

.410 Hunting: Quail & Woodcock

By Tim Woodhouse



The owner of the shorter 2½ inch chambered .410 has been somewhat neglected over the years, with very little choice of hunting ammo, but the rise of small gauge sporting clays shooting has changed all of that. The emergence of 2 ½

inch .410 target shells loaded with a half ounce of US#8½ shot and launched at a higher 1250fps three foot velocity, by the major loading companies, is good news for hunters of the smaller bird species. Although originally intended for sporting clays use, they are a big improvement for the bird hunter that was previously stuck with a choice of #9's or #7½ 's.

There have undoubtedly been instances where the use of the 1/2oz 1200fps Skeet legal #9 shot loads may have been a little light on penetration, especially for ranges much over 25 yards. Conversely for very small birds such as Quail, and slightly larger birds like Woodcock, #7½ shot can be overkill, with more penetration than pattern density (at least with the 1/2oz shell). It also needs considerably more choke with the lighter 1/2oz load,

or alternatively, a 3inch shell with a magnum hunting load of 11/16oz, or even 3/4oz of shot.

(Some Quail hunters reload 3inch shells with 9/16 to 5/8oz of #8.5 & #9 shot, but we are primarily looking at 2½ inch factory loads here, which if the hunter has an older gun with this chamber length, it will hopefully prove useful).

If we take a look at the pellet counts and penetration potential it is easy to see why. These #8½ Sporting Clays shells are invariably loaded with hard magnum grade shot, which certainly improves

their patterning potential down range; and although down on pellet count when compared to the #9 load, (by 50



pellets), the #8½ shell has a significantly improved penetration, which has to be a good thing for reliable bird shooting. The other thing, is that #9 shot does have a tendency to put too many pellets into a bird, especially when it is flushed close up, (unless it is a very small Quail species), as even a .410 with the ½ oz load and I/C chokes can pepper smaller birds in this way at 15 yards or so.

The 1/2oz load always throws a better distributed pattern than the 3inch magnum loads, with their much longer shot columns, and the inevitably increased pellet deformation that this increased length entails. There is also perhaps, the advantage of a considerably higher velocity with the ½ ounce load (at these closer ranges this will be more relevant); and additionally, when the hard magnum #8½ shot is considered, this is most probably the best choice for small birds at these limited ranges of 30 or so yards.

Very small birds will be better with #9 shot, mainly due to their diminutive size. With regards to pattern density with the ½oz load, Skeet, I/C or ultimately Modified chokes, are all that are required for this purpose. Using Full choke just makes hitting much less likely.

