

Dall sheep Full-Curl Identification Information

Introduction

Hunting Dall sheep is challenging. The shooting distance, and/or angle, often creates a challenge for the hunter to properly judge a sheep. Knowing how to judge a legal sheep takes preparation and practice. The harvest rate of sublegal rams has averaged approximately 5-6 percent over the past several years. This does not account for wounding loss.

ADF&G believes that most sublegal ram harvest can be prevented if hunters study this material and understand how to determine age and/or full-curl. Check out our website for more resources, and take the *Dall Sheep Hunting, Full-Curl Identification Guide* [Dall Sheep Hunting Full-Curl Identification Guide](#) to the field with you to study and share with your fellow hunters.

Alaska manages Dall's sheep using the full-curl harvest strategy. The targeted approach of only harvesting full-curl rams limits harvest to a small segment of the sheep population (adult males) and excludes most of the population from harvest. This conservative management approach allows for sustainable harvest of Alaska's Dall's sheep.

All full-curl Dall sheep hunts require hunters to pass the online Dall Sheep Full-Curl Identification quiz prior to hunting. Proof of completion must be carried in the field.

Definition of Full-Curl Horn

5 AAC 92.990. Definitions

(30) “full-curl horn” of a male (ram) Dall sheep means that (A) the tip of at least one horn has grown through 360 degrees of a circle described by the outer surface of the horn, as viewed from the side, or (B) both horn tips are broken, or (C) the sheep is at least eight years of age as determined by horn growth annuli;

Determining full-curl

Ram horns grow in a helix, like the threads of a bolt, out from the head. Horns must be viewed along the axis of the curl (this is not the same as a side view as the head may need to be canted to look down the axis) to see the perfect circle. For a ram to be full-curl, the outer surface of the horn, as viewed along the axis of the curl, must complete 360°. There are 3 methods of looking at the horns to determine whether a horn grows through 360° of a circle and is full-curl. The horns only need to be deemed full-curl by one of the methods!

1. The Perfect Circle View

2. The Stick Test View

3. The Horn Base/Horn Tip Angle View

Below is a description of the 3 methods of looking at horns to determine if they are full-curl by growing through 360° of a circle....

1. The Perfect Circle View

In the Perfect Circle Test, the sheep head is viewed from the side at such an angle that the outer surface of the horn creates a circle. If the horn tip reaches the horn base, then the sheep passes this test and is legal.

Viewing angle is critical. Viewing horns at different angles will change the curl's appearance. A sublegal curl can be viewed as having a full-curl when observed at an improper angle. If the horn is viewed at an improper angle, it will not fit inside a perfect circle. Instead, it will form a flattened circle or ellipse (like an egg).



Wrong view- Elliptical



Correct view- Circular

This is not a full-curl ram. If it is viewed to make it look full-curl by putting the horn tip up to the base, the circle is flattened out to an egg shape. When the horn is turned to fit inside a true circle, the tip of the horn does not reach the base of the horn.

Viewing angle in the field

Look at these two sheep and notice how the horns appear at different viewing angles. The view will continuously change based on your position relative to the sheep and the way that the sheep is moving its head. To determine if it is full-curl by the perfect circle view, notice that you must view the ram from the side and **slightly below**, or it may tilt its head upwards to achieve a similar view.

*Only one horn on a sheep must be 360° for it to be legal.

