

# BELTSVILLE SMALL WHITE TURKEY

January 31, 2014



“Do you like rare turkeys? If so, you might find my story interesting”...

## The Beltsville Small White Turkey A Heritage Breed

By Glenis Marsh and Dr. Brian Tibbot

### The Beginning

It was certainly an unusual day when I received an unexpected email from Dr. Brian Tibbot with the introduction, “Do you like rare turkeys? If so, you might find my story interesting”...

In the early 1930s, consumers surveyed were interested in a small sized turkey for families to enjoy year round with the ability to provide more white meat without the dark pin feathers other breeds left behind.

The project began in 1934 on Poultry Road in Beltsville, Maryland where the Beltsville Agricultural Research Center (USDA) is located.<sup>1</sup>

Key scientists and husbandrymen involved in the creation and development of the Beltsville Small White turkey were Stanley J. Marsden, Dr. Morley Jull, Dr. Theodore C. Byerly and Dr. Charles W. Knox.<sup>2</sup>

Fifteen different strains of the following breeds used were Standard Bronze, Broad Breasted Bronze, Charlevoix Bronze,

White Holland, Black, Narragansett, Wild, and White Austrian (imported from Scotland). Further research states that the White Austrian turkeys were the principal reliance for small size and whiteness. The native Wild turkeys exerted an influence for smallness and contributed a meaty breast. While the White Holland, Bronze and Black imparted the tendency towards early maturity.<sup>3</sup>

These breeds also produced a very wide genetic base which obviously allowed them to be a very hardy, healthy variety.<sup>4,5</sup>

### **Beltsville Small White**

The Beltsville Small White takes from 24 to 26 weeks to reach roaster weight. Originally, toms weighed 23 lbs. and hens 13 lbs. The American Poultry Association lists the standard weight for the Beltsville Small White turkey as Tom 21 lbs., Young Tom 17 lbs., Hen 12 lbs., Young Hen 10 lbs. They have white plumage with a red to blue-white head. Shanks and feet are a light pink. The Standard of Perfection also calls for a horn colored beak, dark brown eyes and a solid black beard. What makes them unique is that they are able to reproduce naturally unlike the Broad Breasted White which requires artificial insemination.

Although their official recognition by the American Poultry Association was in 1951, they were commercially labeled “The Beltsville White” in 1947. They quickly became one of the main commercial birds (25 percent of turkeys sold) and remained quite popular until approximately 1967.<sup>6</sup> After this time, they began to dramatically decline as they were becoming displaced by the Nicholas Broad Breasted White turkey. It wasn’t until the early 1970s when the USDA Beltsville Small White flock was dispersed at the Beltsville station.<sup>7</sup>

Early on, their popularity in both the markets and in backyards was so sought after, that anyone and everyone wanted to cash in on their success. So, how did they end up on a critically endangered list?

### **The Downfall**

Some believe the carcass became undersized and less productive as a consequence of outcrossing and poor selection by untrained breeders.<sup>8</sup>

After discussing “The Downfall” with Franklin D. Albertsen, he graciously provided his detailed response below.

*“The primary reason the Beltsville “faded away” were the changes occurring in agriculture, and especially the poultry business. Most production on American farms is a commodity based type of production. By nature, profitable success [...] depends upon the necessity of high volume of production units to accrue an accumulation of sufficient income to sustain the farm family from the relatively low margin of profit per unit on production of the commodity. Farmers have had to continually expand the scope of their production, regardless of enterprise and whether they like it or not, to maintain a standard of living comparable to what families outside of agriculture consider necessary. The shift was away from small family flocks to much larger specialized farm operations because of economic necessity of the producer. Coupled with this was the closure of many small poultry processing plants, the integrating commercial companies demanded a consistent and uniform raw product available year round, and farm wives were only willing to home-dress a few turkeys each fall.*

*Second, the commercial food processors, distributors, and retailers were demanding a different type of raw commodity or bird. While granting that the Beltsville was an excellent bird for family use, the demand for it centered around Thanksgiving and Christmas - period! The commercial food chain of businesses needed steady, year round utilization of their facilities to profitably justify being part of the industry. The hotel, restaurant, and institutional trade, as well as processors, were demanding a larger bird from which they could obtain a greater amount of product more efficiently by handling less birds. The answer to their needs, at the expense of the smaller Beltsville, was the much larger (and faster growing) Broad Breasted White. The large Broad Breasted White could be harvested at a young, lighter weight to satisfy the housewife over the holidays, but also*

