

The 17 Squirrel

Forming, Loading and Shooting an Overachiever

By Tom Moore

The more I hunt the hardwoods of New England, especially the area of my youth in Western New York I recognize the value of a small caliber centerfire cartridge that remains relatively quiet while doing its work. My small game hunting involves gray squirrels, red squirrels and an occasional groundhog, but I'm most partial to the role of crow sniper. Crows are great targets and offer shot-to-shot ranges of 15 to 250 yards. The dairy farm pastures and hardwood stands of the Finger Lakes Region of New York State offers some great crow hunting.

While terrain and dense population limit shooting distances, accuracy is critical as squirrels and crows present challenging targets. They seldom remain still long enough to align crosshairs, and commonly offer only an eye or ear as a faint aim point through dense cover. These hunting situations don't call for advanced 300-yard ballistics. A highly accurate and quiet cartridge on a handy rifle/scope platform will win the day.

It was the spring of 2004 that I decided to research the possibilities for a more fitting rifle and cartridge combination. I developed criteria to include: 1) a reloadable round, 2) plentiful brass and components, 3) if wildcat, uncomplicated to form, 4) flat shooting, 5) relatively quiet report, and 6) high accuracy potential. I read all I could find and searched endlessly on the Internet and began learning more about very small capacity wildcat cartridges. As I had some experience with the new 17 caliber rimfire rounds and also the 17CCM, I knew I was looking for something I hadn't yet found. My search ultimately led me to the 17 Squirrel, and I've not looked back!

About the 17 Squirrel

The 17 Squirrel is a wildcat derived from the venerable 22 Hornet case. While the hornet has a case length of 1.403, the finished case length of the 17 Squirrel is less than one inch. I've read that the Squirrel case has employed 12, 14, 17, 19, 20, 22 and 25 caliber bullets, but I was interested in the 17 caliber. While some wildcat cartridges have well-documented histories, it is not clear when or where the Squirrel originated. Some suggest it has roots in the Dakotas, and I've also read references to a group of wildcatters in northern California that experimented with the Squirrel or a very similar case. Load data and technical information on some wildcats is very limited. I have diligently sought information on the 17 Squirrel and have accumulated a fair amount of data from several willing riflemen. The research has been a pleasure as I've found a few new friends along the way.

By definition, a wildcat requires some amount of mechanical modification from its parent case, before shooting. I have found case forming a most enjoyable and rewarding hobby, and I recommend it to anyone with an interest in precision work.

These pictures provide perspective of the relative size of the 17 Squirrel. The picture on the left compares loaded 17 Squirrel rounds to a U.S. quarter. And the picture on the right compares the 17 Squirrel (middle) to the 17M2, 22LR on the left and the 22CCM and 22 Hornet on the right. Although small, it can achieve 3,500 fps!



Forming 17 Squirrel Cases

The following process develops casings with dimensions specific to the chamber of my rifle. You will need to carefully develop length and headspace dimensions appropriate to your rifle chamber, but the process is the same. I recommend Remington brass as it is thinner than Winchester and provides about 10% greater case capacity. But regardless of brand, always use new unfired brass for best results. Steps to form 17 Squirrel cases from 22 Hornet brass includes:

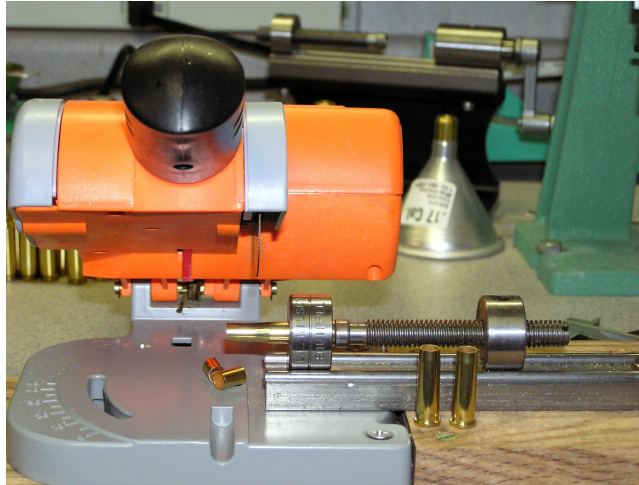
1) Uniform primer pockets and debur flash holes

- i) You are encouraged to do this first while the flash hole is accessible with standard tooling. Specialized tooling is required to debur flash holes after the necks are reduced to less than .22 caliber. Primer pockets can be uniformed at any point, but I prefer to do this while the case is still full length and easier to grip.
- ii) Some don't bother with these preparations, but I've decided they require little time and effort and might eliminate the, "what if I had done it?" question later on.