Sheep 1
Full curl



From above



Sheep 2
Not full curl



From the side



From below

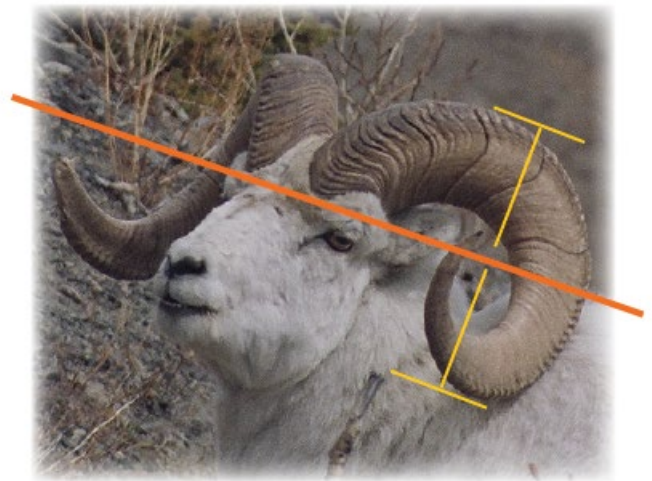
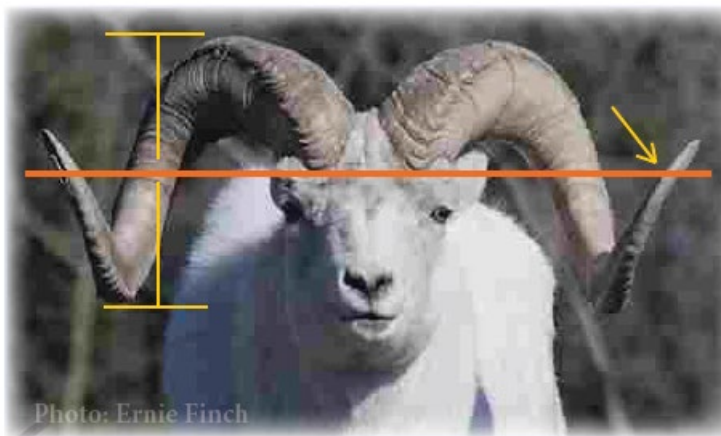


2. The Stick Test

For the stick test with the sheep in hand, a straight stick or dowel is placed beneath and across the front base of both horns and extends out past both sides of the head. **If one of the horn tips reaches or surpasses the plane created by the top of the stick or dowel, then the sheep is full-curl.**

Guides and hunters have been using the “stick test” for years by superimposing an imaginary line across the base of the sheep horns and extending it out beyond the tips.

To ensure that you are viewing the sheep at the proper head angle when using the stick method to check for full-curl, make sure that there is an equal amount of horn showing above and below your imaginary line. If the sheep’s head is tilted too far up or down it will affect the appearance of the tip relative to the horn base.



The images above demonstrate how it looks in the field. With the correct view there is an equal amount of horn above and below the imaginary line.

In the image to the right, the ram on the left clearly does not meet full-curl by the perfect circle test or by the stick test applied to one horn - with the imaginary line passing under the horn base and passing through the 180° point of a circle around the horn.

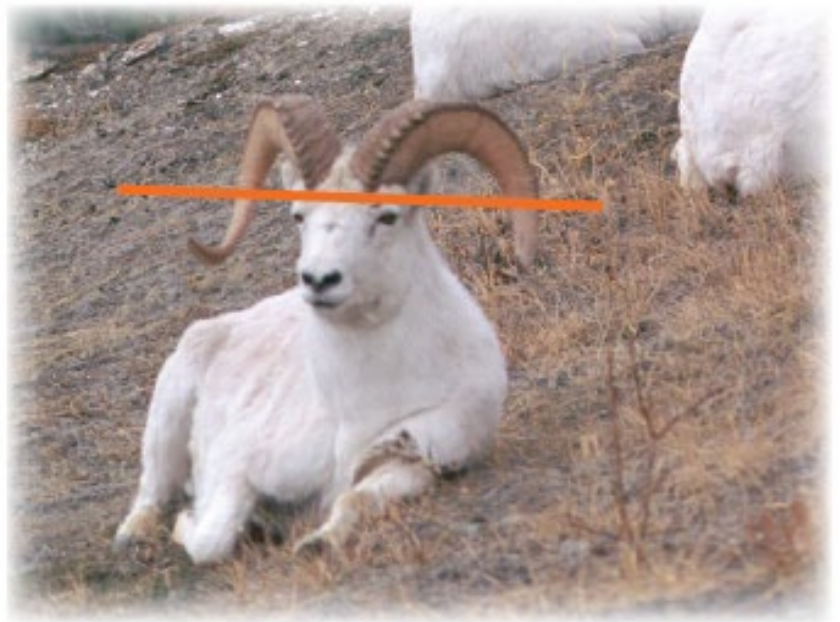
The ram on the right clearly passes the stick test and you could imagine if he turned sideways the horns would far surpass 360°.



