

# An Odd Duck: Sex, Age, and Wood Ducks

*Is This Partly Male- and Partly Female-looking Wood Duck an Intersex Individual?*

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In mid-June of this year, I was walking through our living room, and as I've done thousands of times before, stopped to scan my backyard swamp to see which birds and other wildlife were visible. About 300 feet away, one of the four Wood Ducks in view caught my eye (Featured Photo). I pointed the spotting scope at the duck for a better look, and I could discern the big white eye rings of an adult female, but I also saw a very prominent crest—characteristic of an adult male. However, the crest appeared to be the darker shade of forest green that females have on the top of their heads rather than the usual emerald green with navy tones of a male Wood Duck (Supplemental Photo 1).

The body plumage was most like that of a male, but the many patterns and colors were more muted. The eyes were clearly those of a female—dark with large distinctive white eye rings and bright yellow skin right around the eyes—nothing like the bright red eyes and skin and very visible pupils of a male (compare with Supplemental Photo 2). The beak was dark like a female's, not the yellow, orange-red, white, and black of an adult male's, but the breast was that of a male. The cheeks were black, speckled with white—unlike those of either sex. And, although I could see white crescents on the face, they weren't as distinct as those of an adult male.

What was this duck? A male? A female? Some combination? I reached out to *Birding* Editor Ted

Floyd to see if he could help me solve the mystery, and Ted put me in touch with plumage doyen Peter Pyle.

—Tara Tanaka

Humphrey and Parkes (1959) got a lot right when they developed what is unquestionably the best molt and plumage terminology, the only one that can be used to compare plumages across bird taxa and thus trace the evolutionary history



**Featured Photo.** Tallahassee, Florida; June 23, 2018. Photo by © Tara Tanaka. Go online to see a video of this bird and its behavior ([tinyurl.com/Tanaka-WoDu](https://tinyurl.com/Tanaka-WoDu)).



**Supplemental Photo 1.** The bird with its wings raised clearly is different from the three other adult male Wood Ducks in this photo. Yet it differs in many ways from a typical adult female. Tallahassee, Florida; June 23, 2018. Photo by © Tara Tanaka.

of molts, from reptiles through present-day birds. However, they also admitted at the time that “parts of our fundamental thesis [may] need to be altered or broadened.” One such misreckoning, in their interpretation of first-cycle molts, was elegantly addressed by Howell et al. (2003) in their defining of the “preformative molt.”

Another small misinterpretation involved their treatment of molts and plumages in ducks. This will get just a tad technical, and if you want to skim through this paragraph and the next one, that’s okay. Anyhow, a fundamental feature of Humphrey–Parkes nomenclature is that factors related to “seasonal, reproductive, developmental, or other phenomena” must be ignored. Terminology instead is based simply according to the replacement (molt) of feathers and the plumage that ensues. Hence, plumage *color*, which has much to do with those seasonal, reproductive, and developmental factors, must be disregarded in naming a particular plumage and the molt that precedes it. In this regard, Humphrey and Parkes ignored another one of their precepts—namely, that the “molt cycle” be defined in terms

of *complete* prebasic molts.

Humphrey and Parkes’s error in this case is that they treated the bright colors of male ducks as an inserted alternate plumage. That’s understandable, as most other birds do it that way; think of the alternate plumages of brightly colored shorebirds, warblers, buntings, and so forth. At least they partially corrected the conventional view that female ducks breed in what was considered their “non-breeding” plumage! But if we ignore plumage color and trace molts from ancestral waterfowl taxa, we discover that the brightly colored feathering in males corresponds to the *basic* plumage (Pyle 2005, 2013). In both sexes of ducks, a *partial* body feather molt in spring females and summer

males constitutes the prealternate molt, resulting in a cryptic (“eclipsed”) plumage for breeding and wing feather molt; the body-feather molt following wing feather molt and resulting in bright male plumages is, by contrast, *complete*. Because ducks go into hiding during the wing molt, body-feather molts during this period are not well studied, which has hindered understanding of molt and plumage strategies.

With that as a backdrop, we can now discuss the plumage of the Wood Duck observed by Tara Tanaka in her Tallahassee, Florida, backyard. When both age and sex are in question—for example, when we are separating adult females from first-year males—it is sometimes better to sex a bird first and then determine its age. In this case, however, the opposite approach is better. A consistent way to age ducks, irrespective of plumage coloration, is by the shape of the upper-wing coverts and secondaries, in particular the greater coverts. These are squared and often more sharply patterned in adults than in juveniles. Some inner secondary coverts can be replaced during the partial prealternate molts, but most of this tract and all of the secondaries are retained year-round, either as juvenile feathers in first-year birds or as definitive basic feathers in adults (Supplemental Photos 3, 4). By this criterion, the subject bird is an adult (Supplemental Photo 5).

Okay, now that we’ve aged the bird, what about sex? Well, by body plumage,

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**Supplemental Photo 2.** In addition to various traits intermediate between male and female, this Wood Duck exhibits black cheeks that are speckled with white—not typical of either sex in basic plumage, indicating alternate feathers. Tallahassee, Florida; June 24, 2018. Photo by © Tara Tanaka.

it's clearly not a typical adult male, but it does not fit a typical adult female, either. As Tara notes, it seems right in the middle. Can we say anything about its sex from the wing feathers? Among puddle ducks, the greater coverts and inner secondaries (excluding the tertials) constitute the “speculum,” and the brightness and patterns to these feathers are useful for both aging and sexing ducks, especially when one of these parameters, in this case age, is known. In Wood Ducks, the speculums do not vary as much by sex as in other ducks. The best feathers to assess are those of the greater coverts corresponding to the 6th to 8th secondaries from the outside (s6–s8; see Fig. 47 in Pyle 2008), and a comparison of these feathers in the subject bird (Supplemental Photo 5) indicates them to be, like the body plumage, intermediate between adult male and adult female.

