# Mini Compendium of Big Bore Cartridges

## Part One of a Three Part Series

*by Daniel McCarthy*

### Introduction

Not for more than 100 years has there been such a surge in interest in big bore cartridges as there is today. This interest is fuelled at least in part by the relative affordability of hunting game for which big bore cartridges are suitable. Such game is generally limited to thick skinned dangerous game, namely Cape buffalo, elephant, hippo on land, and white rhino. For half the cost of a typical new car, we can hunt Cape buffalo and plains game. Trophy bull elephant can be hunted in several countries for less than the cost of a new truck, and rhinoceros can be hunted in South Africa for the same budget.

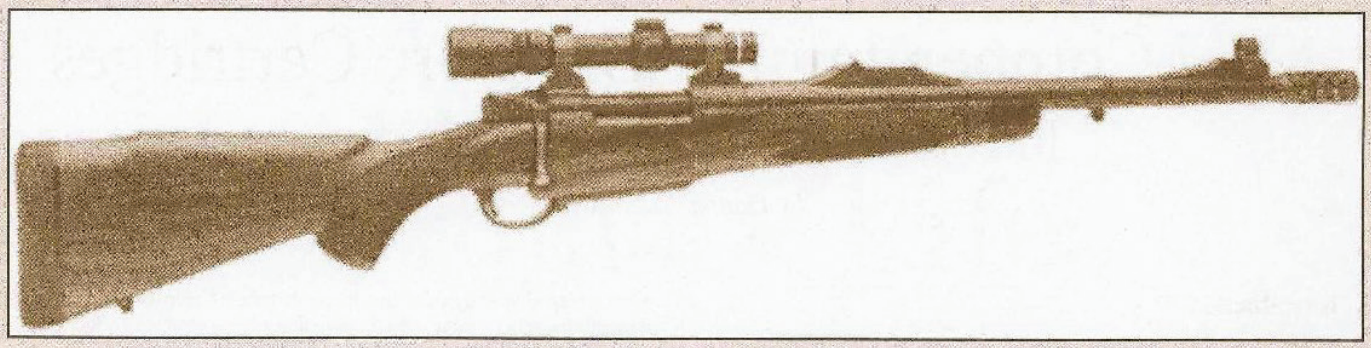
It is not necessary to be wealthy or even a high income earner in order to afford dangerous game hunting in Africa. By scrupulously setting money aside and making a few personal sacrifices to cut expenses, such as giving up eating at restaurants, not buying tickets to professional sporting events, avoiding new or expensive cars and trucks, and by turning some of part of a gun collection into cash, almost every American wage earner will be able to afford a dangerous game hunt in Africa.

With the relative financial accessibility of thick skinned dangerous game hunting comes a natural interest on the part of the sportsman in rifles and cartridges appropriate for that sport. Although none of us would suffer if our thick skinned dangerous game hunting were to be done exclusively with the .416 Rigby, .458 Lott and .470 Nitro Express, there is added excitement to shooting the largest and heaviest of bullets. But there is even more good news for the big bore fan. Prices for newly-produced double rifles are at an all-time low with several fine offerings from Searcy, Heym, Merkel, Krieghoff and Sig coming in at around US$10,000. For a similar amount, a very nice big bore bolt rifle from several master craftsmen may also be acquired. Alternatively, there are some low-budget options for the big bore fan which will result in a very functional big bore dangerous game rifle for about US$3000.