This ram passes the stick test on at least his right side by a couple of inches. It is difficult to see the left side because the horn is broken off.



It is possible for a ram to fail the stick test and pass one of the other tests but the ram in the image to the right falls far short of the stick test and with his shallow-curved, forward pointing tips, would not pass any other test for full-curl except maybe, but unlikely, on age.

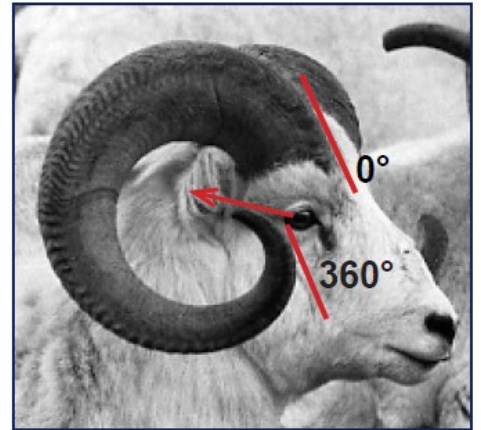


3. The Horn Base/Tip Angle Test

Sheep horns can grow through 360° of a circle without reaching the plane of the horn base. These horns usually drop low and wide and curl tightly as the ram ages.

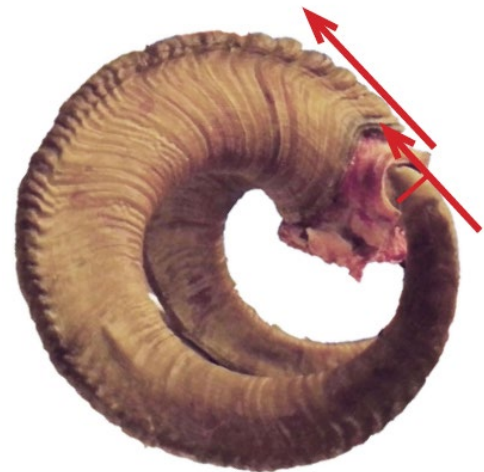
In the example at the right, the horn base angle is assigned a relative starting point of 0°. As you measure the angle around the horn, it is obvious that the tip of the horn on this sheep surpasses the 360° angle required for it to be full-curl.

Important: You are measuring the direction that the tip grows compared to the direction that the base grows.

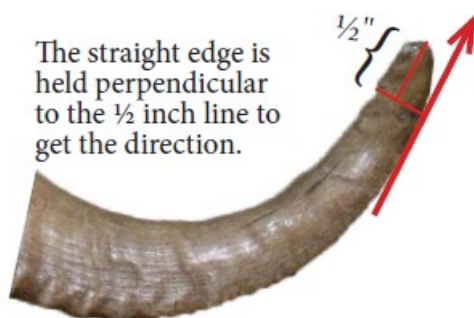


When determining the angle of the horn base, your straightedge will have two contact points (the first two ridges up from the horn base) to determine the direction.

Use the two lowest contact points above the bottom edge of the horn to place a straightedge when determining the horn base angle.



This sheep is legal. The horn tip angle is just equal to the horn base angle. These horns did not pass the stick test or the perfect circle test.



The contact point for the straight edge when determining horn tip direction is 1/2 inch from the tip, measuring down the inside or outside center of the horn.



The horn tips of this sheep do not meet or exceed the angle of the horn base, so it fails this test. It is legal, however, as it passes the stick test.

