



Rowland Ward's Measuring Handbook

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*This handbook gives specific instructions for individual methods of measurement for big-game trophies; these instructions will also let you assess if your trophy meets the minimum to be included in Rowland Ward's Records of Big Game. Before reading the individual methods of measurement, please refer to the General Instructions and Guiding Principles in the very beginning of this handbook, for these must be adhered to for each entry. The **RIGHT** way to measure is shown in **Blue** and the **Wrong** way to measure is shown in **Red**. All methods are on separate pages to allow the user to print out individual sections.*

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• Conservation and Hunting •

Rowland Ward Ltd.'s Guiding Principles

There can be no doubt that the world's wilderness areas and its wild inhabitants are under unprecedented pressure from a modern world dominated by humans. Hunters play an absolutely vital and often completely misunderstood role in the preservation of habitat and species, whether they be game animals or otherwise.

As hunters, we must actively seek the best possible image for our sport, and we must always act in a manner that will further the principles of sound conservation. These include the protection of habitat and the promotion of an understanding between the local indigenous people and the animals and fauna that live in proximity to these people. We must also encourage our fellow hunters to behave in a similar manner.

Rowland Ward encourages and promotes sound conservation practices and fair-chase hunting, especially in regards to the management of wildlife and their habitat. While fair-chase hunting may have different meanings in various regions of the world, Rowland Ward believes that sound game management and fair-chase hunting are very closely interrelated, and Rowland Ward will do its utmost to promote both equally wherever possible.

Rowland Ward understands that modern game management often means game-proof fencing so that animals will not come into conflict with humans. Hunting within game-proof fences is acceptable if it promotes the general well-being and conservation of both the habitat and the species enclosed. For enclosures to be acceptable to RW, they must contain self-sustaining, breeding populations that can feed themselves from naturally occurring vegetation and prey without continual supplemental feeding by humans. They shall provide enough acreage and vegetation that animals can easily hide from humans and predators alike, and they must offer a hunting scenario whereby the outcome of obtaining a certain animal is by no means guaranteed.

Animals that are released solely for the purpose of hunting them shortly thereafter will not be accepted for entry into our record book. Any animal shot in an enclosure that lacks adequate food and acreage to maintain a population is not eligible for entry into our record book. Entries of predators and buffaloes from self-sustaining fenced populations are acceptable only if they naturally breed on such properties. Supplemental release of male buffaloes or predators into a game-proof fenced property for hunting purposes will preclude these predators and buffaloes from inclusion into *Rowland Ward's Records of Big Game*. Non-native introduced or "exotic" animals are accepted if (a) in sufficient large populations and (b) if a hunting license is required. They must comply with the rules listed above.

Color variations of species in certain animal populations and in particular regions have been naturally occurring probably since the dawn of time. Rowland Ward, in fact, has several categories that are, by and large, based on naturally occurring coloration-only differences, such as the Angola impala. However, Rowland Ward will not establish a separate color-based category for animals that are specifically bred for their color.

Rowland Ward Ltd. does not accept darted animals. While darting may in certain cases serve scientific purposes and aid in translocations, by and large it is very difficult to ascertain when this is so. It is generally considered ill-advised to dart an animal repeatedly over relatively short periods of time.

Rowland Ward will not accept animals that have been chased by mechanical vehicles from which subsequently shots were taken. While a vehicle is needed for most forms of transport in the modern world, Rowland Ward expects hunters to stalk animals on foot. The one and only exception is for those hunters who are handicapped and, thus, are physically prevented from stalking game on foot.

Rowland Ward will only accept trophies that are shot legally and in accordance with the game laws and the fair-chase, ethical practices of the country and locale where they were obtained. Rowland Ward fully accepts that hunting practices vary enormously from country to country and continent to continent. For example, using dogs to hunt predators is accepted widely in the Americas, yet it is often not legal in parts of Africa. In all cases, the local laws and practices must be adhered to in order for a trophy to be accepted for entry into *Rowland Ward's Records of Big Game*. There is a caveat, however. The editors of the record book will not accept animals shot from or with the aid of a helicopter or airplane, nor will they accept animals shot with the aid of a remote control airborne drone. Such behavior is prohibited in North America, and for the editors of the record book, these rules supersede any game laws that may exist in other parts of the world where, because of the absence of laws, this practice could be legal.

Rowland Ward's record book honors the animal, and as such no distinction is made based on how the animal was obtained: on a sporting license, a picked-up head, a head shot by government hunters, or an animal taken by poachers. Heads taken from poachers will only be accepted in the record book if they are entered under the auspices of a proper authority, such as a wildlife/game department and if this authority was in legal possession of the animal. Names of poachers are, for obvious reasons, never listed.

No hybrid animals will be accepted unless such animals have a natural hybridization zone in a completely free range, such as the Armenian mouflon and the Transcaspian urial. In such cases the editors may choose to establish a separate category for such animals, in this case the red sheep, or they may choose to enter the hybrids into the category of the larger scoring subspecies from which it was derived.

• General Measuring Instructions for Entering Trophies in *Rowland Ward's Records of Big Game* •

1. Only trophies measured by Rowland Ward Official Measurers will be accepted for publication in *Rowland Ward's Records of Big Game*. Only a measurer may fill in the measurement information on the entry form, and the measurer that measures the trophy must be the person who signs the form. It is the responsibility of the trophy owner to transport the trophy to the measurer. We ask that you please be considerate of the measurer's time. Measurers will not charge for their services and hunters/owners must not offer any form of compensation to a measurer for performing his duties. A trophy entry fee is charged by the publisher to cover the publication costs of the entries.

Measurers may not measure their own trophies if such a trophy falls in the Top 10, based on the entries of the latest edition of *Rowland Ward's Records of Big Game*. A measurer may not measure a Top 10 trophy where the measurer has an association with the hunter/owner of the trophy. Association shall include client, guide, outfitter, family member, booking agent, business associate, and so on. In other words, there may be absolutely no conflict or potential conflict of interest when measuring a Top 10 trophy for entry into the record book.

2. Before commencing a measurement, the measurer shall ask the owner if the trophy was previously scored by another Rowland Ward measurer. The measurer shall keep a copy of each filled-out and signed entry form. In rare instances the editors may ask the measurer for verification of the entry. The hunter or owner shall not ask a second measurer to re-measure the same animal unless he has sought permission from the editors. If a hunter feels that a measurer has measured an animal incorrectly, he/she must return to the measurer and express his concerns and state why he feels the animal deserves to be re-measured. In all cases, the measurer shall decide whether to do so. Seeking re-measurement of a trophy without permission may disqualify it for the book, but in any case, only the lowest-scoring total that was obtained by such activities will be accepted.
3. When submitting a trophy to the editors, it is assumed that such a trophy was legally hunted or legally acquired. The editors reserve the right to ask for official paperwork that shows the trophy was legally hunted or legally purchased. If such paperwork is not forthcoming in a timely manner, the animal will not be entered in the record book. No refunds of the entry fee will be given in such cases. Should the editors discover that a previously listed trophy was not legally hunted/obtained, it will be removed and, again, no refund will be given.
4. For all horns, antlers, tusks, and skulls, a minimum period of 30 days must elapse between the time the trophy is shot and the trophy is measured. In that time frame the natural shrinkage of horns, tusks, and antlers is mainly complete. All rhinos must be measured after a 60-day drying period. Trophies may not be kept in any artificial conditions to prevent natural shrinkage during this period. As a special note, elephant tusks weighed in the field are not accepted for entry into the record book; the 30-day drying-out time applies here as well.

5. Each animal must be entered on a separate order form. Only the most recent entry forms, which are found on rowlandward.com, may be used.
6. Acceptance by the editors of an entry form carries no guarantee of publication. Entry fees will not be refunded if information entered is false or incomplete and, thus, potentially causes a lot of extra work for the editors.
7. All measurements must be taken with a steel tape, steel cable, or steel calipers. For very small antlers and horns, a narrow strip of sturdy paper may be used to measure base circumferences. Method to employ: Wrap the paper strip around the base and mark with a pen where one side meets the other. Lay the paper on a flat surface and measure the distance indicated.

Measurements must be taken in inches (2.54cm), and weights must be recorded in English pounds (454 metric grams or 0.454 kilo). Ivory is weighed in pounds; its weight should be recorded to the nearest pound. Weights falling at or above the half-pound mark are recorded at the next higher pound while weights falling below the half-pound mark are recorded at the next lower pound. Measurements can be done in the metric system but must then be converted in accordance with a standard conversion table.

Horn and antler measurements are best taken with a steel cable. All fractions must be recorded as eighths: $\frac{1}{8}$, $\frac{2}{8}$, $\frac{3}{8}$, $\frac{4}{8}$, $\frac{5}{8}$, $\frac{6}{8}$, $\frac{7}{8}$. Do not record in quarters: $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ please because using quarter-of-an-inch measurements cause mistakes during data entry. For skull measurements, dwarf antelopes, duikers, and Vaal rhebok, enter the measurements of these trophies in sixteenths: $\frac{1}{16}$, $\frac{2}{16}$, $\frac{3}{16}$, etc.

Linear measurements should be taken as follows: Measure to the nearest eighth of an inch except for skull measurements and very small antelopes, which should be taken to the nearest sixteenth of an inch; measurements of crocodiles are taken to the nearest quarter of an inch. Measurements falling at or above half the fractions indicated above are recorded at the next higher increment; measurements falling below the fractions indicated above are recorded at the next lower increment.

Field measurements of lengths of crocodiles should be taken at the time and place of the kill and should be attested to by the professional hunter or a witness and the hunter.

8. Every trophy entry form must show the exact locality where the trophy was bagged. Examples include the name of a nearby river, mountain range, or village. Also acceptable is the name of the hunting concession or its block number. The name of the country must always be given, and the place where the trophy was taken must be tied in with a geographical place name readily identifiable on Google or a standard map of the country. Only if the above cannot be ascertained, a location based on the compass quadrant system, e.g. southwestern Sudan, is acceptable. Incomplete measurement forms will be placed on hold until additional information is supplied to us.

9. In case the tip of a horn or antler has worn unevenly or the base of a horn is uneven, making it difficult to determine the starting or end point, a piece of carton or wood may be used to establish a straight edge. This straight edge is used to establish the end point. This is referred to as “carding off.” This straight edge must always be at a 90-degree angle to the axis of the horn. See individual methods for more details on carding off.
10. No measurements will be accepted for damaged and repaired trophies unless the measurer is absolutely certain that such repairs have not added to the measurements. In all cases, repaired trophies must be noted on the entry forms. Special care must be taken with split skulls, and the measurer must be completely satisfied that the splitting of the skull did not increase any dimension.
11. When recording an abnormal, malformed, perceivably unbalanced, or freakish set of antlers, teeth, tusks, or horns, all official measurers should refer the trophy to the editors for a decision, along with appropriate guiding data and photographs. All such trophies must be noted on the entry form and must be reported to the editors at the time of submission. Examples include hippos with no upper incisors, roe deer with exceptionally thick skulls, or deer with grossly malformed antlers (double bases), which occur because of injury or disease. With swine especially, the upper incisors must be present in the normal place and in normal shape for a measurement of the lower tusks to be acceptable.
12. Animals from zoos, circuses, and other enclosed populations are not eligible for inclusion. In the past the *Rowland Ward's Records of Big Game* has accepted such animals on a limited basis, and we have retained them in the records for historical purposes.
13. Pick-up trophies are acceptable from all categories listed in *Rowland Ward's Records of Big Game*. Pick-ups for which the location cannot be determined with certainty are not eligible for inclusion. Acceptable if hunted
14. Antlers in velvet of any deer species, which includes caribou and moose, will not be accepted.
15. Official scorers shall never measure live animals under any circumstances.
16. All measurements are given for the left or right antler, tusk, and horn of the animal. To determine which is the right or left of an animal do this: When standing behind an animal, the left of the animal is on the person's left and the right of the animal is on the person's right side; when standing in front of the animal, the animal's right antler is at the person's left side and the animal's left side is on the person's right side. Make sure the data filled in on the entry form reflect this.
17. Only completely clean skulls will be measured. No partially cleaned skulls or skulls with flesh, fat, and pieces of hide will be measured.
18. The minimum dimensions listed for the acceptance of trophies for entry into the record book may be modified at any time at the discretion of the editors.

19. The Rowland Ward record book is published every four to five years; the latest edition was published in November 2019. Normally entries are accepted up to six months before the publication deadline. Please send in your entries early, for should there be any omissions, mistakes, or unclear data on entries submitted right before the deadline, your trophy's entry will likely miss the deadline for that edition.
20. Ordering a certificate, a plaque, or other Rowland Ward products may be done on the entry form, which is downloadable from rowlandward.com. Unless the animal was previously recorded, an order for a certificate and/or plaque will only be accepted with a paid entry for the record book. Certificates are available digitally as well as in a paper format.
21. New categories will be considered for native game animals. New categories shall comply with Rowland Ward's Guiding Principles. The editors will keep both scientific and hunter's traditional categorizing of species and subspecies in mind when making decisions. The editors of Rowland Ward will also consider categories for non-native game ("introduced" or "exotics") if they adhere to the rules laid out here in Rowland Ward's Guiding Principles and if they comply with the following: (1) There must be at least five approved entries before a category is opened; (2) no non-native dangerous game animals will be accepted; (3) non-native game animals submitted for the entry must come from a self-sustaining breeding population and not from behind a game-proof fenced area.
22. All entries submitted and paid for can be considered as accepted and will be published in the next edition as long as (1) the minimum as posted on rowlandward.com is equaled or surpassed, (2) if you have completed the entry form completely, and (3) you have received no notification from us asking for additional information.
23. Should an animal be remeasured for whatever reason, please clearly state so on the entry form in the comment section. These are the only legitimate reasons for re-: (1) a method was changed and you are submitting the same trophy under a new method, (2) the trophy is already listed but the name of the owner has changed, and (3) a second measurement is necessary for a top 10 trophy. All other trophies should be new measurements.
24. Clear, focused side- and front-view photographs should accompany an entry form in the following instances: (1) all Top 10 entries; (2) all duikers; (3) dwarf buffaloes; (4) Angola or back faced impalas; (5) all dwarf antelopes; (6) bonteboks (back of the horns, front facial, and rump photo); (7) Robert's, Bright's, and Peter's gazelles (side and front facial and rump photo); (8) white-eared kobs. All such photos shall be "in the field" photos. Digital photos must be a minimum of 300DPI (12 dots per mm) or 2100 x 1500 pixels.

25. *Rowland Ward's Records of Big Game* has been divided into the following four geographical regions for record-keeping purposes.
- I. North and South America, which includes all of the Canadian Arctic and Greenland. All Islands found in the Pacific east of the International Date Line.
 - II. Africa, which includes Madagascar and Mauritius.
 - III. Europe and Asia, which includes Iceland, Svalbard, all of the Russian Arctic west of the International Date Line.
 - IV. Oceania, which includes Australia, New Zealand, New Guinea, New Caledonia.
26. While we prefer digital submissions, physical entries may be sent to Rowland Ward, 15621 Chemical Lane, Huntington Beach, California, 92649, USA. Scan the entry form or use a PDF form that can be filled in online and submit it to info@rowlandward.com.

Method 1 Deer (yet to come)

Method 1-a through 1-j, round antlered deer, (yet to come)

Method 2 Caribou and Reindeer (yet to come)

Method 3 European and Persian Fallow Deer

Rank on a Cumulative Score of the Lengths (L) and Circumferences of the Main Beams (C1), the Heights (H) and Widths (W) the Palms, Inside Span (F), and the Score of the Number of Tines (one point per tine).

