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SHOOTING TIMES

SEPTEMBER 2024

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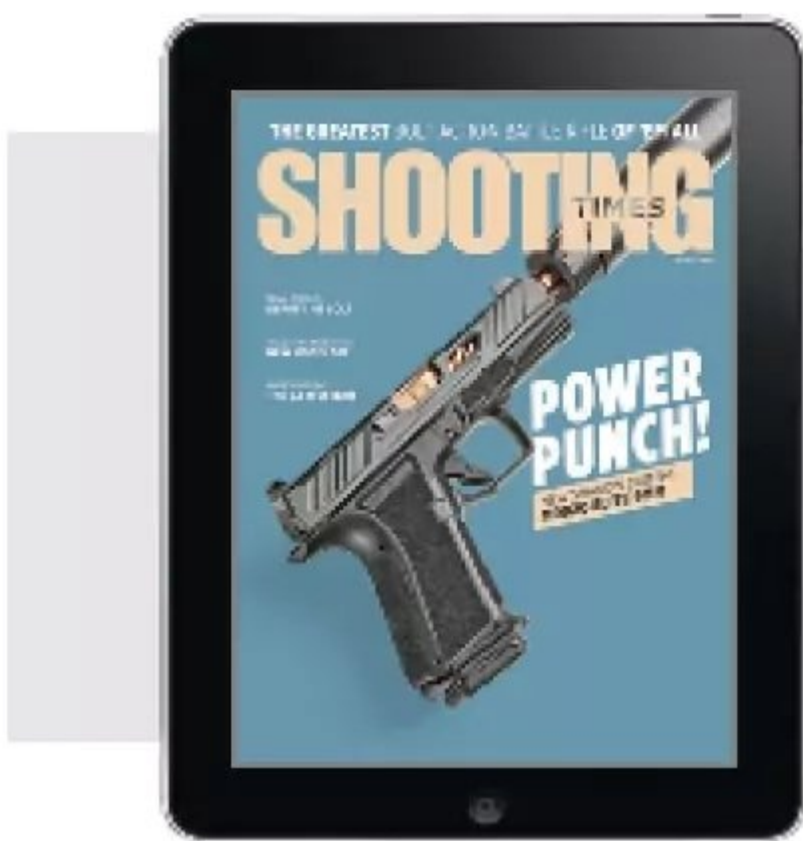
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VICE PRESIDENT,
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Chris Agnes

EDITORIAL

EDITOR IN CHIEF
Joel J. Hutchcroft

COPY EDITOR

Bill Bowers

DIGITAL EDITOR

Jack Oller

SOCIAL MEDIA MANAGER

James Clark

CONTRIBUTORS

Craig Boddington
Jake Edmondson
Steve Gash
Allan Jones
Payton Miller
Lane Pearce
Layne Simpson
Joseph von Benedikt
Terry Wieland

ART

ART DIRECTOR

Mark Kee

STAFF PHOTOGRAPHER

Michael Anschuetz

PRODUCTION

PRODUCTION MANAGER

Terry Boyer

PRODUCTION COORDINATOR

Jenny Kaeb

ENDEMIC AD SALES

VP, ENDEMIC SALES

Michael Savino — mike.savino@outdoorsg.com

NATIONAL ENDEMIC SALES

Jim McConville (440) 791-7017

WESTERN REGION

Hutch Looney — hutch@hlooney.com

MIDWEST REGION

Mark Thiffault (720) 630-9863

EAST REGION

Pat Bentzel (717) 695-8095

NATIONAL AD SALES

ACCOUNT DIRECTOR—DETROIT OFFICE

Kevin Donley (248) 798-4458

NATIONAL ACCOUNT EXECUTIVE—CHICAGO OFFICE

Carl Benson (312) 955-0496

DIRECT RESPONSE ADVERTISING/NON-ENDEMIC

Anthony Smyth (914) 409-4202

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Readers Speak Out Illustration: @mstanley13 - fotolia.com
 New Guns & Gear Illustration: @Oleksandr Moroz - fotolia.com
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.308 Winchester	165 gr.	SST	2645
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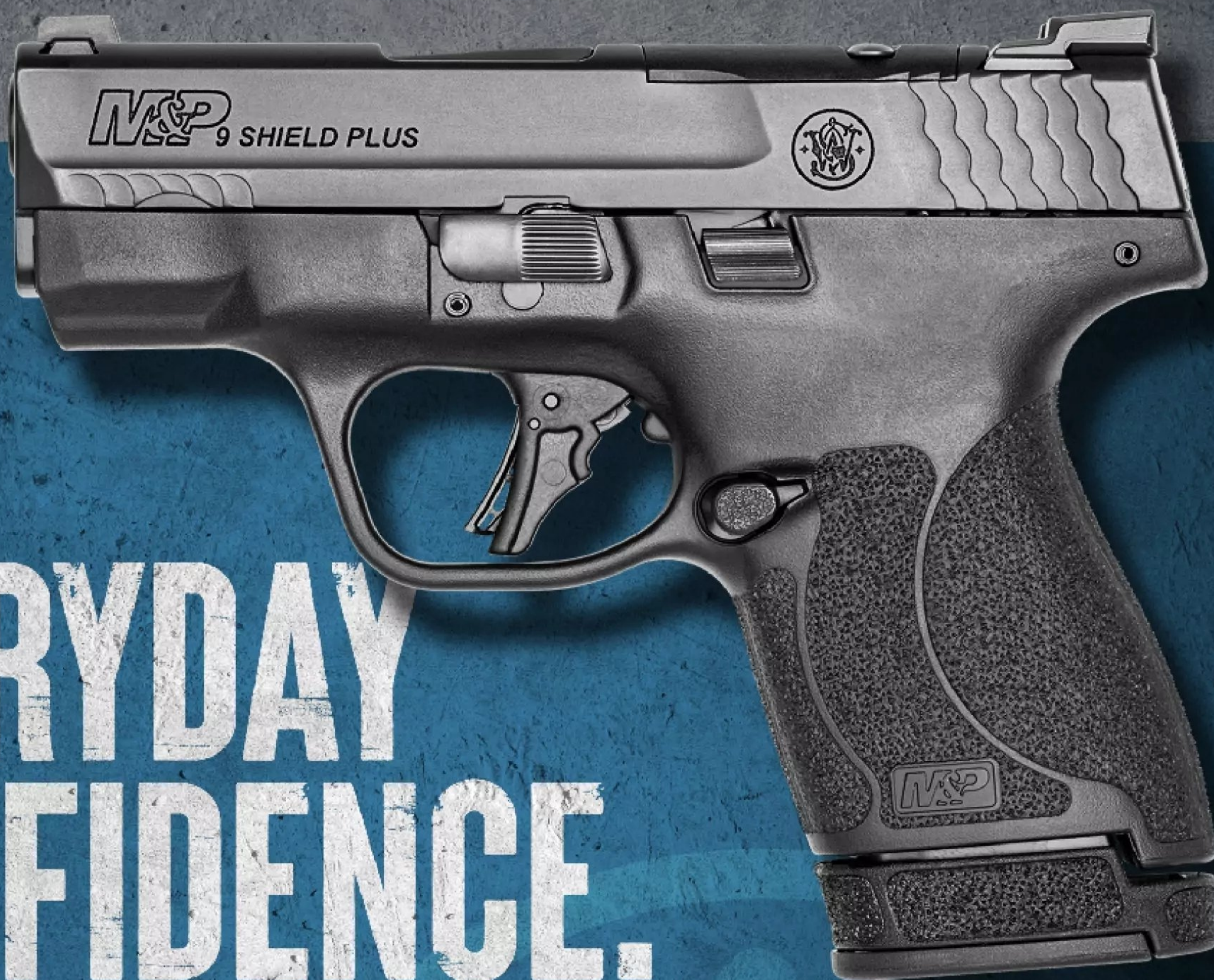
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SHOOTER'S UPDATE

READERS SPEAK OUT

NEW GUNS & GEAR

ASK THE EXPERTS



Super in My Book

DR. BRAD MILLER'S FINE ARTICLES ON .38 SPECIAL AND 9MM BARRELS

and bullets were super in my book. My background gives me an appreciation and knowledge of manufacturing techniques, tolerances, etc., and I've always loved numbers, partly because as we know, numbers don't lie. Sometimes we make assumptions that aren't exactly accurate, as is pointed out via his articles. A lot of tedious measuring was necessary to undertake these pieces. There are all kinds of factors that influence accuracy, and most of your readers can name these with ease. Long ago, in an inquiry I made to P.O. Ackley about a load, part of his response was, "...nothing matters more in terms of accuracy than the bullet."

My own experience with handguns and rifles agrees. I once owned a Llama 1911 sort of clone in 9mm Super. It came with two barrels, neither worth a pasture muffin. The belief was that .38 Supers were made for 0.356-inch bullets. Maybe, maybe not. Accuracy was generally horrible by any standard with factory ammo or handloads. Desperation led me to experiment. The most accurate bullet I had ever found in my .38/.357 was the 148-grain lead hollowbase wadcutter. They usually measure close to 0.358 inch. Brand didn't seem to matter much. I generally loaded them flush in .38 cases with 3 grains of Bullseye or 3.2 grains of Red Dot. After careful review of that approximate weight bullet in the .38 Super, I settled on 4 grains of Bullseye. Cartridge overall length was just a tad under max, not flush of course. I didn't know if they would feed from the magazine or work the action or what. To my surprise, they fed fine and cycled the action as normal. Not only that, accuracy was pretty good—not exactly an S&W Model 52 but not bad considering the awful trigger and sights. The soft lead and hollow base allow the bullet to slug up to whatever bore and groove diameters are in the gun.

John E. Darney

Via email

7x61 Sharpe & Hart

Thanks to Joel Hutchcroft for filling in some interesting history for me in the June issue. In the early 1960s, a hunting friend of mine had a rifle chambered in 7x61 Sharpe & Hart, and I wondered about the origin of the cartridge in those premetric times. Craig Boddington will be pleased to know the rifle was a left-hand Schultz & Larsen. My friend has been gone a while now, and I imagine his widow found a pretty small market for the port-side rifle in what is now a mostly handloaded caliber.

John Miller

Rocky River, OH

Same Barrels, Different Bullets

In Brad Miller's May article, "Same Barrels, Different Bullets," I found his data interesting but lacking one important measurement—the chamber throats of the revolver's cylinder. This is the diameter of a cylinder immediately ahead of the chamber. I say this because regardless of the bullet size, once the gun is fired, the throat sizes the bullet to its diameter before the bullet makes the jump from the cylinder to the barrel's forcing cone. This throat area controls the bullet diameter before it enters the barrel regardless of what the bullet diameter is out of the box.

I bring this up because of loading .44-40 WCF for an early Ruger Vaquero where the cylinder was bored and chambered for the .44-40, and the barrel was for the .44 Magnum. After having very bad luck in hitting the target, I started looking at factors that could affect my handloads. What I found was that no matter what bullet diameter I used, the throat would swage the bullet undersized for the barrel, and the bullet was just rattling down the barrel. To Ruger's credit, after I explained to them my problem, they requested that I send them the guns, and they replaced the barrels and cylinders to match, on their dime. After that the guns shot fine. One other thing to remember with revolvers is there are six chambers, each with its own throat, and that a single throat, as

well as the chamber's alignment to the barrel when indexed, can cause that lone flyer.

Craig Adam
Harrisville, UT

You make a good point, Craig, that it's desirable to have a good match between the cylinder throats and the barrel's groove diameter as this might affect accuracy.

In a perfect world, a revolver's chamber throat is slightly larger than the bullet. The conventional wisdom I've found says that revolver chamber throats should be 0.0005 inch over the diameter of the bullet, or up to 0.001 to 0.002 inch larger, depending on the source of information. Also, again conventional wisdom, the bullet diameter should match the barrel groove diameter, or at the least, the bullet should not be smaller than the barrel's groove diameter because this is thought to degrade accuracy. But in the real world, the numbers don't always match up that way. In fact, there are tolerances in the SAAMI specs that could result in undersize bullets in the barrel. The question then becomes how accurate are undersize bullets?

My article in the June issue for the 0.355 versus 0.357 accuracy test looked at the bullet diameter issue. I used an S&W .38 Special revolver with a 0.3571-inch groove diameter barrel and compared accuracy with 0.355- and 0.357-inch jacketed bullets. (The chamber throats of my gun measured 0.357 inch with a little wiggle room, but none would accept a 0.358-inch pin gauge.) The results did not find any obvious difference in accuracy between the two bullet sizes in that gun. The 0.355 bullets were only 0.002 inch smaller than the bore, which isn't much, and they were jacketed bullets, not lead. But it suggests that there is some leeway with how undersize jacketed bullets can be

without affecting accuracy. The results might depend on how undersize the bullets are. Lead bullets might act differently, as your experience shows for your gun.

This is not a concern in many instances because accuracy with undersize bullets can be as good as "proper" sized bullets. As a reminder to readers, when doing accuracy testing, just using a different round (brand, bullet, powder, etc.) can improve accuracy greatly.

Brad Miller, PhD

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SHOOTER'S UPDATE

READERS SPEAK OUT

NEW GUNS & GEAR

ASK THE EXPERTS



Springfield Model 2020 Rimfire Target Rifles

SPRINGFIELD INTRODUCED THE RIMFIRE VERSION OF ITS MODEL 2020 bolt-action rifle in two basic versions last year, and now the company has two new color variants for the well-designed Target model.

The new colors are Coyote with black webbing and OD Green with black webbing. Features of the Model 2020 Rimfire Target rifle include a reinforced polymer stock, dual sling swivels, a rubber recoil pad, 13.45-inch length of pull, a hard chrome bolt, an interrupted Picatinny rail, a 10-round rotary magazine, an adjustable trigger, and a free-floated 20-inch heavy barrel.

MSRP: \$499

springfield-armory.com



Real Avid Critical Carry EDC Knives

Real Avid has jumped into the folding knife market with its new RAV series knives. The series includes seven models that feature nylon, aluminum, aluminum/stainless steel, glass-filled nylon, aluminum/carbon fiber, and G10 handles and drop point, tanto, and modified clip point blades in 4Cr14 and 8Cr13MoV blade materials, in black oxide or titanium finish. Blade lengths are 3.25 and 3.4 inches, and finishes are black oxide and titanium. Models are offered in standard, spring-assisted liner lock, and axis lock.

MSRP: \$24.99 to \$49.99,

depending on the model

realavid.com



◀ Fiocchi 5.7x28 Combo Packs

Fiocchi has announced new combo packs of 5.7x28mm ammunition. The Combo PT pack (shown here) includes 300 rounds of Fiocchi Range Dynamics 40-grain FMJ ammo and 100 rounds of Fiocchi Hyperformance 40-grain THP ammo. The Range Dynamics rounds have a rated velocity of 1,700 fps, and the Hyperformance rounds have a rated velocity of 1,750 fps.

The Combo SUB pack contains 300 rounds of Range Dynamics FMJ ammo and 100 rounds of Range Dynamics Subsonic ammo. The Range Dynamics Subsonic ammo is loaded with a 62-grain bullet and has a rated velocity of 1,050 fps.

MSRP: \$211 (Combo PT),

\$222 (Combo SUB)

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Hodgdon Powder Co. Acquires RCBS

Hodgdon Powder Co. has acquired RCBS Reloading from Revelyst, a segment of Vista Outdoor, effective May 2, 2024. Hodgdon is prepared to immediately continue shipping RCBS products to wholesale and retail customers.

According to Steve Kehrwald, president and CEO of Hodgdon, "This acquisition of RCBS, the leading brand in metallic reloading tools, is a perfect complement to our portfolio of smokeless powder brands... With our world-class ballistics labs, we look forward to providing even more load data to our new RCBS customers."

Adding the RCBS facility in Oroville, California, to Hodgdon's company-owned facilities in Shawnee, Kansas, Herington, Kansas, and Miles City, Montana, more than doubles the headcount at Hodgdon Powder Co. and greatly expands the company's manufacturing capabilities.

J.B. Hodgdon, co-owner with his late brother Bob, said, "Our dad Bruce partnered with Fred Huntington from RCBS to conduct Reloading Roadshow events in the 1950s and 1960s. I believe they both are looking down today, proud to have our two great brands together in 2024."

