird as a male. Photograph by Steven G. Mlodinow in Tucson, Pima County, Arizona, on 9 December 2010.

Figure 8 (Back cover, second from top). Male Mexican Duck. This bird was easily separated from nearby Mallards by the overall dark coloration, due in part to the rich chestnut-buff internal feather markings and edgings. Also note the all-dark tail and the conspicuous demarcation between dark chest and light neck. The lack of gape spot, presence of streaking on lower face, and relatively limited internal markings on body feathers eliminate Mottled Duck from consideration. The bright yellow bill easily establishes this bird as a male. Overall, this Mexican Duck is rather typical of those seen within the species' core U.S. range. Photograph by Steven G. Mlodinow, Pueblo City Park, Pueblo County, Colorado, 1 January 2012.

Figures 9 and 10. Male Mexican Duck (same bird as in Fig. 8). Note the difference that lighting makes on the appearance of the tail, which goes from entirely dark in the shade (Fig. 9) to dark with extensive whitish-gray internal markings in harsh sunlight (Fig. 10). If this were a female Mallard, the outer tail feathers would be entirely white and the internal markings on the brightly lit photo would be bright white. The speculum color varies from purple-blue on the shaded photo to nearly "teal" on the brightly lit photo. Additionally, note the speculum borders, narrower than on Mallard overall, particularly the anterior border. Photographs by Tony Leukering, Pueblo City Park, Pueblo County, Colorado, 25 January 2012.



Fig. 7. Male Mexican Duck

Fig. 8. Male Mexican Duck



Fig. 9. Same male Mexican Duck as in Fig. 8



Fig. 10. Same male Mexican Duck as in Fig. 8