General remarks: All large, mature fallow-deer bucks have palmation or a tendency to form such. This is a much-prized quality for hunters. On very rare occasions a (partial) double palm may occur in some individuals. As noted in General Instructions, all out-of-the-ordinary trophies should be noted on the entry form and be well documented, and the same applies here.

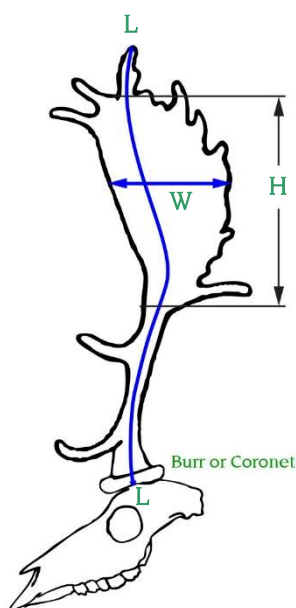


Figure 1

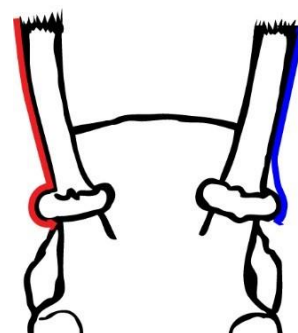


Figure 2

1. Length. Measure the length of each antler on the outside curve from the lower edge of the burr (coronet) to the tip of the main antler. (Figure 1, L) Start to measure on the side of the burr at the lower edge, on the point that lies between the eye socket and the ear canal. In some cases a deer burr will hardly be any more in circumference than the main beam; in others it protrudes significantly like the top part of a cork of a champagne bottle. If the burr protrudes outward from the main beam, the tape measure must not be pressed into the 90-degree corner where the burr meets the beam; rather the tape measure must span this distance by forming an air gap. (Figure 2)

Follow the natural curve on the center of the beam first and then stay on the center of the palm. (Figure 1) The center of the beam/palm can be found by measuring the width two or three times from top to bottom and marking the center with a pencil. The tip is that tine that protrudes farthest and, thus, creates the highest score. (Figure 1, L) In many cases that tine is the foremost point on the top of the palmation, but sometimes the tip can be a tine toward the front or rear. Only when the tape nears the top of the palm should you divert from the centerline of the palm; at that point, go to the center of the longest tine and follow it to the end.

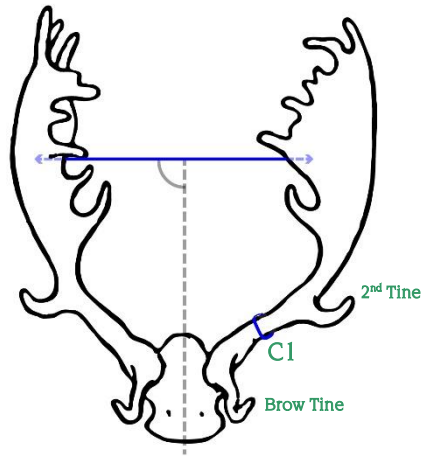


Figure 3

2. Circumference. Measure the circumference of each antler at the smallest point between the brow tine and the second tine. (Figure 3, C1) This can be anywhere between these two tines. In some cases, fallow buck may have additional antler growths or protuberances (tines) in this area and several measurements will have to be taken to find the smallest circumference.

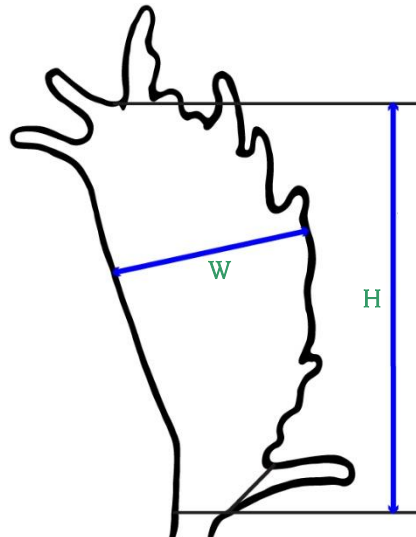


Figure 4

3. Height. Measure the height of each palm on the outside of the antler from the point where the palm broadens to the furthest indentation between the tines on the top of the palm. (Figure 1, H) The lower point of this measurement should be taken where the first tine on the back of the palm starts. Note in Figure 4 where the tine has been marked off by a line. To do this, lay the tape along the palm as though the tine does not exist. Draw a line along the edge of the tape with a pencil. Draw along the edge that is closest to the palm. The lowest point of this line is the start of the height measurement.

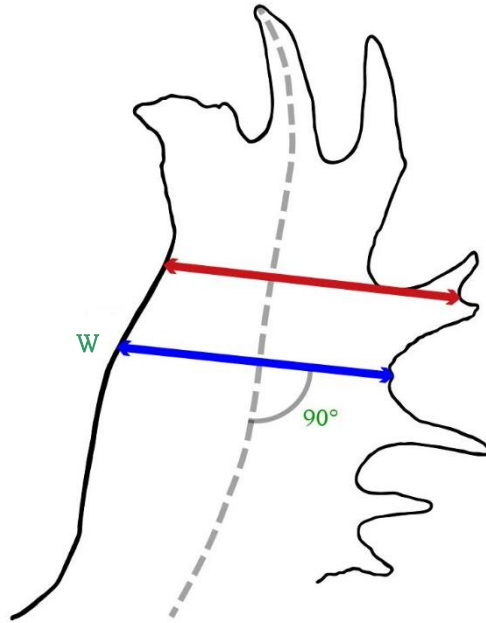


Figure 5

4. Width of Palm. Measure the width of each palm on the outside of the antler at the widest place between protuberances; the measurement must be taken at a 90-degree angle to the axis of the palm. In this case the greatest score is to be sought, so again several measurements must be taken. Be careful: Do not measure between two tines that have a common base. See red line (wrong) and blue line (correct) in Figure 5.

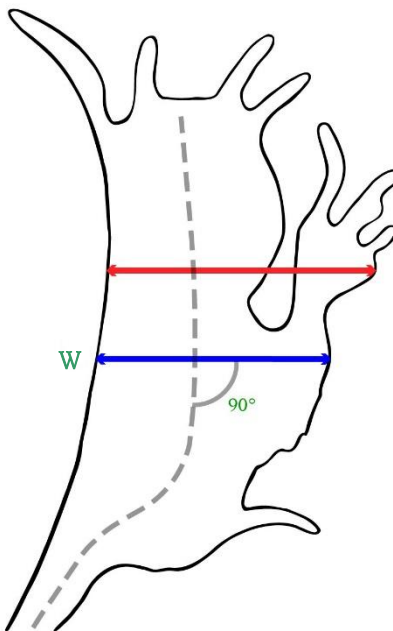


Figure 6

Some fallow deer have very deep “splits” between two tines in the palmated area that, in fact, may make it seem as though the buck has two palms. A measurement of palm width must always be over antler material and must never span any air gaps. A “bridge” found between such tines cannot be spanned to count toward the total width of the palm. See red line (wrong) and blue line (correct) in Figure 6.

5. Count the Number of Tines. Count all tines of 1 inch (2.5 cm) or more in length, include the tip of the main antler. To count as a point, a tine must have a length that is equal to or greater than its base.

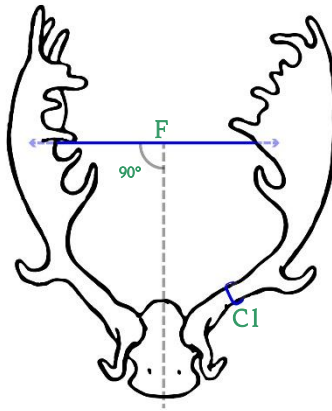


Figure 7

6. Inside Span. Measure the widest inside span of the palms at a 90-degree angle to the long axis of the skull. It can be taken anywhere as long as it does not start or end on a tine; i.e. it must start and end on the palmations. Remember also that the measurement must not only be taken at a 90-degree angle to the long axis of the skull but also parallel to a line drawn through the left and right eye sockets of the skull. In other words, the span cannot be taken by starting on the rear end of the left palm and ending on the front edge of the right palm. (Figure 7, F)

Method 4 Moose

Method 4-a Palmated Moose (yet to come)

Method 4-b Cervine Moose (yet to come)

Method 5 All Pigs and Hippopotami

Rank on the Length of the Longest Tusk.

General remarks: Note that the tusk must be removed from the jaw before being measured. (Figure 1) In most cases, this can be done easily once the skull has been boiled and cleaned. Note all tusks should be measured in $\frac{1}{16}$ of an inch. In rare cases, pigs and hippos may have multiple incisors growing from the same cavity in the jaw; if this occurs, only the longest tusk is to be measured. In all cases, the longest tusks will be those of the lower jaw. The babirusa, giant forest hog, and warthog are the exceptions.

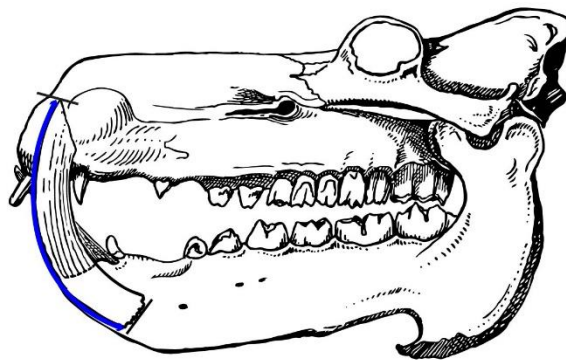


Figure 1

In the typical category, Rowland Ward will only accept swine and hippos that have all their upper and lower incisors in their natural places; all tusks and jaws must be uninjured and must show normal wear and positioning in the jaws. An injured tusk or missing tusk can make the opposite tooth grow to extraordinary lengths in swine and hippos because there is nothing to check its growth. If there is anything that enhances the natural normal length of a tusk, this must be noted on the submission form.

If the injury is natural, the animal will fall in the atypical category, which has a separate minimum. Note atypical categories are only created if there are enough entries to support an atypical category—hippo is a good example. If there are not sufficient entries, the animals will be listed in one table.

Any manipulation by humans to increase the growth of teeth will disqualify the animal from the record book. Since these cases are very hard to judge once the teeth have been removed from the skull and have been cleaned, the editors advise all hunters to submit very carefully detailed information on any injured or noninjured pig or hippo that has a very large score. Photos must be submitted, and without them the editors will assign the trophy to whichever category (typical or atypical) seems the most appropriate. The editors will reject the entry if the situation is unclear. Note that Rowland Ward will contact the people involved in the hunt in order to make a fair judgment on the eligibility of the submission; consequently, an email address and a phone number for the guide should be included on the submission form in case a tusk of large length is submitted. All decisions made by RW will be final, and it is up to the hunter and the guide to prove the eligibility of a naturally injured animal that is to be listed in the atypical category.

In case of babirusa pigs, all four tusks shall be measured. (Figure 5)

1. Length. Measure the length of the two longest tusks on the outside curve from the base to the tip. (Figure 2, L). Start the measurement at the base in line with the furthest projection of the tusk's ending; this is determined by drawing an imaginary line at a 90 degree angle to the axis of the tusk along the tip of the furthest projection. (Figure 4) Many tusks are very worn off (or broken) if this is so they must be carded off. The tape must not bend around to reach the tip. (Figure 3) (See "carding off" in General Instructions.)

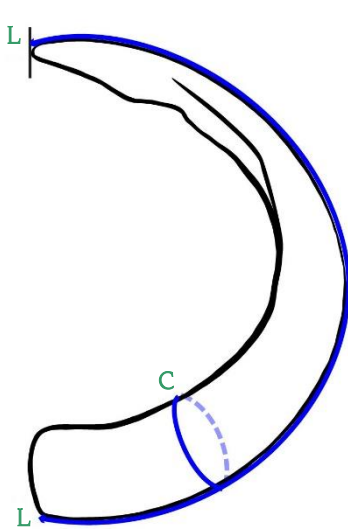


Figure 2

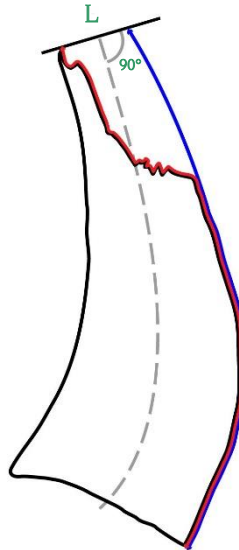


Figure 3

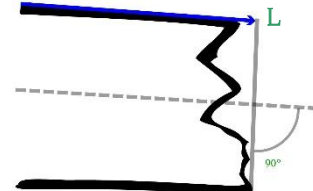


Figure 4

2. Circumference. Measure the circumference of each of the longest tusks at its largest point and at a right angle (90 degree) to the axis of the tusk. (Figure 2, C) Typically this is somewhere between the gumline and the halfway point on the tooth. If there are any grooves in the teeth, the tape measure must span the grooves; the tape measure must not be pressed into any depressions.

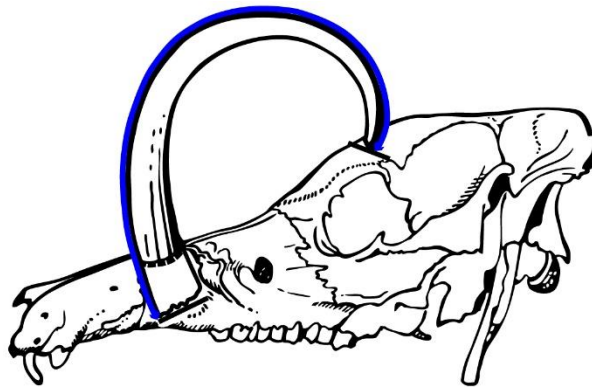


Figure 5 Babirusa (For clarity, only one of four tusks is shown)

Method 6 Walrus, Water Deer, and Musk Deer

Rank on the Length of the Longest Tusk.

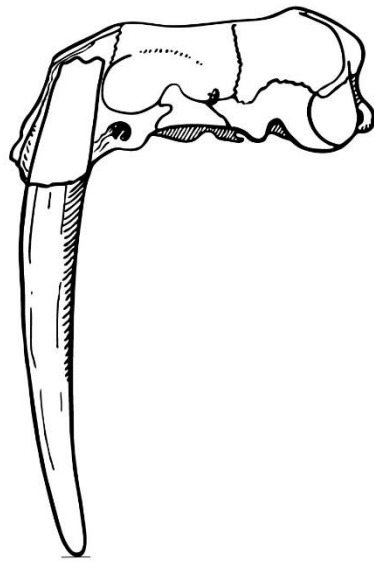


Figure 1

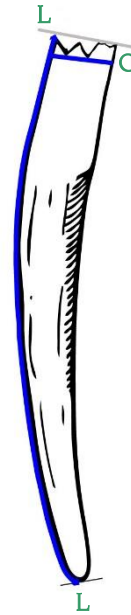


Figure 2

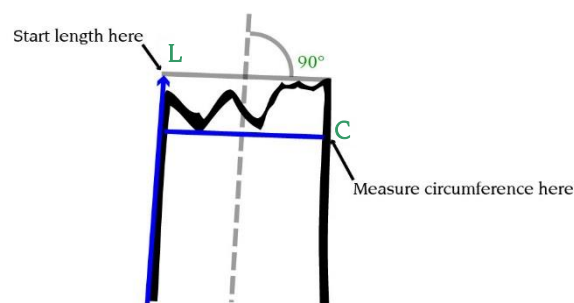


Figure 3

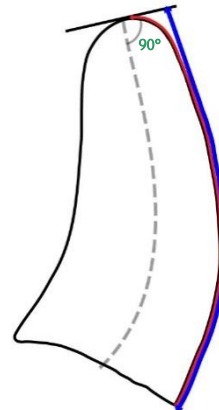


Figure 4

General remarks: Traditionally, walrus trophies have been measured by length and circumferences, and RW did so as early as 1898. If measuring methods could be reset, it might be more equitable to measure the tusk by weight as is done for elephants. That way it would take into account the nerve hollow and the density of the ivory, something length and circumferences cannot do. However, historical records cannot be converted, so we will continue to rank on the measurements of length and circumference.