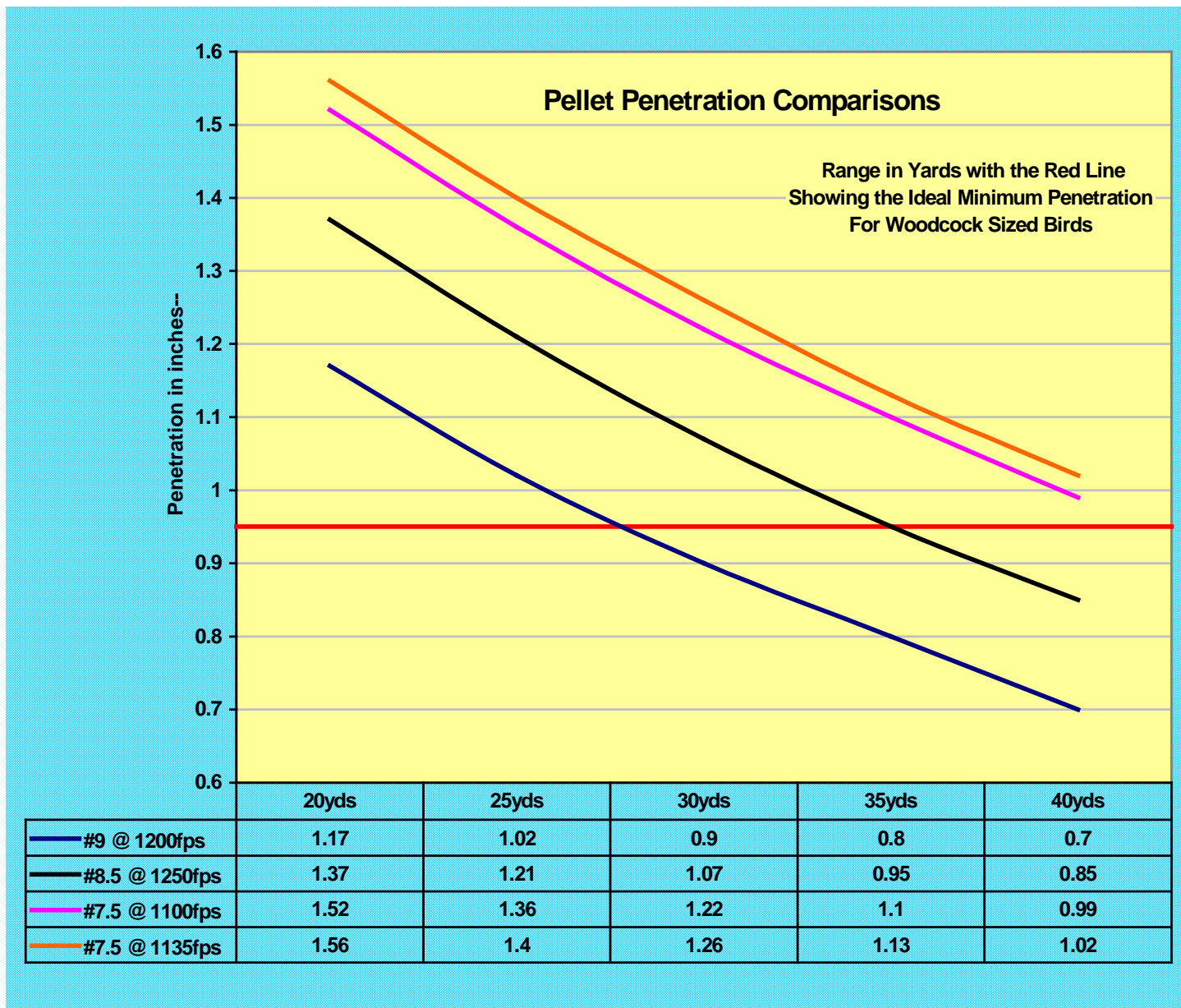
Pellet counts for the half-ounce load: US#8½ = 242 pellets. US#9 = 290 pellets. Pellet count for the 11/16oz load: US#7½ = 238 pellets. Pellet count for the 3/4oz load: US#7½ = 260 pellets.

Pellet Penetration: Quail & Snipe 0.7inches*, Woodcock 0.95inches*.

Shot Size & 3ft velocity	Penetration at 20yards	Penetration at 25yards	Penetration at 30yards	Penetration at 35yards	Penetration at 40yards
Skeet 1/2oz US#9 1200fps @ 3ft	1.17inches	1.02inches	0.90inches	0.80inches	0.70inches
Sporting Clays 1/2oz US#8½ 1250fps @ 3ft	1.37inches	1.21inches	1.07inches	0.95inches	0.85inches
3inch shell 3/4oz US#7½ 1100fps @ 3ft	1.52inches	1.36inches	1.22inches	1.10inches	0.99inches
3inch shell 11/16oz US#7½ 1135fps @ 3ft	1.56inches	1.40inches	1.26inches	1.13inches	1.02inches

If we take an arbitrary figure of 0.95inches of penetration to be sufficient to reach the vitals of small Woodcock sized birds, the chart clearly shows the limits of the different loads for this purpose.

The 3/4oz #7½ Magnum loads might have a greater penetration at longer range (better than a 5yard advantage)



than the 1/2oz #8½ shells, but the pattern quality is higher with the lighter load, which is due to its shorter shot column, and it still has plenty of penetration in hand to 35yards for Woodcock. The 1200fps #9 load is limited to 28yards by the same criteria — 7yards less. However, for Quail, and the established 0.5ft/lb minimum pellet energy, this would indicate about 0.7inches of penetration at 40yards with #9 shot.

