Cast Bullets in the .22 Hornet

When you talk about the .22 Hornet and cast bullets, it's either a love or hate relationship. People either swear by them or at them.

I guess the Hornet and me go back to the days when I was about 10 years old. In those days, I read everything around and that included pop's *Field and Streams*, *Outdoor Life* and *Sports Afield* magazines. I was a great gun crank in those days even though all I had was a single barrel 12 gage shotgun. Dad's battery included a double barrel 12 gauge L.C. Smith and a Remington Model 34 .22. Dad had a near accident with the .22 years back and the .22 was off limits to me but the desire was still there. The bigger bores were non-existent in rural North Carolina. One family about a mile from us has a Model 98 8 X 57mm Mauser and another fellow several miles away had a war trophy 16 X 16 X 8 X 57R drilling but no cartridges for the rifle. You have to understand, this was small game country

On one of his visits, a cousin had a key chain with a .22 Hornet cartridge on it. That round intrigued me even though I'd never be able to own one as we just didn't need a Hornet around the place.

I encountered the Hornet again many times in my shooting career. The next incident was in the North Carolina mountains where a Savage 219 was for sale in a local hardware. I was in about the 6th grade then and I couldn't get my lawn mowing money together and missed that even though it was only $25. Next was a 340 Savage in .22 Hornet at the same hardware. That one was new and cost $57.50 as well as I recall and way out of my league.

When I graduated from high school, I made acquaintance with a fellow and we hunted together for several years until I joined the Army. He had a Martini Cadet rebarrelled to .22 Hornet with a .223" diameter bore. It was a good shooter and many groundhogs, crows and turtles fell to its bark.

Some years later, after I joined the Army, I was able to trade for a Model 43 Hornet. I'd owned it for several months and shot one box of shells through it and here came orders for Viet Nam again. Needing money to leave with my family, it and several other guns I'd like to have again left the house.

Hornets eluded me over the years even though I had shooting partners that had them.

Finally, this last weekend at a gun show, a Ruger M77 SS in .22 Hornet followed me home. Naturally, dies, a shell holder and bullets were on hand as I'd been looking for years and preparing for the day when a Hornet would come my way again. A new bag of 100 rounds of WW brass supplemented my range hoardings from years past.

Ruger's "All Weather" Hornet
4-12X Leupold
(Yeah Shuz, I know the scope don't match)

The rifle that I bought is the heavier barreled stainless steel model with the laminated stock and is advertised by Ruger as the "All Weather" model.

Researching the rifle after I arrived home showed me that it has a 1-14 twist as opposed to the normal SAAMI specification of 1-16. I was happy with that little fact, as it should allow me to shoot slightly longer and heavier bullets that I had originally anticipated.

.22 cast bullets in the #225415HP, the #225107 and the #224438HP configuration were on hand from previous shooting in my .223. Alas, several lots of these used the dreaded Speer and Ideal gas checks that I found to shed and cause problems during .223 testing. This was Saturday night and I was feverously digging out my Hornet dies and checking the bench for leftover bullets to load for Sunday's shoot, as I had no loaded Hornet ammunition in the house at all. Not having much time for research, I resorted to Lyman's *Third Edition, Cast Bullet Manual* for loads and went with it.

Loaded .22 Hornet Cartridges
L-R: #225107, #225438HP, #22596, #225415HP and RCBS 22-55-SP HP
(Note rings above base on four cartridges. These were range pick-ups that came from a Number 3 Ruger and indicate that the case head is preparing to separate. I used them to make dummies.)

A friend of mine had problems with the magazine in his rifle taking bullets seated to published overall lengths. The Ruger doesn't have this problem (see picture below).

