

Untunable Bow? Nock Travel Could Be Your Problem



By Bill Winke

Many of the lessons I've learned over the years have been related to the behavior of the animals I've hunted and how a person with a bow can get close enough for a clean shot.

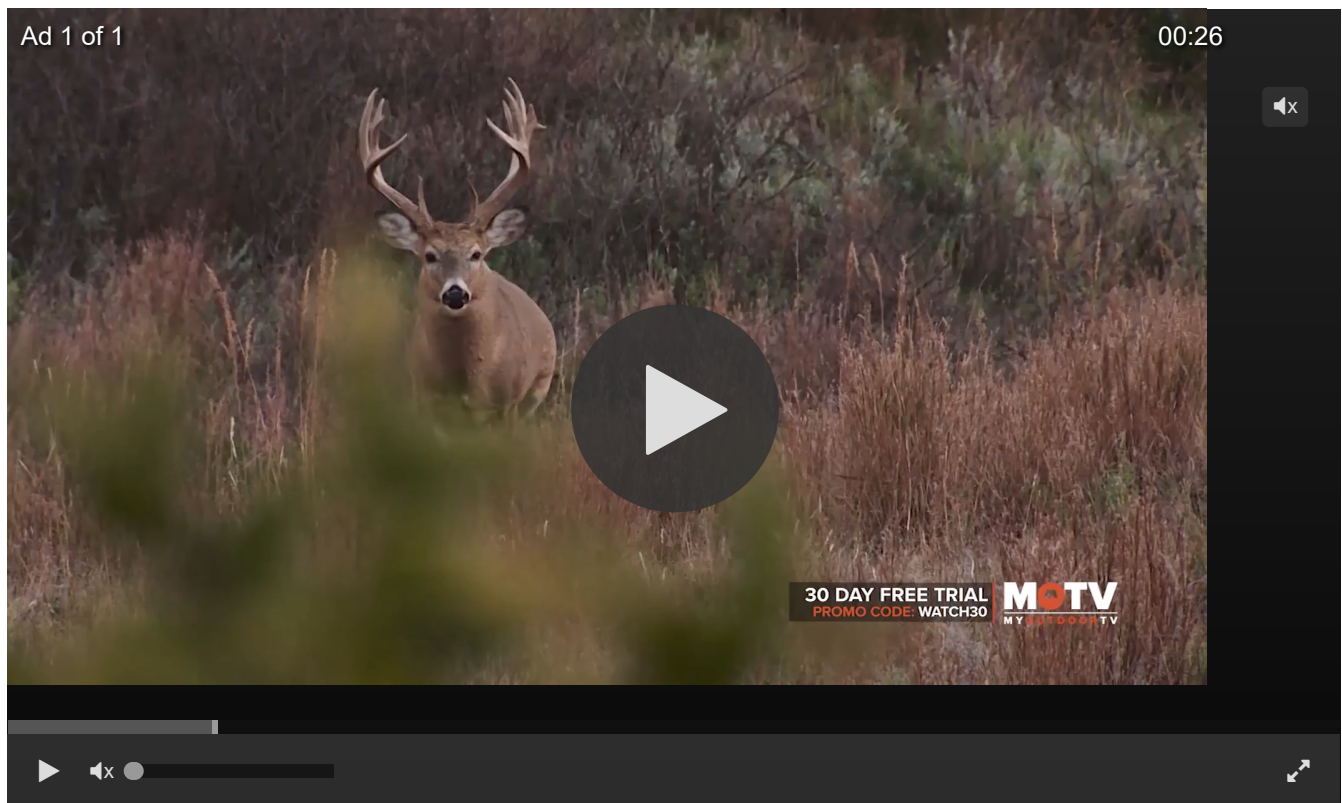
However, just as important are the lessons I've learned that determine how accurately that shot can be placed. The most important lesson I've learned about arrow flight? Nock travel.

Junk Bows

Bow design has gotten a lot better over the last 30 years, but there were times when the manufacturers made bows that could not be tuned, period. You literally had to disassemble and modify some of them in order to get an arrow to fly true. Most people, of course, didn't do that, so bow tuning became something of a black art.

Sure, there were some good bows made during that time, but there were also many bad ones. The companies making lemons are mostly out of business now. The ones that are still with us remedied their ways very quickly.

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Those junk bows were impossible to tune, because their nocking points moved as the string sped forward. The forward path of the nocking point affects the movement of the back of the arrow. If the nocking point moves dramatically to the right as the string is released, for instance, the arrow will slash tail-right as it leaves the bow. You must fix the nock's path to get straight arrow flight.

Unfortunately, it's very hard to fix the nock's path. Much of that is baked in when the bow is built via the design of the cams or the way the limb tips twist when you draw the bow.