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Shooting Results for Model 722?

Q. IN LANE PEARCE'S RECENT COLUMN ON THE .300 Savage, he mentioned having several rifles chambered for the classic round. The hand-load shooting results chart accompanying that column showed the results for the Savage Model 99 and the Remington Model 760 but not for the Model 722. Can Lane share those results, too?

Mark Lopez
Via email

A. We sure can share those results. Unfortunately, when the original column was published, we did not have enough space to include them, but we are happy to do so here. (See the chart below.)

Joel J. Hutchcroft

Is a Hammer-Forged Barrel Smoother?

Q. A barrel question nags me. Is a hammer-forged barrel inherently smoother than one where lands and grooves are cut, which can, from a quality standpoint, vary given the age and condition of the cutters used? A smoother barrel would seem to shoot cleaner with less copper buildup and other negative contamination, thus being more accurate with less maintenance. Is there anything to this apparent disparity between manufacturing methods?

Russell Cowan
Via email



"The Reloader" from the August 2024 *Shooting Times*.

A. A hammer-forged barrel is indeed quite smooth inside. More so than either a button-rifled or a cut-rifled barrel—unless that button or cut barrel has been lapped with a lead plug and polishing compound.

Another potential advantage that proponents of hammer-forged barrels like to point out is that the inner surface is work-hardened, which in theory should make it more resistant to wear and erosion.

The takeaway is this: A properly done hammer-forged barrel theoretically should foul less quickly and last longer than other types. However, I'll be candid. I have not necessarily found that theory to prove out in real use. I believe it's more challenging to build an absolutely consistent hammer-forged barrel than a cut- or button-rifled barrel, and in my personal experience at least, a good cut-rifled barrel usually outperforms all other types in both accuracy and easy cleaning. But I haven't worn out enough of any type to have a useful opinion on barrel life of one versus the other.

Joseph von Benedikt

ST

.300 SAVAGE ACCURACY & VELOCITY

BULLET	POWDER		CASE	PRIMER	VEL. (FPS)	S.D. (FPS)	50-YD. ACC. (IN.)
	(TYPE)	(GRS.)					
Remington Model 722, 24-in. Barrel							
Hornady 150-gr. SST	2000-MR	45.0	Fed.	Rem. 9½	2713	12	1.42
Hornady 150-gr. SST	IMR 4064	40.0	PMC	Rem. 9½	2485	22	1.13
Hornady 150-gr. SST	Varget	41.0	PMC	Rem. 9½	2662	21	1.11
Speer 150-gr. Gold Dot BLK	IMR 3031	38.0	Rem.	CCI 200	2557	10	1.19
Speer 150-gr. Gold Dot BLK	Reloder 15	42.0	Horn.	WLR	2580	18	1.29
Speer 150-gr. Gold Dot BLK	VV N140	42.0	Fed.	CCI 200	2623	18	1.44
Speer 150-gr. Gold Dot BTSP	IMR 4895	41.0	Horn.	WLR	2650	18	1.52
Hornady 150-gr. SST	Factory load				2682	15	1.51
NOTES: Accuracy is the average of two, five-shot groups fired from a sandbag benchrest. Velocity is the average of 10 rounds measured six feet from the gun's muzzle.							
All load data should be used with caution. Always start with reduced loads first and make sure they are safe in each of your guns before proceeding to the high test loads listed. Since <i>Shooting Times</i> has no control over your choice of components, guns, or actual loadings, neither <i>Shooting Times</i> nor the various firearms and components manufacturers assumes any responsibility for the use of this data.							



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SHOOTER'S GALLERY

THE SHOOTIST

THE BALLISTICIAN

THE RELOADER



Colt's New Frontier .22

This single-action sixgun is the finest rimfire handgun Colt ever produced.

BY JOSEPH VON BENEDIKT

COLT'S NEW FRONTIER WAS THE SECOND GENERATION of the company's single-action rimfire revolvers and is arguably the finest rimfire handgun Colt ever produced. Some might say that it's the finest single-action .22 ever made by any company (excluding custom and semi-custom revolvers, such as those made by Freedom Arms).

The New Frontier's ancestral model—the Frontier Scout—was introduced in 1957 as a rebuttal to Ruger's Single-Six .22 revolver, which had launched in 1953 and was soaring in popularity. To Colt's credit, the Frontier Scout actually cost less, retailing at \$49.50 as opposed to the Ruger's \$57.50.

The Frontier Scout was a success and over the years was made in myriad variations, most designated by a letter; the Q-series, followed by the F, K, P, and so on. Some had interchangeable .22 LR and .22 Magnum cylinders. A broad spectrum of grip types were offered, as well as different finishes.

At 7/8ths the size of a centerfire Single Action Army, and sporting a proper loading gate, halfcock notch, and other mechanicals just like the legendary Peacemaker, the Frontier Scout thrived. Still, a few characteristics left discerning shooters dissatisfied. Probably the biggest source of discontent was

the aluminum alloy receiver, which was either anodized black or left in the white.

According to some disciples of the type, the pinnacle of the Colt .22 single action was achieved in 1970, with the launch of the G-series revolvers designated the New Frontier .22 and the Peacemaker .22. The former had adjustable sights; the latter had traditional fixed sights. Grip frames were still made of black anodized aluminum alloy, but the receivers were now steel—and color-casehardened to boot.

The steel-receiver guns weighed about 4 ounces more but looked better, balanced better, and were more durable in both finish and function. Barrel lengths were 4.4 inches (shown); 6.0 inches, and 7.5 inches—although initially, and briefly, Colt built a run of Peacemaker .22s with 4.75-inch barrels. Those are now rare and as a result, desirable.

Eventually, nondesirable features crept in. Late versions of the Peacemaker .22 and New Frontier .22 had crossbolt safeties and simple black “Coltguard” finishes rather than color-casehardening. Production ended around 1986.

I've struggled to pin down exact total production numbers. One source states more than 350,000 Frontier Scouts were made. According to coltforum.com,

Joseph says no other single-action .22 revolver—and perhaps no other revolver at all—is as superbly beautiful as the vintage Colt New Frontier .22.

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23,900 of the steel-receiver Peacemaker .22s and New Frontier .22s were built, but that may be specific to the “L” designation, which were all dual-cylinder models. Colt re-introduced the New Frontier in 2011, but apparently built fewer than 1,200.

Mechanicals

In function, the New Frontier .22 is exactly like its bigger Single Action Army centerfire brothers. To load, swing open the loading gate on the right side of the receiver. Draw back the hammer to halfcock (two clicks). Rotate the cylinder a click at a time, inserting .22 cartridges into the chambers. When full, close the loading gate. The revolver is loaded and ready for use. To fire, cock the hammer to the fullcock position, aim, and squeeze the trigger.

To empty the cylinder of the fired cases, open the loading gate, cradle the revolver in the left hand with the muzzle angled skyward, and use the right forefinger on the ejection rod button to thrust the ejector rod down through each chamber and boost the fired cases out.

Provenance

I had no idea how much I wanted a Colt New Frontier .22 until I saw and handled one at the Antique Arms Show in Las Vegas. I was in the market for an affordable British double rifle. Since no such thing exists, I wasn’t too concerned for my wallet. I picked up the little Colt on a whim and was blown away by its feel and fit and finish and the pure classic Colt personality it exuded. Being an “L” series version, it was made in 1974 and originally came with an extra cylinder in .22 Magnum, which is now missing. Not to worry; that fact put it potentially within my financial reach.

I didn’t have money on me, and I walked away from that fine little revolver determined not to do anything rash. Besides, being an Idaho resident, I couldn’t purchase a handgun and take it with me from a sale location out of my home state.

NEW FRONTIER .22	
MANUFACTURER	Colt's Manufacturing Co.
TYPE	Single-action revolver
CALIBER	.22 Long Rifle
CYLINDER CAPACITY	6 rounds
BARREL	4.4 in.
OVERALL LENGTH	9.75 in.
HEIGHT	4.7 in.
WIDTH	1.44 in.
WEIGHT, EMPTY	28 oz.
GRIPS	Checkered hard rubber
FINISH	Cascolored frame, blued barrel and cylinder; black anodized grip frame
SIGHTS	Adjustable rear, ramped blade front
TRIGGER	3.25-lb. pull (as tested)

Mentally gritting my teeth, I forced myself to wait 24 hours. Then I called the number on the Petersunn Antiques card I’d picked up. The proprietor still had the New Frontier, and he cheerfully took my card number over the phone. A few days later the .22 revolver arrived at my local FFL.

Rangetime

Although champing at the bit to get to the range with it, I forced myself to take the time to shoot a photo package with the little single action while it was still sparkly clean. Friends, there are a few firearms in the world that are simply photogenic; Colt’s New Frontier .22 is one. Creating some photo packages is work, but capturing images of the Colt was a pleasure. For those interested, a good New Frontier .22 like mine is valued between \$500 and \$800.

At the range, I fired four vastly different loads to test in the New Frontier .22: bulk Winchester Super-X high-velocity ammo loaded with 40-grain copper-washed roundnose bullets; SK Pistol Match standard-velocity ammo loaded with 40-grain lead roundnose projectiles; CCI 32-grain copper-washed segmented hollowpoints, and Federal Punch ammo loaded with 29-grain nickel-plated flatnose bullets. All performed well. Cartridges slid into chambers like they were oiled, all fired without failure, and empty cases ejected easily.

Accuracy was solid without being startling. All loads tested averaged between 1.5 and 2.0 inches at 25 yards. Top honors went to the least expensive load on the roster: Winchester’s 40-grain roundnose Super-X ammo averaged 1.55 inches and posted an admirable velocity of 973 fps.

When eared back, the hammer spells C-O-L-T with its four clicks, just as every good Colt single action should. Balance is superb, and pointability is amazing. With clinical testing complete, I indulged in something I haven’t done since I was a boy and tried point-shooting snap shots Hollywood style at various torso targets from seven to 20 yards. I didn’t always hit in the center, or even near center, but I’m pleased to report that I never missed a torso.

I write about a lot of cool old firearms, and I’m sad to confess that most have to be sold to finance the next one to be featured here in “The Shootist” column. Not this one. It’s my new favorite .22 LR handgun.

ST

COLT NEW FRONTIER .22 ACCURACY & VELOCITY				
AMMUNITION	VEL. (FPS)	E.S. (FPS)	S.D. (FPS)	25-YD. ACC. (IN.)
.22 Long Rifle, 4.4-in. Barrel				
Federal Punch 29-gr. FN	1197	67	22	1.82
CCI 32-gr. Segmented HP	1095	115	31	1.56
SK Pistol Match 40-gr. RN	762	75	26	1.86
Winchester Super-X 40-gr. RN	973	89	23	1.55
NOTES: Accuracy is the average of three, six-shot groups fired from a sandbag bench-rest. Velocity is the average of 18 rounds measured with a LabRadar.				



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“Thirty-fives” in the Woods: Then and Now

Time was, compact .35-caliber rifle cartridges were a respected presence in the North American woods. Could be that they are on the rise again. **BY ALLAN JONES**

Two newcomers in the .35-caliber woods cartridge category (.350 Legend and .360 Buckhammer) are getting a lot of attention from hunters. Time will tell if they outpace the classic .35 Remington (center).

FOR DECADES, .35-CALIBER CARTRIDGES were plentiful for hunting the woods of North America. They may be on the rise again due to proven performance and help from some changes in state game laws. Let's establish a baseline “woods” cartridge, then review design and ballistic factors of two .35-caliber newcomers.

The archetypal .35-caliber woods cartridge has to be the .35 Remington from 1906. In terms of longevity and rifles sold, it has no competition in its niche. Almost every action type was at one time chambered for it. Rifles were still available when I profiled that cartridge in the pages of *Shooting Times* in 2019.

Factory .35 Rem. ammo is loaded to a very “soft” 33,500 psi yet pushes a 200-grain bullet to an advertised velocity between 2,020 and 2,080 fps; Hornady has a 200-grain version listed at 2,225 fps. The cartridge's only weakness was disappointing game performance from one now-discontinued 150-grain Spirepoint factory load that was listed at 2,200 fps. Most knowing hunters avoided that load.

Many, including me, believed large-caliber “woods rifles” firing slow, heavy bullets were good “brush busters.” I changed my mind on that when I saw the results of some empirical “twig interference” testing conducted by some of my forensic colleagues.

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“Ballistically, the .350 Legend and the .360 Buckhammer are very close. Yes, the Legend has a four-year head start, but the Buckhammer has modest bullet weight and energy advantage.”

Big, modest-velocity bullets at slow twist rates will deflect, just not quite as much as the lighter high-velocity bullets. Still, if a twig is some yards in front of the critter, even a little deflection could turn a perfect chest shot into a gut shot or a miss, regardless of the cartridge used.

Instead, what the traditional “.35ers” offered was deep penetration with modest velocities that won’t damage much meat. The .35 Rem. had very tolerable recoil in a rifle you could pack all day.

The two newcomers are Winchester’s .350 Legend (2019) and Remington’s .360 Buckhammer (2023). Regulation changes allowed straight-wall rifle cartridges, within certain technical specifications, in regions where only shotguns were previously permitted for hunting deer. And I applaud these decisions for both technical and ethical reasons.

Extensive testing we did at the crime lab showed that a buffered load of 12-gauge 00 Buck fired from an 18-inch Cylinder-bore shotgun averaged about one inch of spread per each yard of distance. At 50 yards that’s over four feet. A single 00 pellet at 850 to 900 fps has less than 100 ft-lbs of kinetic energy at that distance.

The .350 Legend is not directly based on an everyday case. At the standard SAAMI reference diameter point 0.200 inch ahead of the base, the case body is 0.3900 inch. That is closest to the 9mm Luger’s 0.3910 inch. The rim is slightly rebated to 0.378 inch to fit a standard .223 Remington boltface. The 1.710-inch case tapers to 0.378 inch at the case mouth and reminds me of an ancestor—the .351 Winchester Self-Loading (1907) that claimed 1,850 fps with a 180-grain bullet.

Recommended maximum average pressure (MAP) is 55,000 psi, same as the .223 Rem. The reference load on the .350 Legend’s new-cartridge intro sheet is a 145-grain bullet at 2,250 fps. The max bullet diameter guideline is 0.357 inch, and the twist rate guideline is one turn in 16 inches.

Current Winchester offerings show hunting and practice bullet weights between 145 and 180 grains, plus a subsonic load with a 255-grain bullet. The highest velocity load drives 150-grain polymer-tipped bullets to a nominal muzzle velocity of 2,325 fps with 1,800 ft-lbs of energy.

Remington’s .360 Buckhammer has a less complicated origin story. It is the .30-30 Winchester converted to straight-taper, shortened to 1.800 inches, and expanded to hold a .35-caliber bullet.

The .360’s MAP is 50,000 psi, same as the .222 Remington and the .303 British. The reference

load on the Buckhammer’s cartridge intro sheet is a 200-grain bullet at 2,170 fps. Max bullet diameter guideline is 0.358 inch, and the twist rate guideline is, surprisingly, one turn in 12 inches, the same as the .358 Winchester, and faster than the .350 Legend’s twist.

Remington’s 2024 catalog shows two factory loads: a 200-grain bullet at 2,200 fps and 2,150 ft-lbs and a 180-grain bullet at 2,375 fps and 2,300 ft-lbs. It also shows two all-copper bullet loads in development. Federal offers two loads with similar specs.

Ballistically, the .350 Legend and the .360 Buckhammer are very close. Yes, the Legend has a four-year head start, but the Buckhammer has modest bullet weight and energy advantage. If there is an acceptance battle brewing, it will be over platform rather than performance.

The rimless .350 Legend works in most action types; its being “MSR friendly” is a bonus. The rimmed .360 Buckhammer is largely limited to lever guns and single shots. Remington partnered with Henry Arms, who offers the Buckhammer in both lever guns and a single shot. And just recently Traditions announced the .360 Buckhammer in the single-shot Outfitter G3.

The cartridge/chamber drawings for both cartridges are interesting. Older .35-caliber rifle cartridges are, well, old, and their chamber throats certainly reflect old-school thinking. Remember that chamber throats can consist of both freebore and leade. Freebore is an optional cylindrical section at or slightly over bullet diameter immediately ahead of the case mouth. Leade is the necessary tapered section that creates a smooth transition from the chamber to the rifling. Many older cartridge chambers have little or no freebore and/or a short, abrupt leade.