Broken Horns

The terms broken and “broomed” have been used synonymously by sheep hunters for years. Broken is the only term used in Alaska regulation. The term "broomed" is not used in regulation. Broken, as it applies to the horn tips of male (rams) Dall sheep, means:

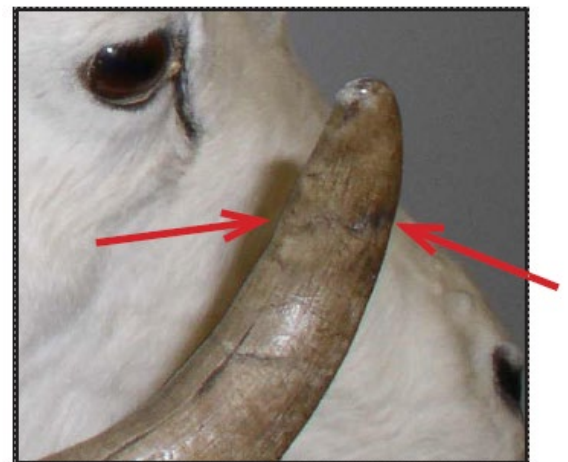
The lamb tip is completely absent; horn tips that are chipped or cracked are not broken if any portion of the lamb tip is present – **both horn tips must be broken.**



Characteristics of the lamb tip include:

1. a length of less than 4 inches,
2. the inside surface of the lamb tip is often distinctly concave when compared to the remainder of the horn, and
3. the lamb tip is the section of horn that is grown during the first 6 months of a sheep's life and is the section of horn distal of the first annulus, which is the swelling of the horn that forms during the first winter of life.

The first annulus is always present on younger rams and is slowly worn through time as the ram ages, along with the rest of the horn tip. Remnants of the first annulus can still be located and identified on the majority of all sheep (ewes, lambs, and rams), including rams that are 10+ years of age.



This is a photo of a horn that is clearly broken.



The lamb tip may show concavity on the inside if not worn down.

Examples of broken horns

The horn to the right was either broken and worn or just worn past the lamb tip. Either way it is considered broken since the lamb tip is gone.



Obviously broken and jagged.



Worn smooth, but lamb tip is missing.

Examples of horns that are worn down but not broken



Lots of horn tips are rubbed and worn down. This is not broken.



Rubbed and worn down but not far enough to remove entire lamb tip. This is not broken.



Slightly damaged and worn but lamb tip still present. This is not broken.

Aging Sheep

Dall sheep have reasonably stable periods of seasonal horn growth. Horn growth generally starts in early spring and ends in late fall or early winter. The time between growth periods is usually marked on each end by a well-defined groove referred to as a true (primary) annulus. By identifying and counting these annuli, the age of an animal can be determined.

- Sheep are born around the end of May.
- Growth is relatively continuous through the first year of life although there is still an annulus formed during the first winter of a sheep's life. The lamb tip represents the first summer of life and is counted as the first annulus.
- Because annuli are formed during winter, they do not actually represent the date of birth of an animal, but the year of life it is in.
- Horn growth normally slows with each consecutive year of the animal's life after age 3; horn growth segments should consecutively get smaller after the third annulus*. This is important to know as it will help to detect false annuli.

** A small percentage of sheep will not follow this general rule.*

Aging sheep by counting annuli in the field, at a distance, through optics, is extremely difficult and not recommended. See Guide to Judging Sheep Horns Under the Full-Curl Regulation (ADF&G 2016) for more detailed description.

Strategy for counting annuli

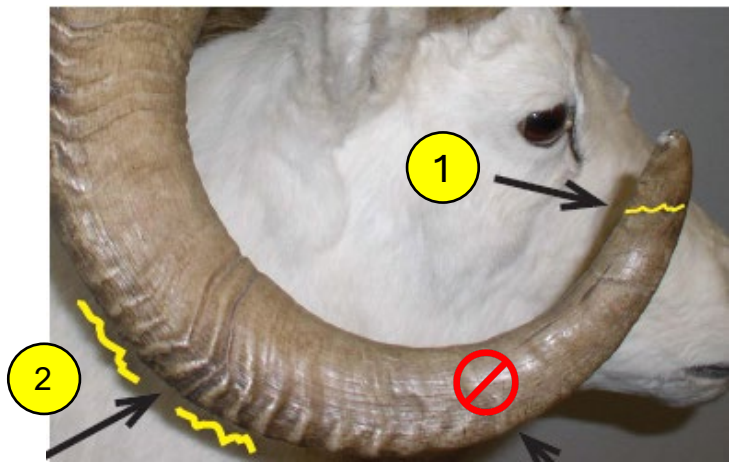
1. Locate lamb tip (it may be missing). This is your first annulus. Designate it as "1".
2. Make sure you don't count the one year "bulge" as an annulus.
3. Locate the second annulus. This is usually the first clear one. Designate it as "2" and continue counting the annuli toward the base of the horn.

