

The proposed

Age Related Trophy Measurement System

Developed by the Working Group for the *Erongo Verzeichnis*







1. Introduction

- It is a growing concern by conservation-orientated hunters and other stakeholders that the constant removal of breeding males in their prime (or even at a younger age) has a severe negative effect on the gene pool of the hunted species. This does not only affect the trophy potential of the species in question but the entire genetic health of the species. Dr Kevin Robertson has put this in the following words, in particular for buffalo:
- *Let's face it – trophy hunting, when not done correctly, i.e. with knowledge and careful consideration is not genetically sustainable.*

- This genetically unsustainable trend is enhanced by a wrongly understood trophy cult and in particular by the measuring systems of existing record books for African Game Animals.
- It is high time that the trophy-hunting sector (selective hunting sector) lives up to its claim of being applied conservation and reverses this negative trend.
- The *Erongo Verzeichnis*, in the form of a working group, has applied its mind to developing a method of scientifically orientated aging of African Hunting Trophies.
- The aim was to create incentives to hunt truly old animals past their prime and to discourage the hunting of immature trophy animals altogether.

A. AIMS AND OBJECTIVES OF THE ART MEASURING SYSTEM

- It is the aim of responsible selective hunting to strongly discourage the hunting of immature animals and to target animals past their prime to ensure genetic sustainability of trophy hunting (selective hunting)

○ HORNS AND TUSKS, CLAWS AND FANGS, THE WEAPONS AND TOOLS OF WILD ANIMALS

- The horns and tusks of game animals – carnivores will be discussed separately – are not trophies to the animals themselves. Quite contrary, they are weapons (and to a lesser extent tools) designed to serve a very distinct purpose.
- This purpose is mainly to enable the carrier to fight for dominance within the same species; largely for mating rights or territories related to mating rights. To a lesser extent these horns and tusks are used to defend the individual or the herd against enemies and, in tusk-carrying species, for digging and debarking of trees.
- The growth and development of horns and tusks of the animals into a fully functional weapon and tool is closely related to the physical development of the animal into sexual maturity and full physical capacity in reaching the prime stage of the animals' life.
- The physical development of ungulates into sexual maturity to some extent depends on field conditions and availability of fodder. In the same way life expectancy varies with fluctuating rainfall cycles towards the end of an animals life.
- Therefore it appears more sensible to identify age classes, rather than to work on actual age in years.
- These age classes are “immature”, “prime” and “past prime”. Once the stage of “prime” is reached the outwardly growth of horns and tusks largely comes to an end. Now the horns and tusks have developed into the weapons they were designed to be. From now on only limited secondary growth takes place, which easily can be differentiated from the primary growth, in particular in case of the horns.

3. General aspects of trophy development

- During extensive examination of specimens the *Working Group of the Erongo Verzeichnis* came to the conclusion that contrary to popular belief :

a) Horned animals (Family Bovidae)