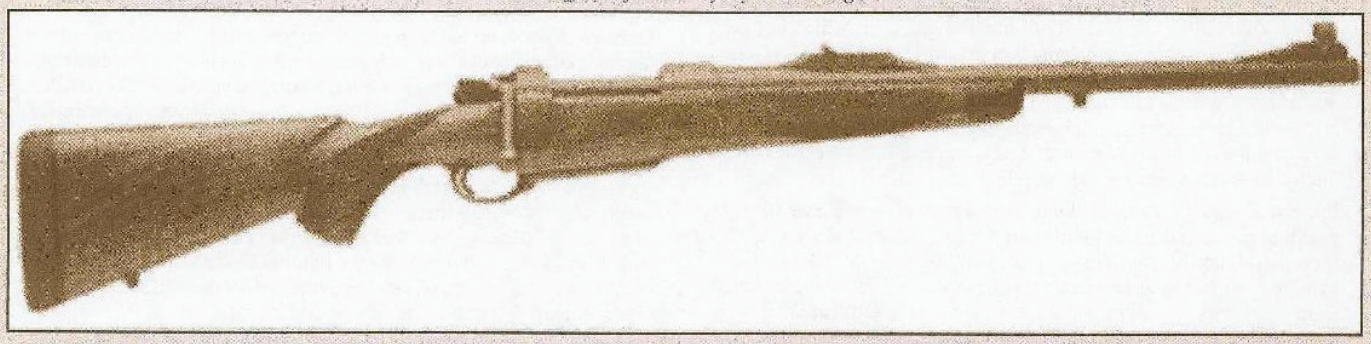
This article provides the reader with a summary of both factory and wildcat cartridges .50 calibre and larger that are suitable for use on thick skinned dangerous game. As a beginning proposition, cartridges that use bullets with a sectional density of less than .300 or which cannot achieve a velocity of close to 2000 f.p.s. have been omitted due to the inadequate penetration that results from those ballistics. These criteria require me to rule out any discussion of production lever action cartridges and any discussion of 2 bore, 4 bore, 8 bore, 10 bore and 12 bore rifles. Although such guns may be fun projects, their poor penetration precludes them from serious consideration in a practical dangerous game rifle. Also, energy figures are not provided in this article because they are misleading. Thick skinned dangerous game do not seem to be much affected by the energy of the cartridge they are shot with, so it would be error to conclude that one cartridge would be more effective than another based solely on energy figures. Rest assured that all of the cartridges discussed in this article have plenty of power for dispatching elephant, buffalo or whatever else is on license.

Just about any cartridge can be used to kill a Cape buffalo with a properly placed broadside lung shot, as the tens of thousands of buffalo fallen to AK-47 rifles have proven. But stopping an enraged bull or penetrating to his vitals from a poor angle can test the limits of any cartridge. Elephant provide an even more difficult penetration challenge since a frontal brain shot on an elephant will require puncturing several feet of trunk and skull bone before the brain is reached. Likewise, buffalo shoulders and jawbones, and buffalo and elephant skulls are notorious for ruining bullets, so only quality monolithic solids or other premium non-expanding bullets should be considered by those with an inclination toward self-preservation.

Each cartridge summarized is discussed primarily from the point of view of building an affordable bolt action rifle to use for thick skinned dangerous game hunting. Example loads and ballistics are shown. The nitro express cartridges are discussed for comparison purposes, even though they are typically available only in more expensive double rifles



*500 Jeffery rifle built by Ryan Breeding.*



*.505 Gibbs by riflemaker Ryan Breeding using Granite Mountain Arms action. This rifle combines tasteful beauty with deadly efficient performance at a reasonable price. The magazine box, follower, front and rear sights, stock and other parts are all made by Ryan in his workshop to achieve flawless function and impeccable quality.*

(the Heym and Hambrush bolt rifles being notable exceptions). I hope that all readers will have the chance to build or purchase a big bore rifle and hunt dangerous game with it, or at least be deterred by the mistakes of those of us who have.

## The .505 Gibbs

The .505 Gibbs was designed by George Gibbs of London to provide big bore stopping power in a Mauser style bolt action rifle. It is considered the king of the classic big bore cartridges and is gigantic in its dimensions. The actions that will properly handle the cartridge are gigantic as well, and the price tag for a rifle in this calibre has a Texas-sized price tag.

