

in different ways, and these differences are where breeders of poultry and livestock have often diverged. Some important and cautionary examples of examples where the attitudes overlap between these two big classes of breeds can help tease out some important lessons.

In the minds of most livestock breeders the uniformity of breeds results from the expected interactions of foundation (what goes into the original mix), isolation (so the mix is not further jumbled or changed along the way by outside stock), and selection (which specific animals breeders choose to keep, and which they choose to reject). In most cases a fourth dimension is piled on here, which is that the whole result is functioning in a specific environment, along with people, for the purposes of production. These are the four most important aspects of a functional breed.

This whole process of breed formation tends to yield a final appearance almost as a secondary result. The cascade of events starts with foundation (what was available), then isolation (nothing else was available!), and selection (breeders needed the animals to do this or that) and the result was animals shaped by the interactions of these three in the environment and serving people. This

process of breed development has occurred, resulting in breeds that function biologically in exactly the same way that livestock breeds function. These can be called “primary” breeds, because they follow the usual trajectory of foundation, isolation, and selection leading to a uniform and recognizable bunch of animals or birds that are designated “breeds.”

However, for many breeds of poultry, and some of mammals, a second pathway has become nearly as important as this first, and often poultry breeders do not reliably distinguish between these two pathways in either their thinking or their practices.

Poultry breeders, seeing the almost inadvertent uniformity brought by the process described above, have often targeted superficial phenotypic uniformity without necessarily including the steps of foundation, isolation, and selection. Poultry breeders have often envisioned a final external appearance, and then have blended various influences to attain that overall product. In many poultry breeds the result has been that varieties within the breeds do not share common histories of foundation, isolation, and selection with one another. For example, White, Buff, and Partridge Chantecler chickens each come from different foundations,

... it is important to understand that “breed” may mean two different things to two different people.

process always results in a certain degree of uniformity, both for appearance and production. The end of that process is an easily recognizable breed, and most observers forget all those steps that went into the process, and concentrate only on the final relatively uniform result.

Breed uniformity can then be taken a final step as a more deliberate process when breeders organize, notice the similarities among their animals, and then deliberately eliminate some rare variants that do not fit the majority package of traits. This final step is breed standardization. Importantly, in most cases the standardization was the crowning final event on a process already well in progress, and leading to the end result of reasonable uniformity. This last step gives the amazing uniformity across an entire breed that makes it so easily recognizable.

For several poultry breeds this same

even though the final products resemble one another externally in all but color. Selection is the key here, with foundation and isolation playing minor roles if any at all.

This second path to breed development, especially in poultry, leads to a logical split in what might be called primary breeds as opposed to secondary breeds. Primary breeds are those with birds that have a shared background of foundation, isolation, and selection. Secondary breeds lack this shared background, and end up with their uniformity coming from targeted selection for a specific phenotype even though the foundation and isolation steps are not shared all that widely among members of the breed. Both primary and secondary breeds have importance, but they are fundamentally different in their function as biological units. As with most of life,

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Breeds & Type

PRIMARY, OLD FOUNDATION

Ancona	Minorca
Andalusian	Old English Game
Aseel	Pheonix
Black Sumatra	Polish
Brahma	Sebright Bantam
Campine	Shamo
Catalana	Sicilian Buttercup
Cochin	Silky Bantam
Crevecoeur	Spanish
Cubalaya	Sultan
Dominique	Sussex
Dorking	Wyandotte (silver laced, white, black)
Frizzle	Yokohama
Hamburg	
Java	
Lakenvelder	
Langshan	
Leghorn	
Malay	

SECONDARY BREEDS

Americauna
Australorp
Chantecler
Cornish
Delaware
Faverolles
Holland
Jersey Giant
Lamona
Orpington
Plymouth Rock other than Barred
Rhode Island White
Wyandotte (golden laced, buff, partridge, silver penciled, columbian, blue)

OLD BREEDS FROM A BLEND OF PRIMARY BREEDS

Barred Plymouth Rock
Buckeye
Houdan
LaFleche
Modern Game
New Hampshire
Redcap
Rhode Island Red

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a few fall in between these extremes, and these include some old breeds that came from blending primary breeds together long ago.

The issues that spring from primary and secondary breeds are important and glaringly obvious for poultry, but are no less important for breeds in nearly every species where breeders have resorted to crossing to other breeds for performance gains or in order to have a competitive edge in the show ring or other performance evaluations. This leads to “secondary breeds,” whether in birds or in mammals, with the same consequences for the underlying genetic resource that a breed should ideally be. Horses have many breeds where this has been the case (show-type Morgans, and many others).

Many poultry breeders consider outward uniformity to be all that there is to breeds. In that case, outcrossing to bring things into a breed is perfectly logical, because the breed is indeed (in their minds) that final external package, and any way to get that is a legitimate breeding practice. These outcrosses do change the underlying genetic package of the breed, which is of conservation importance. A good example is the multitude of Wyandotte varieties. Some, like the Silver Lace, White, and Black, do indeed share a common foundation, isolation, and selection history. Others, like Golden Laced, Buff, Partridge, Silver Pencilled, Columbian, Blue Laced Red, and Blue, do not share that background. All of them do share an array of skin color, comb type, and body shape. The superficial similarities are a veneer over very real underlying genetic differences between the varieties of this one breed.