2) Trim Hornet brass to 0.990"

- i) I find rough trimming the hornet brass before any mechanical forming begins aids the entire forming process.
- ii) Cases will grow in length during the forming process. By rough trimming to 0.990", final trimming (step 6, below) requires the removal of only 10 to 15 thousandths for a clean usable finish.

This picture shows a rough trim saw I designed to speed this process. The saw is very inexpensive and the concept makes dual use of the Wilson Case Trimmer for any casing.



- 3) Form using the Redding 17 Squirrel Form Die #1**
 - i) Redding part #96626 (set)
 - ii) Be certain to adjust the die to attain your desired headspace dimension
 - iii) Use Hornady One Shot lube or Imperial Sizing Wax (sparingly) for best results
 - iv) RCBS (and others) also make form and load dies for the 17 Squirrel
- 4) Form using the Redding 17 Squirrel Form & Trim Die**
 - i) Redding part #96626 (set)
 - ii) Again, adjust die to carefully preserve your desired headspace
- 5) Form using 17 Squirrel FL Sizing Die w/ expander**
 - i) Redding part #80626
 - ii) Be sure to lubricate inside of necks
 - iii) Adjust die according to desired headspace dimension
- 6) Trim to 0.995" using Wilson Trimmer**
- 7) Debur lightly inside and out**
- 8) Anneal case necks and shoulder area**
 - i) Annealing this tiny cartridge requires special care. I use a case spinner on a cordless drill to rotate the case neck and shoulder at the tip of the blue flame of a propane torch for 4 to 5 seconds. Duration will depend on flame adjustment. I adjust to one inch of blue core flame. Immediately after heating, the case is quenched in cold water.
 - ii) As it concerns annealing cases, I have found that practice makes perfect... don't fear it. It is easier to do correctly than you might think. Don't fear losing a handful of cases learning to do this correctly...you will.

The picture below shows freshly annealed 17 Squirrel cases. Notice the amber colors of the top half of the casings.



9) Clean, dry and load to fire-form

The picture below shows the progression of forming the 17 Squirrel from its origin 22 Hornet case to the finished casing. With close scrutiny, one can see that the case length increases from rough trim length of 0.990" to approximately 1.010" before final trimming to 0.996" at step 6 in the process. From left to right: 1) new 22 Hornet case, 2) rough trimmed to 0.990", 3) results of form die #1, 4) results of form and trim die, 5) results of FL die, 6) trimmed to 0.996 before fire forming, 7) a fire-formed case (notice loss of body taper) and 8) a fire-formed case loaded with 18 gr. Berger Varmint (MEF) bullet.



Loading for the 17 Squirrel

As with all load data, you should always use *YOUR* best judgment for personal safety and be very mindful of the specific components used in the data you reference. We hear it repeated often, but always start low and work up slowly.

In simple terms, the 17 Squirrel is roughly an eight-grain cartridge. Carefully measure your charges and remember that one tenth of a grain in tiny cases like this can make a huge difference in pressure. Move one tenth of a grain at a time and don't change other components without reducing your charge and starting anew. Please note that **all loads**

listed here use small pistol primers. Additional caution must be exercised when choosing brass. Remington brass is thinner and provides about 10% more case capacity than Winchester brass. Maximum load data in Remington brass will be unsafe in Winchester brass.

Powders for the 17 Squirrel

I find Winchester 296, and Vihtavuori N110 the top powders for the Squirrel. Hodgdon 110 is also very good, but I've decided there is nothing H110 can do in this cartridge that WW296 can't do just a little better. If you have a supply of H110, you might find it a good substitute for Winchester 296. Recently, I have also experimented with Accurate #9 with favorable results. Note: loading for the 17 Squirrel prompted me to purchase the *Harrell's Schutzen* pistol powder measure. This measure is a fine piece of equipment. It is the answer to accurately throwing charges up to about 30 grains. It is very accurate and handy for throwing small charges like those required by the Squirrel, and a long list of other small caliber rifle and handgun cartridges.

Primers for the 17 Squirrel

I use Winchester WSP (small pistol) primers in all loads. I have not experimented with other small pistol primers as I have had great results with Winchester primers. (Small rifle primers will cause serious pressure spikes...been there...done that...be careful.)

Loads for the 17 Squirrel

My ambition was to tailor loads for the following hunting scenarios:

- 1) **A game dinner load** with reduced velocity, minimal noise and non-volatile bullet performance for minimum tissue destruction on small game
- 2) **A crow load** with high velocity and high volatility bullet for sniping crows and starlings with a flare for excitement (read: scope movies!)
- 3) **A prairie dog (all around) load** with high velocity and better ballistic characteristics for short and intermediate-range prairie dogs, ground squirrels, ground hogs and similar sized varmints.

Fire-form Loads

I fire form with 7.6 grains of Winchester 296 behind the Hornady 20 grain V-max traveling at 3,260 fps. Not only are the 20-grain V-max bullets the most affordable, they are also perfect for many applications of the 17 Squirrel. Fire form loads are perfectly acceptable hunting loads, as demonstrated in the target photograph, below.