Mounts of walrus hide a significant part of the tusks. Early mounts tended to incorporate the skull; Figure 1 illustrates how far a tusk can rest inside a skull. Tusks must be removed in order to measure them. Unfortunately, this sometimes means the mount must be damaged to do so. If the tusks cannot be removed, only the visible part of the tusks should be measured. This **MUST** be noted on the entry form in the remarks section. Two further observations for such cases: (1) The circumference measurement must be taken at the mounted lip, so be sure to do so at a 90-degree angle to the axis of the tusk, and (2) many

walrus mounts have their tusks “extended” so that they are not placed as deeply in the skull as was the case naturally. While obviously the entire length cannot be measured, the “lost” part inside the mounted head is often not nearly as great as imagined.

RW measurers also must keep in mind that remarkably natural-looking artificial tusks have been produced. These can look so real that when mounted they can be very difficult to detect as artificial. When in doubt, examine the upper edge of the tusks (where the nerve hollow is) because the artificial material will be easily recognizable. Note that this applies only to loose tusks. When in doubt, use a heated sharp metal pin to see if it will penetrate the tusk; if so, it is made of a form of plastic. Only do this with permission of the owner. It goes without saying that artificial tusks cannot be measured no matter how faithful their measurements are purported to be to the original set.

1. Length. Measure the length of the upper tusks on the front (longest) curve. (Figure 2, L) Walrus tusks do not end in a 90-degree cut like on a metal pipe but rather have jagged edges very much like elephant and hippo ivory. For the purposes of the length measurement, a line should be drawn that is at a strict 90-degree angle to the axis of the tusk along the highest point of any ending on the tusk. (Figure 3) From this line one must measure the length to the tip. Many walrus’s tusks are very worn off (or sometimes broken) if this is so they must be carded off (Figure 4)

2. Circumference. Measure the circumference of the tusks at the base at a 90-degree angle to the axis of the tusk. The tape may not bridge any air gaps over the jagged end of the tusk. If there are any grooves in the teeth, the tape measure must span the grooves; the tape measure must not be pressed into any depressions. (Figure 3)

In the case of water and musk deer, (Figure 5) the circumference of the tusks will be below 2 inches (5cm). They are so small that they cannot effectively be measured by a steel tape because the metal will not easily make a small enough circle. When forced, it will damage the tape and render an inaccurate result. Here the “Two Inch Rule” applies: Any circumference of 2 inches or less can be taken with a cloth, polyester, or vinyl tape measure. This rule applies ONLY for circumferences of 2 inches or less. Nowhere else may a soft tape measure be used under the RW system.

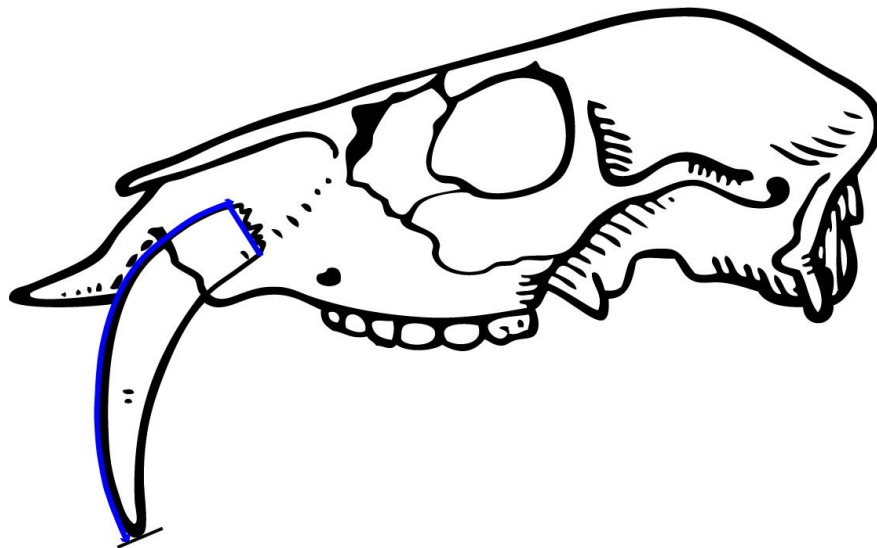


Figure 5

Method 7 All African and Asian Antelopes and Gazelles with Simple, Non-spiraled Horns

Rank on the Longest Horn.

General remarks. Because Method 7 encompasses the greatest number of species of any Rowland Ward method, the detailed measurement descriptions are necessarily longer than the other methods. For ease of use, we have divided the animals to be measured using Method 7 into sections that correspond to the various classes of animals. Make sure to use the correct graphics and correct text for each animal group, for these will display subtle differences in the measuring process. Method 7 is broken down in three subcategories:

Method 7-a Damaliscs; Duikers; Dwarf Antelopes; Gazelles; Hartebeests; Impalas; Kobs; Lechwes; Oryxes; Reedbucks; Rhebok; Roans; Sables; Waterbucks. (Note: African spiral-horned antelopes, blackbucks, and addaxes are measured under Method 8 and wildebeests under Methods 13-a or 13-b.) All antelopes listed above are recorded to the nearest $\frac{1}{8}$ of an inch except duikers; dwarf antelopes and Vaal rhebok are recorded to the nearest $\frac{1}{16}$.

Method 7-b Chamois; Chiltan Wild Goat (sometimes called markhor); Goral; Ibex (True and Spanish); Pasang/Bezoar/Sindh; Rocky Mountain Goat; Serow; Tahr; Western and Central Turs.

Method 7-c Aoudad; Bharal (Blue Sheep); Eastern Tur.

Method 7-a

General Remarks: In all cases, the grain of the horn should be followed from base to the tip. Not following the grain will lead to mismeasurements. Use a pencil and or masking tape to mark the line of the grain at intervals along the axis of a curving horn. This will aid in producing an accurate measurement. A steel cable must be used on curving and curling horns because it is the only accurate way to measure these trophies. Do not use a steel tape nor a soft (vinyl) tape as it is almost impossible to keep the steel tape measure on the horn while also following the grain of the twisting horns and a soft tape can be pressed into depressions too easily. Even with two people doing the measuring, it is hard to keep the tape measure from shifting and buckling while following the contour of the horn.

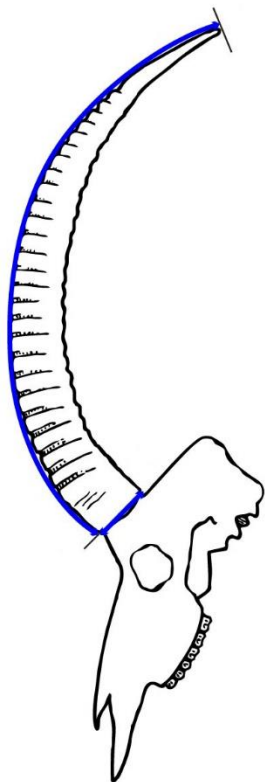


Figure 1 Roan

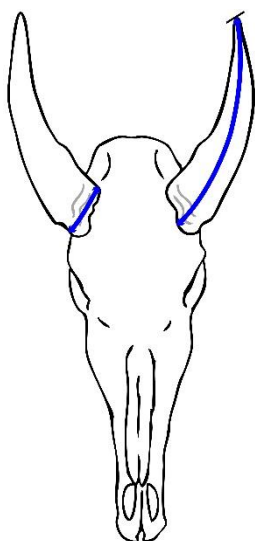


Figure 2 Nilgai

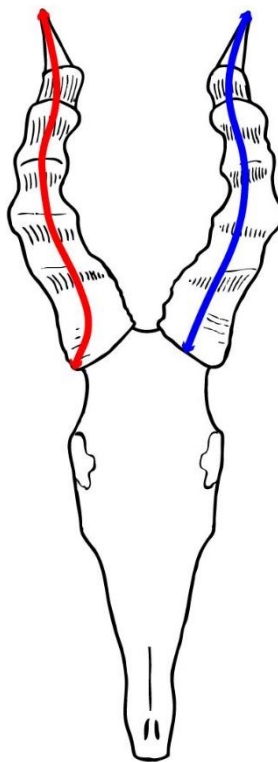


Figure 3 Hartebeest

1. Length. Measure the length of the each horn on the front curve (in the center of the horn) from the lowest edge of the base to the tip. (Figure 1, 2, 3) If the tip is broken and the tape does not come to the end of the horn before the break starts, the broken or worn end must be carded off. (See carding off in General Instructions.)

In order to cover the great many animals under this method, we have divided 7-a into sections in order to make clear the differences and to point out the possible mistakes that can happen for each group. Please read through all of them before measuring because some animals fall into more than one group.

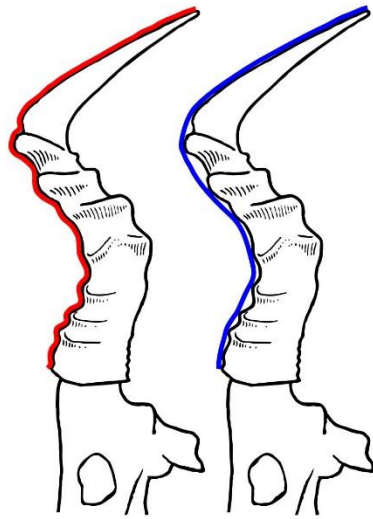


Figure 4 Hartebeest

Horns with knobs or ribs such as hartebeests and Grant's gazelles: Some antelopes and gazelles have relatively smooth horns, but others are deeply ribbed or have knobs; these include Grant's gazelles, sables, and hartebeests. The tape measure/cable must go from the top of one rib/knob to the next and must not be pushed into a "valley." (Figure 4) Start at the base of the horn at the front and end the measurement at the tip. The blue line in Figure 4 shows the correct way to span the knobs, and the red line demonstrates the incorrect way to measure the length of a horn. Follow the grain and use a steel cable for horns that turn and curve.

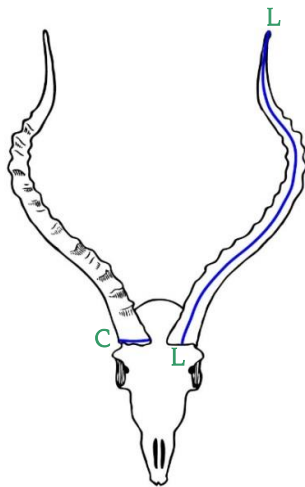


Figure 5 Impala

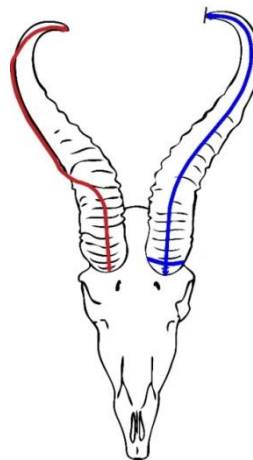


Figure 6 Springbuck

Antelope with bell-shape or curving and turning horns such as springboks, impalas, etc.: Care must be taken to keep with the grain of the horn on springbucks, Soemmerring's gazelles, some reedbucks, and kobs that have outwardly curving horns or bell-shape horns. When you start at the front center of the horn and then gradually follow the horn, it is easy to slowly slide off to the outer curve of the horn rather than staying on the front. If you do so, you will no longer be following the grain. This is the wrong way to score your trophy. (Figure 6) This common mistake in measuring, especially for springboks, mistakenly increases the score. Do not do this. The blue line shows the correct way of following the grain, and the red line demonstrates the incorrect way. Use a cable for measuring the length of horns of this group.

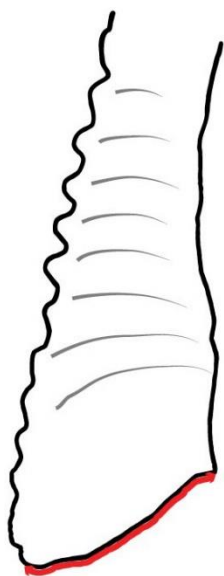


Figure 7

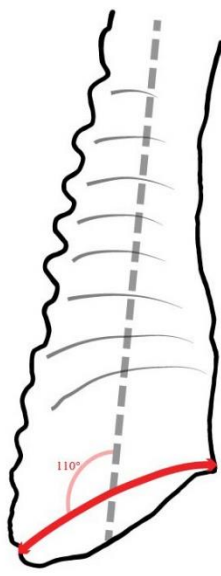


Figure 8

2. Circumference. Measure the circumference of the base of each horn in a continuous loop at a 90-degree angle to the axis of the horn. Note that all bases of category 7-a animals must be measured as close as possible to the horn base at a 90-degree angle to the axis of the horn. This remains true even through, in rare cases, animals such as duikers may, in fact, have a larger circumference farther up the horn. (Figures 7 and 8)

Most horns at the base will not resemble a piece of water pipe that has been cut off at a 90-degree angle. To measure the circumference of your trophy, find the lowest point where the tape measure can circumscribe the horn without it stretching over any “air gaps” as it goes around. In some cases the horns may have valleys or deep grooves along the base of the horn. The tape measure must not be pressed into these grooves or valleys but must span from one high point to the next. Circumferences must always be measured in a continuous loop and at a 90-degree angle to the axis of the horn. (Figure 8) Do not “follow the border” by measuring along the outer edge of a horn and do not weave the tape measure up and down. (Figure 7) The tape measure must circumscribe a continuous and even circle. Only steel tapes may be used for circumference measurements. Unusually swollen, diseased, or malformed horns must be noted on the entry form.

If a head is mounted, do not measure any taxidermist materials; likewise, do not measure over hair or in places where you are not sure that horn exists. Guard against built-up bases; some heads have had their bases extended by 1 to 2 inches. Such materials must not be measured. Using a sharp, pointed small knife, probe the material at a point where the small puncture is less likely to be seen. If the substance can be penetrated, it is very likely manmade, taxidermist material; if you are unable to make a small puncture, it is very likely horn. If a clearly defined border between taxidermy materials on the bases and actual natural horn growth cannot be established such a head **CAN NOT BE MEASURED**. In case a horn tip has been enhanced the head cannot be measured under any circumstances because it is impossible to discern where actual horn stops and artificial materials start on tips.

Do not measure soft, “green” material. On all animals, only hard, “mature” horn may be measured. Keep this in mind: If the material won’t last when exposed to normal boiling and cleaning, it should not be measured.

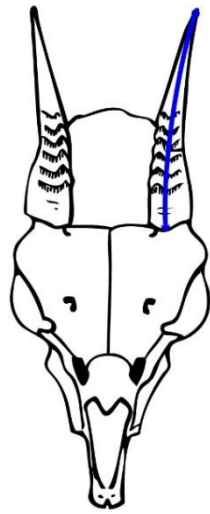


Figure 9 Dik-Dik

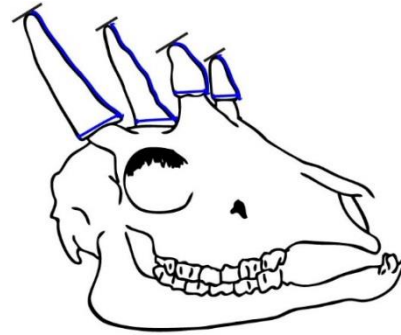


Figure 10 Four-Horned Antelope

Measure Duikers, Dwarf Antelopes, and Vaal Rheboks in $\frac{1}{16}$ of an inch: All animals in Method 7 are measured to the nearest $\frac{1}{8}$ of an inch; however, all duikers, dwarf antelopes (beira, dik-dik, grysbok, steenbok, klipspringer, oribi, Bates's pygmy antelope, suni, and royal antelope) and Vaal rheboks are recorded in fractions of $\frac{1}{16}$ of an inch.