The .550 Gibbs has an overall length of 3.85 inches, making it unsuitable for all but a few magnum actions. Those considering a .505 Gibbs would do well to use an action that has a bolt body diameter of more than 0.700" (which is standard in the model 70/model 98/ CZ550) because after the bolt face is opened up for the Gibbs 0.640" rim, there is just a very thin sliver of metal left on the bolt opposite the extractor. Starting with a larger diameter bolt at the outset, such as the 0.750" bolt found in Granite Mountain Arms magnum Mauser actions, adds to the durability of the rifle. Another alternative is a P14 Enfield action since the P14 bolt has a left lug that extends beyond the bolt face, providing extra metal opposite the extractor which can accommodate the Gibbs very large rim.

At first glance, the .505 Gibbs original factory ballistics of a 525 grain bullet at 2300 fps do not appear to offer much more power than a .458 Winchester Magnum. After all, it is just 25 more grains of bullet weight and 150 feet per second more velocity. However, the ballistics can be improved by stepping up to a 600 grain bullet at 2400 feet per second. Of course the Gibbs also has the advantage of greater bullet diameter than the .458.

At present, factory .505 Gibbs rifles are available from Reimer Johannsen (www.johannsen-jagd.de), Hartmann & Weiss and Heym (www.heym-waffenfabrik.de). CZ announced its introduction of a .505 Gibbs rifle at the shot Show in 2005. Alternatively, master gunsmith Ryan Breeding of Palmdale, California (www.rbbigbores.com) offers a beautiful five shot .505 Gibbs bolt rifle, and custom gunmaker Joe Smithson of Provo, Utah turns out perfection in a .505 Gibbs on a Granite Mountain Arms action. Karl-Heinz Ritterbusch (www.jagdgewehre.com/eng/) offers top quality .505 rifles as well.

Most .505 Gibbs rifles made today are custom built by individual gunsmiths with about a 1-2 year lead time. It is a magnificent classic cartridge with wonderful stopping power. For those who wish to maximize the punch of a hunting rifle, even more potent combinations are discussed further below. Recoil from the .505 Gibbs is significant due to the heavy powder charges it uses. To control recoil, .505 Gibbs rifles should weigh 11 pounds or more.

On Cape buffalo, the .505 Gibbs has been observed to have significantly more shock effect than anything in the .458 class, due to its greater bullet diameter. Performance on game of the .500 Jeffery, .500 AHR, and .500 A-Square will be essentially the same as the .505 Gibbs. The advantage of the .505 Gibbs is its classic design and standard dimensions without a rebated rim. The disadvantages include need for a very expensive magnum Mauser action, periodic shortages of brass, sometimes inconsistent brass quality, and a relatively narrow selection of bullets for the .505" diameter bore. If you want a .505 Gibbs, there is no inexpensive route, other than CZ's new offering. But a well-made .505 Gibbs a rifle is a genuine treasure.

Example loads:

| Cartridge | Powder | Primer | Bullet | Velocity |
|---|---|---|---|---|
| .505 Gibbs | 120.0 grains Reloader 15* | F215 | 600 grain FMJ | 2325 fps. |
| .505 Gibbs | 136.0 grains Reloader 22 | " | 525 grain A-Square | 2328 fps. |

**Notes**

*4 grains Dacron filler between bullet and powder
Use of a slower burning powder such as IMR7828 or RL22 permits fillers to be avoided.

# CLASSIC AFRICAN CARTRIDGES

## The .500 Nitro Express

The predecessor to the .500 Nitro Express (NE) was the .500 Black Powder Express (BPE), but the two cartridges have radical differences in power. While the .500 BPE fired a 440 grain lead bullet at 1500 feet per second, the .500 NE fires a 570 grain bullet at 2150 feet per second. Persons coming into possession of a .500 BPE should use care not to inadvertently shoot .500 Nitro ammunition in it or the rifle will be ruined. Further, the .500 BPE is a good rifle for pigs, black bear and plains game, but does not have a place hunting thick skinned dangerous game. The .500 NE is a very potent dangerous game cartridge. To add further confusion to the mix, the .500 NE comes in three inch and 3 ¼" versions. The three inch version is more popular, and the ballistics of the two are identical.