Quail have been brought down effectively at longer ranges with the 1200fps #9 load with larger gauges, but with only 1/2oz of shot in the .410 2½ inch shell, for certainty, the maximum effective ranges are subject to the minimum pattern requirements.

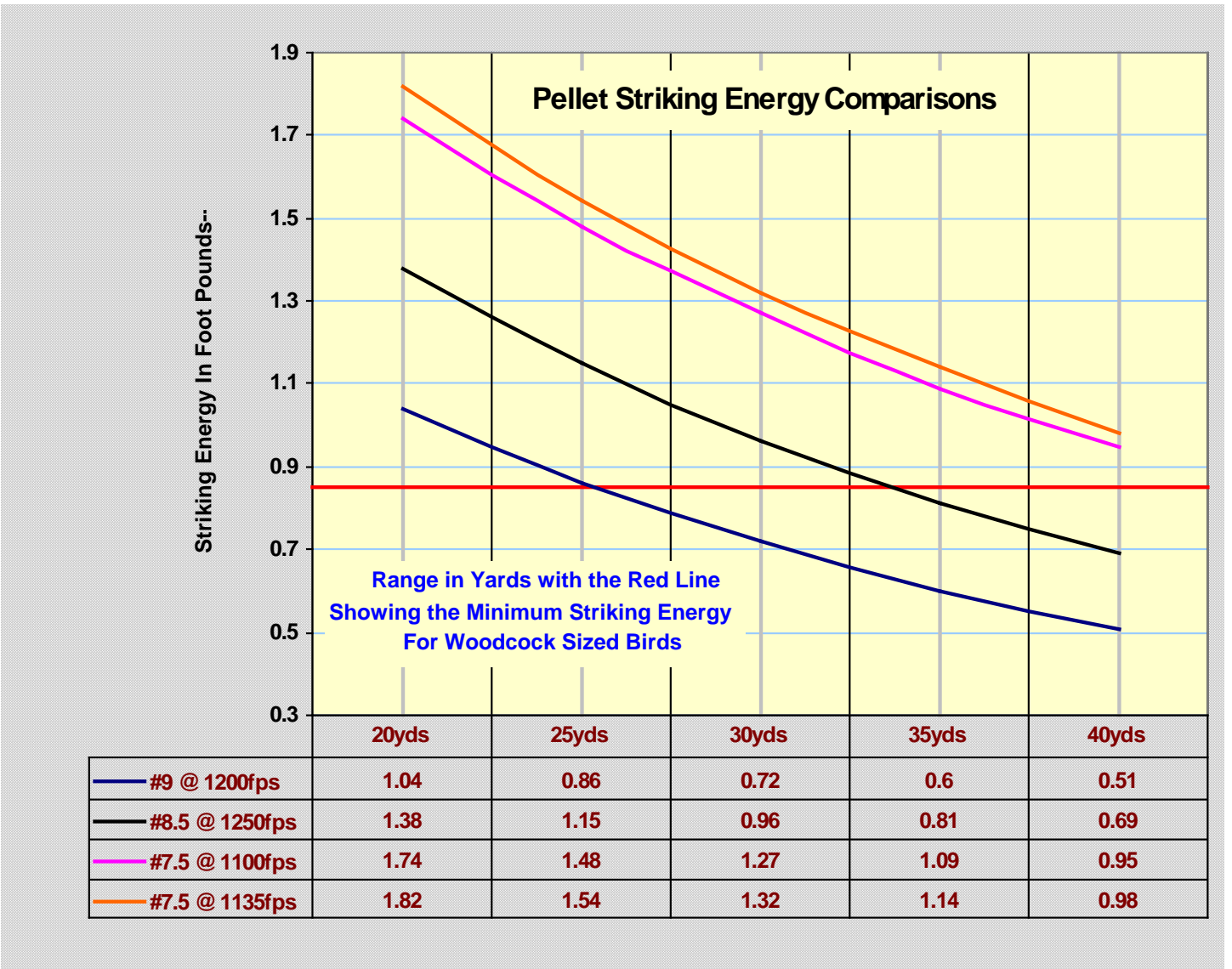
Pellet Striking Energy

Snipe or Quail 0.5ft/lbs. Woodcock = 0.75 to 0.85ft/lbs

Shot Size & 3ft velocity	Striking energy at 20yards	Striking energy at 25yards	Striking Energy at 30yards	Striking Energy at 35yards	Striking Energy at 40yards
Skeet 1/2oz US#9 1200fps @ 3ft	1.04 ft/lbs	0.86 ft/lbs	0.72 ft/lbs	0.60 ft/lbs	0.51 ft/lbs
Sporting Clays 1/2oz US#8½ 1250fps @ 3ft	1.38 ft/lbs	1.15 ft/lbs	0.96 ft/lbs	0.81 ft/lbs	0.69 ft/lbs
3inch shell 3/4oz US#7½ 1100fps @ 3ft	1.74 ft/lbs	1.48 ft/lbs	1.27 ft/lbs	1.09 ft/lbs	0.95 ft/lbs
3inch shell 11/16oz US#7½ 1135fps @ 3ft	1.82 ft/lbs	1.54 ft/lbs	1.32 ft/lbs	1.14 ft/lbs	0.98 ft/lbs

The problem with relying on pellet striking energy alone; is that the actual depth of penetration varies

depending on the size of the pellet, with that same energy level. Smaller sized pellets cut a smaller wound



channel through the flesh of the bird, and by so doing, require less actual striking energy to achieve similar levels of penetration.

From the two graphs, we can see that the 1200fps #9 pellet has sufficient penetration (0.95 inches) to almost 28yards, but the accepted pellet striking energy appears to hit the top end of the established limits for small birds (0.85 ft/lbs) at a fraction over 25yards.

Conversely, the 1250fps #8½ pellet retains the same 0.95inches of penetration out to exactly 35yards, even though it would appear to be 0.04 ft/lbs short of striking energy.

The #7.5 pellets at either velocity have plenty of striking energy and penetration in hand, but in the 1/2oz load it is going to be the pattern that fails first.



The Vital importance Of Pattern Density

With the .410 shotgun, it is the pattern that must take up pole position, because without sufficient pellet density, all of the striking energy and penetration in the world, will be utterly useless unless it can be brought to bear on the bird in a

reliably consistent manner.