A refreshing throating trend in newer rifle cartridges is to longer throats with freebore and a longer, less abrupt leade. Lengths of each section usually fall about 20 percent on either side of half the total throat length. We see this pattern in the 6.5 Creedmoor and the 6.5 PRC. The .350 Legend’s total throat is 0.2475 inch with a freebore to leade ratio of 9 to 16. The .360 Buckhammer’s throat is 0.3428 inch with a ratio of 11 to 14. Its longer throat reflects a 0.25-inch longer COL than the Legend.

Will twist play a role? Will the 255-grain subsonic .350 Legend load require a custom, fast-twist barrel? Could the .360 Buckhammer’s faster 1:12 twist handle the 220- to 250-grain bullets that made the old .358 Winchester a potent “walkin’ around” rifle? Might be fun to explore.

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SHOOTER'S GALLERY

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Get By with a Minimal Inventory of Powders

Shooting Times reader Michael Warner wants to reload six different cartridges with the fewest powders possible. Here's Lane's advice. **BY LANE PEARCE**

The quest to be a minimalist handloader is noble, and these powders will do the trick for loading .44 Magnum, .45 ACP, .30-06, .308 Win., .222 Rem., and .32 Win. Spl.

SHOOTING TIMES READER **MICHAEL WARNER** posed a reloading situation and asked for recommendations. He listed an assortment of firearms that he plans to reload for but didn't want to stock a lot of different propellants. These include the .44 Magnum (both handgun and rifle), .45 ACP, .30-06, .308 Winchester, .222 Remington, and .32 Winchester Special. He asked that I recommend no more than a couple of choices for reloading the handguns and a similar number for the rifles. I quickly realized that it wasn't practical to select just four different propellants that could adequately satisfy his needs.

I started with reviewing the latest Hodgdon reloading manual. Not knowing if Michael would be loading cast or jacketed bullets for the two handgun rounds, I looked at the .45 ACP data for bullet weights ranging from 118 to 250 grains. Hodgdon CFE Pistol and Accurate No. 5 best fit the bill. However, if CFE Pistol isn't available, Hodgdon Titegroup is an alternate option for bullet weights up to 230 grains. And if No. 5 is unavailable, No. 7 is a suitable alternate.

Obviously, you do not substitute one powder for another using the same load recipe. Only use load data for the specific powder and bullet type/weight shown



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in a reputable source load manual. And, of course, keep only the powder you're using anywhere near your load bench to avoid getting them mixed up!

Similarly, selecting only two powders for reloading .44 Magnum is almost as easy. For full-bore "magnum" performance with heavier bullets (240+ grains) in either a handgun or a rifle, Hodgdon H110 and/or Winchester 296 are usually most handloaders' first choices.

However, the relatively slow burn rates of H110 and W296 are not recommended for more modest performance .44 Magnum handloads. Looking at the lighter bullet data, Accurate No. 7 shows up most often for 180- to 240-grain cast or jacketed bullets. Accurate 11 FS is an alternate if No. 7 is unavailable. Fortunately, CFE Pistol is also a preferred propellant for reduced-power handloads with bullets weighing 240+ grains. Remember that load recipes will differ depending on whether you're loading cast or jacketed bullets of the same weight.

Switching to the rifle chamberings, let's look at .308 Winchester and .30-06 first. These two rounds' specifications and performances are, of course, very similar. Basically, the .308 is a half-inch shorter version of the .30-06, i.e., same basic case with less case capacity, same bullet diameter/weights, about the same MAP, etc. It's no surprise that a couple of propellants will satisfy Michael's objective.

I recommend Accurate 2520 for bullets weighing up to 150 grains. Winchester StaBALL Match overlaps at 130 grains, and load data continues up to 200 grains. Either H4895 or IMR 4895 are two good alternatives. However, if he intends to load for autoloading rifles, and especially the M1 Garand, he should stick with StaBALL Match or one of the 4895s.

The .222 Remington and .32 Winchester Special are quite different from the two .30-caliber rifle rounds. They also are quite different from each

other and therefore will require different propellants for handloading safe and reliable ammunition. Hodgdon Benchmark and IMR 8208 XBR are the best all-round options for the .222 Rem. The good news here is CFE 223, both 4895s, 2460, 2520, and StaBALL Match are also listed as alternate choices, depending on bullet weight (40 to 60 grains). So, he might get by using one of these .30-caliber powders, but he'll likely not achieve the desired performance. It can't hurt to try one or two of them before expanding your propellant inventory.

The .32 Win. Spl. is altogether a different story. There's no information in the Hodgdon manual; however, the online Hodgdon Reloading Data Center includes some load data. Benchmark, CFE 223, IMR 8208 XBR, and IMR 4895 are included in the propellant choices. Michael doesn't have to add another powder to his inventory; however, Hodgdon LEVERevolution propellant is the powder of choice for those of us who load and shoot several of the old lever-action cartridges, including the .32 Win. Spl.

Lessons to be learned from my comments include you must acquire the latest editions of the *Hodgdon Annual Manual* and the Hornady reloading manuals. Together, they offer all the reloading information you'll likely ever need. The Hornady manual also offers detailed narratives and illustrations, describing the reloading process from start to finish. Next, you must establish a definite procedure for handloading—and follow it! Don't try to reload when you're distracted or are otherwise not able to focus on the critical processes you're about to perform. Finally, the quest to be a handloading minimalist is an excellent goal. The less opportunity you have to use the wrong propellant when handloading surely reduces the potential to make a mistake that isn't detected until you squeeze the trigger and experience a potential tragedy. Be safe!

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WINCHESTER'S NEWEST **RIMFIRE** LEVER ACTION

IF YOU HUNT BIG GAME WITH A LEVER-ACTION RIFLE LIKE MILLIONS OF RIFLEMEN, THEN THE NEW-FOR-2024 WINCHESTER RANGER MAY BE YOUR IDEAL SMALL-GAME HUNTING COMPANION.

BY JOEL J. HUTCHCROFT

I'VE WRITTEN IT BEFORE: WHEN IT COMES TO .22 RIMFIRE rifles, I have a real fondness for the semiautomatic Browning .22 Auto and the pump-action Winchester Model 1890 because I spent many years as a boy shooting them. Later, as a young adult, I owned two lever-action Winchester Model 9422 XTR rifles at the same time (one in .22 LR and one in .22 WMR) and came to really appreciate them. They were smooth functioning and very accurate. (The .22 WMR was *incredibly* accurate.) Winchester's newest lever-action rimfire rifle is the Ranger, and while it's not as fancy as the Model 9422 XTRs were (they were discontinued in about 2005), it is every bit as accurate and fun to shoot.

Features

Winchester's new Ranger rimfire rifle is made by Istanbul Silah in Turkey and imported by BACO, Inc. of Morgan, Utah (those facts are prominently marked on the right side of the barrel), and the rifle has several key features that make it stand out. First, the receiver is machined from a solid billet of aluminum alloy. It is anodized black, and it is grooved for scope rings. Second, the steel trigger is adjustable for overtravel. Third, the 20.5-inch chrome-moly steel barrel is button rifled, and its muzzle is recessed and precision crowned. The twist rate is standard for the .22 LR at one turn in 16 inches. The barrel, trigger, and hammer are finished matte black.

WINCHESTER’S NEWEST RIMFIRE LEVER ACTION

RANGER	
MANUFACTURER	Winchester Repeating Arms winchesterguns.com
TYPE	Lever-action repeater
CALIBER	.22 Long Rifle
MAGAZINE CAPACITY	15 rounds
BARREL	20.5 in.
OVERALL LENGTH	37.5 in.
WEIGHT, EMPTY	5.3 lbs.
STOCK	Grade I walnut
LENGTH OF PULL	13 in.
FINISH	Matte black barrel, receiver, and lever; satin oil stock
SIGHTS	Adjustable rear, post front with hood, receiver is grooved for scope bases
TRIGGER	4.4-lb. pull (as tested)
SAFETY	Halfcock notch
MSRP	\$419.99

The straight-grip buttstock and forearm are Grade I walnut and finished with a satin oil finish. The length of pull is 13 inches, and the buttstock is fitted with a black plastic buttplate. The forearm has a traditional barrel band.

The Ranger has a tubular magazine that holds 15 rounds of .22 LR ammo. It works the typical way, with an inner spring-loaded tube that is removed by twisting and pulling it toward the muzzle. Rounds are inserted through the slot in the outer tube.

The rifle’s semi-buckhorn rear sight is adjustable for elevation, and since it is dovetailed into the top of the barrel, it can be drifted for windage, too. The front sight is a black square post, and it is protected by a removable hood. The sight’s ramp is attached to the front barrel band.

Upon first glance, you might not notice that the new Ranger is a takedown rifle, but it is. And it’s easy to disassemble. All that is required is to remove one slot-head screw located at the rear of the receiver. Then simply separate the buttstock/hammer/trigger/lever assembly from the receiver/barrel assembly. By the way, the trigger is grooved and so is the hammerspur.

Since the receiver and the barrel stay together during takedown, if a scope is installed on the sleek rifle, its zero remains the same—no rezeroing required after reassembling. (Note: I used my favorite rimfire scope for testing the Ranger. It’s an old Burris 4X scope with a black dot reticle and very fine crosshairs, and it’s nice and compact so



The new-for-2024 Winchester Ranger .22 LR lever-action rifle has a machined aluminum alloy receiver that’s anodized black. Its top is grooved for scope rings.

it makes a great scope for a sleek, little rimfire rifle like the Ranger.) Also, obviously, the bore can be cleaned from the chamber end when in takedown mode, and all the experts recommend cleaning a bore this way whenever possible.

In operation, the Ranger has a solid and secure feeding system. When the lever is worked to open the action, a cartridge pops from the magazine and rides freely to the chamber on a carrier. Closing the lever all the way chambers the round and locks the breechbolt behind it. After firing, as the lever is operated, the dual extractors grip the fired case and pull it out of the chamber. The case ejects cleanly and lands approximately 1.5 feet from the firing

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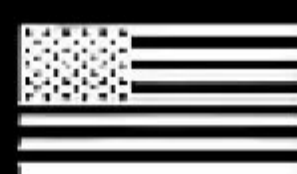
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WINCHESTER'S NEWEST RIMFIRE LEVER ACTION

line. During my sessions with the Ranger, it didn't miss a beat feeding cartridges and extracting fired cases.

The new Ranger measures 37.5 inches overall and weighs 5 pounds, 5 ounces, according to my digital scale. Our sample's trigger pull averaged 4 pounds, 6 ounces over a series of 10 measurements with an RCBS trigger pull gauge. It was smooth, clean, and crisp, with no noticeable takeup.

Shootability

The first rifle I ever fired was a Winchester Model 1873 chambered for .44-40. I was seven years old at the time (I'm now 63! Where has the time gone?), and the old lever action was so heavy to me that my dad had to help me hold it. Amazingly, I (or I should say we) hit the log we were aiming at. Well, the new Ranger is a whole lot easier to shoot. I spent an enjoyable morning shooting the new Ranger on my private shooting range, which borders a small stand of timber that I now own. (It just happens to be the location where I first shot that old Model 1873 with my dad.) After shooting the Ranger for



The rifle's steel trigger is adjustable for overtravel, but the review sample didn't require any adjusting. The trigger pull was crisp and clean, averaging 4 pounds, 6 ounces.



The Ranger can be taken down by removing a single screw. The 20.5-inch steel barrel is button rifled, and the muzzle is recessed and precision crowned.

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WINCHESTER’S NEWEST RIMFIRE LEVER ACTION



The Ranger’s buttstock and forearm are made of Grade I walnut and given a satin oil finish. The buttplate is black plastic.

accuracy from the bench, I made a leisurely stalk through the timber in search of treetop whitetails (a.k.a. fox squirrels). Time afield is always enjoyable, but I just can’t get enough time in the woods hunting small game. The svelte rifle carried comfortably and came to the shoulder quickly and easily.

The results of my accuracy evaluation are listed in the accompanying chart, and the Ranger’s overall accuracy average was 0.66 inch for three, five-shot groups with 10 loads fired at 25 yards. That’s not too shabby. I chose the 25-yard distance rather than 50 yards because when I’m hunting squirrels, I rarely take a shot that’s farther away than 25 yards. Most of the time, my shots are well under 25 yards. However, I did shoot three, five-shot groups at 50 yards with one of the loadings that was the most accurate at 25 yards just to see how it would fare.

At 0.38 inch each, two loads tied for the best 25-yard accuracy. They were the Federal Gold Medal Target #711 40-grain LRN and the SK Rifle Match 40-grain LRN ammo. The three, five-shot groups at 50

yards with the Federal #711 ammo averaged 0.75 inch.

With an average of 0.50 inch, the CCI Mini Mag 40-grain CPRN load took second place honors in the accuracy department. And at 0.63 inch each, the SK Standard Plus 40-grain LRN and the PMC Rifle Match 40-grain LRN loadings tied for third place.

All other loads came in under an inch, with three of ’em averaging 0.75 inch. A rifle that groups 10 loads all under an inch at 25 yards is a great shooter in my book.

Working the Ranger’s lever was easy, and the action was really smooth. The old Model 9422

XTRs I mentioned at the beginning of this report were well known for their silky smooth actions, and the sample Ranger I used for this review was every bit as smooth. Operation of the lever was almost effortless, even with the hammer down.

Accurate, smooth to operate, and fun to shoot, Winchester’s newest rimfire lever-action rifle is destined to be a classic.

ST

WINCHESTER RANGER ACCURACY & VELOCITY				
AMMUNITION	VEL. (FPS)	E.S. (FPS)	S.D. (FPS)	25-YD. ACC. (IN.)
.22 LR, 20.5-in. Barrel				
CCI Mini Mag 40-gr. CPRN	1195	44	17	0.50
Eley Match 40-gr. LFN	1052	9	3	0.75
Federal Gold Medal Target #711 40-gr. LRN	1121	57	21	0.38
Federal Hunter Match 40-gr. LHP	1135	19	6	0.75
Norma TAC-22 High Performance Target 40-gr. LRN	1018	45	18	0.88
PMC Match Rifle 40-gr. LRN	1038	50	19	0.63
SK Rifle Match 40-gr. LRN	995	21	8	0.38
SK Standard Plus 40-gr. LRN	1022	50	19	0.63
Winchester Power-Point 40-gr. LHP	1219	87	36	0.75
Winchester Wildcat 40-gr. LRN	1127	51	20	0.97
NOTES: Accuracy is the average of three, five-shot groups fired from a benchrest. Velocity is the average of five rounds measured 12 feet from the gun’s muzzle.				

