

BROADHEAD PERFORMANCE

by Dr. Ed Ashby

Most often little attention is paid to what broadhead one selects to hunt with. Often the choice is predicated on what the local sporting goods store has in stock, what your hunting buddies use, what worked on Uncle Joe's deer last year, or on that tried and true axiom, "If it costs more it must be better". Volumes of data on terminal ballistics (what happens from the moment of impact) have been written for every conceivable rifle/bullet combination in existence. Virtually no such data exists for archery equipment.

In the summer of 1985 I had the unique opportunity to participate in a field research project to evaluate, at least on a limited basis, the effectiveness of various types of broadheads. The project was conducted at Mkuzi Game Reserve in the Province of Natal, Republic of South Africa. Tony Tomkinson, Chief Ranger at Mkuzi, was the moving force behind the research and has been the person primarily responsible for the opening of Natal to legalized bowhunting. Tony deserves the thanks of all archers for his dedication and Herculean efforts toward the opening of Africa to bowhunters.

Our plan was to evaluate the effectiveness of as many types of broadheads as possible on a wide variety of game from the size of bushbuck to zebra. We had hoped to evaluate the effectiveness of the bow against cape buffalo, but no buffalo were scheduled for herd reduction and no animals were available for testing. Still, the variety of animals tested are most applicable to selection of broadheads for North American game. The animals in the test included bushbuck (average weight from 106 to 143 pounds), warthogs (154-220 pounds), nyala (198-299 pounds), wildebeeste (473-550 pounds), and the zebra (700-1000 pounds). Some testing was also done on giraffe and white rhino, but the data from these animals was not included in the performance analysis. The size of these animals places them outside the practical realm for all but the very most experienced of archers. Nerves of steel, and the ability to run like hell are also required!

All testing to evaluate broadhead performance was done with heavy draw weight bows in order to negate bow weight as a limiting factor. Tony used only an 80# Martin Warthog compound for all his shooting, and I used a 94# longbow. The average arrow mass used with the longbow was 698.5 grains, the average velocity was 182 fps. The mass and velocity of necessity varied with the different

broadheads. Tony's compound was not available to me to chronograph prior to the trip, and the average velocity is unknown, but I would expect it to be comparable.

Thirty-two varieties of broadheads were tested and included most popular fixed and replaceable blade heads, and a number of limited production semi-custom heads.

Some testing was also done with various arrow shaft materials. This data will be presented in a later report.



Typical result with an "Anderson 245" which stopped after hitting a rib on entry.

The data was accumulated using two different sources. One was animals hunted and taken solely with a bow. This method was employed to the maximum extent possible. Where more detailed evaluation of a particular shot was desired, the animal was taken with a rifle (being careful not to damage any tissue even remotely near the site for the test shot) then positioned and shot with the arrow immediately to minimize the effect of tissue change. Each shot was evaluated by wound channel examination and by dissection as required. All field evaluations were tape recorded and later transferred to written shot evaluation forms. Where field evaluation was not complete enough, such as shots into the spine, the animal was returned to the slaughter house for detailed dissection and shot evaluation. The data thus collected was transferred to computer files for detailed analysis. Shots taken on animals previously culled with a rifle were rated as lethal if: (1) the thorax was penetrated, (2) a major blood vessel was severed, (3) a major nerve center was pene-