The established minimum pattern requirement for larger Woodcock is 150 pellets (smaller birds needing about 180), in the 30inch circle, but Snipe or Quail being considerably smaller, need up to 240 to 270, dependent on their actual size.

We have 290 pellets with the 1/2oz #9 load, and if its use is restricted to a maximum of 27yards, as indicated by the penetration figures, then the required choke will be one that can reliably ensure multiple pellet strikes on a smaller bird.

With an I/C choke performance, we can expect the following pattern percentages, 20 yards = 100%, 25yards = 87%, 30yards 77%. #9 pellet counts: 20yards = 290 pellets, 25yards = 252 pellets, 30yards = 223 pellets. With a little extrapolation we can work out that at 27.5yards, our arbitrary maximum penetration range, the I/C choke will put about 237 pellets into the 30 inch circle.

However for first barrel work, if we accept 25 yards as a 'maximum effective' range with #9 shot, an open Skeet choke (usually about half way between I/C and True Cylinder, although some are tighter) can be used, that will have 82% of the pellets (238) in the 30inch circle.

This also has the advantage of a wider spread, enabling easier hitting. Another alternative would be to use softer chilled #9 shot in a reloaded shell, but reverting to the Improved Cylinder, Light Modified or even Modified

choke, as this would have a greater overall spread than the factory load and its hard magnum pellets.

20inch inner circle shown:

The problem with US#7.5 shot (2.4mm) is that even for Woodcock, and using the 3/4oz 3inch .410 shell, some birds are going to be wounded and lost, due to insufficient Pattern Density. (US Improved Cylinder pattern at 30yards).



If we then take 238 pellets as being required for a reliable kill, then by the same token, the #8½ shot loading on paper, will need to go to at least Improved Modified (91% & 221 pellets) or even a Full choke (100% & 242 pellets) for a similar pellet count at 30yards.

In fact the hard magnum shot will usually produce the goods at 30yards with a Modified choke, but it is always

best to pattern any combination first, before venturing forth into the field. The upside with the #8½ pellets, is that they tend to make a better quality pattern than #9, but again this is all subject to actual individual gun and shell performance.