*carried to much heavier weights which enabled the processor to satisfy the majority of their customers year round. The larger birds also facilitated much more efficient automation in processing and development of many processed products creating a vastly increased year round consumption of turkey.*

*An often over-looked fact is that this process simply bred the Beltsville out of existence because most of those early Broad Breasted Whites were the product of mating Broad Breasted toms to the thousands of highly productive, readily available Beltsville hens in all the major commercial flocks. From the mid-50s on, thousands of Beltsville hens in Iowa and the U.S. were A-I’ed to Broad Breasted Bronze (and later white) toms to start the conversion to the larger Broad Breasted Whites the industry wanted.*

*Also, there had never been that many truly “pure” turkey fanciers. In addition, the economical “farm Crisis” of the “80s” resulted in the loss of an entire generation of young farmers. Bankers demanded farmers eliminate any enterprise that appeared too costly in the eyes of the banker. Most small family poultry flocks were the first to go. Farm families simply ordered broilers and turkeys to grow out during the summer for fall harvest. They were not the least bit concerned about what the hatchery supplier called them, so there was no pressure upon the hatchery as to what name they went by. In fact, by that time most hatcheries were buying their eggs from a supplier. They simply hatched whatever eggs they could get.*

*I do know that I was frustrated at times when I gave eggs to a few hatchery flocks and they just crossed them with their own birds and went on their merry way. The most disappointing instance was when an individual who supposedly promotes and lives on the sale of rare breeds was given several hundred eggs one year and then made no attempt to keep them straight and wasn’t the least bit concerned about it.”*

There is another reason for the Beltsville Small White turkey’s

unfortunate demise that has never been written about in depth which leads to the focal point of this article.

### **Dr. Brian Tibbot's Efforts and Fate of the Ames Birds**

Dr. Tibbot has devoted much of his spare time getting authentic Beltsville Small White turkeys into the hands of dedicated breeders and preservationists. He has corresponded with multiple hatcheries and the individual breeders contracted to supply them to evaluate who had authentic Beltsville Small Whites and who did not. His goal was (and is) to place the turkeys into reliable, individual hands before they become extinct. Through his experience and connections, he and a few others discovered there were turkeys being sold as "Beltsville Small White" which were actually Midget Whites from the University of Wisconsin developed more than 30 years after the Beltsville Small White.

Below are quotes taken directly from Dr. Tibbot:

*"I emailed University of Wisconsin prof, Dr. Wentworth about his Midget Whites and their genetic background. He stated he never had Beltsvilles nor do his Midget Whites have any Beltsville parentage in them."*<sup>9</sup>

If breeders and hatcheries didn't want to replace their stock with authentic Beltsville Small Whites, why wouldn't they simply change the name to Midget Whites? Since Dr. Tibbot suspects a miscommunication between field station workers and purchasers ~20 years ago, one reason would be due to the embarrassment of having to admit making a mistake.

Dr. Tibbot generously offered authentic Beltsville Small White turkey hatching eggs via the Ames lab to these breeders however,

none followed through to acquire any.

Besides the fact that there are two similar small white turkeys in existence, it's no secret that the Midget White is not listed in the APA Standard of Perfection and the Beltsville White is.

Are there any true Beltsville White flocks left today? A 1998 Turkey Census Report taken by the Society for the Preservation of Poultry Antiquities (SPPA) states:

*"Beltsville Small White: Only two flocks have been located, one in the U.S. and one in Canada. The U.S. flock is owned by the government and has been housed within a biologically controlled building. They have not been exposed to any common environmental germs or diseases since 1961 and may not be able to survive in a normal farm setting. The Canadian flock is similar in that it is not available to anyone other than the educational facility that owns them. I have been told that the Canadian flock has hens that lay fertile eggs even when no toms have mated with them, producing all male offspring. When toms are mated with the hens the 50/50 sex ratio occurs as normal. \* All of the turkeys listed in breeder catalogs as Beltsville Whites can be traced back to the University of Wisconsin which has White Midgets [Midget White]."*<sup>10</sup>

Dr. Tibbot has also kept a very close eye on the last remaining flocks, following them and documenting the names of the breeders who keep them. The Livestock Breeds Conservancy has forwarded interested breeders to him and he has assisted them in locating authentic stock. He wanted this article written to keep the information up to date and for us all to realize how few of them are truly left in existence.