Ruger Hornet Magazine showing bullet fit
#225415 HP loaded to Lyman Cast Bullet Manual length

A 2-10X Weaver was in top of the safe and that was mounted and I was ready to see what the Hornet would do

Initial Hornet Tests with Lyman Cast Bullet Manual Data and "Not So Good" Bullets

Bullet	***Wgt***	***Powder***	***Wgt***	**Av Vel**	**Stan Dev**	***Primer***	**Bullet Diar**	**Overall Length**	**Comments**
225415 HP	47.5	700-X	4.7	2097	64.5	WSR	.2255	1.694	**2"@100 Yd**
225415 HP	47.5	Red Dot	3.8	1775	20.2	WSR	.2255	1.694	**3"@100 Yd**
225438 HP	44.2	700-X	3.8	1909	26.5	WSR	.2255	1.675	**4"@100 Yd**
225107	40.0	700-X	4.0	2064	21.9	WSR	.2255	1.642	**2"@100 Yd**

As can be seen in the preceding table, no "bugholes" were obtained. The 2-10X Weaver proved to be a little low powered for seeing .22 holes at 100 yards and I had a heck of a time getting the rifle on paper to start with. Still, I thought it shot all right for the first time out as you always have bugs in the system with a new rifle.

The Quest Continues

Now that I was sure that the rifle functioned all right and some of the groups showed promise, I really started to get serious about shooting.

I dug around in top of the safe and a 4-12X Leupold emerged and was installed and the rifle bore sighted to get it at least close to the target.

The moulds were broken out as well as some lino and some of Felix's babbitt alloy I had been saving for a special occasion. I commenced to make about 6-700 new bullets. More of the #225415HPs, more #225438HPs, more #225107s and a bunch of #22596 and #225450 bullets that I'd had reasonable success with in the .223.

These were all nose first sized and had Hornady gas checks installed.

The barrel was given an additional cleaning to be sure no copper fouling from the previous owner was in the bore.

I even treated myself and ordered a Timney sear and spring set from Midsouth to lighten the 6-pound trigger pull.

I was determined to leave no stone unturned as I kind of like the crack of the little Hornet

An additional 6 lots of test ammunition was loaded for the next series of tests and this time, a little more research was done on the loads.

In reality, the only good cast data that exists is in the old Lyman Cast Bullet manual and it's not very comprehensive. Most of the loads are 40 years old and new cast Hornet data is needed desperately with some of the newer powders. I'll attempt to correct that problem somewhat in this article. Additional suitable powders for the .22 Hornet that get wide use are H-110, WW 296 and AA 1680. None of these were on hand at the time these tests were made.

Follow-up Testing

Lyman #225107

Bullet	***Wgt***	***Powder***	***Wgt***	**Av Vel**	**Stan Dev**	***Primer***	**Bullet Diar**	**Overall Length**	**Comments**
225107	40.0	700-X	4.0	2064	21.9	WSR	.2255	1.642	2" @ 100
225107	40.0	700-X	4.7	2260	1.2	WSR	.2255	1.642	Not Acc
225107	40.0	2400	7.5	2211	51.9	WSR	.2255	1.642	1.5" @ 100
225107	40.0	Longshot	6.0	2426	27.1	WSR	.2255	1.642	1" @ 100
225107	40.0	Titegroup	5.0	2351	17.5	WSR	.2255	1.642	1" @ 100
225107	40.0	WC820	8.5	2433	44.5	WSR	.2255	1.642	1.5" @ 100
225107	40.0	Lil Gun	7.5	2305	12.1	WSR	.2255	1.642	1" @ 100

Lyman #225438 HP

Bullet	***Wgt***	***Powder***	***Wgt***	**Av Vel**	**Stan Dev**	***Primer***	**Bullet Diar**	**Overall Length**	**Comments**
225438 HP	44.20	700-X	3.8	1909	26.5	WSR	.2255	1.675	4"/Not Acc
225438 HP	44.20	Longshot	6.0	2356	48.4	WSR	.2255	1.675	1" @ 100
225438 HP	44.20	Green Dot	4.5	2093	22.3	WSR	.2255	1.642	1.5" @ 100
225438 HP	44.20	Lil Gun	7.5	2221	56.9	WSR	.2255	1.642	1" @ 100
225438 HP	44.20	Titegroup	5.0	2257	6.0	WSR	.2255	1.642	1.5" @ 100
225438 HP	44.20	Herco	5.5	2287	5.5	WSR	.2255	1.642	1.5" @ 100
225438 HP	44.20	Blue Dot	5.5	1899	77.0	WSR	.2255	1.642	1.5" @ 100
225438 HP	44.20	Unique	4.7	2066	26.1	WSR	.2255	1.642	1" @ 100