Measuring the circumference for duikers, dwarf antelopes, and Vaal rheboks: Note that all bases under 7-a must be measured as close as possible to the horn base at a 90-degree angle to the axis of the horn even though, in unusual cases, duikers may in fact have a larger circumference farther up the horn from the bases. In some cases these small antelopes may have circumference of below 2 inches (5 cm) and they cannot be effectively measured by a $\frac{1}{4}$ -inch steel tape because the metal will not make a small enough circle easily, and when forced it will damage the tape and render an inaccurate result. Here the "Two Inch Rule" applies: Any circumference of 2 inches or less can be measured with a cloth, polyester, or vinyl tape measure. This rule applies ONLY for circumferences of 2 inches or less. Nowhere else may a soft tape be used under the RW system.

Four-Horned Antelopes or Chousinghas

In the case of the chousingha or four-horned antelope, measurements should be recorded as follows: length and circumferences of all four horns. Four-horned antelopes are ranked on their longest horn, which is normally the rearmost horn.

1. Length. Measure the length of the each horn on the front curve (in the center of the horn) from the lowest edge of the base to the tip. (Figure 10, A–B)

2. Circumference. Measure the circumference of the base of each horn at a 90-degree angle to the axis of the horn. (Figure 10)

Reedbucks

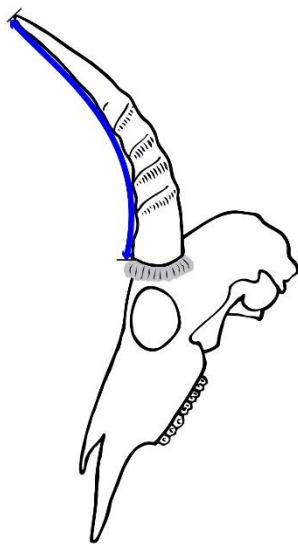


Figure 11 Reedbuck

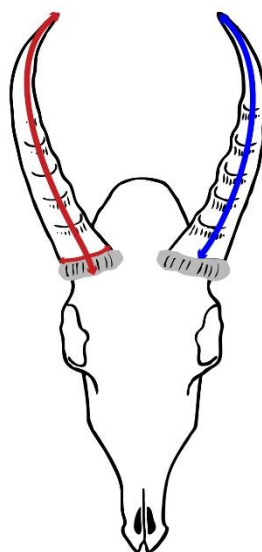


Figure 12 Reedbuck

All species of reedbucks, but especially the common reedbuck, form a pulpy section at the base of the horn. This soft material can easily be penetrated with the point of a knife. This is horn in formation but not hard horn, and it must not be measured. Probe the horn for soft material with a knife point; the demarcation between soft and hard horn will be the point where you start your measurement. (Figures 11 and 12) Most of the soft, green material will be removed during the cleaning process, but sometimes a leatherlike residue will remain. This should not be measured, so be careful where you place the tape measure at the start. A reedbuck is best measured after cleaning but before mounting as the exact base of the horn will be much more easily discerned. With mounted reedbuck heads, you will often find the taxidermist has used materials to build up an artificial pulpy section—this artificial material must not be measured. With a mounted head, remember that just because the material feels hard to the touch, this does not mean it is horn. Probe with a knife point to find out where to start the measurement of the horn length.

1. Length. Measure the length of the each horn on the front curve (in the center of the horn) from the lowest edge of the base to the tip. Do not measure the “green” or soft horn that forms a pulpy section at the base of the horn. (Figures 11 and 12) With reedbucks the horns curve up and forward and with some varieties they also curve inward; with such heads it is easy to slowly slide off to the outer curve of the horn rather than staying on the front. Make sure to stay in the center front of the horn.

2. Circumference. No circumferences are measured for reedbucks.

Method 7-b Chamois; Chiltan Wild Goat (sometimes called Markhor); Goral; Ibex (True and Spanish); Pasang/Bezoar/Sindh; Rocky Mountain Goat; Serow; Tahr; Western and Central Turs

Rank on the Longest Horn.

This subsection of Method 7 contains mostly rather straightforward-to-measure animals such as chamois, goral, tahr, and more. While none should be overly complex to measure, close attention needs to be paid to animals with curving horns such as the Spanish ibex, central turs, and some bezoars.

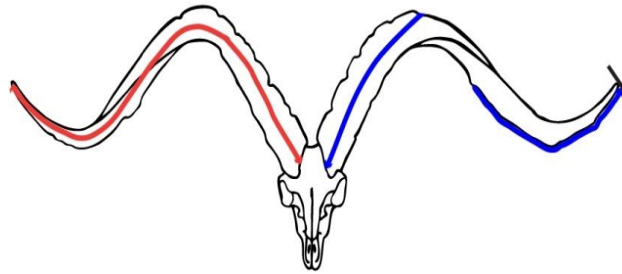


Figure 1 Bezoar with Extreme Spread

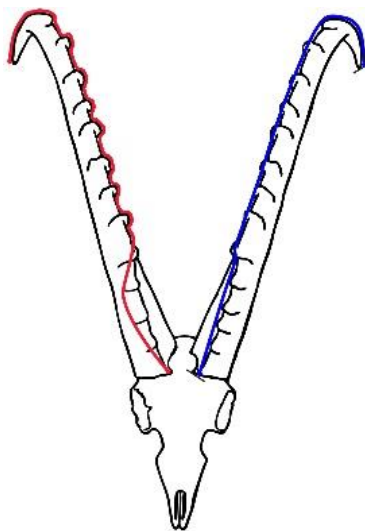


Figure 3

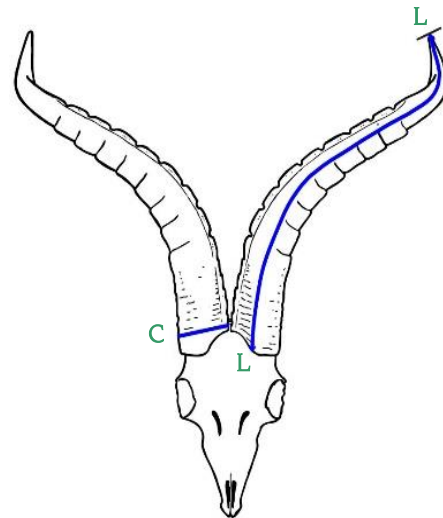


Figure 4

1. Length. Measure the center of the front horn from the lowest edge of the base to the tip. Follow the grain. (Figures 1 thru 7)

To measure the length of the horn, follow the grain of the horn. If the horn curves or twists, keep following the same grain where you started; see red and blue lines on. (Figure 1,3 and 4) Some ibex have relatively smooth horns, but many more are deeply knobbed. In all cases, care must be taken not only to follow the grain but also to “span the knobs” from one high point to the next with a steel tape measure. Make sure not to press the tape measure down in between the ribs. (Figures 2 and 5)

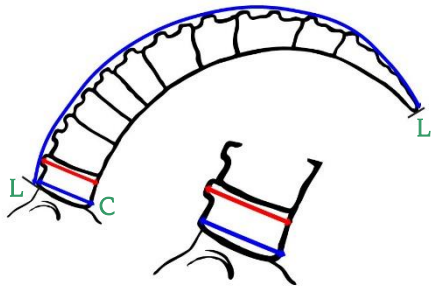


Figure 5

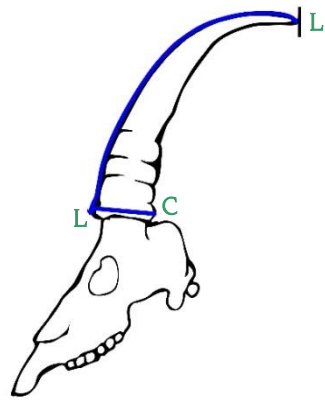


Figure 6

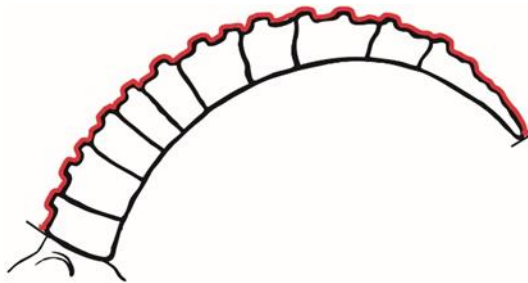


Figure 2

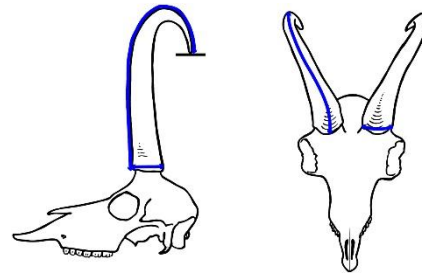


Figure 7

2. Circumference. Measure the circumference of the base of each horn at a 90-degree angle to the axis of the horn. (Figures 4, 5, 6, 7)

To measure the circumference, keep in mind that chamois and ibex may, in some cases, have larger circumferences farther up the horn from the bases. True ibexes (*Capra ibex*) can have a knob right at the base of the horn on one or both horns. Sometimes this knob may be right above the base. (Nubian and certain Asian ibex varieties exhibit this characteristic.) In that case, the base measurement should still be taken as close the base line as possible and at a 90-degree angle to the axis of the horn.

Growth Rings: Count the number rings on both horns. (Supplemental)

Method 7-c Eastern Turs, Aoudads, and Bharal (Blue Sheep)

Rank on the Sum of Both Horns and Bases.

General Remarks: Aoudads, bharals, and turs have curved and/or cylindrical horns. The frontal surface of their horns tends to be somewhat rounded where they meet the forehead; their horns do not have a ridge or hardly have a ridge; and they often have no protruding “low point” on their horns like sheep and most ibexes. Given these factors, it is hard to know where to start the length measurement. This is solved by using the eye sockets as a bearing for that measurement. See below. (For western tur and tur from the Central Caucasus, see 7-b.)

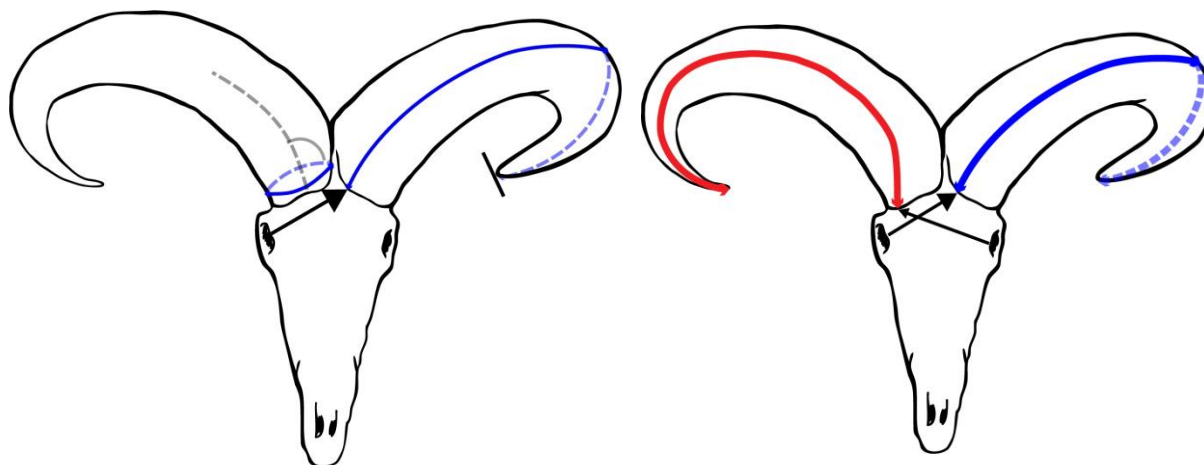


Figure 1 Aoudad

Figure 2 Aoudad

1. Length. Start the length measurement on the front of the horn base at that point closest to a line drawn from the center of the eye socket from the opposite side of the skull. (Figure 1, 2) Do not measure from the lowest point of the horn near the eye socket on the same side of the skull. (Figure 2, red line). Keep following the grain till you reach the end. If the tip is broken, card off. (See General Instructions.)

With an aoudad (and many turs), the arc of the length measurement will more or less form a half-moon shape. However, with a truly magnificent tur trophy, the horn tips will point upward. To measure the length of the horn of such a tur, start the tape on the center front of the horn in line with the eye socket on the opposite side of the skull, curve over the horn, arrive on the outside, go under the horn, and eventually point the tape straight up. For such an animal it is a must to mark the way points with paper masking tape or a pencil.

2. Circumference. Measure the base of each horn. (Figure 1, C) The tape must form a continuous loop and be at a 90-degree angle to axis to the horn. Do not measure anything but horn material—no hair, taxidermist filler, etc.—and do not press the tape into depressions.

3. Growth Rings. Count the rings on both horns. (Supplemental)

Method 8 Spiral-Horned Antelopes (Giant and Common Eland; Bongo; Mountain and Common Nyala; Sitatunga; Bushbuck; Greater and Lesser Kudu; Addax and Blackbuck (Separate instructions are given at the end of this section for these latter two.)

Rank on the Length of the Longest Horn.

General remarks: With all true spiral-horned antelopes, the measurement starts on the front keel and follows the horn around to the tip. (Figure 1) In most cases the keel completely disappears before the tip is reached; when that happens, a straight line must be followed to the tip. With some species there will be little of a keel at the base of the horn—bongos and bushbucks come to mind. In such cases start the measurement on the front of the horn (at the lowest part) and follow the grain. With true spiral horns, only a tape measure is allowed—not a cable—because cables tend to roll off the keel. In case of a poorly defined keel, take a pencil and first mark the horn with way points to lay out the path you will use in measuring the horn. Sometimes the grain will barely be discernable at certain points because of wear, but if you look carefully, the grain will appear again above or below such points.

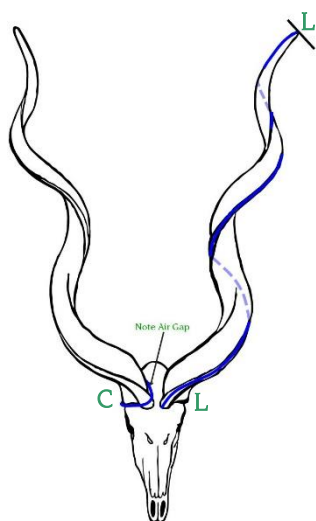


Figure 1



Figure 2



Figure 3

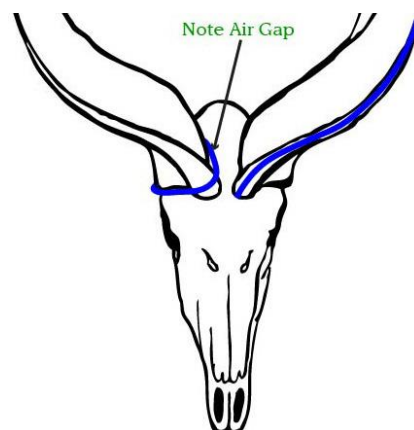


Figure 4

1. Length. Measure the length of each horn around the spiral, keeping the tape measure on top of the spiral ridge. Start at the base, find the lowest point of the front ridge, and proceed to the tip. (Figure 1 and 4). Where the ridge ends near the tip, proceed in a straight line to the tip and do not continue to spiral.