### **The Beltsville Lines**

Dr. Tibbot has assigned names to the lines and categorized them as follows:

### Albertsen Line

Franklin D. Albertsen

inherited the turkeys from his father Harry P. Albertsen who worked at the Iowa State University Poultry Farm in Ames, Iowa from 1961-1975. He obtained a few trios during their transfer from Iowa State University to what is now called USDA Animal National Disease Center (renamed in 1973 from the 1961 previously named National Animal Disease Laboratory). This transfer occurred sometime in the mid to late 60s as ISU reduced their turkey flock and the remaining Beltsville Whites were transferred to the NADL where they remain today as part of the NADL activities. While ISU and the NADC often work closely together, they are two entirely separate entities and there are no Beltsville Small Whites at the ISU Poultry Farm today. Part of the USDA NADC flock was transferred to the Southeast Poultry Research Station in Athens, Georgia a few years ago. Most agree that the last of the flock at Beltsville went to California in about 1970. (most likely UCD)

It was during this time that Franklin D. Albertsen obtained his first two trios, which he considered intensely line bred but rigorously selected and culled for during the following decades to maintain their original, unique and practical utility characteristics.

Albertsen states:

*"They have remained very healthy and productive with excellent conformation - - especially for the wide, round breast Marsden desired in an attractive roasting bird. Way too often the heritage breeders and preservationists have forgotten that the Beltsville was originally a broad breasted turkey - - just much smaller than the large whites of today. They*

*were a meat bird raised for consumption. They are natural mating, and the hens will lay about 150 eggs per year.”*

Additional noteworthy comments from Albertsen:

*“My birds were very hardy and stayed outside 365 days per year even during blizzards and 40 below temperatures.”*

*“Old breeders who knew good Beltsvilles in the 50s will testify that I’ve done my best to keep them authentic.”*

Though they also came from Ames, it had been many years so, Dr. Tibbot considers this a different line. Most people purchase this line from Jerry Pool who has done a superb job shipping thousands of quality eggs on eggbid and ebay. He has been offering them there for over ten years.

#### Ames Line

In 2004, Dr. Tibbot received 200 eggs directly from the USDA Ames lab. This was stock exclusively distributed to USDA labs and Universities. The general public did not have access. He then gave them to three people. Two had them only for two years and sold off to people who did not know what they were. Mary Wolf in Ceres, California bred them for a year or two. Mary sold the flock to Pam Hogan in Oregon who sold eggs and poults on eggbid and ebay for a few years. Pam sold her flock to a couple of people a few years ago, including Nevermore Farm and S and S Poultry both of which disbanded their flocks.

Dr. Tibbot writes, *“Though I wish the breeder flock had not gone through so many hands in just ten years, I imagine anything from Pam is pure Ames from Mary, from me, from USDA-ARS Ames.”*

Interesting commentary from Dr. Tibbot regarding fear aspects:

*“It was a closed flock at ISU/USDA dating as far back as the mid 1940’s. However, they always kept 100-300 breeders! So, there is a lower degree of inbreeding compared to some of the other flocks.*

*“The USDA-Ames facility specialized in poultry diseases. Their flock was also considered to have no immune system. Not necessarily genetically, but because it was raised in a clean environment so, it could be challenged with particular disease in a controlled situation elsewhere. Since breeders are not exposed, they do not create these antibodies.*

*Live birds were not allowed to leave the facility, but if they were, they might fall victim to diseases out in the real world. These antibodies are also deposited in the egg yolk, so poults are kept safe in shell and first week of life.*

*Without these antibodies, more poults are likely to die in shell or shortly after hatch. Mary lost a lot of poults 3-10 days after hatch. She thought it was because E. coli permeated the shells mid way during incubation due to a power failure.*

*It is thought that when eggs cool and warm, they can take in bacteria due to the pores and pressure differences. However, once the next generation was established, we and others found our birds to be very disease resistant.*

*So, don’t over or under hype fear aspects, because they may be totally untrue, true but exaggerated and not scientific. Misinformation can be a big problem. I usually had to test to find out for myself.”*

#### Guelph Line

*Previously called Ontario*

The Ontario Agricultural College of Guelph University obtained stock from Beltsville and conducted parthenogenesis studies. Parthenogenesis in the

Beltsville Small White turkey was first noted in 1952 by M. W. Olsen and studies initiated at the Agricultural Research Center, ARS in Beltsville, MD in 1953 by Olsen and Marsden.<sup>11, 12</sup> The work continued at the University of Guelph which was quite guarded about distributing stock when Dr. Tibbot wrote them years back. They later became more accommodating and a couple of breeders from the US were able to acquire stock from them. There have been some reports that this line is smaller with little to no commercial value but it makes a good laboratory bird.