Notes

- There will be a segment of growth below the last annulus for sheep that are harvested in the fall.
- You should **never assume any ram has a hidden annulus** (below the hairline) and subsequently, you should never add a year to the number of annuli you can clearly see.

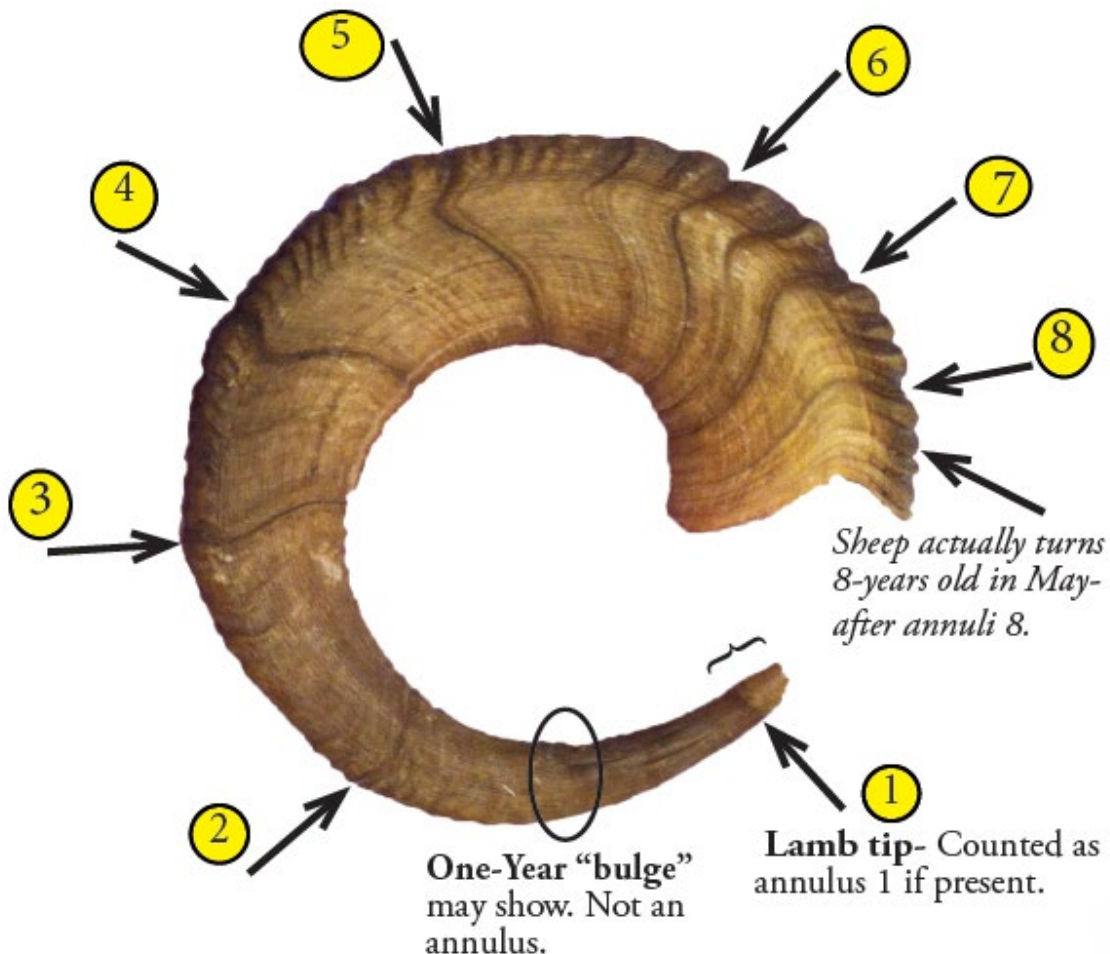
The second annulus - notes

- The second annulus (#2) is usually the first clear one and may be the first one visible if the lamb tip is rubbed away. It is also identifiable as the second annulus because it is located at the point where the outer surface of the horn starts to get ridges. There will be ridges on both sides of the annulus.
- The first annulus (#1).