Some of this comes from standards that emphasize external form as well as color. An interesting example of how this can affect breeds is the Java, which has black, mottled, and white varieties. All of these go back to the same foundation, making the Java an old, primary breed. Of late, some reddish birds popped out of different bloodlines, and these have led to the “auburn” variety, with the same foundation of the old primary breed that the other varieties belong to. As with many new developments in old breeds, though, the tendency is to insist that all auburns end up with the same repeatable color, so some of these interesting variants are doomed to be discarded, because ultimately only one single pattern will be



Dr. Don Monke, President, Wyandotte Breeders of America: White Wyandottes are one of the primary foundation breeds.



Gina Bisco's White Chantecler rooster shows his fine characteristics: tight thick feathering, good comb, small wattles, and length of back and neck. "He's a strong looking guy," she said. (Gina Bisco)



Cutline goes here for one more photo.

crowned “auburn,” and the others, from the same old breed, may well be deemed illegitimate.

The focus on external form has other consequences, and unfortunately can lead to the “secondary breed” attitude and the practices that go along with it. These can put at risk the many poultry breeds that are indeed primary breeds. These genetic packages must be protected, and must be bred pure within the breed in order to assure survival of that genetic package. In these primary breeds, specific genetic combinations are important, and outcrossing can easily disrupt these.

Poultry breeders need to be diligent in understanding the character of their breeds, and need to reflect on the importance of foundation and isolation in maintaining the genetic uniqueness of their breeds. Ignoring this, and resorting to outcrosses, can assure that the result is “such and such” a breed in name only, with the underlying genetic package based on foundation and isolation long gone.

Importantly, no species has been completely exempt from this confusion and genetic mismanagement. For breed conservation to be genetically meaningful, the breeds involved have to be true genetic resources, and breeds that have been crossbred or heavily contaminated by outside breeding simply do not qualify by that criterion. Sorting through the details of breed history (both the written and the unwritten versions!) can be a tricky undertaking, but is essential if pure breeds are to be stewarded for effective conservation. To do that, it is important to understand that “breed” may mean two different things to two different people.

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Thanks to Christine Heinrichs for editing and photos. She is the author of How to Raise Chickens and How to Raise Poultry, published by Voyageur Press. Both focus on raising traditional breeds in small flocks.

BREEDS:



Garfield Farm's Java project yielded the white and auburn varieties. Photo courtesy Gaerfield Farm.

Restoring Auburn Javas

For Lyle Behl, refining this unique breed became a lifetime goal

**BY CHRISTINE HEINRICHS
PENNSYLVANIA**

Auburn Javas slipped away from their black, white and mottled sisters in the 19th century. They reappeared in the 2003 Garfield Farm Museum breeding project in LaFox, Illinois, and are now being raised by several breeders.

Springfield, Illinois breeder Lyle Behl has been working with the variety since those early days. His goals are to refine the Gold Spangled color.

"They differ a little from the Gold Spangled Hamburgs, but genetically they are very similar," he said. "The hens have stripes on the neck and I think the

Hamburg tries to have a spangled neck on the female. But the overall female body should be auburn color with black spangles."

He hopes to see the Auburn restored and eventually recognized by the APA. The Standard description he has written is published in the January issue of the Java Breeders of America Poultry Club Newsletter, <http://www.javabreeder-sofamerica.com/>, along with an article about breeding for color.

"I consider the Garfield line to be fairly well established as it breeds true now, or at least true enough to know which individuals to select for the breeders," he said.

Other color variations have appeared

in other flocks, but have not yet been established in breeding populations. Mr. Behl is also working with a silver counterpart to the gold.

The Auburn color variety was never recognized by any Standard, although it's mentioned by John C. Bennett in *The Poultry-Book* he wrote in 1850: "These (describing a pair of Javas), like all other pure Java fowls, are of a black or dark auburn color." Caleb N. Bement described them in *The American Poulterer's Companion* (1856) "... in general, the color of the feathers is auburn, like the vulture." Dr. Bennett makes the point that this description applies specifically to the Java color. "Their plumage is decidedly rich," he wrote.

Exactly what that means was not explained. At one event, Dr. Bennett posted a notice in a publication asking for those who wanted to debate about his birds to come to see them on display and discuss them. If anyone discovers any records from those events, please share them with the Java Breeders of America Poultry Club.

“The breast and body feathers on the male tie the roosters and hens together,” he said. “I now select for the deep red on the backs and shoulders.”

He resists adding other breeds to the flock, because the Java is a primary American breed.

“The Java is not a composite breed, so I don’t want to bring in other breeds,” he said. “I want to improve within the breed.”

Mr. Behl will have hatching eggs available for sale this summer. Additional photos of his birds are posted on his site, www.behlfarm.com. Contact him at 217-498-7522 or behlcascade@springnet1.com.

Roy Autrey and Ruth Caron organized the Java Breeders of America Poultry Club to encourage the preservation of Javas through selective breeding, exhibition, and through sharing knowledge. The club publishes a quarterly newsletter and offers special discounts to club members. Membership in the Java Breeders of America Poultry club is \$10 a year. Join by sending a check or money order to Java Breeders of America Poultry Club, 195 Northglen Lane, Martindale, Texas 78655 or online.

The Auburn Java is a living artifact that tantalizes us with a hint of what other genes might be concealed in our flocks. Traits such as being a good forager, good brooder and good mother (and father), alert protector, longevity, disease and parasite resistance, ability to mate naturally and fertility are less easily observed than physical traits but are also influenced by inherited genes. Modern industrial poultry is genetically uniform, making it vulnerable to catastrophic losses in the event a serious pathogen finds its way into commercial poultry operations. The world may well need an infusion of genes to overcome disease or infestation.

Christine Heinrichs is the author of How to Raise Chickens and How to Raise Poultry, published by Voyageur Press. Both focus on raising traditional breed poultry in small flocks.

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