#### Donnelly Line

Gerald Donnelly obtained a trio from Franklin D. Albertsen 20 years ago and was so impressed by them, he immediately brought them to visit Norman Kardosh in Kansas who was equally impressed. Donnelly has repeatedly commented on the uniform consistency of Albertsen’s birds and mentions the compact and greater muscling expression (especially in the breast) than the Canadian birds. Albertsen indicates, “I have given him choice of the best I had when he wanted any.”

Frank Reece of Good Shepherd Poultry Ranch & Kansas State University obtained stock from Ontario. Frank and KSU had a collaboration project to improve Beltsville Small Whites and had all three lines. Frank called Dr. Tibbot after he wrote him back then. He said that the last best flock was located in Texas, but it had been disbanded in the 1980s.

Cirrus Hill Farm in Canada obtained stock directly from Gerald Donnelly. They also keep a separate and distinct Ames line (via Dr. Tibbot/Pam Hogan) both of which are still quite productive, hatch very well and have high

rates of survival. Cirrus Hill hatches hundreds of eggs annually and is dedicated to preserving its meat production qualities.

These amazing turkeys are truly in danger of becoming extinct and in desperate need of dedicated breeders.

### **A Solution**

A solution to this problem is actually quite complex once one begins to investigate the Midget White turkey created by Dr. J. Robert Smyth and Dr. Bernard Wentworth. The project began at the University of Amherst in Massachusetts and finalized at the University of Wisconsin.<sup>13</sup> They are a cross between Broad Breasted Whites and Royal Palms. Midget Whites are completely unrelated to the Beltsville Small White and approximately 2 pounds lighter. Another interesting difference is that a Beltsville Small White has a common turkey head shape however, a Midget White has a more petite head shape similar to a Royal Palm which is completely unique from all other turkey breeds.

Franklin D. Albertsen makes an intriguing statement in regards to differentiating the Beltsville Small White from other small white turkeys.

*“In the early 1940s, T. T. Milby at what was then the Department of Poultry Husbandry at Oklahoma A. & M. College in Stillwater recognized the potential problem of keeping the Beltsville variety distinct from the White Holland and other strains of small white turkeys being bred at that time. He felt very strongly that if a visible means could be found to readily recognize and distinguish the Beltsville Small White [...], all varieties would ultimately benefit and it would enable breeders to avoid unintentional cross breeding*

*In 1941, Oklahoma A. & M. had obtained hatching eggs from the USDA in Beltsville in order to start their own flock and help proliferate the birds in the Southwest. Among the poult hatched, a couple had clear yellowish down which is often referred to as “pure white” as opposed to the typical white poult down of a light brown/tannish to reddish brown cast and markings on the head, wings, and back of a creamy to whitish yellow body. The same phenomenon was observed by others in many of the early Beltsville poults. Study determined that the so-called “pure white down” was a phenotypic expression of the action of the dominant black factor “B” tracing back to one of the original lines used in its development, in contrast to the more ‘buffish’ tints of the more common bronze based white poults with brown eyes. These birds all had blue eyes at maturity. By 1943 Milby appealed to breeders and researchers to establish the ‘pure white down’ as an identifying characteristic of the Beltsville in major scientific journals, but to no avail.”<sup>14, 15, 16</sup>*

There is an additional issue both Dr. Tibbot and I would like to address regarding phenotype and genotype. However, I would like to ask the reader an important question. Can any small white turkey be labeled, sold and exhibited as a Beltsville Small White turkey? The answer to that is an astounding YES!

As previously mentioned, the Midget White is not listed in the Standard of Perfection but the Beltsville Small White is. This is known in the inner circles of poultry shows and the majority of Midget White turkeys are labeled and shown as “Beltsville Small White” turkeys on a regular basis.

Don Schrider of Livestock Breeds Conservancy, confirms this with his statement:

*“My thoughts on flocks of Beltsville Small Whites have more to do with encouraging breeders to select*

*toward the phenotypic Standard, rather than saying this flock is pure and that flock is not.”*

Dr. Tibbot writes in response as he continues to be dedicated to form a flock certification project:

*“Many people are concerned about both genotype and phenotype and have the right to know where the last remaining lines are located.*

*Only a subset of genes, though many, control form. Other genes control characteristics a judge won't see at shows, like immune system-disease resistance, reproductive traits etc.”*

White plumage was intended and still has an advantage during processing. Today, many hobbyists and ethnic consumers prefer color plumage which may be detrimental to the turkey.