Sometimes you see a bulge created at the 12-month point in an animal's life. It might look like an area where the horn is swollen. **This is not an annulus.**

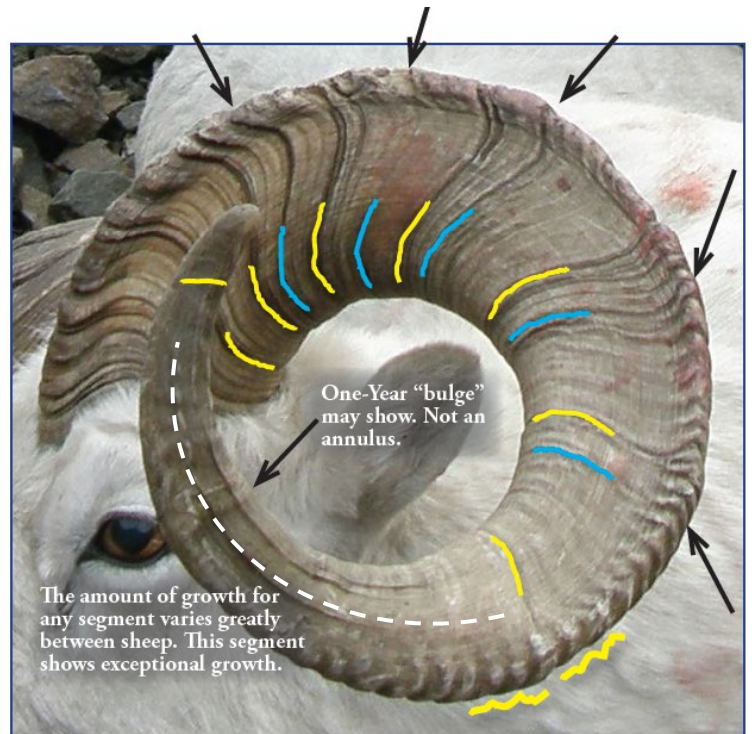
Counting annuli



Ridges and false annuli

A distinct pattern of ridges between true annuli tend to repeat themselves in the middle section of the horn. For example, if there is a false annulus in one section, it tends to repeat itself in the following growth segments. Knowing this will provide you with one more bit of information and help you better identify false annuli. In the sheep horns to the right, the arrows point to a false annulus that repeats itself in each growth segment.

See how well defined the false annuli can appear? That is why you need to use all the clues when making age determinations.



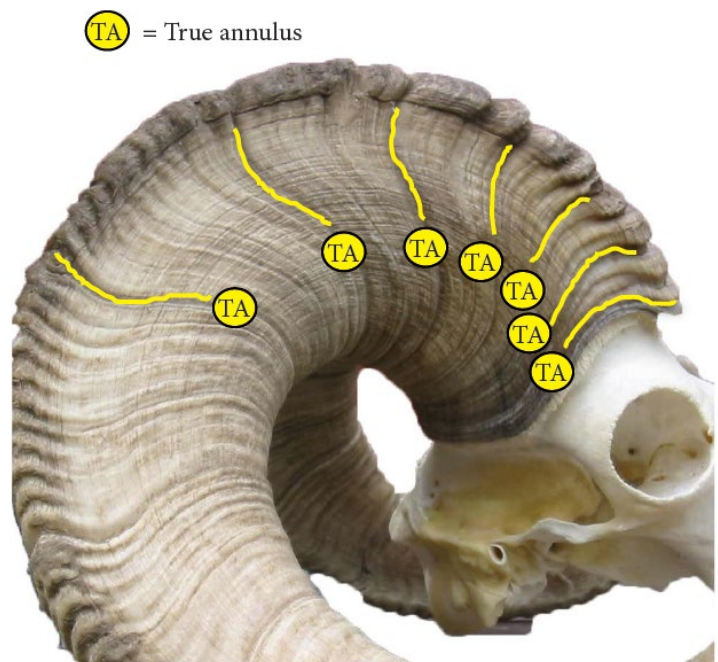
True annuli are shown with a yellow line.