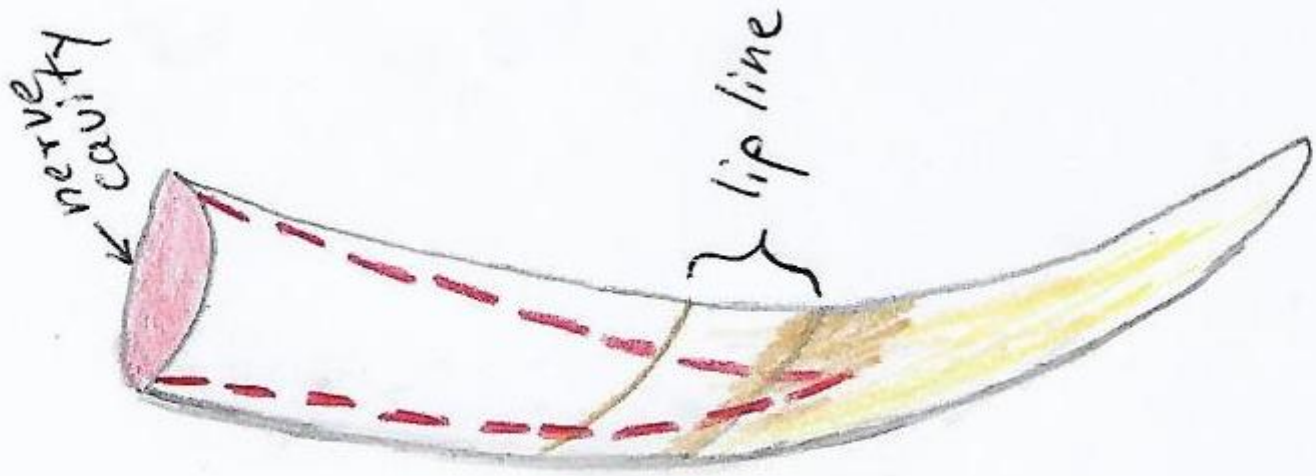
- The shape of the horns depends on the genetic make-up of an animal and not on age. Horn tips pointing outward in a kudu, for example, is not a question of age, but of genetics. The same applies to the tips of springbok horns pointing backwards, a closed boss in buffalo and many characteristic traits in other species
- Thickness of horns, tusks, etc. is not age related, it depends on genetics
- It has to be kept in mind that the pointed tips of the horns are the first to appear in the young animals. These tips are constantly pushed upwards as new horn cells appear at the base during development of the horns. The newest or youngest horn cells thus are always found at the base of the horns. This fact is the base for age determination of *Bovidae* species by means of horn development, as suggested by the ART Measuring System.
- The new horn cells, which are formed at the base during the development, are soft and velvety, while the upper cells harden and are polished by horn rubbing of the animal at bushes and other objects. The horn bases of immature animals thus appear light grey and velvety. At this stage the horns are not suited for serious fighting. The animal is still immature.

- Once the horns are fully developed with reaching sexual maturity, primary growths stops and the horn cells at the base now become solid and strong. At this stage the animals are very active in horn rubbing to remove the last remaining soft, velvety material at the base. The entire horn now has a hard, dark, smooth appearance and the physical maturity of the animal, together with the solid, fully developed horns, enable it to successfully participate in dominance fights for territories or mating rights during the rut. At this stage the animal is at its prime.
- From now on only very limited secondary growth slowly takes place at the horn base, which – although it differs in its appearance in different species – can easily be differentiated from the primary horn growth. Moreover features related with ageing of the horn cells at the base are discernible, once again variable in appearance in different species. Now the animal is past its prime.
- The primary and decisive aging criteria thus are soft and velvety horn bases (immature), completely solid horn bases without remains of velvety material (prime) and secondary growth at base, features related to old horn cells at base and discolouring of sections of the horns due to decrease in testosterone levels (past prime).
- Secondary or additional aging criteria should be considered as well. It has to be kept in mind though that these additional criteria are to a considerable extent related to field conditions and individual habits. Therefore such criteria can only serve as additional information. These are ossification of skull sutures, tooth wear and signs of wear on horns.

b) Tusked animals (Families *Elephantidae*, *Suidae*, *Hippopotamidae*)

