

Selecting Your Best Turkeys for Breeding

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Well marked and fleshed Royal Palm toms.

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Chapter 1 – The Definition and History of the Heritage Turkey

The American Livestock Breeds Conservancy's Definition of a Heritage Turkey:

All domesticated turkeys descend from wild turkeys indigenous to North and South America. They are the quintessential American poultry. For centuries people have raised turkeys for food and for the joy of having them.

Many different varieties have been developed to fit different purposes. Turkeys were selected for productivity and for specific color patterns to show off the bird's beauty. The American Poultry Association (APA) lists eight varieties of turkeys in its *Standard of Perfection*. Most were accepted into the *Standard* in the last half of the 19th century, with a few more recent additions. They are Black, Bronze, Narragansett, White Holland, Slate, Bourbon Red, Beltsville Small White, and Royal Palm. The American Livestock Breeds Conservancy also recognizes other naturally mating color varieties that have not been accepted into the APA Standard, such as the Jersey Buff, White Midget, and others. All of these varieties are Heritage Turkeys.

Heritage Turkeys are defined by the historic, range-based production system in which they are raised. Turkeys must meet all of the following criteria to qualify as a Heritage Turkey:

- 1. Naturally mating:** the Heritage Turkey must be reproduced and genetically maintained through natural mating, with expected fertility rates of 70-80%. This means that turkeys marketed as "Heritage" must be the result of naturally mating pairs of both grandparent and parent stock.
- 2. Long productive outdoor lifespan:** the Heritage Turkey must have a long productive lifespan. Breeding hens are commonly productive for 5-7 years and breeding toms for 3-5 years. The Heritage Turkey must also have a genetic ability to withstand the environmental rigors of outdoor production systems.
- 3. Slow growth rate:** the Heritage Turkey must have a slow to moderate rate of growth. Today's Heritage Turkeys reach a marketable weight in about 28 weeks, giving the birds time to develop a strong skeletal structure and healthy organs prior to building muscle mass. This growth rate is identical to that of the commercial varieties of the first half of the 20th century.

Beginning in the mid-1920s and extending into the 1950s turkeys were selected for larger size and greater breast width, which resulted in the development of the Broad Breasted Bronze. In the 1950s, poultry processors began to seek broad breasted turkeys with less visible pinfeathers, as the dark pinfeathers, which remained in the dressed bird, were considered unattractive. By the 1960s, the Large or Broad Breasted White had been developed, and soon surpassed the Broad Breasted Bronze in the marketplace.

Today's commercial turkey is selected to efficiently produce meat at the lowest possible cost. It is an excellent converter of feed to breast meat, but the result of this improvement is a loss of the bird's ability to successfully mate and produce fertile eggs without intervention. Both the Broad Breasted White and the Broad Breasted Bronze turkey require artificial insemination to produce fertile eggs.

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Interestingly, the turkey known as the Broad Breasted Bronze in the early 1930s through the late 1950s is nearly identical to today's Heritage Bronze turkey – both being naturally mating, productive, long-lived, and requiring 26-28 weeks to reach market weight. This early Broad Breasted Bronze is very different from the modern turkey of the same name. The Broad Breasted turkey of today has traits that fit modern, genetically controlled, intensively managed, efficiency-driven farming. While superb at their job, modern Broad Breasted Bronze and Broad Breasted White turkeys are not Heritage Turkeys. Only naturally mating turkeys meeting all of the above criteria are Heritage Turkeys.

Definition prepared and endorsed by Frank Reese, owner & breeder, Good Shepherd Farm; Marjorie Bender, Research & Technical Program Manager, American Livestock Breeds Conservancy; Dr. Scott Beyer, Department Chair, Poultry Science, Kansas State University; Dr. Cal Larson, Professor Emeritus, Poultry Science, Virginia Tech; Jeff May, Regional Manager & Feed Specialist, Dawes Laboratories; Danny Williamson, farmer and turkey breeder, Windmill Farm; Paula Johnson, turkey breeder, and Steve Pope, Promotion & Chef, Good Shepherd Farm.