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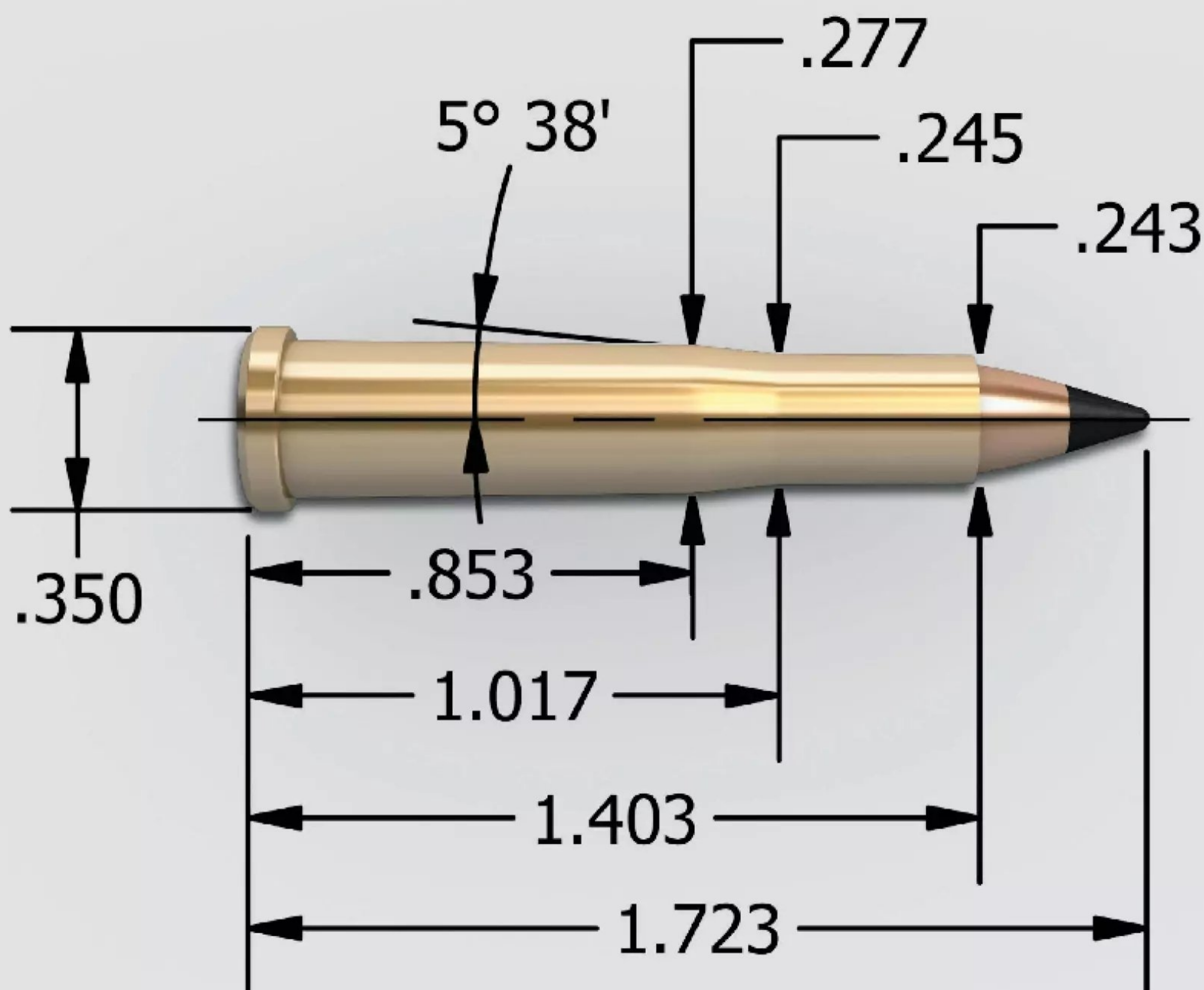
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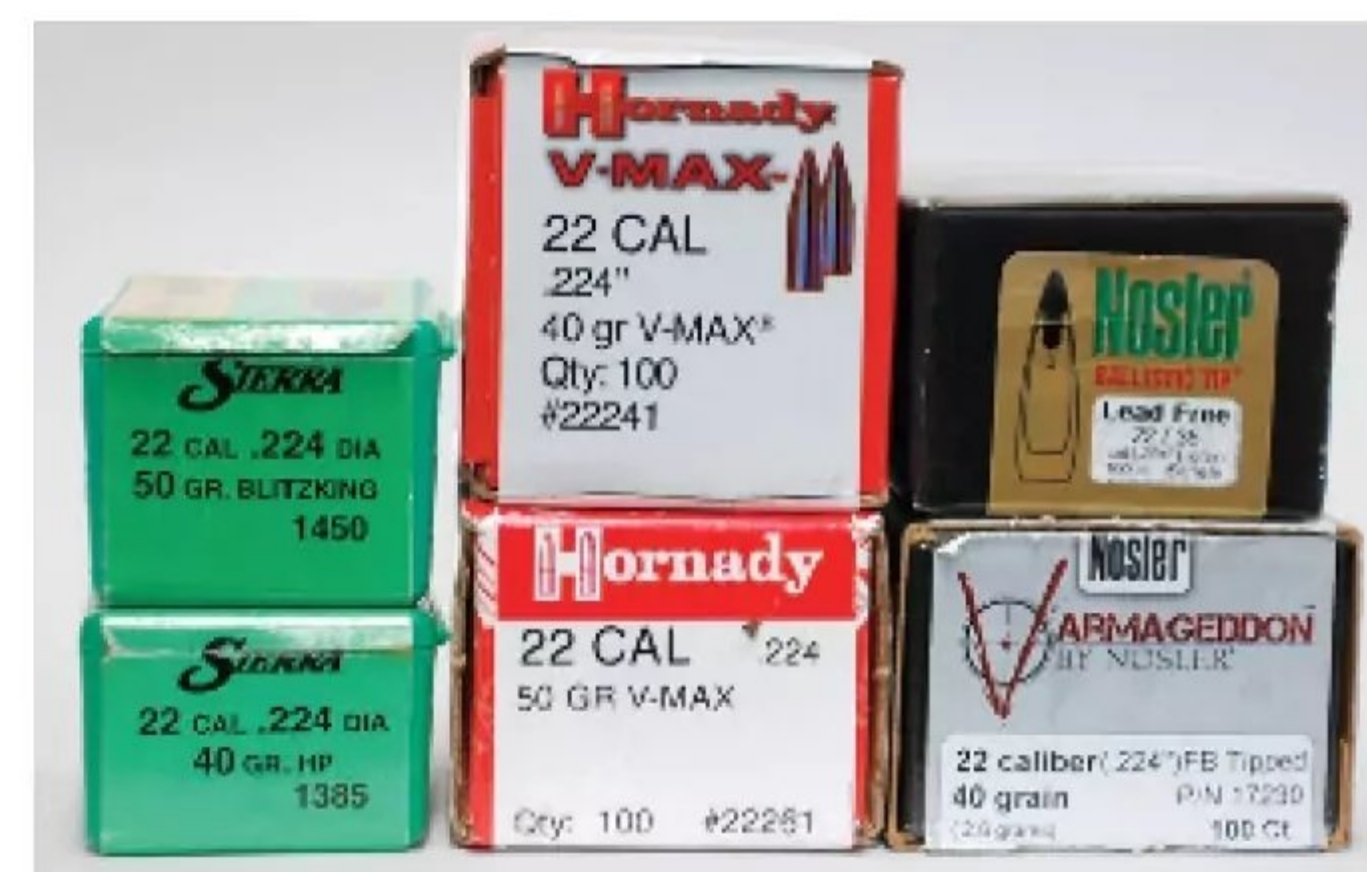


THE TIMELESS **.22 HORNET**

THE .22 HORNET IS A MIGHTY MITE THAT IS STILL GOING STRONG. WITH NEW-FOR-2024 GUNS RECENTLY ANNOUNCED, ITS FUTURE LOOKS BRIGHT.

BY STEVE GASH

THE DEVELOPMENT OF THE .22 HORNET CARTRIDGE is significant in cartridge history for several reasons. Interestingly, it was the first smokeless powder round designed for varmint shooting. Its “parent” cartridge was the blackpowder .22 Winchester Center Fire (WCF), which dates from 1885. It was chambered in the Winchester Single Shot falling block rifle designed by John M. Browning and also in the Remington No. 7 Rolling Block in 1904. The cartridge’s length of 1.61 inches made it too long for repeating arms. The .22 WCF was eventually loaded with smokeless powder to the same ballistics, but it was discontinued in 1936. Experiments by Col. Townsend Whelen and Cpt. G.L. Workyns at the Springfield Armory in the 1920s led to the development of a new round that later came to be called the .22 Hornet. The original guns for it were made on Springfield Model 1903 actions. Consequently, early .22 Hornet rifles had 0.223-inch bores.



While several ammo companies offer factory-loaded .22 Hornet ammunition, it can be difficult to find. On the other hand, handloading components are usually available, and reloading the cartridge is very satisfying.

The .22 WCF case was only modified slightly to form the .22 Hornet. The length of the .22 WCF case was 1.39 inches, while the Hornet's is 1.403 inches. The rim diameters of the rounds in that same order also were similar, at 0.342 and 0.350 inch. Ditto the neck diameters at 0.241 and 0.242 inch. However, as I stated earlier, the overall cartridge length of the WCF was 1.61 inches, but the Hornet's COL is 1.723 inches. Both little bottleneck rounds produced different velocities with their 45-grain bullets. The velocity of the .22 WCF was listed at 1,550 fps, which produced 240 ft-lbs of energy at the muzzle. The Hornet bullet of the same weight at 2,690 fps at the muzzle made 723 ft-lbs of energy. In addition, the standard twist rate for the .22 Hornet is one turn in 16 inches. This limits the round to lighter (i.e., shorter) bullets.

Some Great Old Guns

The grand old Hornet originated in commercial form in 1932 from Winchester, and soon most American ammo manufacturers were on board with the round. Rifles for the .22 Hornet have seen only sporadic production to this day. Examples are the Winchester Models 54 (1930 to 1936) and 70 (1946 to 1963), the Stevens Model 340 (1950 to 1985), and the Savage Model 23D (1933 to 1947) and the Models 342 and 342S. Then from 1938 to 1965, Savage offered the Model 219 break-action single shot in .22 Hornet, to which I shall return later.

It is significant that the .22 Hornet was the first varmint cartridge designed for smokeless powder. Its continuing popularity is interesting since the case is small, doesn't hold much powder, and the maximum average pressure (MAP) is only 49,000 psi,

quite low in comparison to modern cartridges, such as the popular .223 Remington (MAP: 55,000 psi). The .22 Hornet may look weak, but it is perfectly adequate as a 100- to 150-yard game-getter. The round has enjoyed varying degrees of popularity over the decades, and it refuses to die. As I've noted, Winchester, Savage, and Stevens made rifles for the Hornet in the past, but all of those are currently discontinued. Hornet rifles were also made by Anschutz, and I think the model numbers were 1433D and 1730D. In 1994 Ruger announced the Model 77/22 bolt-action rifle in .22 Hornet. Since then it has periodically been listed as "unavailable."

I was introduced to the .22 Hornet cartridge in a rather unusual manner. I hated junior high school, so when classes were dismissed for the year, I hot-footed it to my grandparents' 80-acre farm in Cooper County, Missouri, where I stayed until the day before school started the next fall. Woodchucks were numerous, and they voraciously ate my granddad's soy beans, red clover, and just about anything else he tried to grow. My job was to wage war on these pesky rodents with my granddad's .22 LR rifle.

When I escaped to the farm in the spring of 1956, I was shocked to find a Remington Model 11 12-gauge shotgun standing in the corner, instead of the Winchester Model 69A .22 LR with which I had previously hunted 'chucks.

The why and how of the trade were not related to me, but I confess that the woodchucks were delighted. As I prepared to return home that year, Granddad came to me with the Model 11 in his hand and said, "Here, you can have this. I've got no use for it."

THE TIMELESS .22 HORNET



After I returned home, I realized that Granddad was gunless on the farm, so I went to the local Sears Roebuck store and ordered what I thought would be suitable armament against woodchucks for a Missouri farmer. It was a Savage Model 219-B in .22 Hornet. I ordered the gun, and Sears sent it directly to the farm. The next summer, it was a different story in the 'chuck wars. I was impressed with what seemed to me to be

such a powerful cartridge, and the 219-B and I made a serious dent in the 'chuck populations.

Well, in 1978, the 219-B was bequeathed to me. I still have it and cherish the memories of those long-ago 'chuck hunts.

I have occasionally dabbled with other Hornet rifles, and one was a CZ Model 527. It was imported into the U.S. from about 1995 to 2009.



Ruger Super Redhawk (circa 2024)



The Hornet Today

The limiting factor of the .22 Hornet these days is not its ballistics but the dearth of guns available to shoot it. Fortunately, in 2024, Sturm, Ruger & Co. made an announcement that should gladden the hearts of Hornet lovers everywhere. As previously noted, Ruger announced the Model 77/22 bolt-action rifle in .22 Hornet in 1994, and since then it has periodically been listed as “unavailable,” but in early 2024, the rifle became available again, and it is structured similar to original ones. It has a five-round rotary magazine. I obtained a vintage Model 77/22 from a fellow rifle aficionado, and lo and behold, the serial number indicates that it was made in the first year of production. In addition, I just received one of the new 2024 Model 77/22s on order for comparison with my 1994 version. It is a little different than my 1994 version, but it, too, is a real shooter.

The 2024 version of the Model 77/22 features an 18.5-inch barrel, with a 1:14 twist, so it can handle slightly heavier (longer) bullets than rifles with the 1:16 twist. This version has what Ruger calls the Green Mountain laminate stock, and it’s quite attractive to my eye. It is solidly bedded along the stainless-steel barrel, which is a bit more robust than the barrel on my 1994 rifle. The muzzle of the 2024 rifle measures 0.748 inch, and it is 0.923 inch at its junction with the receiver. The rifle came with 1-inch Ruger rings for easy scope mounting. The trigger

pull averages a hair over four pounds but is crisp and without a lot of overtravel. For testing, I used Leupold 30mm rings to attach a Sightron 1-6X 24mm S-TAC IR AR1 scope. The 2024 rifle shot even better than my 1994 rifle, averaging 0.71 inch with four handloads and two factory loads. The velocities of the two factory loads were somewhat lower than in the 20-inch-barreled 1994 rifle.

Before I leave Ruger, I must report that the firm also offers the Super Redhawk revolver in .22 Hornet for 2024. I just received one, and it is up to Ruger’s usual high standards. I think it would be a super truck gun. The trigger pull averages 4 pounds, 14.4 ounces, and I mounted a Nikon Force XR 2.5-8X 28 EER scope for this report. With the scope installed, the weight is 5 pounds, 6 ounces. (The revolver alone weighs 4 pounds, 6 ounces.)

This fine piece of ordnance has a 9.5-inch barrel with a 1:9 twist, which spins these stubby .22-caliber bullets sufficiently to stabilize them into satisfyingly small groups. The revolver has an eight-round, unfluted cylinder that is 1.781 inches in diameter and 1.749 inches long. The grip is a rubber Hogue Monogrip, and the gun has a green HiViz fiber-optic front sight. The rear sight is adjustable, but also included are Ruger 1-inch rings that clamp directly to the topstrap, making mounting a long-eye-relief pistol scope a breeze. You can read more about the new Super Redhawk in Joel Hutchcroft’s review of it elsewhere in this magazine.

Only a few other handguns have been made in .22 Hornet, such as Taurus’s Raging Hornet revolver. It is the Model 22H SS, an eight-shot stainless-steel revolver with a 10-inch barrel. It was offered from 1999 to 2004.

Additional news on the Hornet front is that Cooper of Montana (in Stevensville) made at least five rifle models in .22 Hornet from 1996 to 1999. However, in 2023, Cooper of Montana was sold to Nighthawk Custom in Berryville, Arkansas, and production was suspended. A new firm named “Cooper of Arkansas” has been formed in Berryville and is in the process of resurrecting the Cooper line. Nighthawk asked me to recommend cartridges for these rifles, and as you might expect, the .22 Hornet was high on my list. Time will tell if the Hornet ever flies from Arkansas.

Handloading the Hornet

The accompanying chart shows the velocities of several representative handloads and the factory ammunition I was able to obtain for the Hornet guns I tested. It’s obviously possible for the handloader to assemble ammo with a variety of bullets and powders that can take care of a variety of targets, paper or live. Woodchucks, rockchucks, ground squirrels, and coyotes should quake when a Hornet-equipped hunter shows up. Where legal, a mild load in the Hornet should be just the ticket for turkeys, as well.