- In principle the development of tusks of these families is similar to the development of horns in Bovidae. In young animals there is rapid growth of the tusks until the animals reach full maturity. The tusks are fed with nutrients and mineral substances necessary for growths via the nerve through fine capillaries, which pervade the tusks.
- During the “rapid growth phase” of the tusks in an immature animal the nerve is very big and the circumference of the tusks is biggest at the base, the entire tusk tapering towards the tip. As at this age the nerve extends beyond the lip line and as the ivory is not dense and hard yet, the tusk is not suited for serious fighting. Cracking or breakage of the ivory, which exposes the nerve, leads to infection of the nerve, which results in the tusk rotting out.
- As the animal reaches physical maturity the base of the tusk starts to neck in, the tusk now tapers somewhat towards the base as well. The capillaries in the tusk now start to ossify, the ivory becoming very hard, dense and heavy and the nerve retracts, the nerve cavity now becoming filled with ivory as well. The nerve cavity now ends within the bony tusk sockets inside the skull, which, together with the solidness of the ivory, gives much better protection to the nerve in serious fighting. Only now the tusk is fully functional as the weapon and tool it is designed for.
- In animals past the prime the circumference of the tusk is biggest at the point where it leaves the skull and the nerve is very short. It has to be kept in mind however that big, thick elephant tusks need a bigger nerve to feed the tusk during the growth phase and that such tusks always have a relatively big nerve as compared to thin tusks.

- Elephant or warthog tusks, which have the biggest circumference at the base, related to a very big nerve, originate from an immature animal.
- In warthog, which have a relatively short lifespan, tapering of tusks towards the base is a sign of an animal in its prime.
- In warthog past the prime tusks show lamellae growth at the base and finally a characteristic twist at the base, accompanied by a very small nerve cavity and drastic tapering towards the base.
- In elephants, which have a long lifespan, tapering of the tusk towards the base starts before the animal has reached full maturity around approximately 40-45 years of age. In elephants the lower jaw should be taken into consideration for ageing. If the Molar 5 (M5), has largely been replaced by the Molar 6 (M6), the elephant is in its prime. Elephants fully on the M6 showing wear, are past their prime.
- This development of tusks was confirmed for Elephant and warthog during the workshops of the Erongo Verzeichnis. It still has to be confirmed for other African pig species and for hippopotamus.





- AGING CRITERIA (SPECIES-SPECIFIC)
- a) **Primary or decisive aging criteria**
 - age of horn cells, in particular at base (Bovidae)
 - hardening of horn-cell, in particular at base (Bovidae)
 - secondary growth at base (Bovidae)
 - flaking off of dead horn cells, in particular at base (Bovidae)
 - cracking and coarse breakage of dead horn cells (Bovidae)
 - Secondary laminar growth (Bovidae)
 - Growth 'rifts'/spurts (Bovidae)
 - Inwardly growth at base (Bovidae)
 - Discolouring of horns due to reduced testosterone levels (Bovidae)
 - Prime ring and subsequent growth (Bovidae)
 - inspection of molars (loxodonta)
 - tapering of tusks towards base (loxodonta and Suidae)
 - development of prominent secondary laminar growth (Suidae)
 - twisting at base (Phacochoeros)
 - closure of nerve cavity (Loxodonto, Suidae, carnivore)
 - colour of canines (carnivore)
 - retraction of gum/development of "canine neck" (carnivore)
 - prominent bone ridge on skull (carnivore)

- b) **Secondary or additional aging criteria**
 - ossification of skull sutures
 - tooth wear
 - brooming, wear and breakage of horns/tusks



4. Aims and Objectives

- It is the aim to target animals past their prime and to strongly discourage the hunting of immature trophy animals, to ensure genetic sustainability of trophy hunting (selective hunting).
- As the horns and tusks of the animals serve as tools and weapons it must be taken into account that it is characteristic for old trophy animals that the tips of the horns or tusks are broomed off and often the tip of a horn is broken with age (often in uneven way for the two horns). For this reason it appears unjust to disadvantage trophies with the tips of one horn shorter than the other.

Conclusion

- The suggested ART Measuring System is based on clearly discernible features formed during the stages of development of horns during the lifespan of *bovidae* species and tusks of *Elephantidae*, *Suidae*, *Hippopotamidae* species into the fully functional tool they are designed to be by nature.
- This development is not dependant on the quality of the horn- or tusk substance, which might differ in individuals. The often-propagated ageing on tooth wear does not take into account the differing qualities of the tooth substance, which unquestionable exists. It is based on wear, the amount of which to a considerable extend is dependant on the quality of the tooth substance. Moreover the amount of tooth wear varies with terrain, nature of fodder and rainfall cycles.
- The proposed ART Measuring System therefor appears to be based on the more reliable ageing criteria during the stages “immature”, “prime” and “past prime”, which form the base for responsible selection in order as not to interfere with the genetic sustainability if the hunted species.

