

BROADHEAD TEST: GRIZZLYSTIK MASAAI 125 GRAIN

By

C. Cheney and W. Vosloo

This broadhead is produced by GrizzlyStik (Alaskan Bowhunting Supplies) – a company situated in Alaska. They produce a variety of broadheads one of which is the Masaai 125 grain fixed blade broadhead (Figure 1). The Masaai is also available in 150, 175 and 200 grain versions.



Figure 1: Masaai broadhead

PACKAGING

The broadheads come safely packaged inside a sturdy brown plastic box with clear lid placed inside a sealed clear plastic container with colorful and information packed insert (Figure 2).



Figure 2: Packaging

BLADE DESCRIPTION

The broadhead consists of a single, ventilated, fixed blade with convex cutting edges made of 440 grade stainless steel. The blade has single bevel cutting edges set at 25° , a 30° Tanto point and is mounted onto a CNC aircraft grade anodized aluminium ferrule with stainless steel Torx screws. The blade is 1.32mm thick has a hardness of 58 Rockwell. Total length of the broadhead – tip of point to end of thread is 63.14 mm, has a cutting width of 27.6mm, blade length along the curve of 40.97mm

The mechanical advantage of the broadhead was calculated as 1.48.

The 3 broadheads in the package were weighed and averaged out at 126 grains.

TESTING METHOD

The broadheads were mounted onto GrizzlyStik Momentum UFOC Nano 330 shafts fletched with three 2 inch plastic vanes. Total arrow weight was 656 grains and arrows had an F.O.C of 21.25%. Shaft length 30 inches. Arrows were shot from a Hoyt Spyder 70# compound bow set at 29" draw length bow kindly loaned by Magnum Archery. The broadhead passed both the thumbnail and paper sharpness test with flying colours (Figure 3).



Figure 3: Sharpness test

The arrows were shot out of a shooting machine into foam target set at 20 yards to determine penetration and grouping. The grouping (3 shots) was compared to that using the same arrows but replacing the broadhead with field points of the same weight. We wanted to see how the size of

grouping using field point compared to that of the broadheads and how the mean point of impact (MPI) differed without any additional tuning of the broadheads.

Another test was conducted shooting the broadhead at 20 yards through a fresh bovine scapula mounted onto a frame to ascertain its bone penetrating capability and durability.

High speed video footage using a state of the art Metek Vision Research camera (see Figure 4) enabled us to calculate the velocity in feet per second just prior to and just after point of impact with the scapula – a measurement far more valuable than measuring arrow velocity at the bow. From these velocity calculations we were also able to calculate kinetic energy and momentum of the arrow at point of impact and as the arrow exited the scapula.



Figure 4: Metek high speed video camera.

RESULTS

Ballistics

Arrow velocity (at bow)	241 feet per second
Grouping (3 arrows) at 20 yards	52mm (2.05")
Deviation of broadhead MPI from field point MPI	10mm (high)
Penetration into foam broadhead butt	281mm
SCAPULA TEST	
Arrow velocity at moment of impact with scapula	230 feet per second
Kinetic energy at moment of impact	77.04 foot pounds
Momentum at moment of impact	66.9 slugs ft/sec
Arrow velocity on exit from scapula	177 feet per second
Kinetic energy on exit from scapula	45.63 foot pounds
Momentum on exit from scapula	51.56 slugs ft/sec
Loss of velocity after scapula penetration	53 feet per second (23% reduction)
Loss of kinetic energy on exit from scapula	31.41 foot pounds (40.8% reduction)
Loss of momentum on exit from scapula	15.34 slugs ft/sec (33.9% reduction)

Inspection of broadhead after scapula test

The broadhead and shaft were completely intact after passing through the bovine scapula. One of the two single beveled cutting edges had slight serrations. With a file this broadhead could quickly be brought back into tip top shape ready for further use. See Figure 5.



Figure 5: Broadhead before and after shot through scapula

Observations from high speed video footage

The broadhead was rotating on entry and cut through the bovine scapula with ease. The arrow was very stable and the shaft showed minor oscillations after passing through the scapula and imbedding into the foam target. See Figure 6.