Lyman 22596

Bullet	Wgt	Powder	Wgt	Av Vel	Stan Dev	Primer	Bullet Diar	Overall Length	Comments
22596	51.8	Herco	4.5	1858	10.5	RSR	.2255	1.718	4” @ 100
22596	51.8	Titegroup	5.0	2042	30.4	RSR	.2255	1.718	4” @ 100
22596	51.8	Unique	4.7	1936	17.3	RSR	.2255	1.718	Not Acc
22596	51.8	AA5	5.5	1803	52.4	RSR	.2255	1.718	2.5” @ 100
22596	51.8	Green Dot	4.2	1828	32.3	RSR	.2255	1.718	2” @ 100
22596	51.8	Longshot	5.5	2046	4.0	RSR	.2255	1.718	2” @ 100
22596	51.8	2400	8.0	2231	13.8	RSR	.2255	1.718	1.5” @ 100
22596	51.8	WC820	8.0	2224	12.3	RSR	.2255	1.718	2” @ 100
22596	51.8	Lil Gun	8.0	2247	18.9	RSR	.2255	1.718	2” @ 100
22596	51.8	Blue Dot	6.0	2042	60.1	RSR	.2255	1.718	1.5” @ 100

For some reason, the #22596 bullet didn’t shoot well in the Hornet. I was expecting great things from it that didn’t materialize.

Lyman #225450

Bullet	Wgt	Powder	Wgt	Av Vel	Stan Dev	Primer	Bullet Diar	Overall Length	Comments
225450	53.9	Herco	5.0	1996	13.0	RSR	.2255	1.754	2” @ 100
225450	53.9	Longshot	5.5	2095	37.7	RSR	.2255	1.754	1.5” @ 100
225450	53.9	Lil Gun	8.0	2349	29.0	RSR	.2255	1.754	1” @ 100
225450	53.9	AA5	5.5	1901	5.7	RSR	.2255	1.754	1.5” @ 100
225450	53.9	Unique	4.7	1969	16.9	WSR	.2255	1.754	3” @ 100
225450	53.9	WC820	8.0	2231	13.6	WSR	.2255	1.754	1.5” @ 100
225450	53.9	Green Dot	4.2	1832	14.9	WSR	.2255	1.754	1.5” @ 100
225450	53.9	Blue Dot	6.0	2008	12.6	RSR	.2255	1.754	1.5” @ 100
225450	53.9	2400	8.0	2325	13.3	WSR	.2255	1.754	1.5” @ 100
225450	53.9	Titegroup	5.0	2082	12.1	WSR	.2255	1.754	Not Acc

Lyman #225415 HP

Bullet	Wgt	Powder	Wgt	Av Vel	Stan Dev	Primer	Bullet Diar	Overall Length	Comments
225415 HP	47.5	Red Dot	3.8	1775	20.1	WSR	.2255	1.694	3” @ 100
225415 HP	47.5	700-X	4.7	2097	65.4	WSR	.2255	1.694	2” @ 100
225415 HP	47.5	2400	7.0	2114	21.3	WSR	.2255	1.694	1.5” @ 100
225415 HP	47.5	Blue Dot	5.0	1882	21.9	WSR	.2255	1.694	1.5” @ 100
225415 HP	47.5	Lil Gun	8.0	2388	12.8	WSR	.2255	1.694	1” @ 100
225415 HP	47.5	Longshot	5.0	2018	18.8	WSR	.2255	1.694	1.25” @ 100
225415 HP	47.5	Unique	5.0	2033	12.9	WSR	.2255	1.694	2” @ 100
225415 HP	47.5	4227	8.0	1841	61.8	WSR	.2255	1.694	1.5” @ 100

225415 HP	47.5	Green Dot	4.2	1875	16.3	WSR	.2255	1.694	1.5” @ 100
225415 HP	47.5	Titegroup	4.8	2049	18.4	WSR	.2255	1.694	1” @ 100
225415 HP	47.5	WC820	7.5	2098	57.6	WSR	.2255	1.694	1.5” @ 100
225415 HP	47.5	WW231	5.0	2091	15.8	WSR	.2255	1.694	3” @ 100
225415 HP	47.5	Herco	5.0	2008	6.1	WSR	.2255	1.694	3” @ 100
225415 HP	47.5	MS4759	8.0	2061	4.5	WSR	.2255	1.694	1.5” @ 100
225415 HP	47.5	2400	8.0	2370	5.7	WSR	.2255	1.694	1.5” @ 100
225415 HP	47.5	Reloader 7	9.5	1948	7.1	WSR	.2255	1.694	1.5” @ 100