Unfortunately when using the 2½ inch shell, pattern density is always going to be an issue. To this end, to avoid an unacceptable number of crippled birds, smaller shot must be used to maintain sufficient numbers within the pattern; but this in turn, also limits the effective range to one of sufficient pellet energy and penetration.

Established pellet sizes and performances at 40yards with a 12gauge, must be reappraised to what can be realized with half the shot weight of smaller pellets at a general 30yards, or perhaps slightly more depending on pattern density and the quarry, with the 2½ inch .410.

2½ inch shells pattern considerably better in 2½ inch chambers, leaving the pellets in better shape, as the inevitable damage they incur jumping and expanding into the longer chamber gap, and then being forced back down to bore size by the cone of the 3inch chamber impairs the pattern quality.

After all, the trick with smaller sized birds, is to hit them with sufficient numbers of pellets that have a good chance of penetrating sufficiently to reach the vitals organs, and not let them sneak off through holes in the pattern, which can all to readily occur with heavier loads of the larger shot sizes; or worse, to hit them with the

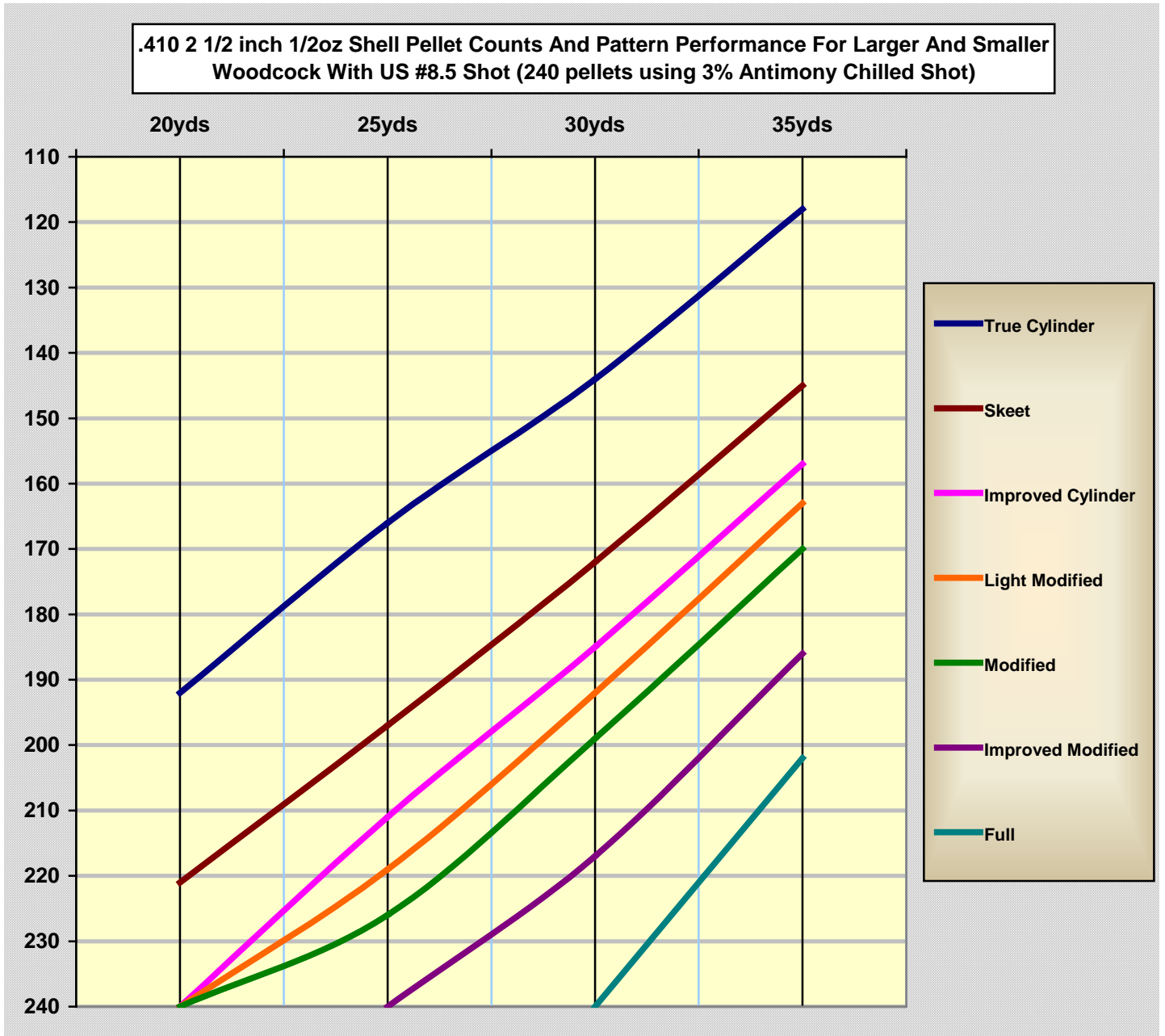


denser patterns of lighter loads of overly smaller sized pellets, that lacking sufficient velocity and penetration, may only manage to wound them in a non-vital spot.

So, for the owner of a shorter chambered gun, or someone who doesn't reload, the Skeet and Sporting Clays ½oz #9 & #8½ shot .410 numbers loaded with magnum shot are just the ticket when shots are taken within sensible ranges.

Excellent 1882 Lancaster '.360 Long' Rook rifle converted to a .410 hammer double with 2½inch chambers with I/C and Modified chokes.

An ideal candidate for Quail and Woodcock in the field with the high performance 2½inch factory loads and their hard magnum #9 and #8.5 shot.



True Cylinder: To find the options for larger woodcock, if we follow the 150pellet minimum pattern line across the graph, we find that the True Cylinder choke option reaches the limits of its pattern at 28.5yards, but for smaller woodcock and 180 pellets, we can see that this occurs at 22.5yards. From the penetration graph we can see that the pellet penetration limit is at 35yards, so this pattern fails before the ability of the pellets to get the job done.