A Brief Timeline of the Domesticated Turkey

<i>2000 years ago</i>	Domestication of the turkey by Aztecs in Mexico and Mayans in Central America
<i>Early 1500</i>	Cortez and Spanish explorers find both wild and domesticated turkeys
<i>1500 - 1519</i>	Turkey first taken back to Spain
<i>1500s</i>	Several European varieties were developed including: <ul style="list-style-type: none">• Norfolk Black• Cambridgeshire Bronze• White Austrian• Buff• Blue• Ronquieres (a small variegated Belgian variety)
<i>By 1600</i>	Turkeys were found throughout Europe. Turkey was widely used in celebrations and holiday feasts and was well regarded for its sumptuous meat.
<i>Early 1600</i>	European varieties of turkeys return to North America with colonists.
<i>1621</i>	First Thanksgiving is celebrated at Plymouth Colony. According to folklore wild turkey was served as a main course.
<i>By 1700</i>	Domesticated turkeys were plentiful in the mid-Atlantic region and through the Coastal South.
<i>October 3, 1789</i>	George Washington declared a day of Thanksgiving.



A historic holiday postcard

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October 3, 1863 Abraham Lincoln officially proclaimed Thanksgiving as a national holiday. (This has been traditionally celebrated on the last Thursday of November.)

1874 The American Poultry Association (APA) was formed. They established and adopted Standards for five varieties of turkeys:

- Bronze
- Narragansett
- White Holland
- Black
- Slate

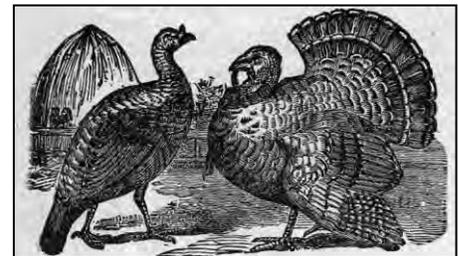
1909 Bourbon Red was accepted into the *APA Standard of Perfection*

1951 Beltsville Small White was accepted into the *APA Standard of Perfection*

1971 Royal Palm was accepted into the *APA Standard of Perfection*

The Great Change from Standard to Broad Breasted Turkeys

1900s Breeders in Washington and Oregon produced larger birds with broader breasts. These were called Mammoth Bronze.



Turkey etching circa 1930

1927 Jesse Throssel an immigrant to British Columbia, Canada, from England, imported two lines of turkeys (a Bronze and a White), that had been selected for greater breast width. These were known as the Cambridgeshire lines.

Late 1930s Cambridgeshire Bronzes had been crossed into the Mammoth Bronze population, including the renowned Wagon Wheel Ranch strain.

1938 Mrs. H. P. Griffin coined the term “Broad Breasted Bronze.” This was a commercial term that meant double-breasted in which mounds of muscle were on both sides of the keel bone.

1950s Fertility troubles began to occur. Broad-breasted conformation brings with it a shorter keel bone and shorter shanks in addition to the bulkier muscle mass on the breast. This conformation prevents males from effectively mounting females, resulting in lower fertility rates. Industry began to perfect artificial insemination techniques to compensate.

1950s Large, white feathered varieties were developed. These dressed-out more cleanly. Breeders competed at shows based on side-by-side comparisons of productivity. Breeders include: Amerine, Browning, Gozzi, Jerome,

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Jones, Keithly, Kimber, Lovelace, Lyons, Nicholas, Rose-a-Linda, and Wrolstad.

- 1960s* These large white turkeys began appearing in the market. At this time, most consumers purchased dressed birds based on carcass appearance. The white varieties were preferred because they lacked the dark pin feathers and melanin that remained in the carcass of colored feathered birds.
- 1960s* Artificial insemination became common practice among commercial breeders.
- 1997* The American Livestock Breeds Conservancy (ALBC) conducted a census of *Standard* varieties of turkeys maintained by hatcheries. The total number of breeding birds of all *Standard* varieties was 1,335. ALBC began actively promoting Heritage Turkeys.
- 2003* ALBC conducted a second census, including a survey of individual breeders. The total breeding birds of all *Standard* and non-standard varieties was 4,412.
- 2004 – 2006* ALBC and Virginia Tech conducted research that demonstrated that Heritage Turkeys have more robust immune systems than industrial strains.
- 2006* ALBC conducted third census. The total breeding birds of all *Standard* and non-standard varieties was 10,404.

Today's International Turkey Industry

Today, only two international companies own most commercial turkey genetics, Aviagen, based in the United Kingdom, and Hybrid, based in Canada. Aviagen now owns the genetic resources of two previously significant commercial companies, Nicholas, from California, and British United Turkeys (BUT) from the United Kingdom. BUT had an American operation, including a breeding farm based in West Virginia. Both Nicholas and BUT offered multiple strains. When Nicholas bought BUT of America in 2004, the American breeding stock was destroyed. Aviagen subsequently purchased Nicholas. As of February 2009, the Aviagen website only offered two strains from each company for sale. This story is of great importance because it shows just how quickly genetic resources can be lost.