RCBS 22-55-SP HP

Bullet	***Wgt***	***Powder***	***Wgt***	**Av Vel**	**Stan Dev**	***Primer***	**Bullet Diar**	**Overall Length**	**Comments**
2255SP HP	54.5	2400	7.0	1994	30.5	WSR	.2255	1.760	1” @ 100
2255SP HP	54.5	Lil Gun	8.0	2301	36.1	WSR	.2255	1.760	1” @ 100
2255SP HP	54.5	Longshot	5.5	2047	7.8	WSR	.2255	1.760	3” @ 100
2255SP HP	54.5	WC820	8.0	2065	58.1	WSR	.2255	1.760	<1” @ 100
2255SP HP	54.5	MS4759 Comp. load	8.5	1493	5.6	WSR	.2255	1.760	2” @ 100

Several of the more recently introduced fast burning powders were tested. These included: Hodgdon’s Universal, Titegroup, and Longshot. Longshot proved to be a fairly useful powder in the Hornet. Universal and Titegroup both indicated pressure signs before reaching 2,000 feet per second, therefore, I do not recommend either for use in the Hornet.

I was most disappointed that both Blue Dot and Herco made such a poor showing in the Hornet as they are a couple of my standby powders. In both cases, with heavier bullets, I hit pressure signs before I got to my desired velocity.

I was also unable to get velocities over 2,000 feet per second with 4227, milsurp 4759 and Reloader 7. This was due to insufficient case capacity.

The powders that did well for me were Lil Gun, 2400 (naturally), WC820, and Longshot.
The bullets that I’ll probably be using most are the 225415HP and the 22-55-SP HP.

After all the smoke has settled from my Hornet testing and about 2,000 rounds of cast have gone down range, I’ve formed my conclusions about cast in the .22 Hornet.

The Hornet round is a nice little cast caliber for the casual varmint shooter. In the older rifles with a 1-16 twist I suspect one would stay in the safe a lot at my house as I'm not infatuated with the terminal results of the lighter bullets required to get them to shoot accurately. The Ruger with its 1-14 twist is a bit different, as it will handle a bullet big enough for serious shooting on varmints with bullet weights at velocities I normally associate with the .222 Remington and .223 Remington.

Bullet selection in the Hornet is key. For the 1-16 twists, you'll need a #225107 or #225438 and might get by with a #225415 but stability on that one is iffy at lower velocities.

Powder is another critical factor. I got very good results with Lil Gun, WC820 and Longshot. It doesn't seem to be too picky about powder as long as the velocity is in the 2300 FPS range. 2400 as I expected proved to be a reliable powder with cast bullets as it's suppose to be "the Hornet powder".

The Hornet is a delicate little caliber. Be careful with testing unknown loads as it can go from a gentle little lady to a raving bitch with a .5 grain increase. It's very susceptible to blowing primers with hot loads. An early on indication of this is difficulty of the rim entering the shell holder. I had some once fired cases when I started this project. Nearly all failed during the tests with the classic incipient separation ring so the previous rifle must have had excessive headspace.

The Hornet is a "stretcher" as well. Check your cases often as they do grow on you over several firings and need trimming.

All this discussion aside, if you're hankering to try cast in a .22 Hornet, you'll not go wrong with Ruger's SS laminated stock job. This rifle just feels good and will have a place in my safe for a long time. I can't wait until next spring when the blackbirds start pairing up and I can start harvesting a few.

I'll have the Ruger tuned up, a couple pounds of Lil Gun and a batch of 22-55-SP HPs all ready for the event. Brown just delivered an additional 500 new WW Hornet cases and life will indeed be good.

Addendum: Since I completed this article, there was a fierce debate going on over pistol versus rifle primers in cast on the cast bullet site so I loaded 50 rounds using small pistol primers in lieu of small rifle primers.

The improvement in consistency in accuracy in the Hornet was amazing.

I've shot pistol primers in many different rifle calibers but it never dawned on me that they would make as much difference in the accuracy as they did.

I'm not going back and repeat all of these tests using pistol primers but I can tell you, it's definitely worth trying.

John Goins/aka beagle