B. THE MEASURING METHODS

- (a) *Tragelapus* species (kudus, nyalas, bushbuck, sitatunga, bongo)
 - The length, from the lowest point at the base, along the ridge, thus following the spiral and the circumference of both horns are measured and the measurements noted
 - Only the longer horn is taken in account to establish the score. Of this horn the length and the circumference at the base, in centimetre accurate to one point after the comma, are added to establish the sum of measuring points (MP)
 - Now the age is determined and comes to bear in the following way
 - Immature - the trophy is disqualified
 - Prime - the MP are multiplied by 1,0 to establish the score
 - Past Prime - the MP are multiplied by 1,12 to establish the score

B. THE MEASURING METHODS

- (b) *Taurotragus* species (eland)
 - The length, following the spiral, and circumference of both horns are measured and the measurements noted
 - Only the longer horn is taken in account to establish the score. Of this horn an additional age related measurement is taken, namely the length of the “twist-section” of the horn. Placing a steel cable over the tip of the horn and pushing the cable, always tightly surrounding the circumference, downwards, to establish this. As soon as light falls underneath a certain spot at the cable, the end of the “twist-section” is reached. This section now is measured, starting at the lowest point of the horn, following the spiral to the end of the “twist-section”
 - the length, the circumference at the base and the “twist-section”, in centimetre accurate to one point after the comma, are added to establish the sum of measuring points (MP)
 - Now the age is determined and comes to bear in the following way
 - Immature – the trophy is disqualified
 - Prime– the MP are multiplied by 1,0 to establish the score
 - Past Prime – the MP are multiplied by 1,12 to establish the score

B. THE MEASURING METHODS

- c) *Kobus, Redunca, Pelea, Damaliscus, Gazella, Aepyceros, Litocranus, Ammodorcas* and *Antidorchas* species (waterbuck, reedbuck, rhebuck, topi and related, gazelles, impala, gerenuk, dibatag and springbok)
 - The length, from the lowest point at the base, along the middle of the horn, following the curve to the tip, and the circumference of both horns are measured and the measurements noted
 - Only the longer horn is taken in account to establish the score. Of this horn the length and the circumference at the base, in centimetre accurate to one point after the comma, are added to establish the sum of measuring points (MP)
 - Now the age is determined and comes to bear in the following way
 - Immature – the trophy is disqualified
 - Mature – the MP are multiplied by 1,0 to establish the score
 - Old – the MP are multiplied by 1,12 to establish the score

B. THE MEASURING METHODS

- e) *Alcelaphus* species (Hartebeests)
 - The length, from the lowest point at the base, along the middle of the horn, following the curve to the tip, and the circumference of both horns are measured and the measurements noted
 - Only the longer horn is taken in account to establish the score. Of this horn an additional age related measurement is taken, namely the length of the “ornament ring-section” of the horn. To establish this the length from the lowest point of the horn, following the curve to the middle of the last prominent “ornament ring” behind the sharp backward bend of the horn is measured
 - The length, the circumference at the base and the “ornament ring-section”, in centimetre accurate to one point after the comma, are added to establish the sum of measuring points (MP)
 - Now the age is determined and comes to bear in the following way
 - Immature – the trophy is disqualified
 - Mature – the MP are multiplied by 1,0 to establish the score
 - Old – the MP are multiplied by 1,12 to establish the score

B. THE MEASURING METHODS

f) *Synceros* species (buffalo)