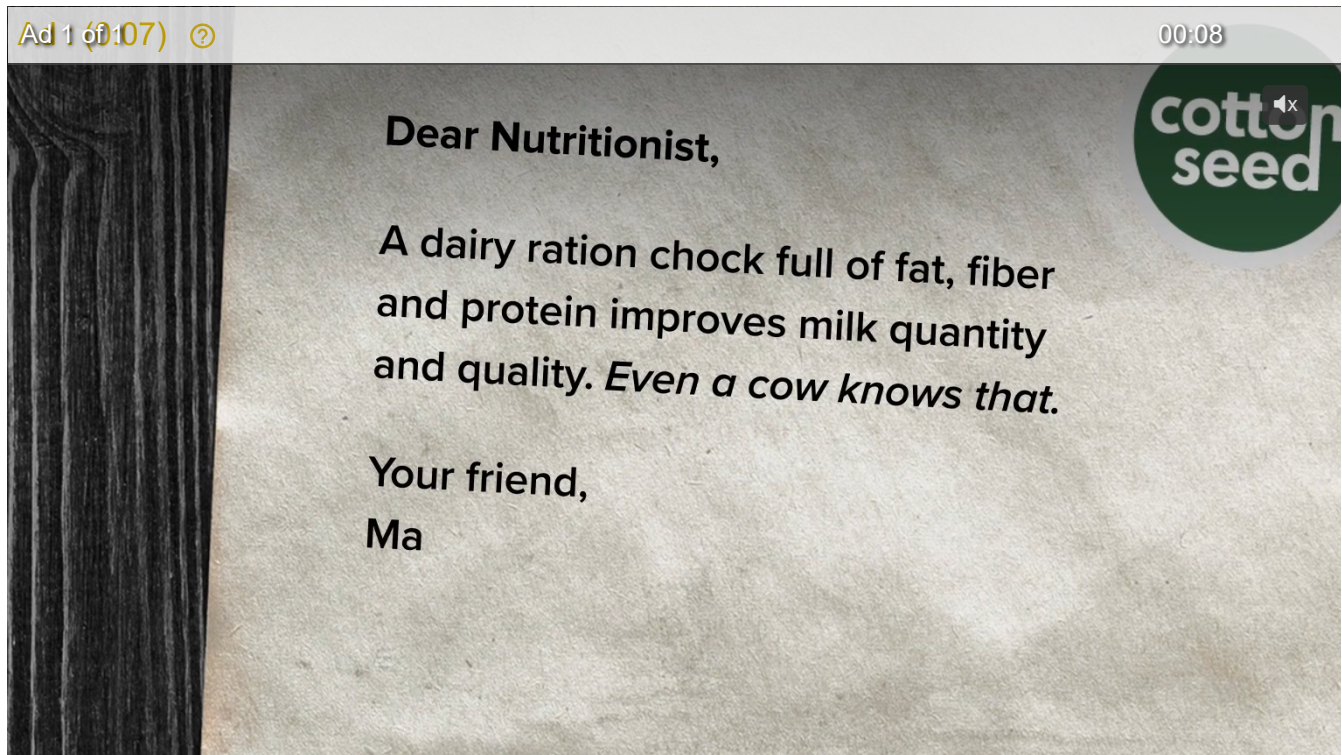
Up & Down Nock Travel

Vertical nock travel (up or down as the string zips forward) arises from poor cam-timing, the result of poor cam design or the stretch of one harness versus the other. For most of us, a poorly timed two-cam bow was our first introduction to nock-travel problems. Then, someone showed us that the cams reached their designed full-draw positions at different points in the draw cycle. Then, that someone showed us how to fix it with a few twists to the longer harness. We were shooting great again.

Three things have happened in recent decades. First, bow designers came up with a variety of cam designs — single, hybrid and binary — that were less sensitive to stretch in the harnesses. Second, the synthetics used in string and harness manufacture don't stretch nearly as much now. Third, string/harness makers learned to pre-stress their products so they were stable once they were installed on a bow. The result: bows that have greatly improved vertical nock travel.

I still tune all of my bows whether they have single, hybrid or binary cams. You do this by twisting up the correct cable (control cable or buss cable) to ensure the cams are at the correct rotation at full draw to produce level nock travel.

Video That May Interest You



If you have a bow press and time to watch YouTube tutorials, this is easy enough to do solo. If not, most good archery pro shops have someone on staff who can do this in a few minutes.

If possible, shoot the bow you're considering buying through paper first. If the seller won't let you check out the bow's arrow flight before you buy it, walk away from the deal — it's your hard-earned money. Any reputable bow manufacturer will be the first to agree, as they want you to see how good their bows are.

Sideways Nock Travel

You'll see the result of horizontal nock travel when you paper-tune your bow and find a sideways tear. Eliminating that tear will require a process of elimination, as sideways nock travel can result from two different issues.

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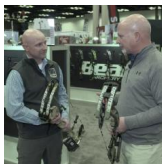
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Cam Lean

Start with the bow itself. Again, I wouldn't buy a bow that can't be tuned, but it can be hard to get access to a range and tuning fixture when making a purchase. Fortunately, you can tell a lot about a bow's sideways nock travel just by looking at it.

Before you draw the bow, hold it out in front of you and sight down the string. Line the cams up and see if they and the string form a straight line. If they don't, the bow likely has tuning issues. If cams lean at rest, they will only get worse when you draw the string.

As the cams lean during the draw, the string is actually moving sideways compared to the bow's grip. Then, when you release the string, the cams spring back to their starting point and the nocking point moves to the side, taking the back of the arrow with it. The result is a sideways paper tear.

Next, see if the cams are vertical at full draw. It's harder to see this when you're drawing the bow, so get someone to draw the bow while you look at it from above. If misalignment is noticeable, you'll have a hard time tuning that bow.

You can sometimes fix a bit of cam lean by twisting one side of the bow's split-yoke system (if applicable) to move the limb tips back to square. If the problem is significant, however, walk away. You'll fight it forever.

Your Grip

I've owned several bows I couldn't easily tune. Their cams looked straight at rest and full draw, but they all displayed tail-right or tail-left tears through paper. I made adjustments to the rest's position without improving the arrow flight.

Finally, I realized I could change the arrow flight by just bending my wrist differently or adjusting my pressure point on the bow's handle. I started experimenting with my grip and was soon able to get good arrow flight out of bows that otherwise gave me fits. However, it often took a slightly different grip to suit each bow.

I've found tuning a bow only turns into a black art when you have trouble with nock travel and grip position. If you have an "untunable" bow, that's where you need to start!

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