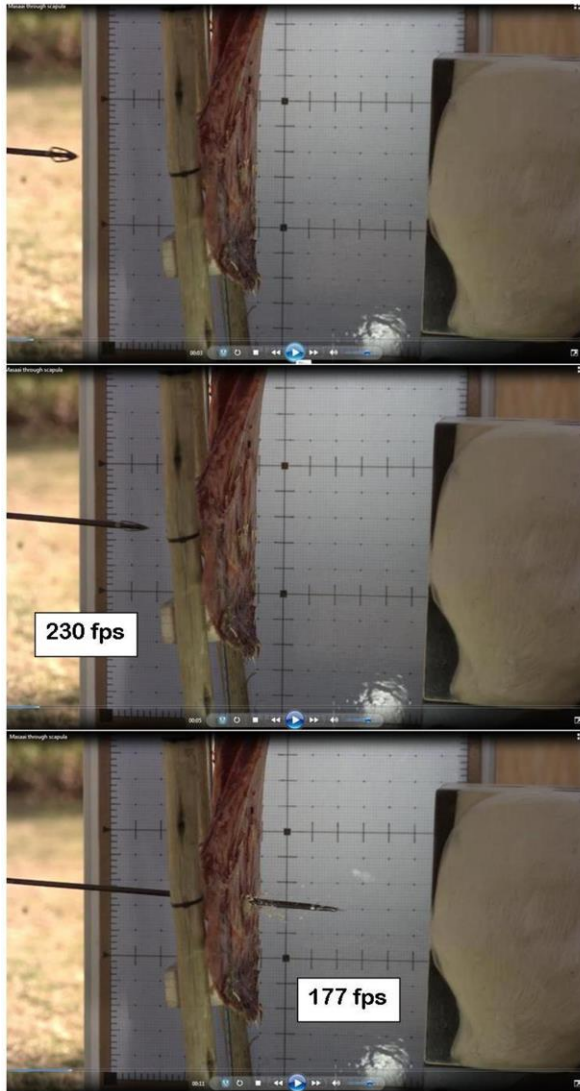


Figure 6: Masai broadhead penetrating through a fresh bovine scapula

Effect on scapula

The twisting effect of the single bevel edge was evident in the bone. Because of the tapering shaft there was little resistance once the broadhead had penetrated. See Figure 7.

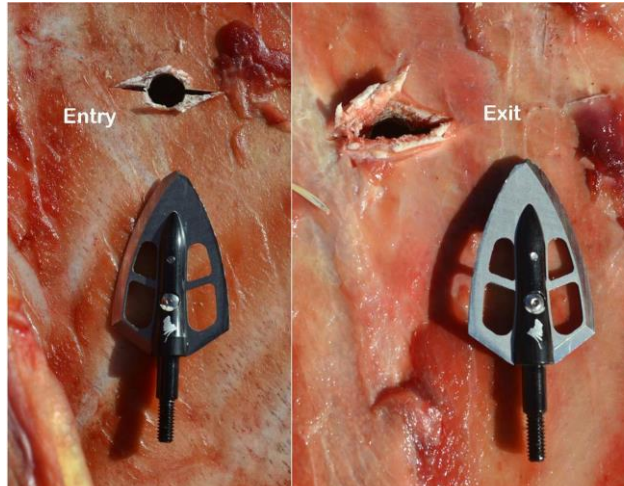


Figure 7: Effect on scapula

BROADHEAD SCORE SHEET

GrizzlyStik Masaai 125 grain fixed blade	SCORE	1	2	3	4	5
Packaging and presentation						X
Mechanical Advantage				X		
F.O.C						X
Cutting width						X
Cutting length				X		
Blade point						X
Number of blades						X
Bevels						X
Blade thickness					X	
Ferrule material and construction				X		
Planing index (difference in MPI from field point MPI)					X	
Penetration (foam) – measured from tip of broadhead					X	
Sharpness (thumbnail and paper test)						X
Strength and durability					X	
Quality and value for money						X
Type of broadhead					X	
Reliability of operation (moving parts)						X
Kinetic energy retention after bovine scapula penetration at 20 yards			X			
Momentum retention after bovine scapula penetration at 20 yards				X		
Reuseability						X
SCORE (100)		84				

CONCLUSION

An excellent broadhead. Out of the box it is shaving sharp. Without any tuning it impacts very close to field points at 20 yards. It shoots tight groups. The arrow is stable in flight and will have no problem

passing through the scapula or rib of even large game if its impact angle is at or close to a right angle. It is a tough and strongly constructed broadhead that will be able to be reused (with some minor file work) over and over again making it excellent value for money. The broadhead has proven design features of a strong Tanto point and single beveled edges that split and open bone on entry which makes it easy for the rest of the shaft to pass through. The Masaai 125 grain has proved itself when used on a variety of African game species and is highly recommended.