Though the Beltsville Small White is only ~80 years old, compared to other breeds of 100-125 years, it's a true heritage breed and recognized by the American Poultry Association.

Our hope is to establish a certification project for the Beltsville Small White turkey because of its unique traits and declining numbers.

Dr. Tibbot has recently been in contact with Dr. Swayne at the Southeast Poultry Research Laboratory, USDA/Agricultural Research Service. They first received eggs from the National Animal Disease Center/Ames on 10/14/1997 which has disbanded its flock. Dr. Tibbot still considers this flock the Ames line. Though Southeast Poultry Research Laboratory does not distribute to the general public, Dr. Tibbot and the Livestock Breed Conservancy are working on recruiting qualified breeders who would not only be willing to breed the Beltsville Small White turkey but also distribute to other

interested breeders whose fate the turkey will ultimately lie.

### Resources:

1. A Brief History of Turkey Research and the Role of the Beltsville Agricultural Research Center - Let's Talk Turkey USDA <http://afrsweb.usda.gov/sp2UserFiles/Place/12000000/Partnering/TurkeySuccess.pdf>
2. Beltsville Small White Turkeys, Breed Savers, April 19, 2011 <http://breedsavers.blogspot.com/2011/04/beltsville-small-white-turkeys.html>
3. The Agricultural Research Center of The United States Department of Agriculture, Miscellaneous Publication No. 697, 1949
4. 1998 SPPA Turkey Census Report by Paula Johnson <http://www.feathersite.com/Poultry//Turkeys/BRKBeltsville.html>
5. Franklin D. Albertsen interview  
6. Nov/Dec 1988 Agricultural Research Magazine
7. Beltsville Small White Turkeys, Breed Savers, April 19, 2011 <http://breedsavers.blogspot.com/2011/04/beltsville-small-white-turkeys.html>
8. The Beltsville Small White Turkey by Bonnie Meilke, STPA Gobbler <http://www.feathersite.com/Poultry//Turkeys/BeltsBonnie.html>
9. A History of the Midget White Turkey By J. R. Smyth Jr. and B.C. Wentworth <http://www.motherearthnews.com/homesteading-and-livestock/history-midget-white-turkey.aspx#axzz2hpF0ryxB>
10. Beltsville Small White Turkeys by Paula Johnson, Society for the Preservation of Poultry Antiquities 1998 Census.
11. The Occurrence and Possible Significance of Parthenogenesis in Eggs of Mated

Turkeys by M. W. Olsen Volume 58, April 1962, Issue 1 P1-6

12. Olsen, M. W., 1965.

Twelve year summary of selection for Parthenogenesis in Beltsville Small White turkeys. Br. Poult. Sci. 6:1-6.

13. A History of the Midget White Turkey By J. R. Smyth Jr. and B.C. Wentworth <http://www.motherearthnews.com/homesteading-and-livestock/history-midget-white-turkey.aspx#axzz2hpF0ryxB>

14. A Tripple-Allele Series and Plumage Color in Turkeys, V. S. Asmundson, Division of Poultry Husbandry, University of California, Davis. January 3, 1945

15. Milby 1943

16. Japp and Milby 1944

Photo Credit :  
Agricultural Research  
Service USDA K9639-1



### Thank you:

Franklin D. Albertsen for your dedication to the breed and vast knowledge you continue to generously share. Many thanks for the telephone interview and correspondence.

Don Schrider for taking the time to answer our questions.

Cirrus Hill Farm for not only taking time to answer our questions but more importantly, all you are doing with the breed itself.

Nevermore Farm,  
Boondockers Farm, Northland  
Ranch and Bentwood Farms LLC

Jerry Pool for distributing thousands of Beltsville Small White turkeys across the United States.

Dr. Brian Tibbot for enlightening me about the importance of preserving the unique genetics of the Beltsville Small White turkey. Without your continued encouragement, this article simply would not have been written.

### Author's Notes:

This article was written for research and historical purposes only. Dr. Brian Tibbot, Franklin D. Albertsen nor I currently have Beltsville Small White turkeys.

Dr. Brian Tibbot, Ph.D. is a former Research Scientist at USDA-ARS Madison, WI and Albany CA. He is currently a science teacher in Northern California and breeds his own line of Black Skin Chickens and American Blue Rabbits. He has kindly offered his email address: tibbotb@aol.com.