Skeet:

Assuming a muzzle constriction between True and Improved Cylinder, for larger woodcock and 150 pellets, the pattern holds good until 34yards. This is very close to the maximum penetration range of 35yards.

For smaller woodcock and 180 pellets pattern density is maintained to 28.5yards.

Improved Cylinder: The 150 pellet minimum pattern is exceeded (157) at the limits of penetration at 35yards, but the 180pellet limit is reached at 31yards, 4 yards short of the penetration limit.

Light Modified: At 35yards with 163 pellets, the 150 pellet limit is not an issue, but the 180 pellet level is reached at a fraction over 32yards.

Modified: With 170 pellets the 150 minimum pattern requirement is left behind, but it is just short of the penetration limit of 35yards at slightly over 33yards for 180 pellets.

Improved Modified: With 186 pellets this has all that is needed for both smaller and larger woodcock with the 1/2ounce load of #8.5 at 1250fps. Here the penetration limit of 35yards will be reached just before the pellet count of the pattern.

Full: The use of full choke with this load for woodcock is ill advised, and will just make hitting a lot harder at the shorter distances.

Choke Performance Recommendations: For larger woodcock, Skeet (34yards max) and Improved Cylinder (35yards max) in a double gun would appear to be ideal. For smaller woodcock, Light Modified (32+yards max), and Improved Modified (35yards max) chokes will be ideal. But it is probably better to restrict shots to 30yards, so as to have an excess of both pattern and penetration.

Magnum shot: However the Winchester loads shown (and others such as Remington & Federal etc) contain hard magnum shot with a 5 - 6% antimony content, which will tighten up the pattern spreads and increase pellet density for any given choke.

What this means in practice is that even for the smaller woodcock, using a double gun, Improved Cylinder and Modified chokes with magnum shot will suffice.

It is perhaps akin to the use of at least the next tighter choke constriction with chilled shot, but with better pellet distribution within the pattern circle; due in part to the reduced numbers of 'fliers' (overly damaged pellets), with the harder magnum shot.

[See the www.4-10.co.uk](http://www.4-10.co.uk) home website page for details of purchasing Tim Woodhouse's .410 book:

'Because It's there!' Climbing the North Face of the .410