2. Circumference. Measure the circumference at a 90-degree angle to the axis of the horn. (Figures 1, 2 and 4) Do not weave the tape along the edge of the base. (Figure 3)

Elands and greater kudus especially have hard-to-measure bases because of deep grooves; these run parallel to the spiral ridges and are quite pronounced at the lower part of the horns. (Figure 4, Note “Air Gap”) Care must be taken to ensure a continuous loop at a 90-degree angle to the axis to the horn, and to not depress the tape into valleys or deep grooves. In other words the tape does not have to touch horn at all times; instead, it must span from one high point to the next. There will be “air bridges” created by the tape while measuring. Remember the tape must be directly over horn material at all times, not hide or

skull. It is an advantage to have two people to measure the bases of the more challenging spiral horns. If possible, remove the horns from the skull and place the horns at such an angle so that the tape measure can be held with the greatest accuracy and at a 90-degree angle to the axis of the horn.

The temptation is to follow the uneven edges along the horn base and press the tape into valleys. This is wrong. The result will be a very much higher score for the circumference. (Figure 3) Do not follow the uneven edge of the horn, but instead form a tight circle at a 90-degree angle to the axis to the horn. Find the lowest point where the tape measure can encircle the horn and measure there. (Figures 2 and 4)

Addax and Blackbuck have horns that spiral and are measured under Method 8, even though they are not spiral-horned antelopes. For these two animals, unlike with the true spiral-horned antelopes, use a cable only and mark the path to be measured with a pencil and pieces of masking tape. Having another person to hold the cable in place as it twists around the horn is of great help.

Start the length measurement at the bases of the horn on the center front of the horn. In most cases with the addax, a clear grain can be seen. Follow the grain around the spiral of the horn. With the blackbuck, this is harder because the density of the ribs distorts the grain, making it hard to see in some sections of the horn. Lay a path with pencil marks and/or masking tape.

For both species, once the spiral runs out, follow a straight line to the tip. In most cases, the horns of the addax and blackbuck have ridges that are so close together that it is very hard to push a cable into them. Nonetheless, do not press the cable into the ridges of the horns, but rather have it go from ridge to ridge like a bridge. The addax and blackbuck have relatively even and smooth bases, and, unlike their horn lengths, these are not hard to measure. Remember to measure the bases at a 90-degree angle to the axis of the horn.

Method 9 Pronghorn Antelope

Rank on Total of all measurements.

A pronghorn is unique for two reasons: It is the only horned animal in the world that sheds its horns and it is the only horned animal that has branches (the prongs). The pronghorn has its own method under the RW system. The minor challenges with measuring a pronghorn are establishing the base, where to start measuring the length of the horn, and measuring the prong. Unlike most other horned animals, the pronghorns tend to have pretty uneven horn bases that are either lobbed and or even sometimes jagged. Please be sure to read the instructions on how to measure them as it is different from most other methods.

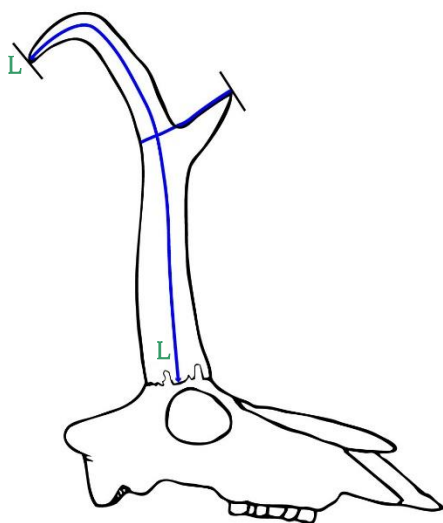


Figure 1

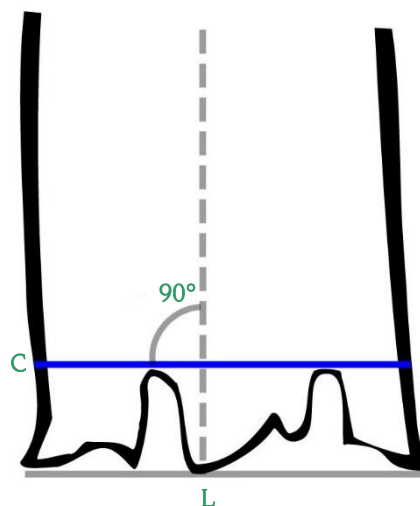


Figure 2

1. Length. Measure the length of each horn along the outside surface of the horn starting on the center of the horn. (Figure 1) To find the starting point of the length measurement, draw a line at 90-degree angle to the axis of the horn where it touches the lowest point. (Figure 2 and 3) (This also ensures the longest length measurement.) Follow the grain of the horn along the center of the outer edge to the horn tip. The tips often curve down, but they may do so either backward toward the tail, inward toward the base of the horn, or even forward. In some unusual cases the tips point partially upward. In all cases follow the grain of the horn. Carding off may be needed. (See General Instructions.)

Horns may develop small “pebbles,” bubbles, or points on the horn. It is not a problem should the line of the length measurement go over these as long as the length measurement is not enlarged in a great manner. Do not push the tape in before and after such a protrusion to increase the length measurement. If these protrusions are $\frac{3}{8}$ or larger, as may rarely happen, use a caliper to measure its base along the line of the length measurement and then stop the length measurement where the caliper measurement started and start the length measurement again where the second caliper leg stopped. Add the caliper measurement to the length measurement. Careful marking with a pencil and some masking tape is needed to do this accurately; write up all measurements and then add them together. Note such protrusions in the comment section.

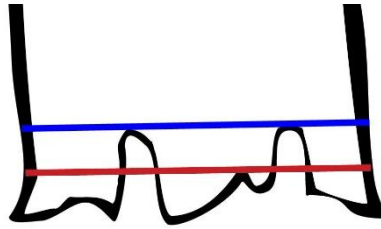


Figure 3

2. Circumference. Measure the circumference of the base of each horn at a right angle to the axis of the horn. (Figure 2) Find the lowest point where a circle can be made at a 90-degree angle to the axis of the horn. Make sure that the tape touches the horn at all times along the entire measurement. Do not allow the tape to bridge over air gaps at the uneven end of the horn. See red (wrong way to measure) and blue (right way to measure) lines. (Figure 3) It should be noted that the bases of a pronghorn can be inflated by soaking them in liquid for a prolonged period; also, the use of bonding substances when mounting the head can increase the bases. If a measurer notices excessive (swollen) bases on a mounted head, he should note it in the comments section and submit photos to the editors. Attempts to artificially inflate the bases will lead to disqualification of the entry.

3. Prong Length. Measure the prong by starting at the very point of the prong, following the upper edge of the prong until you reach the horn itself, and then go in a straight line to the center point of the back end of the horn. (Figures 4 and 5) See the detailed drawing of the top view of where to stop the tape at the back end of the horn. (Figure 5)

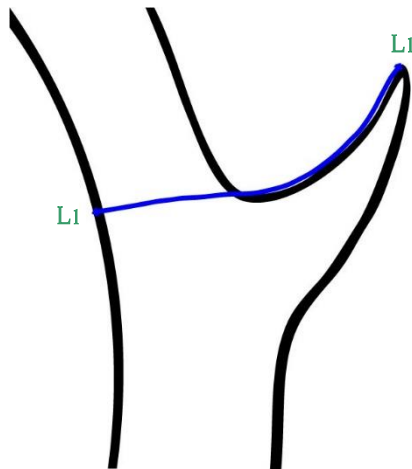


Figure 4

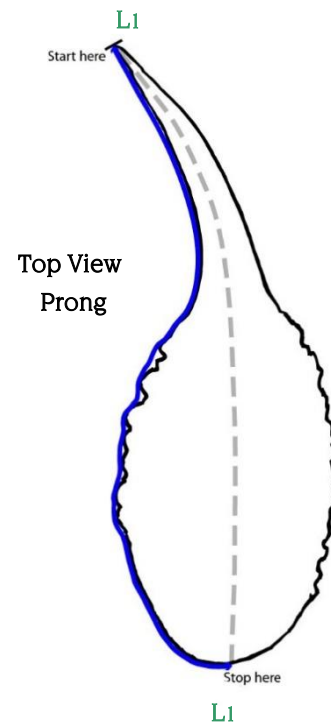


Figure 5

If the prong is broken off, card off; do not start along a jagged, broken edge of a remnant prong point. In rare cases, a prong can form a partial break from the horn, much like a heavy branch of a tree slowly starts tearing off from the main trunk but has not yet separated. Such cracks must be spanned with the tape when measuring the prong, but then it must be measured separately and deducted from the total length of that prong.

Method 10 American, Asian, and European Wild Cattle (yet to come)

Method 11 Muskox

Rank on the Sum of Measurements 1 and 2.

1. Length. Measure the length of each horn from the center of the boss to the tip, following along the center of the horn surface (L). (Figures 1 and 2) Start on the boss side in the narrow valley between the two bosses use a hooked $\frac{1}{4}$ -inch wide steel tape. Hook the steel tape around the edge of the horn and then the tape will then go almost straight up and make a turn to arrive at the top of the boss. From there, measure toward the tip while keeping the tape in the center. Marking the center of the horns with a pencil or paper masking tape first is a good way to keep right in the center. As the tape advances toward the point, it may, in fact, start back toward the boss as the horn hooks up and inward. Stay on the center of the horn. If the horn tip is broken or worn, card off. (See General instructions.)

2. Width of Boss. Using a caliper, measure each boss at its greatest width. Make sure your measurement is parallel to the center of the skull. (Figure 1) Do not measure “green” or “soft” boss material. Make sure the caliper is tight along the horn but not so tight that that it snaps inward once it is removed from the horn but not too loose around the horn either. It must touch horn when being removed from the skull so that the space can be measured with an inch tape.

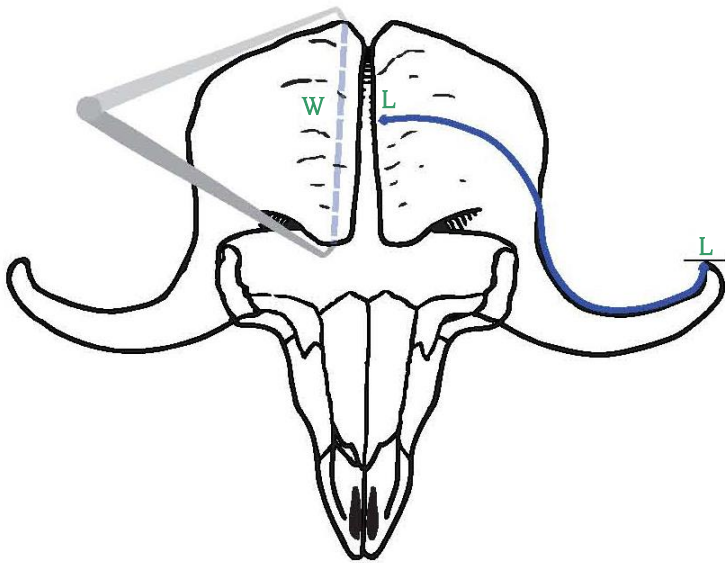


Figure 1

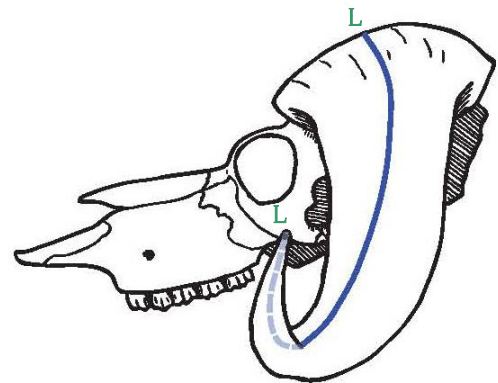


Figure 2

Method 12 African Buffaloes

Method 12-a Cape, Nile, and Central African Buffaloes

Rank on the Sum of the Measurements of the Widest Spread and the Width of Bosses.

General remarks: The three largest varieties of African buffaloes that fall under this method all have spread and boss development as their most desirable attributes. Rowland Ward emphasizes this.

The preferred time to measure a buffalo is after it has been cleaned and dried but before it is mounted because it is much easier then to see where actual horn starts and soft materials stops. (Soft material must not be measured and should have been removed during the cleaning process.) Measuring a mounted head is also acceptable but more difficult for a couple of reasons. First of all, it is large and unwieldy, and, second, sometimes the bosses have been reconstructed by a taxidermist.

If the boss(es) of a buffalo have been enhanced or accentuated or otherwise been altered by taxidermist materials, the head CAN NO LONGER BE MEASURED under the RW system. Practical experience has shown that it is impossible to know where the actual horn starts and human-applied taxidermy materials end as actual horn may or may not be underneath artificial material. Note that manmade materials covering part of the actual horn may be very difficult to see unless exposed to direct sunlight or a strong flashlight. Do not assume that because you only have a skull and horns that the bosses have not been augmented; many such heads are. When in doubt about a head being enhanced, do not measure it. Only three measurements of a buffalo are needed, and none is particularly hard to obtain. Close attention must be paid, however, to making sure that a right angle is used in obtaining the spread and boss measurements.

1. Greatest Spread. Establish the outer limits of the horns using two right-angle forms. Measure the greatest spread in a straight line and at a right angle to the axis of the horns. (Figure 1)

The easiest way to measure the spread is to lay the buffalo horns and skull on a smooth, flat surface such as a clean, smooth concrete floor and then place two large carpenter's triangles (an L-shaped device made of hard plastic or metal that can stand up straight) on both ends of the horns. Make sure that both triangles are at a 90-degree angle to the axis of the skull. It is now easy to get a measurement. Mark with a pencil where the carpenter's square reaches the concrete floor (both sides), push the horns and triangles away and measure the distance between the two marks. Do not measure from a wall above the horns and skull to a single carpenter's triangle because an air measurement may lead to a tape measure sagging, and this will increase the score.

In extraordinary cases, a buffalo may have genital injury (or is a hermaphrodite), and in such cases malformed horns may occur and the spread measurement can be very large. Such animals must be noted in the comment section on the entry form. Such animals normally have very undeveloped bosses.

2. Width of Boss. Using a tape measure, measure the boss of each horn at its greatest width; this must be taken parallel to the axis of the horn. (Figure 1) DO NOT measure "green" or "soft" boss material.

Take the tape and start at the back of the boss and curve the tape over the boss to the front at its widest point. Do not press the tape into any depressions; span it over uneven points. Do not measure green horn or skull bone. The angle for this measurement must be parallel to the centerline of the skull. Some bosses have a very thin edge and others have a very pronounced "overhang," so you will have to start the tape quite low near the back of the skull of the animal.