Important Names in the History of Domestic Turkeys

Poultry Judges

Below is a listing of great American Poultry Association (APA) Judges of the twentieth century who significantly influenced turkey breeding in the United States during their time. These names will appear in historical documents and the informed reader will find them worth recognizing.



George Hackett

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George W. Hackett (early 20th century)

- The first to certify breeding flocks.
- Defended standard turkeys against change to the double-breasted conformation.
- Actively opposed the industrialization of turkey production.

M.C. (Maggie) Small

- Editor of *Turkey World* for Watt Publishing (beginning in 1934)
- Executive Secretary-Treasurer for the National Turkey Federation (1939-1970)
- Consultant to the Foreign Agricultural Service, USDA (beginning 1969)

Stanley J. Marsden (1897-1971)

- Poultry Instructor – University of Nebraska 1921-1929
- USDA Turkey Investigations 1929-1965
- With J. Holmes Martin, authored *Turkey Management* (6 editions, last printing in 1955)
- Led the team that developed the Beltsville Small White turkey



Stanley Marsden



Norm Kardosh

Influential Breeders

Great breeders produce quality birds that are highly desirable. These breeders leave their mark when their strains are valued and maintained by future breeders. Some of these strains continue but others are now extinct. Protecting strains from extinction is not about nostalgia. Rather, protecting the strains ensures the greatest genetic diversity within the population, and therefore the greatest health of the breed. The strains (or bloodlines) are the bedrock on which long-term survival of standard turkeys depends. Knowing, understanding, valuing, and protecting the strains in your flock will help assure their survival and that of standard turkeys.



Mrs. Ole Nelson

Below is a list of some of the great turkey breeders. The strain's name is synonymous with the breeder's name. The names in parentheses are breeders and/or strains in which the original strains still exists today.

Bronze

- Bird Brothers, Shelton, PA. Famous for the Goldbanks Bronze, (Norm Kardosh – deceased, Frank Reese)
- Turkey Ranch Bronze (extinct)
- Mrs. Martha B. Walker Bronze (Rolla Henry – deceased, Frank Reese)
- Wagon Wheel Ranch H. P. (extinct)
- Griffin B B Bronze (extinct)
- Reiman Turkey Farms Bronze (extinct)
- Elvin Risbrudt Bronze (introduced into Norm Kardosh flock in 1960s), (Norm Kardosh – deceased, Frank Reese)
- Rolla Henry Bronze (Norm Karosh – deceased, Frank Reese)



Sadie Caldwell

Narragansett

- Ole Nelson Narragansett (Norm Kardosh - deceased)
- Hawkeye Farms Narragansett (extinct)

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- Oakdale Turkey Farm Narragansett (Norm Kardosh - deceased)
- Norman Kardosh Narragansett (Frank Reese)

Bourbon Red

- J. F. Barbee Bourbon Red, (extinct)
- Mrs. Sadie B. Caldwell Bourbon Red (Norm Kardosh – deceased, Frank Reese)
- Gladys Honssinger Bourbon Red (Norm Kardosh – deceased)



Mrs. W.T. Hall

Black

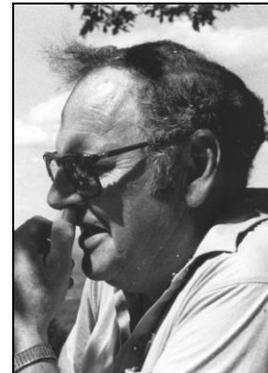
- Mr. Ole Nelson Blacks (Danny Williamson)
- Mrs. W.T. Hall Blacks (extinct)
- Wm. N. DeWald Blacks (extinct)



Henry Domes

White Holland

- Henry W. Domes White Holland (extinct)
- Jeffrey's Turkey Farm White Holland (extinct)
- Mrs. Homer Price White Holland (extinct)
- Frank R. Reese White Holland. Made in 2002 by Norm Kardosh and Frank Reese from foundation stock obtained from Duane Urch, Ridgeway Hatchery, Bill Yockey's Midget White turkeys, and a strain of small hens from British United Turkeys.



Dr. J.R. Smyth

Beltsville Small Whites

- Stanley J. Marsden Beltsville Small Whites (University of Guelph, University of Iowa, Gerald Donnelly via Guelph)

Slate

- Dr. Edward Buss Slate (source of original Kardosh slates)
- Kardosh Slate (Dallas Gilbert, Jerry Klaus)
- Duane Urch Slate (Urch)

Royal Palms

- Enoch Carson Royal Palms (extinct)

Midget White

- Dr. J. R. Smyth Jr.
- Dr. B.C. Wentworth



Gerald Donnelly



Frank Reese (left) & Danny Williamson