Where does this leave us? I find it quite interesting that the iris, orbital skin, and bill colors match a female rather than a male, as Tara points out. I believe that, by far, the best explanation for this plumage is that this is an older or “senescent” female that has acquired male-like characteristics, a phenomenon known in many bird taxa, especially ducks. It turns out that plumages of ducks are actually controlled by estrogen. The browner plumages are considered the “neutral plumage state” as maintained by estrogen levels in females, and the reduction of estrogen leads to the colorful plumage of formative and definitive male ducks (Kimball and Ligon 1999). As female ducks

age, reaching perhaps six years old or older, estrogen production drops and male plumage coloration develops to varying degrees (Greij 1973, Endler et al. 1988). A similar effect can occur when an ovary is lost or damaged. This phenomenon also affects feather shapes, likely explaining the medium-long crest in the subject bird. Sex-specific color patterns and shapes of feathers are controlled by complex, interrelated fluctuations in sex hormones, thyroid secretions, and pituitary gland activities that, at least in this case, appear not to have affected bare-part colors.

Now what about the molt and plumage state of this bird? Adult female Wood Ducks undergo a partial prealternate molt into a more cryptic plumage for nesting in January–April,



PSM 12977



PSM 16976

**Supplemental Photos 3, 4.** Incredibly useful for studies of molt is the Slater Museum of Natural History's *Wing and Tail Image Collection* ([tinyurl.com/Slater-wing-tail](http://tinyurl.com/Slater-wing-tail)). Wings of four Wood Ducks are in the collection ([tinyurl.com/Slater-WoDu](http://tinyurl.com/Slater-WoDu)). The two images here are of (left) a post-fledging (hatch-year) male from Skagit County, Washington, August 25, 1991 (Puget Sound Museum 12977), and (right) an adult female from Grays Harbor County, Washington, May 6, 1993 (Puget Sound Museum 16976). Note the rounded and indistinctly patterned upperwing coverts and secondaries in 12977, indicating juvenile feathers, in contrast with the squared and distinctly patterned coverts and secondaries in 16976, indicating definitive basic feathers. Images courtesy of the Slater Museum of Natural History.

**Supplemental Photo 5.** Note the square-shaped greater coverts and secondaries of our subject bird, with sharply defined patterns, indicating an adult. Tallahassee, Florida; June 18, 2018. Photo by © Tara Tanaka.



whereas males assume their cryptic alternate plumage in June–July, to provide camouflage during the synchronous wing-feather molt in July–August, at which time they become briefly flightless (Pyle 2008). The prealternate molts involve a variable number of head and upperpart feathers along with zero or a few inner wing coverts. Tara notes that the auriculars of the subject bird were speckled white and black, not matching either male or female adults, at least those in basic plumage. I believe these are alternate feathers—as may also be the case for the paler and duller feathers of the lower scapulars, rump, and upper-tail coverts.

This leads to the next question: Does the reduction of estrogen also affect the timing of molt? If so, it could be that the limited extent of the prealternate molt this late in the season may indicate a delay in timing, toward that of males, which should just be commencing this molt in mid-June. As usual when it comes to molts and plumages in birds, “more study needed”!

—Peter Pyle

After seeing this duck for the first time, I spent many hours in my blind observing and documenting our unusual visitor. I would agree that the duck’s behavior was more consistent with that of a female. At the end of a video I made of this duck ([tinyurl.com/Tanaka-WoDu](http://tinyurl.com/Tanaka-WoDu)), the bird flies to a branch and proceeds to clear a large area for herself. This is the exact behavior I’ve seen in females with ducklings as they clear the area around their ducklings to protect them from other ducks.

Our Wood Ducks go into hiding during hunting season (November–January) and during what I now know is the time of their “synchronous wing-feather molt” in July–August, so I’ve rarely seen them during this period when they aren’t at their snazziest. Thanks to Peter for solving this mystery—I’ve learned more than I ever expected.

—Tara Tanaka

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## Acknowledgments

Pyle thanks Gary Shugart, at the Slater Museum of Natural History, for assistance in procuring Supplemental Photos 3, 4.

The  
brilliant  
answer is  
always...



The adult male Wood Duck has got to be just about the easiest bird to identify in the ABA Area. And the female Wood Duck, although not as garish as the male, is nevertheless a cinch to recognize. Except for the problem of plumage variation. Although many birders know that male ducks acquire a female-like “eclipse” plumage in the summer, fewer are aware that female ducks can acquire a male-like plumage as they grow older. All of which is to say: Is this bird a male? Or a female? Or both?

• **Eavesdrop on Peter Pyle and Tara Tanaka’s conversation about the Featured Photo, beginning on p. 58 of this issue.**

This installment of the *Birding* Featured Photo, like several others in recent issues, arose from a question—basically, “What’s the deal with the bird in this photo?” Then we summoned Peter Pyle, and a conversation ensued. Do you have a photo of a mystery bird? Please submit it to *Birding* magazine, and let the fun—and the conversing—begin.



Join the online discussion about this odd duck, hosted at The ABA Blog and still ongoing: [aba.org/magazine](http://aba.org/magazine)