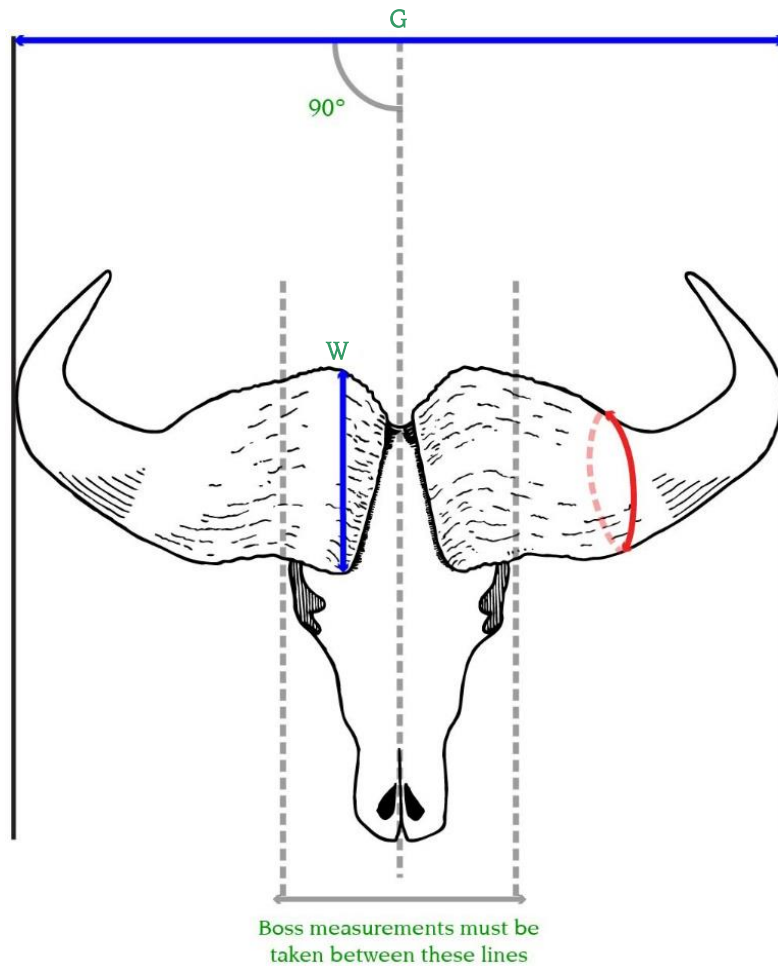


Figure 1 Cape Buffalo

The same situation may occur in the front. Depending on the horn configuration, it can be possible to take a “semi-circumference” measurement for the width; this is wrong. Only measure the top section of the horn for the width; as soon as the horn starts curving inward, stop the width measurement. (Figure 2) Boss measurements may not be taken outside the outer edge of the eye sockets because the horns here begin to form an oval around the bone core of the horn, and if taken in extreme it would lead to a circumference measurement. Finally remember that the bosses must be measured exactly parallel to the axis of the horn and NOT at a 90-degree angle to the axis of the horn.

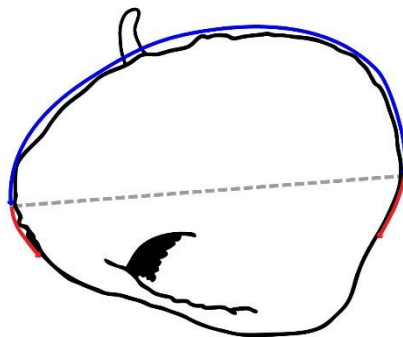


Figure 2 Cape Buffalo. Cross section of horn as seen if it were removed from the skull

Method 12-b West African Buffaloes and Dwarf Buffaloes

Rank on the Sum of the Length of the Horns and the Width of the Bosses.

General remarks: The dwarf forest buffalo and the West African buffalo have a separate method of measurement from other buffaloes. The spread is seldom very large, especially in the dwarf variety. The length of the quarter-moon-shape horns and the bosses are the most distinguishing features of these smaller bovines. The dividing line between dwarf and West African buffalo is often unclear. The same holds true for the borders of the dwarf buffalo and other buffalo varieties. Because of these factors, all dwarf and West African buffalo submissions must be accompanied with good, clear frontal-face photos.

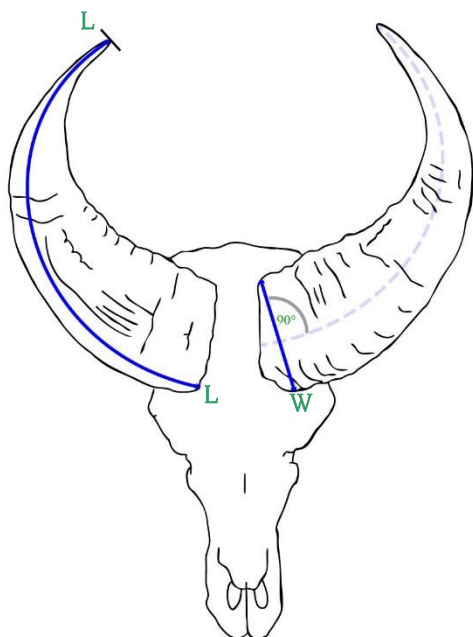


Figure 1

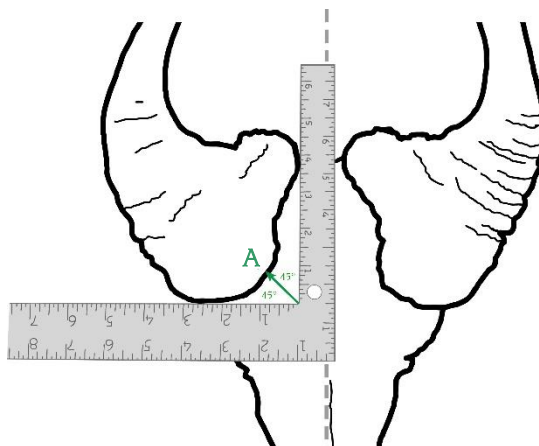


Figure 2

1. Length. Measure the length of each horn on the outside curve. Start in the front and measure along the front edge, keeping to the outside surface and continuing to the tip. (Figure 1) To find the starting point (L), lay the long leg of a carpenter's square against the bottommost part of the boss and place the shorter leg of the square against the inner part of the boss between the horns. (Figure 2) Make sure the short leg is exactly parallel to the axis of the skull. Now divide the 90-degree angle into half (45 degrees) and mark this spot on the edge of the boss. This is the starting point for the length measurement; keep to the outside surface and continue to the tip. (Figure 1)

2. Width of Boss. Using a tape, measure each boss at its greatest width, at a 90-degree angle to the centerline (axis) of the horn, not the skull. (This is different from the method for the three larger buffaloes under Method 12-a.) Do not measure "green" or "soft" boss material. Depending on the horn configuration, it can be possible to take a "circumference" measurement for the width. Only measure the top 50 percent of the horn for the width; as soon as the horn starts curving inward (downward), stop the width measurement. (Figure 3) Do not press the tape into any depressions; span it over uneven points. Do not measure the skull under the boss; measure the horn only. Boss measurements may not be taken outside the outer edge of the eye sockets because the horns here begin to form an oval around the bone core of the horn, and if taken in extreme, it would lead to a circumference measurement.

Often a taxidermist will enhance a soft boss with putty and other materials; this makes a soft boss seem like a hard boss once the head is mounted. If the boss(es) of a buffalo have been enhanced or accentuated or otherwise been altered by taxidermist materials, the head can NO LONGER BE MEASURED under the RW system. Practical experience has shown that it is impossible to know where the actual horn starts and human-applied taxidermy materials ends. Note that manmade materials cover part of the actual horn may be very difficult to see unless exposed to direct sunlight or when viewed with a strong flashlight. When in doubt about a head being enhanced, do not measure it.

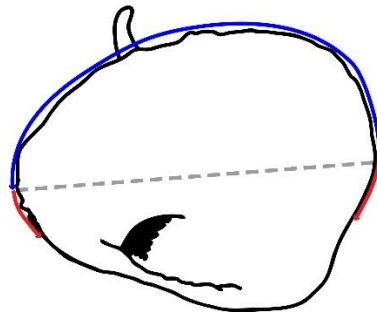


Figure 3

Cross Section of Horn as Seen if It Were Removed from the Skull

Method 13 Wildebeests and Gnus

Method 13-a Cookson's, White-Bearded, and Nyasaland Wildebeests; Brindled Gnu

Rank on the Widest Spread.

General remarks: Rowland Ward used to use the same measurement method for most wildebeests and large buffaloes. These animals have a lot in common, but because a wildebeest has bases of which a circumference can be taken with good accuracy, something that is not possible with a buffalo, the editors decided to create a separate method for recording wildebeests.

1. Greatest Spread. Establish the outer limits of the horns using two right-angle forms. Measure the greatest spread in a straight line and at a right angle to the axis of the skull. (Figure 1, G)

To measure the spread, lay the horns and skull on a smooth, flat surface such as a clean, smooth concrete floor and then place two large carpenter's triangles (an L-shaped device made of hard plastic or metal that can stand up straight) on both ends of the horns making sure that both squares are at a 90-degree angle to the axis of the skull. It is now easy to get a measurement; mark with a pencil where the triangles reach the concrete floor (both sides), push the horns and triangles away, and measure the distance between the two marks. Do not measure from a wall above the horns and skull to a single carpenter's square because an air measurement may lead to a tape measure sagging, and this will increase the score.

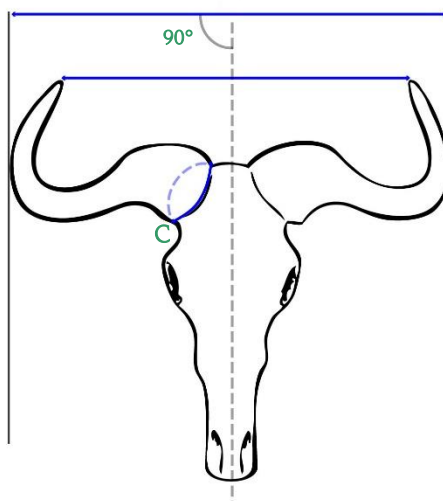


Figure 1 Blue, Cookson's, Nyasaland, or White-bearded Wildebeest

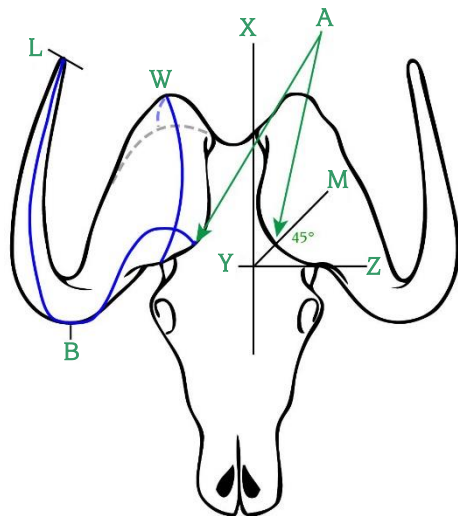
2. Circumference of Base. Measure the circumference of the bases at their widest point. This measurement must be parallel to the horn ends and is not taken at a 90-degree angle to the axis of the horns. Use a tape and keep a tight loop. This is somewhat akin to the measurement of a burr of a large deer but less rough. In general the bases of a wildebeest are quite smooth; nevertheless, do not press the tape into any depressions or cracks.

3. Tip-to-Tip Spread. Measure the spread from the very tip to the other tip. (Figure 1, E) The best tool for this is a wood ruler with a 6-inch slide rule built in. N.B. In order to fall in the typical category, the tip-to-tip measurement must be 5 percent less than the greatest spread. If not, the animal falls into the atypical category.

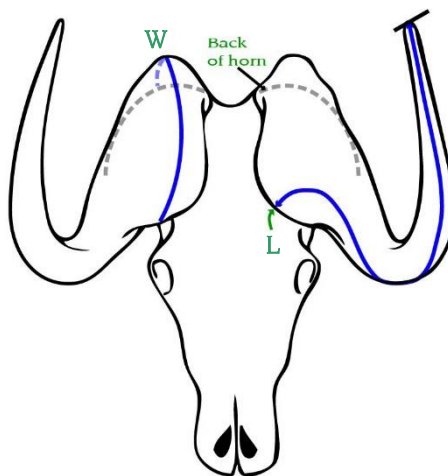
Method 13-b White-tailed Gnu / Black Wildebeest

Rank on the Length of the Longest Horn.

General remarks: This is the only African antelope to have a method of its own under the Rowland Ward system. It is not hard to measure, but establishing the starting point for the horn length takes a bit of work in order to be done accurately.



Black Wildebeest Figure 1



Black Wildebeest Figure 2

1. Length. To determine the starting point, lay a carpenter's square at a right angle along the boss (Figure 1, XYZ). The line XY is parallel to the centerline of the skull. Line YZ is at a 90-degree angle to the axis of the skull and will touch the lowest point of the boss. Bisect XYZ at a 45-degree angle (M). The point where this line meets the boss (A) is the starting point for measuring the length of each horn. Mark this with a pencil or piece of chalk.

Next, mark the lowest point on the outside of the "elbow" of the horn before it curves up (B). Start at A and follow the grain of the horn over the ridge of the boss to the front of the horn, go over the lowest point at the elbow, and then move up the center front to the tip (L). (Figure 2)

2. Width of Boss. Measure the width of each boss at its widest point. To determine where to measure the width, it's best to use a caliper. (You can find the widest point using a caliper, but you must measure with a tape.) Mark the widest points with chalk. Place the tape where the horn meets the skull in front and go over the highest point of the boss to the back; stop where the horn ends and the skull appears (Figure 2). This is NOT a circumference measurement. Do not measure hair or taxidermist materials.

Method 14 All True Wild Sheep (*Ovis*)

Rank on the Sum of Both Horn Lengths and All Circumferences.

General Remarks: This measurement is used only for true sheep—mouflon, urials, argalis, snow sheep, thin horn sheep, and bighorn sheep (*Ovis musimon*, *Ovis orientalis*, *Ovis ammon*, *Ovis nivicola*, *Ovis dali*, and *Ovis canadensis*). Aoudad (Barbary sheep) and blue sheep are not true sheep and are measured under method 7-c, along with the East Caucasian or Dagestan tur (a wild goat).

Wild sheep are among the most magnificent large fauna of the world. While wildlife-viewing tourists prefer the large cats, the Big Five, and other mega fauna, hunters often consider wild sheep to be the most desirable of all the game animals.

In general sheep are not hard to measure, but close attention must be paid to (a) their bases, (b) the ridges (large argalis and some urials), and (c) the quarter-measurement system. This system requires hunters to measure the quarters of the longest horn.

1. Length. Measure the length of each horn from the base to the tip (Figure 1, L–L and Figure 2). Many sheep have horns that have a flat frontal surface that extends from the base all the way to the tip. Place the 90-degree hook (found on the end of the steel tape) around the lowest point at the base and then follow the center of the ridge throughout the curve of the horn to the tip. End the measurement to a point that is in line with the end of the tip but do not curve the tape to get to the center of the tip. Card the horn off and measure up to the farthest protruding point of the horn in a straight line. (Figure 3)

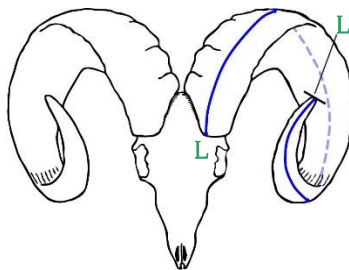


Figure 1

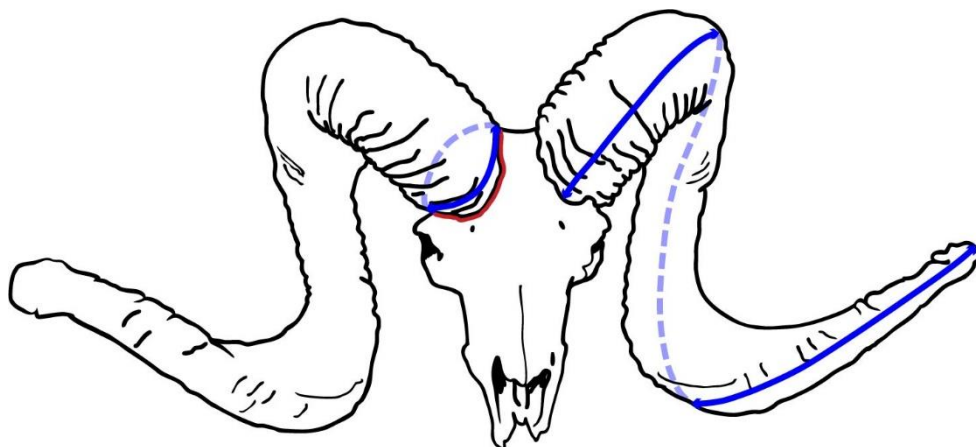


Figure 2

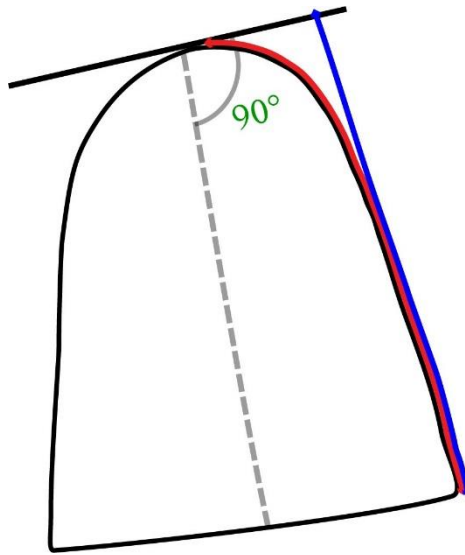


Figure 3

In the case of some argalis and urials, the horns can be more rounded so care must be taken to stay in the center of the horn after you have started from the lowest point on the base. Many sheep, especially North American and the closely related snow sheep, have a protruding point/small ridge at the lower front end of the bases; this is clearly the lowest point. Do not press the tape in any ridges, depressions, or missing chunks of horn to increase the length measurement; all such gaps should be air bridged.