False annuli are marked with a blue line

Decreasing segment size

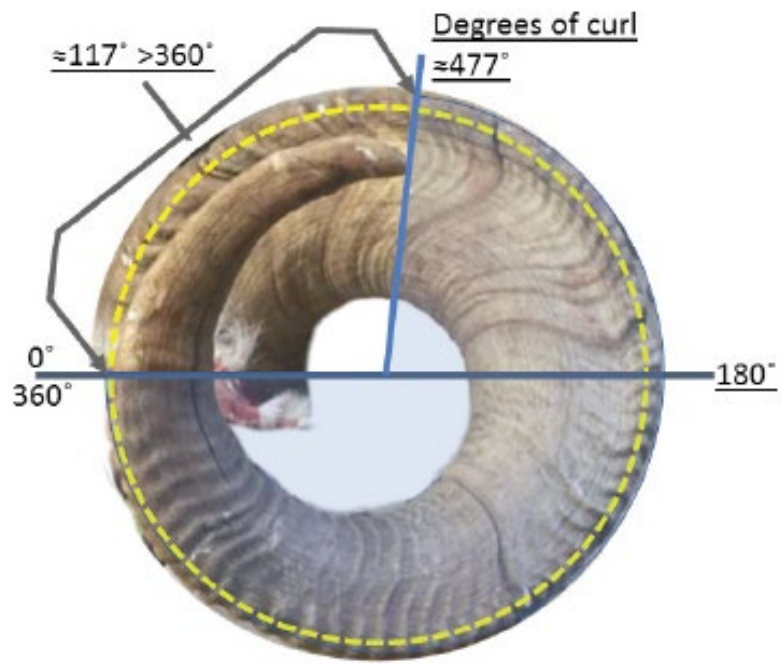
As sheep age, annual horn growth slows. This causes the growth segment between annuli to successively get shorter. The growth segments near the base of the horns are usually closer together than the segments further out near the tip. If you are not seeing this pattern, you may be including false annuli in your assessment of the age of a ram.

** There is a small percentage of sheep that will not fit this description. Use as many clues as possible to determine true and false annuli.*



Degrees of curl

Many hunters talk about sheep horn curl using fractions; a sheep is $7/8^{\text{th}}$'s or $15/16^{\text{th}}$'s, etc. But this terminology can be deceiving. A $15/16^{\text{th}}$ curl, for example, is not close to full. It is not $15/16^{\text{th}}$'s of an inch, it is $15/16^{\text{th}}$'s of a circle that may be in the realm of 36 inches. On a ram with 36-inch horns, $10^\circ = 1$ inch of horn. A sheep that is $15/16^{\text{th}}$'s is actually only about 340° of curl and 2 inches short of full-curl.



Give yourself a buffer!

Hunters tend to get in trouble and shoot sublegal sheep when they are trying to judge a sheep that is very close to 360° . Don't do this. Give yourself a buffer; some number of degrees over 360° that you will know for sure that the animal is a legal ram. Two inches over 360° on a 36-inch sheep will give you 380° and should be easy to see the tip of the horn overlap the base of the horn when you have the proper viewing angle.



This "close to full-curl" ram is the type that sheep hunters waste their time on and get in trouble by convincing themselves that it is full-curl.



When viewing a ram, if you can clearly see that the curve of the tip of the horn will match the curve of the base of the horn if they are overlapped, then the ram is more than full-curl.

Quiz sample – Is this a full-curl ram?



No. This sheep is not legal.

With just a slight movement of his head you can see that he almost presents the perfect circle view. He may inch a bit closer but will still come up short of full-curl.

This is the type of sheep that hunters may watch for hours trying to make it into full-curl. Don't convince yourself or your hunting partner that a sheep is full-curl. Be confident that it is.



If you stare at a sheep for hours at all different angles trying to determine if it is full-curl, it is too close to shoot.

If you are not absolutely sure that a ram is full-curl, don't shoot!