- Like with all other horned animals the actual horn growth is measured, rather than some subjective lines like spread, tip to tip, etc.
- The length of both horns and the breadth of the boss is measured and noted. To establish the score only the longer horn is taken into account.
- To establish the starting point for measuring the length of the horns a right angle with a horizontal axis of 10cm in length is placed in such way that the vertical axis rests on the extension of “middle suture” of the skull between the horns. Without altering the alignment the right angle now is moved upwards and towards the horn until both legs touch the horn. Now the angle is bisected. Measurement starts at the point of intersection and follows the curve of the horn along the lower edge to the outside and from there to the tip.
- The breadth of the boss at the broadest place in a straight line across the horn, following the arch is measured
- The two measurements are added to give the MP
- Now the age is determined and comes to bear in the following way
- Immature - the trophy is disqualified
- Mature - the MP are multiplied by 1,0 to establish the score
- Old - the MP are multiplied by 1,12 to establish the score



B. THE MEASURING METHODS

- g) *Connochaetes* (Wildebeest)
 - The length and circumference of both horn is measured and noted. To establish the score only the longer horn is taken into account.
 - To establish the starting point for measuring the length of the horns a right angle with a horizontal axis of 10cm in length is placed in such way that the vertical axis rests on the extension of “middle suture” of the skull between the horns. Without altering the alignment the right angle now is moved upwards and towards the horn until both legs touch the horn. Now the angle is bisected. Measurement starts at the point of intersection and follows the curve of the horn along the lower edge to the outside and from there to the tip.
 - The length and the circumference at the base of the longer horn, in centimetre accurate to one point after the comma, are added to establish the sum of measuring points (MP)
 - Now the age is determined and comes to bear in the following way
 - Immature – the trophy is disqualified
 - Mature – the MP are multiplied by 1,0 to establish the score
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B. THE MEASURING METHODS

- h) *Cephalopus, Sylvicapra, Neotragus and Nesotragus, Madoqua, Dorcatragus, Raphiceros, Ourebia, and Oreotragus* species (duikers, pygmy antelope, dik dik, beira, steenbok and grysbok, oribi and klipspringer)
 - The length, from the lowest point at the base, along the middle of the horn to the tip, and the circumference of both horns are measured and the measurements noted.
 - Only the longest horn is taken into account. An additional age-related measurement is taken, namely the “sock-section”. To establish this the length of the “sock” from the lowest point of the horn upwards to the thickest point of the “zenith-area”
 - The length, the circumference at the base and the “sock-section”, in centimetre accurate to one point after the comma, are added to establish the sum of measuring points (MP)
 - Now the age is determined and comes to bear in the following way
 - Immature – the trophy is disqualified
 - Mature – the MP are multiplied by 1,0 to establish the score
 - Old – the MP are multiplied by 1,12 to establish the score

B. THE MEASURING METHODS

- i) *Phacochoeros*, *Potamochoeros* and *Hylochoeros* species (African wild pigs)
 - The length of the longer tusk and circumference at the thickest point in centimetres are added to give the measuring points
 - Now the age is determined and comes to bear in the following way
 - Immature – the trophy is disqualified
 - Mature – the MP are multiplied by 1,0 to establish the score
 - Old – the MP are multiplied by 1,12 to establish the score

B. THE MEASURING METHODS

- j) *Loxodonta* species (elephants)
 - The weight of the heavier tusk in Kg with decimal points gives the measuring points
 - Now the age is determined and comes to bear in the following way
 - Immature – the trophy is disqualified
 - Mature – the MP are multiplied by 1,0 to establish the score
 - Old – the MP are multiplied by 1,12 to establish the score

B. THE MEASURING METHODS

- k) *Panthera*, *Acinonyx* and *Hyaena* and *crocuta* species (Large cats and hyena)
 - The length and width of the skull in Cm are added to give the measuring points
 - Now the age is determined and comes to bear in the following way
 - Immature - the trophy is disqualified
 - Mature - the MP are multiplied by 1,0 to establish the score
 - Old - the MP are multiplied by 1,12 to establish the score