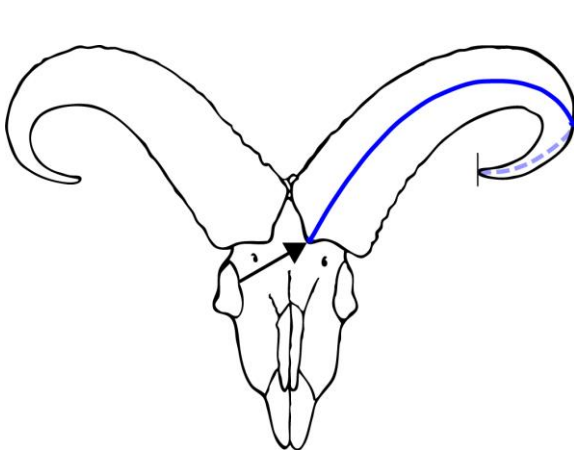


Figure 4

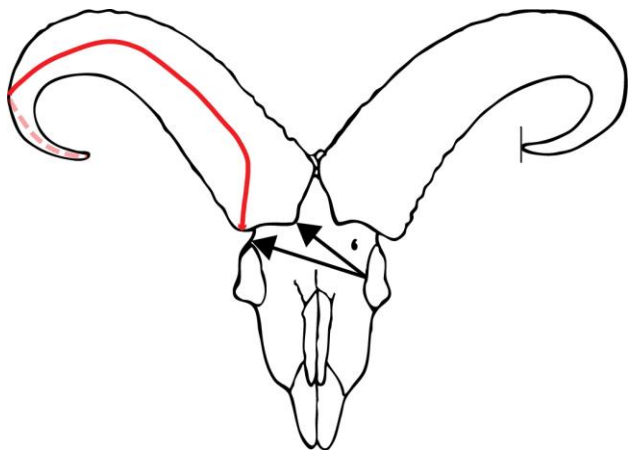


Figure 5

With some mouflon and urials, the horns tend to grow backward to a point above the neck rather than forming a curl forward around the eye. With such convex horns—especially found in Cyprian and Armenian mouflons—the “opposite eye socket” rule should be applied in order to find the starting point. Start the length measurement on the front of the horn at that point where the horn is closest to a straight line drawn from the center of the eye socket on the opposite side of the skull. (Figure 4 & 5) Note the lines in Figure 5 one pointing at the center of the horn and the correct starting point and the other to the outside and the wrong starting point. Figure 4 shows the correct lines. Do not measure from the lowest point of the horn near the eye socket. (Figure 5) Keep following the grain till you reach the end.

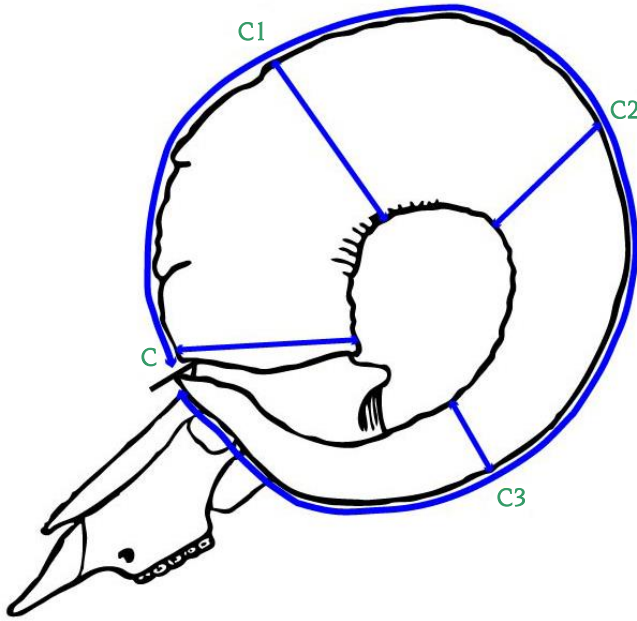


Figure 6

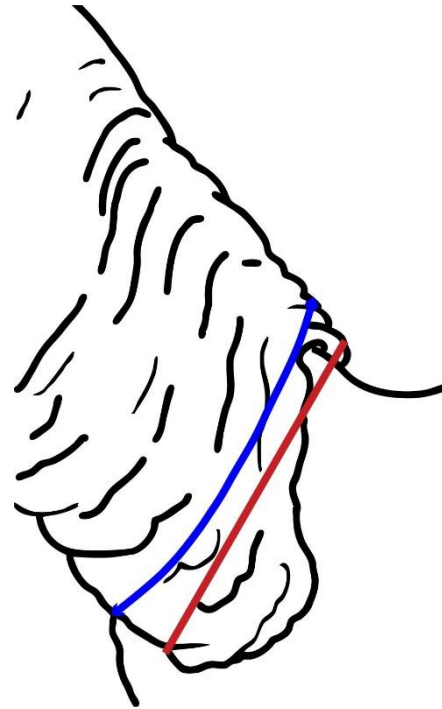


Figure 7 Argali Base

2. Circumference. Take the length of the longest horn and divide it into thirds. (Figure 6) Record the intervals of the longest horn on the score sheet. Starting at the base and using a pencil, mark both horns at the same intervals all the way to the tips. Measure the circumference of each horn at the base (C), the first quarter (C1), the second quarter (C2), and the third quarter (C3). These measurements are to be made at a 90-degree angle to the axis of the horn. Do not use a tape with a 90-degree hook on the end; instead, use a steel tape with a ring on the end because only a tape that will lie flat completely will give an accurate measurement of the circumference. If you have no steel tape without a hook, make a loop on a hooked-steel tape and start at the 10-inch mark and deduct 10 inches from the measurement.

The base measurement is the most challenging of all circumferences, for it must be taken at a 90-degree angle to the axis of the horn, the inside of the tape must touch horn material at all times, and no air gaps on the edges of the horn may be bridged. (Figure 6 and 7)

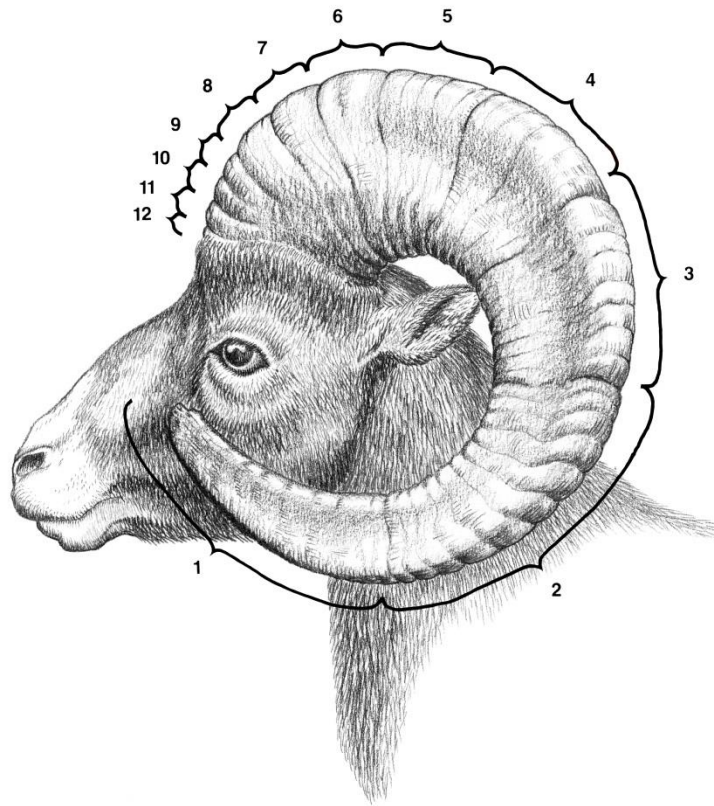


Figure 8 (from *Sheep and Sheep Hunting*, O'Connor, used with permission)

3. Record the Age. This is a supplemental measurement. Carefully count the growth rings of the ram to determine its age. (Figure 8) Do not count rings that do not extend the entire circumference of the horn. Count the rings on both horns so that you can verify you have the right number. It is important to remember that hunting is a conservation tool, and, as such, hunters for mountain game seek to shoot old males. Whenever possible, measurers for the Rowland Ward record book should take the extra effort to determine the age of ibexes, sheep, and goats.

Counting the rings (annuli) on markhorns, ibexes, true sheep, and many wild goats (*Capra*) is almost always possible. Growth rings are the result of the difference in the sheep's food intake during the winter and spring seasons: Horn growth slows during the winter season when food intake is lower and then accelerates again in the spring. Be careful not to count a ring that does not extend the entire circumference of the horn; these "false start" rings can be caused by better food conditions that occur temporarily late in the winter season. (See Figure 8, in the middle of year 4) In sheep with heavily broomed horns, the first, and in rare cases the second, growth rings are no longer there because they have been worn off. This is only very rarely so for ibexes and markhorns. These data will be published in *Rowland Ward's Records of Big Game*.

Method 15 Markhor

Rank on Total Score.

General remarks: Markhors are one of the world's greatest animals. Their horns may spiral up to 60 inches (152 cm) in length, and populations in colder climates exhibit long guard hairs in the winter along the front and the side of the bodies. The Suleiman variety has very tightly twisting horns that go up straight from the skull in a "V" shape; their horns resemble the inside of a rifle barrel. The Astor variety may show curls with huge diameters that can be even larger than a kudu's. Because it has two spiral ridges per horn (back & front) it may be measured either on the back or the front of spiral.

The Chilton wild goat, sometimes referred to as a "markhor," is measured under Method 7-b. Although some specimens of Chilton wild goats display a certain amount of twisting of the horns, historical records show that not all do and they do not have two spiral ridges like a markhor; therefore, using Method 15 to measure a Chilton wild goat is inappropriate.

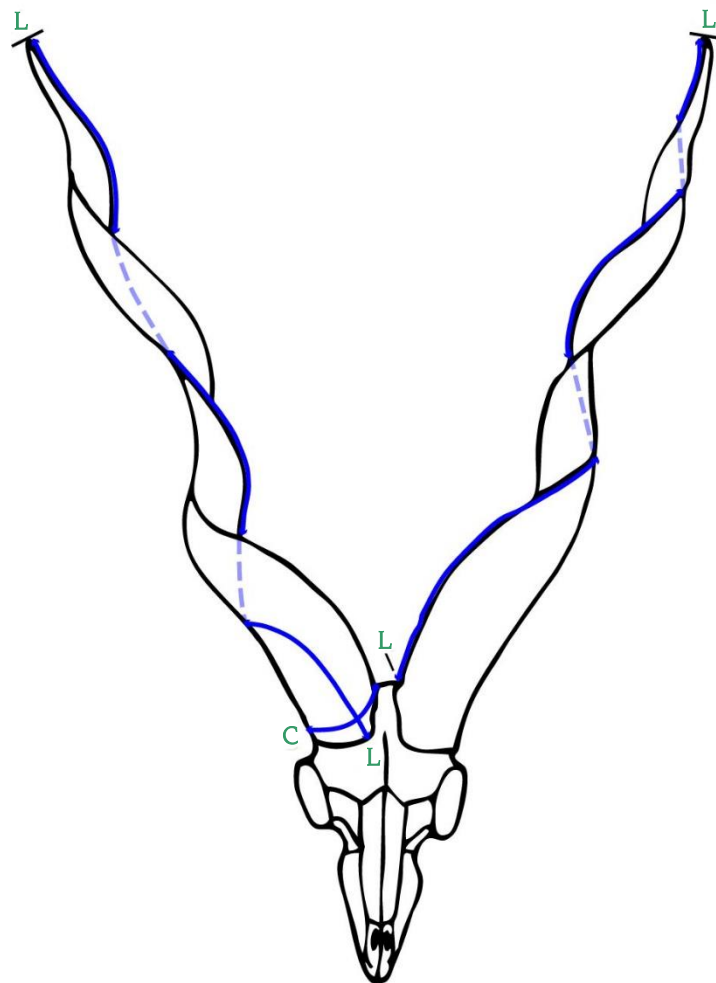


Figure 1 Medium-Curl Markhor

1. Length. Measure each horn around the spiral by keeping the tape on top of the spiral ridge. (Figure 1) Start at the lowest point at the front (or back) of the base and proceed to the tip. Where the spiral ridge ends near the tip, proceed in a straight line to the tip and do not continue to spiral.

Most markhor horns have two spirals—front and rear—albeit some varieties have only one well-defined rear spiral ridge. As a general rule, the front has a more rounded and somewhat less defined ridge while the rear is more pronounced. Markhors may be measured on either ridge—whichever gets the greater length measurement. There is a caveat, however. If one horn is measured on the front ridge, then the other horn must be measured on the front, too; the front and back ridges cannot be mixed and matched.

2. Circumference. Measure each horn at the base (C). Measure the circumference of the base of each horn at a 90-degree angle to the axis of the horn. Find the lowest point near the base where the tape encircles horn only and measure; this must be at a 90-degree angle to the axis of the horn. It is an advantage to have two people measure the bases of the more challenging markhors.

Depending on the subspecies, some markhors have hard-to-measure bases. Care must be taken to ensure a continuous loop with the tape so that it is on or above horn material at all times. Do not depress the tape into valleys or deep grooves. These grooves run parallel to the spirals found along the lower part of the horns and right at the horn bases of markhors. The tape must span from one high point to the next; thus, there will be “air bridges” created by the tape while measuring. Do not weave the tape along the edge of the base because this will result in a very much higher score for the circumference; this is wrong.

3. Growth Rings. This is a supplemental measurement. Determine the age by counting the rings (annuli) on both horns. It is important to remember that hunting is a conservation tool and as such hunters for mountain game seek to shoot old males. Whenever possible measurers for the Rowland Ward record book should make the extra effort to determine the age of ibexes, sheep, and goats.

Counting the rings is almost always possible for markhors, ibexes, true sheep, and many wild goats (*Capra*). Growth rings are created due to the lowering of food intake during the winter season and the accelerating of food intake in the spring; thus, based on food intake, horn growth slows and then accelerates during these two seasons. This, in turn, causes the growth of rings on the horns.