This article is not a treatise on handloading the Hornet, but it is almost mandatory that I explore this aspect in some depth, as factory ammunition is hard to find and, well, just

.22 HORNET ACCURACY & VELOCITY								
BULLET	POWDER		CASE	PRIMER	VEL. (FPS)	E.S. (FPS)	S.D. (FPS)	50-YD. ACC. (IN.)
	(TYPE)	(GRS.)						
Ruger Model 77/22, 20-in. Barrel, 1:14 Twist (circa 1994)								
Nosler Varmageddon 40-gr. Tipped	H110	9.2	Win.	CCI 500	2473	215	77	0.96
Nosler Varmageddon 40-gr. Tipped	H110	9.2	Win.	CCI 550	2520	48	17	0.87
Nosler Varmageddon 40-gr. Tipped	H110	9.2	Win.	Fed. 100	2497	89	39	0.81
Nosler Varmageddon 40-gr. Tipped	H110	9.2	Win.	Fed. 200	2503	165	66	0.79
Nosler Varmageddon 40-gr. Tipped	H110	9.2	Win.	Fed. 205	2443	73	30	0.91
Nosler Varmageddon 40-gr. Tipped	H110	9.2	Win.	WSPM	2564	59	25	0.45
Hornady Varmint Express 35-gr. V-Max	Factory Load				2950	38	18	0.43
Remington 45-gr. PSP	Factory Load				2903	35	13	0.83
Winchester Super-X 46-gr. HP	Factory Load				2602	41	17	0.87
Ruger Model 77/22, 18.5-in. Barrel, 1:14 Twist (circa 2024)								
Hornady 40-gr. V-Max	IMR 4227	10.5	Win.	CCI 500	2678	70	28	0.75
Nosler 40-gr. Ballistic Tip	Lil'Gun	12.0	Win.	Fed. 205	2713	73	26	0.71
Sierra 40-gr. HP	H110	10.5	Win.	Fed. 205	2472	48	17	0.55
Sierra 45-gr. Semi-Pointed	Lil'Gun	12.0	Fed.	WSP	2525	57	19	0.73
Sierra 45-gr. SP	Lil'Gun	12.0	Win.	CCI 550	2720	99	36	0.87
Hornady 50-gr. V-Max	Lil'Gun	12.0	Win.	CCI 550	2601	58	22	0.78
Remington 45-gr. PSP	Factory Load				2616	41	17	0.71
Winchester Super-X 46-gr. HP	Factory Load				2484	71	26	0.59
Ruger Super Redhawk, 9.5-in. Barrel, 1:9 Twist (circa 2024)								
Hornady 40-gr. V-Max	Lil'Gun	12.0	Win.	CCI 550	1881	41	14	1.50
Sierra 40-gr. SP	IMR 4227	10.5	Win.	CCI 500	1670	32	12	1.22
Hornady 50-gr. V-Max	2400	8.5	Win.	CCI 500	1736	91	30	1.88
Hornady 50-gr. V-Max	Lil'Gun	12.0	Win.	CCI 550	1898	58	23	1.49
Remington 45-gr. PSP	Factory Load				1872	24	8	0.87
Winchester Super-X 46-gr. HP	Factory Load				1595	48	16	0.83
CZ Model 527, 20.9-in. Barrel, 1:16 Twist (circa 2013)								
Nosler Varmageddon 40-gr. HP	Lil'Gun	12.5	Win.	Fed. 100	2814	50	23	0.39
Sierra 40-gr. BlitzKing	H110	10.5	Peters	CCI 400	2797	88	41	0.57
Sierra 40-gr. HP	H110	10.5	Peters	CCI 400	2706	63	28	0.83
Sierra 45-gr. SP	H110	10.5	Fed.	Fed. 100	2682	152	56	1.30
Sierra 45-gr. SP	H110	10.5	Fed.	WSP	2687	104	34	1.36
Sierra 45-gr. SP	H110	10.5	Fed.	WSPM	2715	99	42	1.10
Sierra 45-gr. SP	H110	10.5	Win.	Fed. 205	2679	88	36	0.73
Sierra 45-gr. SP	Lil'Gun	12.5	Fed.	Fed. 100	2719	56	22	0.55
Sierra 45-gr. SP	Lil'Gun	12.5	Fed.	WSP	2659	44	17	0.35
Sierra 45-gr. SP	Lil'Gun	12.5	Fed.	WSPM	2717	80	28	0.35
Sierra 45-gr. SP	Lil'Gun	12.5	Win.	Fed. 205	2828	50	18	0.73
Federal 30-gr. TNT Green	Factory Load				3131	141	47	0.76
Hornady Varmint Express 35-gr. V-Max	Factory Load				3265	54	21	0.67
Savage Model 219-B, 26-in. Barrel, 1:16 Twist (circa 1956)								
Remington 45-gr. PSP	Factory Load				2672	39	17	1.99
Winchester Super-X 46-gr. HP	Factory Load				2693	19	7	1.36
NOTES: Accuracy is the average of three, five-shot groups. Velocity is the average of five rounds measured eight feet from the guns' muzzles. All load data should be used with caution. Always start with reduced loads first and make sure they are safe in each of your guns before proceeding to the high test loads listed. Since <i>Shooting Times</i> has no control over your choice of components, guns, or actual loadings, neither <i>Shooting Times</i> nor the various firearms and components manufacturers assumes any responsibility for the use of this data.								

plain expensive. Plus, it is very rewarding to brew up a batch of handloads for your Hornet rifles.

The .22 Hornet is a delightful option for the walk-around varmint hunter who wants an accurate round with adequate power that is quiet and very economical to handload. Fortunately, loading dies and suitable powders and bullets are usually available. Currently, Winchester, Remington, Hornady, Nosler, and perhaps others offer new cases for the reloader. Bullet weights suitable for the Hornet are available from 30 to 50 grains, and heavier bullets may be only marginally stabilized at Hornet velocities.

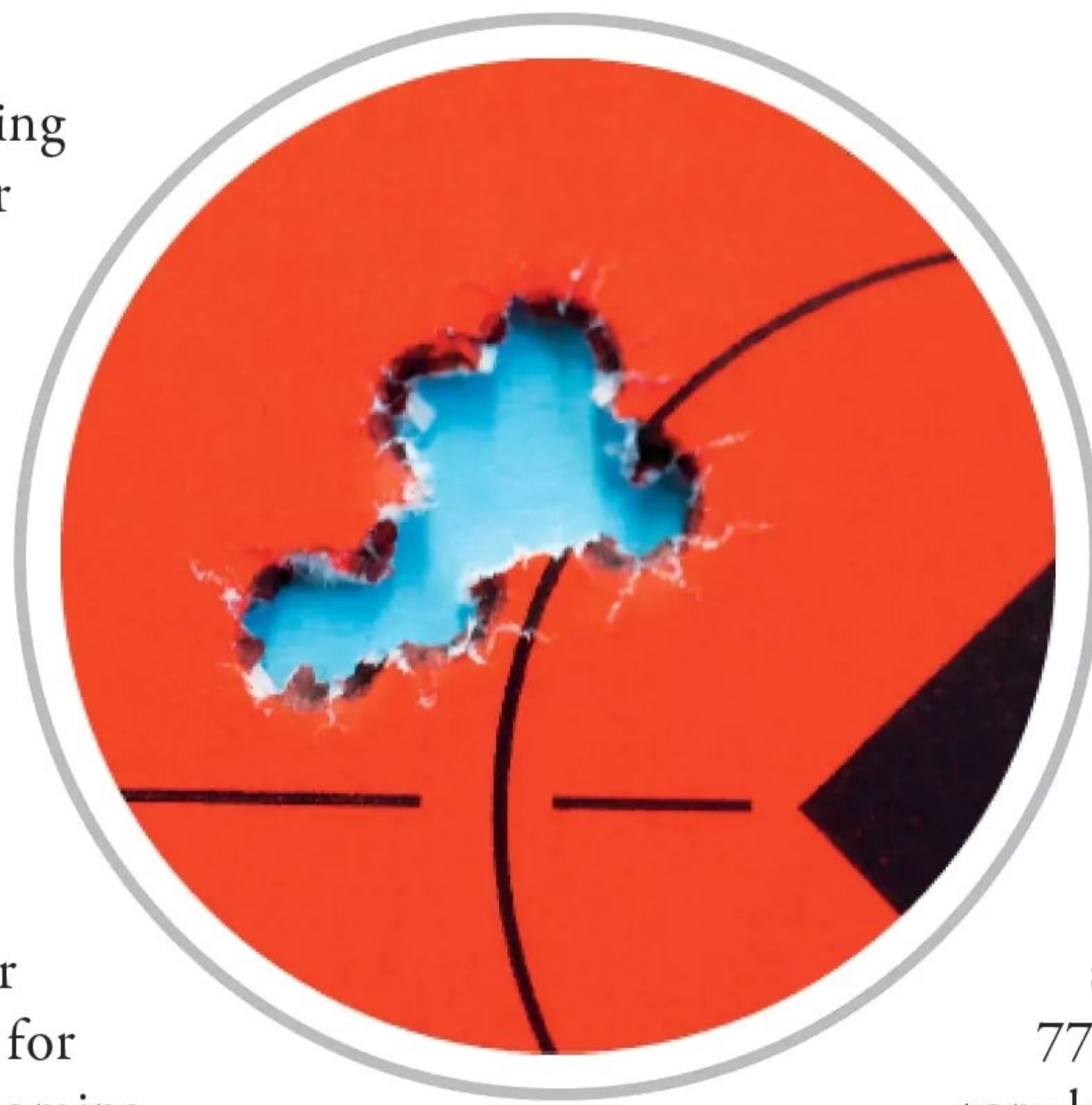
Here are some general guidelines for handloads. The .22 Hornet case is small, and the powder charges are about like a centerfire pistol round, so much experimentation has been done on primer selection. The use of Small Pistol primers in the Hornet has shown improved uniformity and good accuracy. As a general rule, I use Small Pistol Magnum primers for most Hornet rifle loads, and standard Small Pistol primers for the revolver. The *Speer Handloading Manual Number 15* lists CCI 500 Small Pistol primers for all loads with bullets over 30 grains. The *Hodgdon Annual Manual* for 2024 used Remington No. 6½ and WSR Small Rifle primers for its loads.

The standard bullet weight for the .22 Hornet has been 45 and 46 grains, and velocities of 2,700 to 2,800 fps are obtainable in rifles. The 50-grain bullets reach about 2,500 or a little higher. Loads for the Speer 30- and 33-grain bullets and the Hornady 35-grain V-Max bullets show velocities over 3,000 fps, but 40-, 45-, and 50-grain bullets are more appropriate for the useful spectrum of Hornet shooting. The small capacity of the Hornet's case and its modest MAP of 49,000 psi make fast-burning propellants work best, and one can run out of case capacity before a bullet can be seated over heavier charges.

In days of yore, Hercules (now Alliant) 2400 powder and IMR 4227 were the go-to powders for the Hornet, and they still work fine. However, the highest velocities are obtained with spherical propellants like Lil'Gun and H110 and W296 from Hodgdon, and they meter nicely. A charge of 12.0 to 12.5 grains of Lil'Gun is appropriate for 40- to 45-grain bullets. Loads with H110 were less ballistically uniform and a bit slower, but in the 2024 rifle, the modest load of 10.5 grains of H110 with the Sierra 40-grain HP shot a 0.55-inch group average at a leisurely velocity of 2,472 fps.

Range Results

My 1994 version of the Model 77/22 and the new Super Redhawk were benchrest tested at 50 yards from my indoor shooting



The .22 Hornet can be very accurate, and it makes a great little small-game and varmint cartridge.

building. The results are shown in the chart. The average group size in the revolver with the two factory loads and for the four handloads was 1.30 inches. The revolver's somewhat hefty trigger pull made shooting groups a bit of a challenge. The older Model 77/22 averaged 0.81 inch with the two factory loads and six handloads.

The differences in velocities of the factory loads by barrel length were enlightening. The Winchester 46-grain HP load was 889 fps (36 percent) slower in the 9.5-inch Super Redhawk barrel than in the 2024 Model 77/22 with its 18.5-inch barrel. The same comparison with Remington's 45-grain PSP bullet was 744 fps (28 percent) slower.

I got a new batch of Hornady's Varmint Express just in time to test it in the 1994 Model 77/22, and the velocity was 2,950 fps, group size was 0.43 inch, and the standard deviation (SD) was only 18 fps.

There has been much to do about the effects of primers in the small .22 Hornet case, with its very small powder charges that are really about like a .357 Magnum load. A few years ago, I did some tests of various primers in the CZ Model 527 .22 Hornet, and frankly, I saw little conclusive evidence that primers make much difference.

My tests did show, however, that the ballistic uniformity (as indicated by the loads' SDs and group sizes) was dramatically different by powder. In the 1994 Model 77/22, the average SDs of five loads with Lil'Gun were about double the SDs for six loads with H110. It definitely pays to test loads in a gun to see what works the best.

What's next for the Hornet? While the .22 Hornet may be old, it can still be a useful part of the varmint and small-game hunter's battery. It is mild of voice, has virtually no recoil, is economical to handload, and the wide selection of bullets and powders makes it a delight to develop specialized loads for it. About the only drawback is that the tiny case is rather hard to hold onto in the reloading process.

Perhaps the most intriguing Hornet news today is that availability of Ruger's Super Redhawk revolver and the Model 77/22 bolt-action rifle, both proven performers.

Time will tell if a new .22 Hornet rifle or revolver can eke out a sliver of market share in a field crowded with small-caliber, accurate rounds. But the fact that Ruger's Model 77/22 has stood the test of time for 30 years says something about the unique appeal of the .22 Hornet. It is a Goldilocks cartridge—it's just right. Okay, woodchucks, marmots, and other LFCs (little furry critters), you've been warned.

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SUPER REDHAWK
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A VARMINT HUNTER'S

DREAM

RUGER'S NEW EIGHT-SHOT DOUBLE-ACTION SUPER REDHAWK CHAMBERED IN .22 HORNET IS GREAT FOR HUNTING VARMINTS AND SMALL GAME.

BY JOEL J. HUTCHCROFT

A LOT OF THE PEOPLE I SOCIALIZE WITH ARE BIG-game hunters. Whenever they are around, they are excited to show photos of the game they have taken most recently. I enjoy seeing their prized game animals and hearing about their adventures. I, too, have been on many memorable big-game hunts. In fact, I've hunted big game on four continents. But I must confess that deep down I'm a varmint hunter. And where I live, coyotes are the top of the varmint chain, so I've sort of always thought of myself as a coyote hunter. I've never been on the same scale as my friend and former *Shooting Times* writer Rick Jamison, but I'm not ashamed to say that I sometimes daydream about hunting coyotes. I've tried a lot of cartridges on varmints, including .220 Swift, .22-250, .270 Winchester, .243 Winchester, .22 WMR, .17 HMR, .17 Remington, .32 H&R Magnum, .357 Sig, and 10mm Auto, to name just a few. One of my favorite varmint cartridges has always been the .22 Hornet. I've used it in Ruger rifles (Model 77/22 and No. 1), a German Weihrauch rifle, and two Magnum Research handguns (a single-shot Lone Eagle pistol and a BFR single-action revolver).

As Steve Gash points out in his article on the timeless .22 Hornet beginning on page 34 of this issue of the magazine, in 2024, Ruger announced that it is now offering a new version of the double-action Super Redhawk revolver chambered for the .22 Hornet. I'm happy to focus this report on the new revolver because I have been a fan of the Super Redhawk ever since Ruger first brought it out in 1986. I've shot just about every version of the Super Redhawk since then (calibers include .44 Magnum, .454 Casull, and .480 Ruger; I have not fired the 10mm Auto version yet), and one of my cherished collectible guns is a .44 Magnum Super Redhawk with a two-digit serial

A VARMINT HUNTER’S DREAM



Measuring 15 inches long and weighing 66 ounces without a scope, the .22 Hornet Super Redhawk is a big piece of hardware.

SUPER REDHAWK	
MANUFACTURER	Ruger ruger.com
TYPE	Double-action revolver
CALIBER	.22 Hornet
CYLINDER CAPACITY	8 rounds
BARREL	9.5 in.
OVERALL LENGTH	15 in.
HEIGHT	6.25 in. (without scope)
WIDTH	1.78 in.
WEIGHT, EMPTY	66 oz. (without scope)
GRIPS	Rubber Hogue Tamer
FINISH	Satin stainless
SIGHTS	Adjustable rear, green HiViz front
TRIGGER	15.09-lb. DA pull, 5.16-lb. SA pull (as tested)
SAFETY	Transfer-bar firing mechanism
MSRP	\$1,499

number. (I used it on my first hunt for *Shooting Times* back in the early 1990s. That was a big-game hunt for aoudads in Texas, south of El Paso.)

The .22 Hornet Super Redhawk

The Super Redhawk is an interesting gun. It has a beefed-up frame, an unfluted cylinder, and a coil mainspring. The frame’s butt is a Ruger GP100-style affair, which is basically a stem inside of which is housed the mainspring. It reminds me of the classic Dan Wesson grip frame. The Super Redhawk’s grip slides over the grip frame stem and is secured with a screw that goes up through the bottom. Various types of grips have been used on the Super Redhawk throughout its lifespan, including two-piece rubber with different kinds of wood inserts. The grip on the new-for-2024 .22 Hornet Super Redhawk is a black rubber one-piece Hogue Tamer Monogrip with a built-in recoil absorber on the inside.