At the present time, double rifles in .500 NE are currently made by Heym, Krieghoff, Merkel, Searcy, Westley Richards, Sig, Rigby, H&H and others. Bolt action rifles in .500 NE are made by Hambrusch Hunting Rifles. In years past, Heym also made bolt action rifles in this caliber. In double rifles, the .500 NE offers the maximum power than can be found in a rifle of reasonable weight (10-11 pounds). The more powerful double rifle calibres require a significantly heavier rifle in order to keep recoil at a manageable level. The .500 NE is also known for being able to reach the lungs of a Cape buffalo even if he is shot from the rear. The .577 and .600 Nitro Express cannot match this penetration. The reader should note that the .500 NE has the least impressive ballistics of any cartridge mentioned in this article, although it is actually a larger and more powerful cartridge than most professional hunters use for backup when on safari. Hopefully that will help put the awesome power of some of these cartridges into perspective.

Example loads:

| Cartridge | Powder | Primer | Bullet | Velocity |
|---|---|---|---|---|
| 500 Nitro Express | 3*96.0 grains Reloader 15 | F215 | 570 grain Barnes solid | 2150 f.p.s. |
| " | 110.0 grains IMR4831 | " | " | " |
| " | 45.0 XMP5744 | " | 500 grain cast lead | 1500 f.p.s.* |

Notes
Filler may be desirable if Woodleigh bullets are used due to their shorter length.
*Low recoil practice load.

## The .500 Jeffery

The 500 Jeffery is misnamed as it was designed in Germany under the name ".500 Schuler". Hostilities between England and Germany during the first world war resulted in British firms calling the cartridge the .500 Jeffery instead, although the two cartridges are one and the same. The European designation for the cartridge is 12.7 x 70 mm.

The .500 Jeffery is an excellent big bore stopping rifle pushing up to a 600 grain bullet at 2400 feet per second with proper reloads. Original ballistic were a .535 grain bullet at 2400 feet per second. Lengthwise penetration on buffalo using a .500 Jeffery is reported by Jaco Marais of South Africa. Similar performance can be obtained from the .505 Gibbs and .500 A-Square.

The .500 Jeffery has a cartridge overall length of 3.45" which permits it to be built on smaller actions such as standard Mauser 98. Before the reader becomes enthusiastic about rebarreling a surplus model 98 Mauser to .500 Jeffery, there are some difficult problems to consider. First, the .500 Jeffery has a rebated rim which can lead to feeding problems if the rifle is not properly assembled. A few master riflemakers can get a .500 Jeffery to reliably feed from a staggered magazine. Others will prefer to use a single stack Schuler style magazine for its reliability ( The original Schuler rifles used a single stack magazine). Another feeding trick is to use a U-shaped follower rather than a standard L-shaped follower in order for the cartridge to ride as high as possible to avoid the bolt overriding it and closing on an empty chamber. Second, the .500 Jeffery is a fat little cartridge that will require construction of a new magazine box and extensive work to the rails and ramp of the rifle. When these issues are considered, the .500 A-Square on a CZ550 action begins to look like a much more attractive option for the budget-minded. If the reader is seeking a high end rifle in .500 Jeffery, then a true specialist at getting such a rifle to feed should be employed by the project, such as Ryan Breeding or Duane Wiebe in California, Dennis Olson in Plains Montana, or Sterling Davenport in Arizona. B. Searcy & Co. (www.searcyent.com), Sigarms (www.sigarms.com), Heym, Reimer Johannsen, Karl-Heinz Ritterbusch (www.jagdgewehre.com/ger/gerframe.htm) and Gottfried Prechtl (www..gollmatic.de/) offer very fine rifles in .500 Jeffery as well.

*Jeffery Mauser rifle by Reimer Johannsen. The Johannsen rifles closely follow the original Mauser design and are very traditional in their approach. Takedown versions are also available.*

*Jeffery with classic lines built by Reimer Johannsen. Quick-detachable scope mounts integral with double square bridges of the receiver allow use with a scope or iron sights.*