Be careful not to count rings that do not extend around the entire circumference of the horn; such “false start” rings can be caused by better food conditions late in the winter season. With some sheep that exhibit heavy brooming, the first, and in rare cases, the second growth rings are no longer there because the horns have been worn off. This is only very rarely so for ibex and markhor. This age data will be published in *Rowland Ward's Records of Big Game*.

Method 16 Rhinoceroses from Africa and Asia

Rank on the Length of the Longest Horn.

General remarks: All rhino horns are subject to shrinkage; consequently, the drying out process is particularly critical to obtaining an accurate measurement. The rhino is the only animal in the Rowland Ward measuring system that requires a 60-day drying-out period. Hunters should keep in mind that green measurements taken in the field are invariably much greater than the eventually “dried-out” measurement that follows two months later. Measurers should be aware that many mounted rhinos today have horns made of artificial materials because of the extreme value of real horn and because of safety concerns of having real horn in one’s home. Artificial horns obviously cannot be measured.

When measuring the length and circumference, great care must be taken to not measure the hide or artificial taxidermy materials. The horns must be measured in a place where there is excellent light—daylight is preferred—so that the measurer can ascertain the difference between the actual horn and the skin. Many mounted rhino horns have been enhanced with taxidermy materials where the base of the horn and skin meet, and this must not be measured.

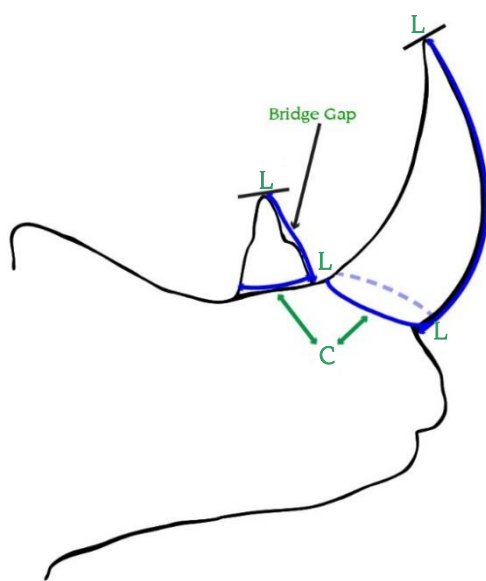


Figure 1

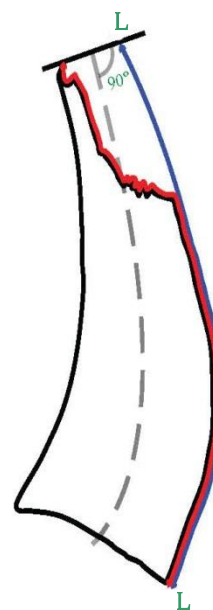


Figure 2

1. Length. Measure the length on the front curve of each horn from the base to the tip. (Figure 1) In case the horn has a piece missing or has grooves or holes, the tape measure must bridge such gaps and must not be pushed into the depressions. (See Figure 1, rear horn, L) Many rhinos have a broken horn or worn tips, and they must be carded off at the tip in order to get an accurate measurement of horn length. (See Figure 2 and General Instructions for carding off.) Make sure the tape measure is not pressed into the broken area or indentations, grooves, or holes, which would increase the length. Measure the front of the horn along the outer curve. Start where the hide stops and the short hairs of the base of the horn start.

2. Circumference. Measure the circumference around the base of each horn. (Figure 1) As with the measurements of antelope horns, the circumference must only measure horn, not skin. Most rhino horns will not have an even end like a piece of water pipe that has been cut off at a 90-degree angle. The temptation is to follow the uneven edges of the horn (weave the tape measure). This will result in a very much higher value for the circumference and is wrong. The tape measure must form one continuous circle at a 90-degree angle to the axis of the horn. Do not follow the uneven edge of the horn. Again, great care must be taken to not measure artificial taxidermy materials.

Method 17 African and Asian Elephants and Mammoths

Rank on the Weight of Both Tusks.

General remarks:

Measurers should be aware that virtually no elephant shoulder mounts have actual ivory tusks; most have reconstructed fiberglass tusks. Some of these look remarkably like real ivory. Mounted elephant heads cannot be measured unless the tusks are removed. Please note that the length of a tusk and its circumference are worthwhile measurements that are of interest to naturalists, biologists, and hunters. Rowland Ward has listed lengths of tusks since the late 1800s. Please do not forget to record these supplemental measurements.

Rowland Ward has a number of recorded historical mammoth tusks listed in the book for comparison purposes and general interest.



Figure 1

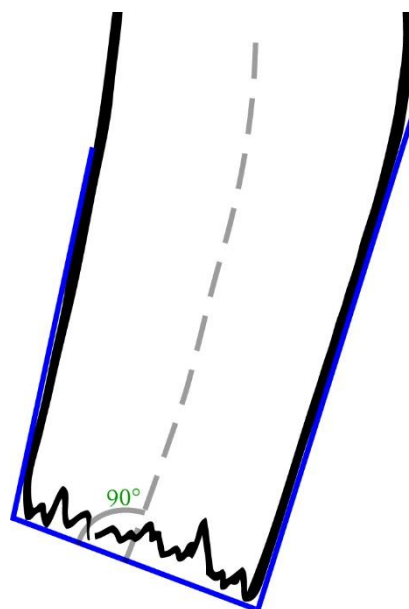


Figure 2

1. Weight. Weigh both tusks. Because some scales only give metric measurements, we give instructions in pounds and kilos. When ivory is weighed in pounds (454 metric grams), it should be recorded to the nearest pound. Weights falling at or above the half-pound mark are to be recorded at the next highest pound; weights falling below the half-pound mark are to be recorded at the next lowest pound. Make a photo of each tusk while on the scale in such a manner that the indicator on the scale can be seen and submit this photo

When weighing the tusk in kilograms, weigh each tusk to the nearest half kilogram (500 metric grams). Weights falling at or above the quarter-kilo mark will be recorded at the next highest half kilo; weights falling below the quarter-kilo will be recorded at the next lowest kilo. Weights falling on or above the three-quarter-kilo mark will be recorded at the next highest kilo; weights falling below the three-quarter kilo will be recorded at the next lowest half kilo.

DO NOT weigh tusks with pedestals, taxidermy materials, or plugs placed in the hollows where the nerve used to be. Such tusks cannot be weighed unless removed from the bases and the materials in the nerve hollows completely removed.

Rowland Ward has two minimums for elephants—one for the weight of a single tusk and the other for a pair. See Minimums online at RowlandWard.com. If one tusk is broken and the other meets the minimum for a single tusk, such an elephant is eligible for entry; in such cases still record both tusks even if one is very small.

2. Length. Record the length on the *outside* curve of each tusk to the nearest quarter inch. (Figure 1) The measurer may find small chips missing at the base of an elephant's tusk because the ivory is very thin there. (Figure 2) To determine the end point of a length measurement, make an imaginary circle at a 90-degree angle to the axis of the tusk along the farthest points of the end of the tusk. Measure from this circle on the outside of the tusk to the tip. (Figure 2)

3. Circumference. Record the greatest circumference of each tusk to the nearest $\frac{1}{8}$ -inch. (Figure 1, C) It should be noted that the greatest circumference often is not at the base of the tusk but approximately where the end of the lip occurred. The circumference should be measured at a 90-degree angle to the axis of the tusk.

Method 18 Skulls of All Cats, Chevrotains, Hyenas, Javelinas (Peccaries), Wolverines, and Wolves

Rank on the Sum of Measurements 1 and 2.

General remarks: For the skulls of carnivores, measure to $\frac{1}{16}$ -inch. Note that only the upper skull may be measured; no lower jaw is included. The skull must be entirely cleaned, and all hide, flesh, and cartilage must be removed and then dried for 30 days. The measurements are taken along the length of the axis of the skull (length) and at a right angle of this axis (width).

Measurers must note all malformations. Injuries to the jaws can make teeth stick out and thus increase the score; they must not be measured. In some cases a skull may have come apart during the cleaning process. In such cases, a reassembled skull may be measured, but the measurer must be certain such reconstruction does not add to the score. If this cannot be ascertained, the skull cannot be measured.

Make sure the caliper is tight along the skull but not so tight that it snaps inward once removed from the skull but not too loose around the skull either. The caliper must touch bone when being removed from the skull so that the space can be measured with an inch tape.

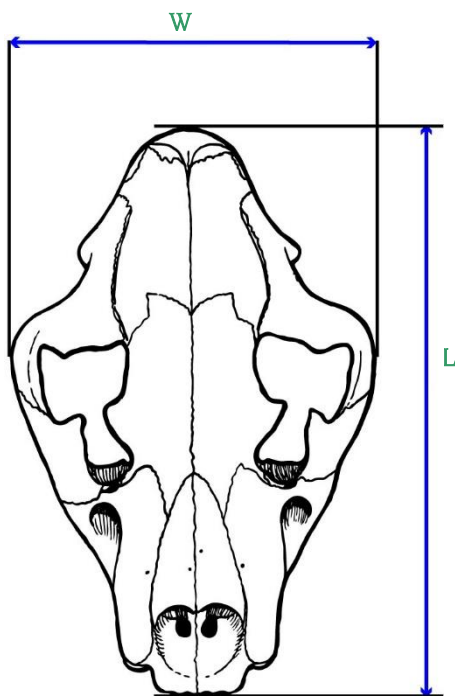


Figure 1

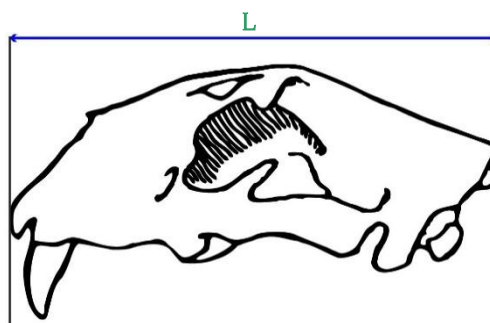


Figure 2

1. Length. Establish the outer limits of the length of the skull. Measure with a caliper along the skull's lengthwise axis. Measure the distance between the points of the caliper. (Figures 1 and 2, L)

2. Width. Using a caliper, determine the width of the skull at a 90-degree angle to the skull's axis. Measure the distance between the points of the caliper. (Figure 1, W)

Supplemental Measurements: The following measurements will only be accepted if the skull measurement qualifies the animal for inclusion. **Animals are ranked only on skull measurements and not on body measurements/weights.** These measurements can be taken by the guide or outfitter and a witness if an official Rowland Ward measurer is not available. They must sign and date the measurement form.

Body Length for Cats, Civets, Hyenas, Wolverines, and Wolves (Supplemental)

Rowland Ward will accept a body length measurement as supplemental data for all cats, civets, hyenas, wolverines, and wolves, but for no others. This is a field measurement and must be taken before skinning. It is a measurement of the total body length, including the length of the tail. Measure to the nearest quarter-inch. Do not measure a skinned animal because a fresh, green skin stretches considerably.

Lay the animal on its side on a flat piece of terrain. This is important in order to get a proper measurement. Pull the nose and tail into a straight line, and then drive in pegs at each end. Place the peg at the end of the tail flesh/skin and not at the end of the hairs. Make sure the pegs are at a 90-degree angle to the ground. Remove the animal. Take the measurement between the pegs directly on the ground, not with a gap between the tape and the ground. Do not measure over the contours of the body of the animal. The terrain must be flat and cleaned of debris and the tape measure must not be pushed into depressions in the terrain.

Squared Measurement for Bears (Supplemental)

For all bears, Rowland Ward will accept as supplemental data a “squared” skin measurement. This is a field measurement of a fresh skin and must be taken after skinning. It is a measurement of the total skin width and length. Lay the skin on a flat, even surface but do not stretch it. Measure to the nearest quarter-inch. Measure from the tip of the nose to the end of the tail, but not the hairs that extend beyond the tip of the tail. Next, measure the width of the skin from the claws of the left front leg to the claws of the right front leg; the claws of the front feet are part of the measurement. Add the two measurements together and divide by two.

Weight Measurement for All Animals (Supplemental)

For all animals that fall under Method 18, we will accept as supplemental data a body weight measurement. This must be taken before skinning or gutting and as soon as practical after the animal is shot. Animals may not be measured when wet, either from rain or having been dunked in water. Be sure not to weigh any harness or other devices that may be used to hold up the animal for the scale. The weight must be taken with a scale; no estimated weights can be accepted. When measuring in pounds (lbs.), record to nearest 0.5 (half) pound. When measuring in kilograms (kg), record to nearest 0.25kg (250 metric grams). (A pound equals 454 metric grams.) Make a photo of the scale in such a manner so that the indicator on the scale can be seen with the animal and submit this photo.

Method 19 Crocodilians—Nile, Salt Water, Mugger (Marsh) Crocodiles—and American Alligator

Rank on Length.

General remarks: It is generally accepted that the length of a crocodilian is its most desirable attribute. Hunters consider the “between-the-pegs” technique to be the most accurate measurement of length; it is the method Rowland Ward has used since the late 1800s. This is a field measurement and is taken before skinning; it is a measurement of the total body length, including the length of the tail. Do not measure a skinned crocodile as fresh, green skin stretches considerably.

Rowland Ward measures crocodilians in a straight line between the pegs and **not** following the contour line of the body from nose to tail. (Figure 1) The body contour, scales and depression over the spine add considerably to the measurement. Also some specimens are considerably more bulky in the middle, depending on two factors: a) the size of recent meals, and b) the amount of time elapsed after death because crocodilians bloat after dying and both factors that will increase an “over the body” contour measurement.

This measurement can be taken by the professional hunter or witness if an official Rowland Ward measurer is not available. In that case, it must then later be certified by a measurer. It should be noted that the editors will accept measurements of fully mounted specimens as it has been established that there is very little, if any, longitudinal stretching of the skin involved in such cases. However, not many crocodiles are mounted in a straight-line position, yet the length can only be taken in a straight line between the tip of the nose and the tip of the tail. Length of fresh or raw skins, dried, cured, or tanned skins will not be accepted.

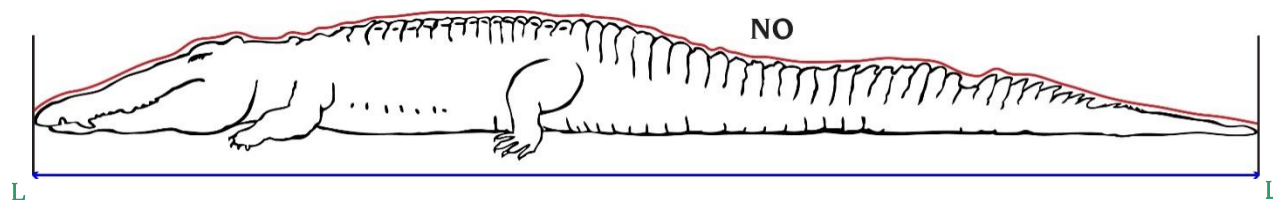


Figure 1

1. Length. Lay the crocodile on a flat piece of terrain that is cleared of debris such as rocks and sticks. This is important in order to get a proper measurement. Pull the nose and tail of the reptile into a straight line, and then drive in pegs at each end. Make sure the pegs are at a 90-degree angle to the ground. Remove the crocodile. Take the measurements between pegs along the ground. Care should be taken to measure from where the peg is entered in the ground in a straight line to where the second peg touches the ground. The terrain must be flat and the tape measure must not be pushed into depressions or lifted up by sticks or rocks. Measurements should be taken to the nearest quarter-inch (or centimeter). Do not measure over the contours of the body of the animal. (See red line in Figure 1.) Make a photo of the animal in such a manner so that the pegs can be seen with the animal and submit this photo.