The .22 Hornet Super Redhawk’s cylinder holds eight rounds. That’s the highest capacity of any previous Super Redhawk, but that’s not a surprise when you consider you’re starting out with a cylinder that’s large enough to hold six of those big .454 Casull or .480 Ruger rounds.

The cylinder rotates counterclockwise when the action is operated, and it swings out to the left when the cylinder lock release, which is located on the left side of the frame, is activated. On my sample,

the cylinder-frame gap measures 0.006 inch, according to my feeler gauge.

The barrel on the .22 Hornet Super Redhawk is 9.5 inches long, but for other chamberings you can get a 7.5-inch, 5.0-inch, or 2.5-inch barrel. The 2.5-inch barrel is offered on the Alaskan version of the Super Redhawk, and it is chambered for .44 Magnum, .454 Casull, and .480 Ruger. The 9.5-inch barrel of our .22 Hornet Super Redhawk has a diameter of 0.9 inch at the muzzle, and the muzzle is recessed to protect the crown.

The revolver’s front sight is a bright green HiViz fiber-optic sight, and the rear sight is fully adjustable with a white-outline square notch. One of the best features of the Super

The Super Redhawk comes with the rubber Hogue Tamer Monogrip that has a built-in recoil absorber on the inside. However, the .22 Hornet cartridge doesn’t produce much felt recoil in the big revolver.





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The new-for-2024 version has an eight-round cylinder capacity, and that's plenty of firepower on board for hunting varmints and small game.



The Super Redhawk's barrel measures 0.9 inch at the muzzle, and the muzzle is recessed.



The revolver's front sight has a bright green HiViz fiber-optic insert, making it readily visible in varying light conditions.

Redhawk is its topstrap is machined for Ruger scope rings, and the .22 Hornet version comes with 1.0-inch Ruger rings. They made installing the Burris 3-12X handgun scope I used for this report very easy. It's one of the most robust and secure scope-mounting systems on a handgun that I am aware of.

Another easy thing about this revolver is its trigger pull. Its single-action trigger pull averaged 5 pounds, 2.5 ounces, which is a little heavier than I prefer, but it was very smooth. The gun's double-action trigger pull averaged 15 pounds, 1.4 ounces. Those trigger pull figures are based on eight measurements in each mode with an RCBS trigger pull gauge.

By now, I'm sure you get the picture that the Super Redhawk is a big piece of hardware. It measures 15 inches long and weighs 66 ounces (that's a bit over four pounds) without a scope. With the scope I used, it weighs 86 ounces (5.38 pounds), according to my digital scale.

Shooting Results

Shooting the .22 Hornet Super Redhawk was a ton of fun. There's plenty of roar and muzzle blast, but there's hardly any

felt recoil. I put seven factory loads through the new revolver, and I have to say by the time I was done shooting, the gun's cylinder was dirty! The .22 Hornet factory ammo from Browning, Federal, Hornady, and Winchester simply wasn't the cleanest-shooting ammo I've ever fired. Honestly, I had never noticed that with my .22 Hornet rifles.

Also, as you can see from the accompanying chart, most of the factory ammo I fired had high extreme spreads and standard deviations. In fact, four out of the seven loads had triple-digit extreme spreads. I can't explain that. At first I thought it was due to how old a couple of the loads are, but when I got down to really looking at the results, one of the oldest boxes of ammo I used had the lowest extreme spread. It's the Winchester 46-grain HP ammo, and my supply of it is going on 30 years old. The newest ammo I have (the Browning Predator & Varmint 35-grain BXV, the Federal Varmint & Predator 35-grain Tipped, and the Winchester Varmint-X 35-grain PTRE) are not more than two years old, and they had the highest extreme spreads. Like I said, I can't explain it.

As for the accuracy, I was very pleased with my results. I'm sure the fine Burris 3-12X handgun scope I used had a lot to do

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A VARMINT HUNTER’S DREAM



Joel says the .22 Hornet Ruger Super Redhawk is a varmint hunter’s dream because it is fun to shoot, it is accurate, and it operates reliably.

with the good results. I purchased it a few years ago, intending to mount it on a Thompson/Center Contender G2 single-shot pistol for which I have several extra barrels, including one in .223 Remington. I think putting it on the .22 Hornet Super Redhawk was a perfect application.

Overall, the five-shot group average for all seven loads was 1.82 inches. That’s for three, five-shot groups with each load, and that’s at 50 yards, fired from a benchrest. I dispensed with shooting the .22 Hornet Super Redhawk at *Shooting Times*’s standard protocol distance for handguns, which is 25 yards, because most of the varmint hunting I do is at longer distances than that.

My best accuracy came with the Winchester Super-X 46-grain HP ammo, and like I said earlier it is going on 30 years old. Its three-group accuracy average was 1.25 inches.

Another old load I had in my cache is the Winchester 34-grain JHP loading, and with it, I achieved a 1.75-inch three-group average. I know it’s not as old as the 46-grain ammo, but I don’t know how old it actually is. Anyway, it still shoots quite well.

With an average of 1.95 inches, third place in the accuracy department went to the Hornady Varmint Express 35-grain V-Max ammo.

The load with the highest velocity is the Winchester Varmint-X 35-grain PTRE, averaging 2,310 fps, measured 12 feet from the gun’s muzzle. PTRE stands for Polymer Tip Rapid Expansion. The load with the lowest velocity is the Winchester Super-X 45-grain JSP, and it averaged 1,791 fps. All velocities reported are the averages for eight rounds fired.

I encourage every reader to check out Steve Gash’s article

elsewhere in this issue. He, too, fired a brand-new .22 Hornet Super Redhawk for his report, and he achieved better accuracy with his revolver than I did. Obviously, Steve is a better shooter than I am, but that doesn’t hurt my feelings one bit. I’ve always said I am a mediocre shooter at best.

For readers wondering if I had any hiccups shooting the new Super Redhawk, I can say there weren’t any. I didn’t even have any sticky extractions, which I was anticipating because other .22 centerfire double-action revolvers that I have worked with have exhibited that, due to expansion of the fired cases. With a DA revolver, you are extracting all fired cases with one push on the extractor rod, unlike a single-action revolver that extracts one case at a time, and sometimes if the cases expand enough, they can require a very stiff push on the extractor rod. Not so with the .22 Hornet Super Redhawk.

I did have one chamber in the Super Redhawk that felt a little tighter than the others when loading a fresh round, so I tried my best to measure all of the chamber throats with my calipers. It appeared to be about 0.006 inch smaller in diameter than the others. Those measurements were 0.220, 0.225, 0.225, 0.226, 0.225, 0.226, 0.226, and 0.226 inch, respectively.

Also, I didn’t have any trouble cocking the hammer when firing in single-action mode. Sometimes with a double-action revolver, you’ll have some cartridge setback upon firing, wherein the case heads can cause enough friction against the frame that the cylinder’s rotation hangs up. That didn’t happen here.

What else can I say about the new Super Redhawk? It might not be for everyone, but for varmint and small-game hunters who like to use the classic .22 Hornet cartridge, it’s a dream revolver.

RUGER SUPER REDHAWK ACCURACY & VELOCITY				
AMMUNITION	VEL. (FPS)	E.S. (FPS)	S.D. (FPS)	50-YD. ACC. (IN.)
.22 Hornet, 9.5-in. Barrel, 1:9-in. Twist				
Winchester 34-gr. JHP	1991	118	71	1.75
Browning Predator & Varmint 35-gr. BXV	2295	129	39	2.00
Federal Varmint & Predator 35-gr. Tipped	2107	209	68	1.50
Hornady Varmint Express 35-gr. V-Max	1920	88	32	1.95
Winchester Varmint-X 35-gr. PTRE	2310	202	77	2.50
Winchester Super-X 45-gr. JSP	1791	92	35	2.25
Winchester Super-X 46-gr. HP	1879	66	21	1.25
NOTES: Accuracy is the average of three, five-shot groups fired from a sandbag benchrest. Velocity is the average of eight rounds measured 12 feet from the gun’s muzzle.				

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THE 357 MAGNUM MARCHES ON

LAYNE CHALLENGED THE GRAND OLD .357 MAGNUM CARTRIDGE BY FIRING IT WITH ONE POWDER, FIVE BULLET WEIGHTS, AND FIVE BARREL LENGTHS. HERE ARE HIS RESULTS.

BY LAYNE SIMPSON

WHEN SMITH & WESSON INTRODUCED the .357 Magnum in 1935, it was the company's response to the .38 Super Automatic developed by Colt six years earlier for the Model 1911 pistol. The .38 Super was loaded with a 147-grain FMJ bullet at a velocity of 1,225 fps. At the time, tests performed by Colt had revealed that a bullet from the .38 Super had to be launched at a velocity of 1,200 fps in order to reliably punch through the body of an automobile and still have enough power remaining to put the brakes on its occupant. (If the steel in one of the automobiles driven by gangsters and hoodlums in those days was melted down, it could probably be used to make an entire fleet of today's Mini Coopers.) And while the .38 Super proved capable of doing just that, the .357 Magnum loaded with a slightly heavier bullet at higher velocity may have proved to be even more of a good thing. Two of the first S&W revolvers built in .357 Magnum were presented to FBI Director J. Edgar Hoover and Philip Sharpe, who was instrumental in the development of the cartridge.

THE .357 MAGNUM MARCHES ON

Ammunition initially loaded by Winchester had a 158-grain lead SWC bullet. The bullet of a so-called metal-piercing load added a bit later was also lead, but a pointed steel cap on its nose increased penetration. Developed specifically for use by law enforcement officers while on road-block duty, it was commonly called the highway patrol load. There was a time when it was commonly believed that a bullet fired from the .357 Magnum into the engine of an automobile would bring it to a screeching halt. To see if such was fact or hot air, a high school friend and I pitted my Ruger Blackhawk and factory ammo loaded with various bullets (including the metal-piercing round) against the engine of a Nash Rambler automobile that sat abandoned on his father's farm. Much to our disappointment, not a single bullet managed to punch through the water jacket of the Nash engine. Splashes of lead on rusty steel were the only evidence that we had been there.



The five upside-down Hornady 0.357-inch XTP bullets at right show that their dimensions from cannelures to noses are the same, while differences in their overall lengths are due to different lengths of their full-diameter shanks. (left to right) Hornady 110-grain XTP, Hornady 125-grain XTP, Hornady 140-grain XTP, Hornady 158-grain XTP, Hornady 180-grain XTP



As is typical for rifle, pistol, and revolver cases made by Starline, those in .357 Magnum are tops in strength, uniformity, longevity, and overall quality.

Smith & Wesson also promoted the .357 Magnum for hunting deer and other big game. Major Douglas Wesson, who was a grandson of company co-founder Daniel B. Wesson, used an S&W .357 Magnum revolver with an 8.75-inch barrel on highly publicized hunts in Wyoming and Canada for moose, elk, grizzlies, and pronghorn antelopes. It was written that two shots were required to bag the antelope at 200 yards, but the others were one-shot kills. Winchester and Remington loaded the 158-grain bullet to just over 1,500 fps for more than 800 ft-lbs of energy, not too far behind some of today's .44 Magnum ammunition. The velocity of the .357 Magnum was later reduced to the present 1,250 fps for 550 ft-lbs of energy.

That Ruger Blackhawk I had during the 1960s accounted for several deer, with all but one standing inside 100 yards. An S&W Model 29 in .44 Magnum eventually became my primary venison harvester, but I continued to use the .357 Magnum when chasing feral hogs with hounds. A 146-grain bullet made by Speer in those days worked fine on deer, and it proved to be enough for up-close shots on pigs ranging in size from small to medium. But when the distance was increased to 50 yards or so and the target was a huge boar with a thick gristle plate covering its vitals, a 170-grain SWC cast of scrap wheelweight metal with a Lyman No. 358429 mold and seated atop 13.0 grains of 2400 powder did a much better job of dropping the bacon.

The Exercise

For this report, I decided to see how the performance of the .357 Magnum cartridge loaded with a slow-burning powder compares when fired from firearms with barrels of various lengths. When it comes to reaching maximum velocities with all available bullet weights, I have found W296 impossible to beat. And since I wanted weight alone to determine velocity differences, I used bullets from the same maker in order to eliminate major differences in bullet shape and diameter. Hornady XTP bullets weighing 110, 125, 140, 158, and 180 grains fit the bill perfectly. Measured with a Starrett micrometer, diameters were 0.3572 inch for the 110- and 125-grain bullets and 0.3568 inch for the other three. I doubt if a mere 0.0004 inch difference in diameter had enough influence on my test results to matter. The five bullets have the same cannelure-to-nose measurement, and they differ only in full-diameter shank length. When loaded to the same overall cartridge length, free travel prior to rifling engagement is the same for those bullets. The XTP design has long been renowned for accuracy and performance on game. Starline .357 Magnum cases and Federal No. 200 Small Pistol Magnum primers rounded out my selection of top-quality components.

All powder charges were thrown with a Redding Competition 10X Pistol/Small Rifle measure. A Redding Supreme .38 Special/.357 Magnum die set was used. After a trip through the carbide sizing die, the mouths of virgin cases were expanded just enough for smooth bulletseating. Recommended overall cartridge length for the five Hornady bullets is the same at 1.590 inches.



A Dan Wesson Arms Model 715-VH revolver with interchangeable 2.5-inch, 4.0-inch, 6.0-inch, and 8.0-inch barrels was used to test the velocities of full-power charges of W296 behind five Hornady 0.357-inch bullets weighing from 110 to 180 grains.

The revolver used for .357 Magnum velocity checks was a Dan Wesson Arms Model 715-VH purchased in 1993. Due to its weight (49.5 ounces with 8.0-inch barrel) along with a large hand-filling grip, it is the most comfortable revolver of its caliber I have shot. As a bonus, its single-action trigger pull is both smooth and light. The big revolver was also chambered for a number of other cartridges, including the .357 SuperMag, .375 SuperMag, and .445 SuperMag, all designed by Elgin Gates for handgun metallic silhouette competition where Dan Wesson revolvers had a big following. Mine departed the factory as a Pistol Pac, consisting of a revolver with interchangeable barrels measuring 2.5, 4.0, 6.0, and 8.0 inches. Also included in the hard case was a small hand tool used for switching barrels, a feeler gauge for setting cylinder gap after a barrel switch, front sights with inserts of various colors, and two grips of different sizes and shapes. (See Joel Hutchcroft's "Hipshots" column in the June 2023 issue for more about Dan Wesson.)

A Ruger-made Marlin 1894 lever-action rifle with a barrel measuring 18.125 inches from boltface to muzzle was also used for checking velocities. Adding a Bushnell 1.5-4.5X Scopechief IV made it ideal for checking accuracy at 50 yards as well. Also serving as a paper-puncher at that distance was an old, reliable 6.0-inch-barreled Smith & Wesson Model 686 revolver wearing an equally reliable Bausch & Lomb Elite 3000 scope in 2-6X magnification. The carbine rested on sandbags, while the revolver was shot from

an MTM K-Zone pistol rest with the butt resting firmly on a thin sandbag.

The Results

So what did I learn? Well, regardless of barrel length or bullet weight, velocity variation of slow-burning W296 ranged from a low of 11 fps to a high of 24 fps, which I consider to be quite good. Then we have velocity gain per inch of barrel increase. Increasing barrel length from 4.0 to 6.0 inches resulted in an average gain of 120 fps (60 fps per inch). Going from a barrel length of 6.0 inches to 8.0 inches increased average velocity by 119 fps, for virtually the same gain per inch. Increasing barrel length from 8.0 inches to 18.125 inches resulted in an average gain of 469 fps, or roughly 47 fps per inch of barrel length



A Ruger-made Marlin 1894 and a Smith & Wesson Model 686 were used for testing the accuracy of the .357 Magnum loads at 50 yards.