Game Dinner Load

To date, my best reduced load for taking edible game is 5.9 grains of Vihtavuori N110 behind the 25 grain Hornady HP. This load chronographs at 2,550 fps. The accuracy of these loads is remarkable at 0.240 inches at 50 yards. It is very quiet and your hits are visible, as the rifle experiences no discernable movement upon firing. I continue to experiment with even lower velocity game loads using N110 and Accurate 1680.

Crow Loads

This is where the fun is! I have developed a couple of loads for the sole purpose of watching crows disappear! My best crow load uses 8.5 grains of Winchester 296 behind the Berger 18-grain Match Varmint or the 17.5-grain Hammett bullets. These loads develop 3,520 fps in my rifle and deliver a devastating shock on small varmints! I get very good consistency from both of these loads. What fun!

Prairie Dog Load

Now, as a Yankee that is yet to hunt prairie dogs, I'm unable to provide testimony concerning the effectiveness of these loads on said varmints. But, I'm planning on the day (when all 3 kids are out and school bills are paid) that I can head west and test my imagination! For this load, I use the 20-grain Hornady V-max bullet behind 8.4 grains of Winchester 296. This bullet is chosen for its favorable ballistic characteristics (BC.183) and effectiveness on the receiving end. The velocity of this load is 3,490 in my rifle and represents what I consider to be a reasonable maximum that achieves great accuracy at safe pressures. If I had to use only one load for all purposes, this is the load.

For loading tools, I use the Wilson bushing neck die and in-line seating die with an arbor press. The chamber neck diameter on my Cooper is about 0.2015, and the diameter of a loaded round using Remington brass is approximately 0.193", which means there is considerable sizing required to reduce the fired neck to a reloadable diameter. With that amount of reduction, I am convinced that the Wilson bushing dies provide better case concentricity than 7/8 dies.

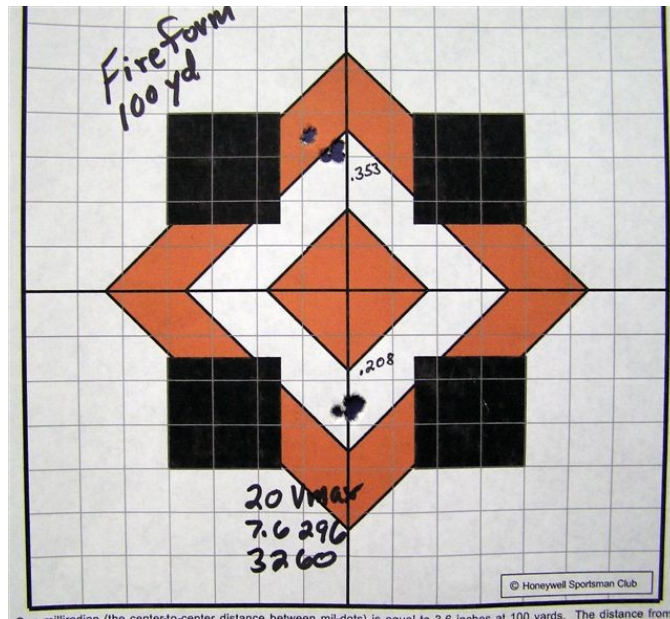
I do not size the entire neck. I have set my dies and press to size about 80% of the neck, leaving the last 20% at the base of the neck at the fired diameter. This method helps center the bullet in the barrel when the round is chambered. I have found the best accuracy when the bullet is seated about 15 thousandths into the lands. This proves to be equally true of all bullets tested to date.

Shooting the 17 Squirrel

Combine low noise, low recoil, flat trajectory, great accuracy and effective terminal performance and you can sum it all up in one word...FUN! And the fun is quite inexpensive when you consider that at 8.x grains per load, a pound of powder provides more than 800 loaded rounds! I mounted a Leopold VXIII 4.5-14-40mm scope on my Cooper Classic and I'm very pleased with the weight, balance and feel. It's a delightful rifle to carry and shoot. What's more, with this small casing you can carry a whole day worth of shooting in the pockets of your flannel shirt...game loads in one pocket and crow loads in the other!



While it's beyond my shooting skills to demonstrate the true capability of this rifle and cartridge combo, this picture demonstrates the kind of accuracy you can expect from fire form loads at 100 yards. Don't waste fire form shots on paper, as varmints won't know the difference!



I consider the 17 Squirrel to be an overachiever given the level of performance attained from its small powder charge. I'm personally quite fond of very small cartridges, and find the little Squirrel more attractive than the rimfire alternatives for the versatility it provides from short distances all the way out past 200 yards. If you have similar fancy, the mighty 17 Squirrel will not disappoint you. It's a great little cartridge!