THE .357 MAGNUM MARCHES ON

increase. As barrel length is increased beyond 16 inches or so, velocity gain per each additional inch of barrel increase will decrease due to the extremely high expansion ratio of the .357 Magnum cartridge. Think of it as a .22 Long Rifle on steroids.

As bullet weight increases, velocity gain in longer barrels decreases, and that came as no surprise. When going from a 2.5-inch barrel to an 8.0-inch barrel, respective velocity increases for the 110-grain, 125-grain, 140-grain, 158-grain, and 180-grain bullets were 506 fps, 396 fps, 362 fps, 251 fps, and 210 fps. When switching from a 2.5-inch barrel to a barrel measuring 18.125 inches, the 110-grain bullet gained more than twice as much velocity as the 180-grain bullet (1,114 fps versus 519 fps). Powder charge weights used with all bullet weights were considered maximum or close to it by reliable sources.

As expected, a blossom of bright muzzle flash was produced when W296 burned in the 2.5-inch and 4.0-inch barrels, and since I was shooting during the day when ambient light was good, I did not consider it to be a negative. Switching to the 6.0-inch and 8.0-inch barrels of the Dan Wesson revolver reduced

flash to barely noticeable. During the few times I have shot feral pigs with that revolver, it was wearing one of its two longest barrels.

I also proved to my own satisfaction that from a practical point of view, there is not a lot of difference in accuracy among the five Hornady bullets fired from my guns. Among several factors that could be at work here, all bullets being quite close to the same diameter along with all traveling the same distance prior to engaging the rifling had to be influential. Something I was already aware of is the ability of W296 to reach velocities with bullets weighing from 110 grains to 180 grains that no other single propellant I have tried can match.

The grand old .357 Magnum is a survivor, and it certainly deserves to be. At a time when 9mm pistols virtually own the personal-defense market, and cartridges ranging in power from .44 Magnum on up are most often seen in the hunting fields, the .357 Magnum marches on with a variety of excellent ammunition options offered by various companies. Neither is there a scarcity of revolvers from Smith & Wesson, Ruger, Kimber, Colt, Freedom Arms, Taurus, Rossi, Nighthawk Custom, and others that I might be unintentionally overlooking. And then we have lever-action rifles in .357 Magnum offered by several companies, with the Marlin 1894 being made by Ruger quite impressive in accuracy, quality, and aesthetics.

The option of shooting softer-recoiling .38 Special ammunition available with a great variety of load options in .357 Magnum revolvers is one reason why the 89-year-old youngster has been and continues to be so popular. During most of my life I have owned at least one revolver in .357 Magnum, and I see no reason why that should change.

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.357 MAGNUM 50-YARD ACCURACY					
BULLET	POWDER		COL (IN.)	BARREL LENGTH (IN.)	
	(TYPE)	(GRS.)		6.0 ACC. (IN.)	18.125 ACC. (IN.)
Hornady 110-gr. XTP	W296	23.0	1.590	2.29	2.12
Hornady 125-gr. XTP	W296	20.3	1.590	1.87	2.72
Hornady 140-gr. XTP	W296	18.2	1.590	2.47	1.64
Hornady 158-gr. XTP	W296	16.0	1.590	1.63	1.30
Hornady 180-gr. XTP	W296	13.7	1.590	2.36	1.46
NOTES: A Smith & Wesson Model 686 with a Bausch & Lomb Elite 3000 3-6X scope and a Ruger-made Marlin 1894 with a Bushnell Scopechief IV 1.5-4.5X scope were used to gather this data. Accuracy is the average of two, five-shot groups fired from a benchrest. Starline cases and Federal 200 primers were used for all handloads. Powder charges are maximum or close to it and should be reduced by 10 percent for starting loads in other guns.					
All load data should be used with caution. Always start with reduced loads first and make sure they are safe in each of your guns before proceeding to the high test loads listed. Since <i>Shooting Times</i> has no control over your choice of components, guns, or actual loadings, neither <i>Shooting Times</i> nor the various firearms and components manufacturers assumes any responsibility for the use of this data.					

.357 MAGNUM VELOCITY & EXTREME SPREAD													
BULLET	POWDER		COL (IN.)	BARREL LENGTH (IN.)									
	(TYPE)	(GRS.)		2.5		4.0		6.0		8.0		18.125	
				VEL. (FPS)	E.S. (FPS)	VEL. (FPS)	E.S. (FPS)	VEL. (FPS)	E.S. (FPS)	VEL. (FPS)	E.S. (FPS)	VEL. (FPS)	E.S. (FPS)
Hornady 110-gr. XTP	W296	23.0	1.590	1348	15	1529	19	1646	11	1854	20	2462	17
Hornady 125-gr. XTP	W296	20.3	1.590	1253	17	1351	26	1486	24	1649	17	2188	15
Hornady 140-gr. XTP	W296	18.2	1.590	1141	12	1239	10	1374	19	1503	21	1967	12
Hornady 158-gr. XTP	W296	16.0	1.590	1076	24	1144	24	1236	13	1327	10	1788	11
Hornady 180-gr. XTP	W296	13.7	1.590	992	23	1075	21	1198	22	1202	11	1511	14
NOTES: A Dan Wesson Model 715-VH revolver with 1:18 twist and a Ruger-made Marlin 1894 rifle with 1:16 twist were used to obtain these results. Velocity is the average of six rounds measured 12 feet from the guns' muzzles. Starline cases and Federal 200 primers were used for all handloads. Powder charges are maximum or close to it and should be reduced by 10 percent for starting loads in other guns.													
All load data should be used with caution. Always start with reduced loads first and make sure they are safe in each of your guns before proceeding to the high test loads listed. Since <i>Shooting Times</i> has no control over your choice of components, guns, or actual loadings, neither <i>Shooting Times</i> nor the various firearms and components manufacturers assumes any responsibility for the use of this data.													

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LEUPOLD'S BX-4 RANGE HD TBR/W IS A BINOCULAR, A RANGEFINDER, AND A BALLISTIC SOLVER ALL ROLLED INTO ONE DEVICE.

BY FRANK MELLONI

ONCE YOU TAKE UP THE SPORT OF LONG-range shooting, you'll notice that your range bag seems to be a bit more crowded than usual. While clever packing can make it easier to navigate, nothing takes up less space than equipment that simply isn't there. Choosing gear that serves multiple purposes is a natural way to cut bulk, shave weight, and even put a few dollars back into your pocket. Leupold's new BX-4 Range HD TBR/W binocular will appeal to outdoorsmen trying to simplify their load-out, as it fills the roles of at least three devices.

If we allow the alphabet soup to settle, we find the string of letters stands for High-Definition True Ballistic Range (with) Wind. In essence, this tool combines a pair of Leupold's exceptional optical technologies with a laser rangefinder and a ballistic solver, creating a formidable multi-tool for those who like to stretch things out. Combining this trio of long-range essentials into one does more than economize space and money; it also drastically reduces the time needed to land a shot. This is imperative when your window of opportunity is rapidly closing.

If we consider a typical hunting scenario, one needs to locate an animal with one device and then pick up another to determine its distance. Once that information is obtained, they must then plug it into a ballistic calculator before dialing come-up or holding over. With the BX-4 Range binocular, a press of the button will gather and display all of that information, allowing you to take the shot the moment you place them down.

Because I am a long-range junkie suffering from terminal laziness, this product spoke deeply to me the moment I laid eyes on it. Therefore, when the opportunity to put one through its paces rolled into my inbox, I eagerly jumped on it.

When my sample arrived, I found it to be weighty but not overbearing. Constructed from magnesium alloy, the BX-4 Range is packed with Leupold's Elite Optical System without the associated weight of aluminum or the flimsiness of polymer. Magnesium is already tough by nature, so to enhance the user experience, all surfaces are rubberized, and a studded pattern is applied to the gripping areas on each barrel. The BX-4 is constructed with the more modern roof prism system, lending it a compact and streamlined profile when compared to dated Porro prism designs. A simple pair of waterproof buttons are located on the top of the device, and they can be internally swapped for left-handed operation. Together, they control every feature and navigate an extraordinarily simple menu.

Interestingly, the included accessories are significant talking points of the purchase, as they make the binocular more conducive to carrying afield, ensuring it doesn't sit back at camp because you didn't feel like toting it. An over-the-shoulder case serves as home and is designed in a way that doesn't stress your neck or interfere with a rifle sling. Users have the option of looping a pair of connectors through the binocular and then either attaching them to the included straps or leaving them disconnected for untethered freedom. I liked being able to switch on a moment's notice, as that is typically the warning you get for a terrain or situation change.

BX-4 RANGE HD TBR/W

MANUFACTURER	Leupold & Stevens Inc. leupold.com
DISTANCE RATING	2,600 yds.
MAGNIFICATION	10X
WEIGHT	39 oz.
LENGTH	5.90 in.
HEIGHT	5.88 in.
WIDTH	2.75 in.
BODY MATERIAL	Magnesium alloy
WATERPROOFING	IPX7
OPERATING TEMP.	-40 to 160 degrees F
SENSORS	Laser rangefinder, inclinometer
BATTERY	CR2
DISPLAY COLOR	Red
LASER BEAM DIVERGENCE	1.5x.3 MRAD
MSRP	\$1,599.99

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Rubberized objective caps are included and can either remain attached or removed to reduce their pendulum effect in gusty conditions. A one-piece ocular lens cap also is included and can be woven through the strap or tucked away into one of the three case pockets. Ample space is also provided for a spare CR2 battery, which is the sole power source for the unit's electronics. Leupold even includes a lens cloth should your fingers find a lens instead of a cap during an early morning dig through your pack.

I began my evaluation in the living room as I familiarized myself with the BX-4's menu system and the entirety of its function. When configured for right-handed use, the right button will activate the rangefinder and display customized information that I will get to in a minute. Adjusting the clarity of this display is conducted by twisting the right diopter adjustment. Focusing on the objective is accomplished in the traditional manner. If the ranging button is held down, the BX-4 will continue to range in scan mode, which is useful when you want to map out an area or get a quick idea of how far two targets are away from each other. Holding down the left button brings us into the menu and gets us to the more advanced features.

The first menu directs you to choose an output, with the choices being TBR, Bow, or LOS. Let's begin with LOS, or Line of Sight, as that is the simplest of the three and the basis for the other two. Laser rangefinders work by zapping a target with a beam and then measuring the amount of time it takes for it to get back. It plugs that data into a formula that uses the speed of light to determine how far away said target is. That's it. If you're shooting in a flat environment, that's going to be representative of what's going on. However, as distance increases, that becomes increasingly less probable, which is where the TBR, or True Ballistic Range output, comes in. Once you add an incline or decline, you need to subtract from your line-of-sight distance based on the angle and shoot the target as if it is closer. The TBR setting allows you to select one of 25 ballistic profiles, which it will use to give you the corrected distance, thus landing you a hit instead of sending one high. The Bow setting does essentially the same thing, just for the closer distances and sharper angles that bowhunters typically work with. It also doesn't have, or require, a ballistic profile to be set.

Using the left button to cycle through the menu, you'll find your typical settings like display brightness and measurement unit selection; however, you'll also come across the wind setting. Once you select your ballistic group, you can activate this option to give you a correction for a 90-degree 10 MPH wind. If the wind feels like it's half of that, simply cut the number in half. If the direction feels more like 45 degrees, cut it in half again. With this method, shooters can use the baseline to determine what hold, if any, is needed to dope a breeze and ensure their rounds go where they are supposed to.

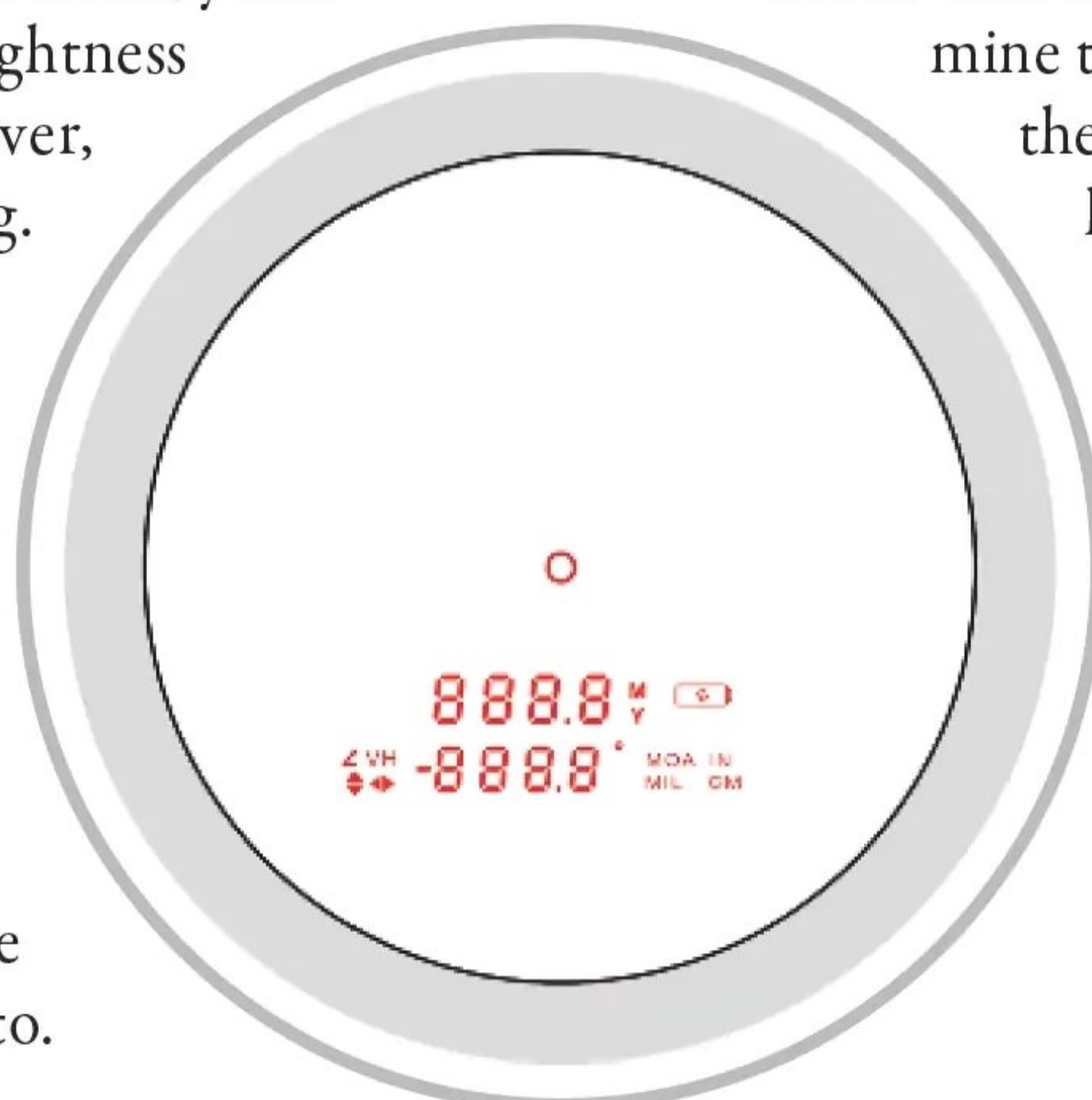


The new BX-4 Range HD TBR/W from Leupold combines a binocular, a laser rangefinder, and a ballistic solver into one convenient device.

Leupold gives you information on over 150 of the most popular cartridges in the included manual, as well as a chart that helps the user link their ammo to a profile group based on its 600-yard drop data. More cartridges are also listed on the website. I found the list adequate; however, having to zero at 200 or even 300 yards for the data to match up lost a few points with me. While this is an easy task, I think more shooters and sportsmen share my preference for a 100-yard zero. Nonetheless, I had a 200-yard board available, so getting everything to jibe would only require a few shots before checking the ballistic functionality.

My range day began about 40 minutes before sunrise, as before I could begin to consider the ballistic aspects, I needed to ensure it functioned well as a standalone binocular. Peering through it at the crack of dawn, I was able to find a doe getting in her last bites of rye, just out of bounds of the 700-yard target

bank. The clarity was excellent, and I was able to determine that the rack of a lifetime wasn't mixed into the tree branches in the foreground. Placing her belly into the center of view, I obtained a reading of 696 yards, which seemed spot on, considering her distance from the known distance features to which she was adjacent. With my elbows perched



The BX-4 Range TBR/W provides multiple displays in multiple modes, including true ballistic range, wind, and more. It uses ballistic data for more than 150 popular cartridges to offer an instant shooting solution.



The binocular's body is made of durable magnesium alloy, making the device rugged and lightweight. Power is provided by a CR2 battery.

on the shooting bench, I was steady enough to take this reading on my first pass. Turning my attention to the vegetation, I was pleased with the color correctness between the mixed greens and yellow grass, not to mention the clarity of the individual twigs that comprise the brush we typically fight through to hang steel. I took my test further by zeroing in on the targets that were now sitting in the shadows of the early morning sun, again satisfied with their visibility as this is one of the more challenging scenarios for optical devices to resolve. Likewise is a target sitting directly in front of the sun, as the glare has a tendency to wash it out to oblivion. This was not the case with the BX-4 Range binocular, thus checking off all my requirements for fieldworthiness.

To be honest, I expected no less from a Leupold product, so the preceding was a boring start for a range day. However, that's nothing that a little gunfire won't cure. Hornady's 140-grain ELD Match 6.5 Creedmoor load was listed in the literature and categorized as part of ballistic group #8. Setting the rangefinder to the TBR setting and selecting this group gave me everything I needed to start the live fire evaluation process. This particular range features a 6 percent grade, which isn't represented in the fire solutions gathered from the ballistic app on my phone but is noted in my dope book, as this is a recording of actual impacts. When I laced the targets between 400 and 800 yards, I was excited to see the BX-4's outputs were closer in line with my confirmed data than what my phone was displaying. I was even more thrilled as I landed a first-round hit on each target in rapid succession.

I had the unit set to spit out a milliradian holdover amount, as that coincided with my scope's scale. If you shoot MOA, there is a provision for that as well. If eyeballing a hold is your thing, there is even the option to display a come-up in inches (or centimeters if you're in metric). I exhausted a few more boxes of ammo by alternating between the rifle and binocular

and using just the riflescope's stadia to hold for impacts that were both fast and precise.

As the barrel cooled, I finalized my testing by checking a target board that was precisely 1,000 yards away; it passed. I also took a moment to range a house that was 1,743 yards out. For reference, I've confirmed this distance multiple times with tests of similar equipment, and that, too, passed. Leupold guarantees ranging ability out to 2,600 yards, but that's only of a perfectly reflective surface, which I did not have available. Overall, I was happy with both the optical and ballistic ability of the product and impressed with its ability to put me on target with minimal ballistic input. Arguably, lacking temperature and elevation inputs should have impacted things a bit, but considering I had no trouble keeping my rounds within the 2 MOA targets all day, I'd say the nay-

sayers ought to look closer. The MSRP also presents more than what initially meets the eye, as \$1,599.99 might sound pricey at first, but once you consider the cash you save on a separate rangefinder, it's easier to swallow. The savings also trickle down to your ibuprofen budget, as you'll likely never need to treat a headache from juggling three devices ever again. **ST**

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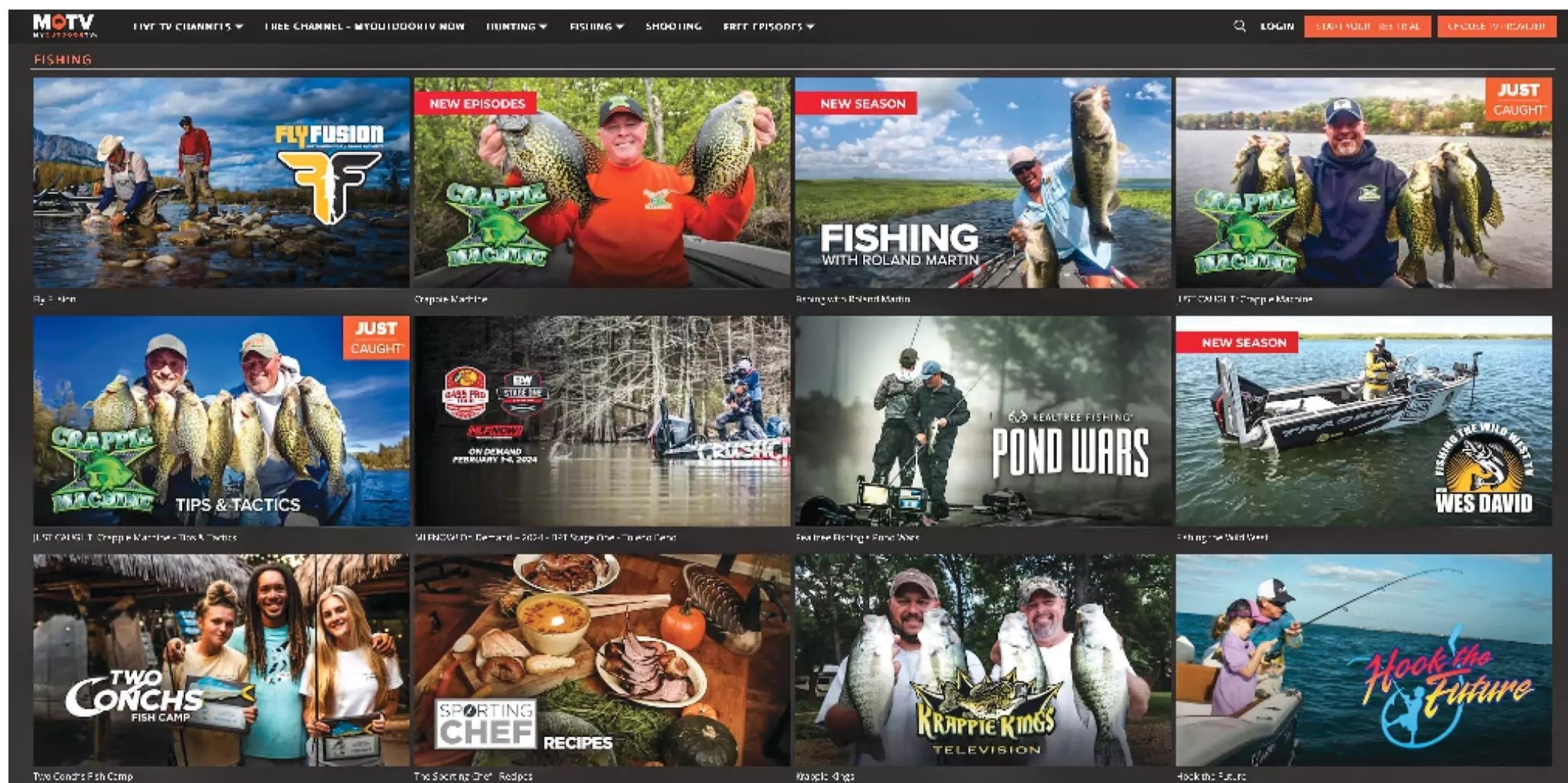


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BECAUSE OF THE NATURE AND PRODUCTION SCHEDULE OF PREPARING a print magazine, you are reading this September 2024 issue in or around the month of July. That means you are probably enjoying the great outdoors in a lot of ways, including heading to the shooting range for some quality practice and fun shooting. And you also may be getting in a little fishing at your favorite fishin' hole. If that's the case, and you haven't already discovered it, MyOutdoorTV has a ton of fishing content.

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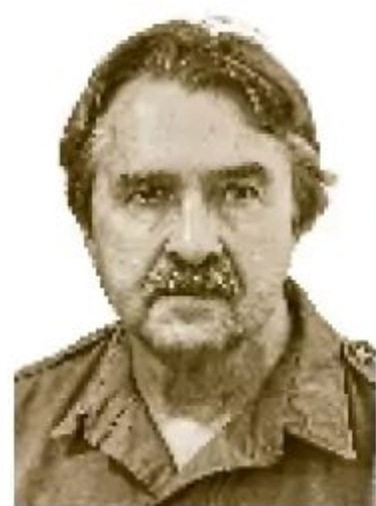


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Small Game? Small Gun

Terry tried the .44 Special on raccoons and found it worked, but he learned that the .32 H&R Magnum is much better for raccoons, possums, squirrels, and crows. **BY TERRY WIELAND**

WAY BACK IN THE DIM DISTANT, I BOUGHT AN old farmhouse far from town. It had a cornfield on one side, an apple orchard on the other, and raccoons in between. There was a ramshackle garage stuffed with junk and old lumber, and the raccoons made it their HQ.

One night, awakened by the noise and prodded by a spouse who went to work early, I headed out to the garage with my trusty Smith & Wesson Mountain Gun. Most would agree that a .44 Magnum is somewhat overkill for a raccoon, but it's what I had at hand and, being a rather devoted IPSC shooter, figured it would work as well as anything in a confined space.

Well, it did. Several shots were fired. One missed the raccoon, went through the wall, and nicked the brick work on the house. A second shot nailed the raccoon but went on through another wall and glanced off the big propane tank outside.

I thought I was playing it safe, using light .44 Special loads with lead bullets, but obviously not. I got the raccoon, no real damage done, and a lesson learned. It did, however, give me an ironclad reason for buying a Smith & Wesson Model 16-4, the delightful target revolver (6.0-inch barrel, full underlug, cocobolo grips) chambered for the equally delightful .32 H&R Magnum. Of course, you can and usually would—for target purposes, anyway—shoot .32 S&W Long.

But—and this was my thinking—a .32 H&R Magnum would be great for the continuing raccoon problem. My then-spouse, ever skeptical of anything to do with guns, and especially my reasoning for buying another, acceded to this because she had recently put in a garden and had plans for an impressive array of organic vegetables and herbs. (Raccoons love tomatoes sprinkled with basil, did you know that?)

Anyway, I soon found out that factory .32 H&R ammo was pretty anemic. Like, why even bother?

The .32 H&R Magnum S&W Model 16-4 (front right) is a good small-game and varmint gun in moderately dense population areas. The .22 LR target pistol (left) is an Adolph-Weber (circa 1912).

But handloaded with hollowpoint bullets, lead or jacketed, it could be turned into rather impressive raccoon medicine and also was good, I learned in the following years, for possums, squirrels, and crows at the bird feeder.

Naturally, I used every possible advantage with regard to rests and so on, but I wasn't shooting a Bulls-eye match. I also stuck with the open sights and got pretty good at stalking within whacking distance of a crow. Another lesson: An 85-grain hollowpoint bullet at 1,250 fps does an impressive job on a bird feeder full of grain if you don't *squeeeeeeze* the trigger.

The seeds went everywhere, reappearing over the next several years as a variety of exotic weeds.

Small-game hunting is one of those activities that was very popular a century ago, and articles appeared regularly in the shooting press. Today, it has all but disappeared, unless you live in the country or have access to farmland. When it's mentioned, it's usually in the context of heading west and burning cases of .223 on prairie dogs.

But if you buy a house in the country, or the semi-country—areas where large houses sit on five or six

acres of land, with trees and gardens and flower beds—you may find yourself needing to deal with various pests like crows, squirrels, woodchucks, and raccoons. You can't pull out your .220 Swift to deal with them, and in most such places even the mild and cuddly old .22 Hornet is questionable.

Handguns like my S&W .32 Magnum are hard to come by, although you might find a Model 16-4 or a Ruger single action on GunBroker.com or at an auction house. Failing that, there is always the faithful .22 Long Rifle. A good, long-barreled .22 target pistol, even a single shot, loaded with some of today's excellent ammunition, will do the job nicely. My favorite is CCI Mini-Mag, especially the hollowpoints for critters.

Crows at the feeder provide some good practice if you have a nice old .22 *Schützen* rifle, too. In fact, that can be your very reason for bidding on that seductive Stevens Model 45 at Rock Island Auction Co.

A final point: No wife agrees to a new gun purchase faster than one whose organic peas are peeping through or whose award-winning tulips are just beginning to sprout.

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Jesse A. Wallingford was born on June 25, 1872 (one source lists the year as 1871). His father was a sergeant in the British Rifle Brigade. At an early age, Jesse showed promise as a marksman and was taught to shoot by his father at the age of seven. By 1885 he had joined his father's regiment and later joined the Duke of Connaught's Own Company. By age 17, he had taken up competitive shooting. In 1894, after serving in India, he joined the School of Musketry in Hythe as a third-class instructor and began winning national and international shooting competitions. In 1899 he won a gold medal in the 300-meter free rifle prone event of the International Shooting Sports Federation World Championships that were held in Loosduinen, Netherlands. *The Book of the Rifle* (published in 1901) had a portrait of Jesse with the title, "The Best Shot in the British Army."

The year 1908 was an eventful one in Jesse's life. He competed in the 1908 Olympics in London and won a bronze medal in the team pistol event. He finished fifth in the individual pistol event, sixth in the team free rifle event, and 10th in the 300-meter free

rifle event. Also that year, he set the first Mad Minute record, with 36 hits on a 48-inch target placed at 300 yards, fired in one minute.

During his military career he was six times rifle champion of the British Empire, twice revolver champion (second place five times), and twice the winner of the Prince of Wales prize (one of the biggest shooting trophies in the world). One of those Prince of Wales prize victories came after a seven-way shoot off.

In 1911 he left the British Army and joined the New Zealand Defense Force, where he was commissioned as a captain. His military achievements there included supervising the work of training the Expeditionary Force in rifle practice at Penrose, Auckland. He was awarded a Military Cross for his exceptional actions while serving with the New Zealand Staff Force during a battle on the Gallipoli Peninsula in 1915, and his marksmanship became legendary. He was promoted to major in 1919. He retired in 1927 after 52 years in military service. He then became the superintendent of a veteran's home and continued to shoot. He passed away on June 6, 1944. **ST**



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The Human Machine Gun

Jesse Wallingford set the first Mad Minute speed-shooting record, medaled in the Olympics, and was awarded the Military Cross. **BY JOEL J. HUTCHCROFT**

In addition to setting the first British Mad Minute record, Jesse A. Wallingford also won many revolver and rifle shooting competitions, medaled in the 1908 Olympics, and had a distinguished 52-year military career.

LAST MONTH I WROTE ABOUT BRITISH SERGEANT Instructor Frank Snoxell, who set an amazing shooting record by firing 38 shots from a bolt-action .303 British Lee-Enfield S.M.L.E. in one minute and placing all those shots on a target set at 300 yards. That demonstration was fired during what was known as the Mad Minute. The previous record for the Mad Minute was 36 shots in a minute, with all shots hitting the target at 300 yards. The shooter was Jesse

A. Wallingford, and he was popularly known as the Prince of Riflemen, the Best Shot in the British Army, the Human Machine Gun, and the Hero of ANZAC.

If you read last month's column, then you already know about the Mad Minute, so I'm not going to repeat that information here. You also may have gathered from that column that Snoxell was not very well known. You could say he was rather obscure. Wallingford, on the other hand, was extremely well known.



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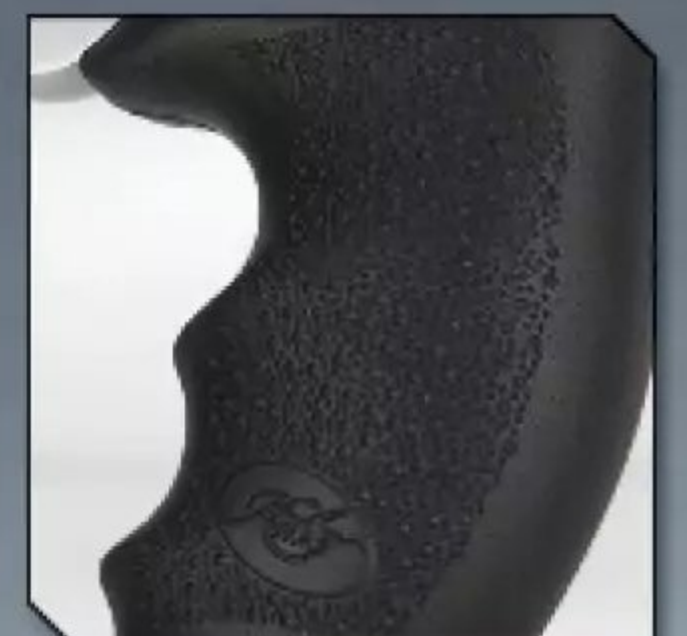
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