



2005 Head-2-Head Bow Test



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Introduction

In 2005 we experienced a tremendous voter turnout for the third annual Head to Head bow test. The top eight vote getters were Alpine, PSE, Bow Tech, Oneida, Mathews, Martin, Hoyt and Darton. Each company was contacted and asked to choose one of their bows for our yearly challenge. After an explanation of the test and the parameters evaluated they chose a model to be included. A detailed description of all models will be included here.

Each year we try to refine this bow test to provide the best and most informative results possible. After two years of being asked, I decided to do a less subjective noise test along with our regular noise test. We employed a Quest 2700 sound level meter for this task and the results were interesting and informative.

All bows were set up and tuned twice to properly shoot a 350 grain and 540 grain arrow. Speed was recorded for both setups using an Oehler M35 Chronograph.

Most of us know that the decision to purchase a bow will many times come down to a subjective quality rather than an objective measure such as speed or efficiency. How a bow feels in our hands, draws or sounds will guide the majority of us to our personal choice. These are the performance aspects that our Head to Head test focuses on and the validity of the data lies in the method – blindfolded archers testing bows without regard to brand or “looks”.

While going through the test results I was amazed at times. For instance, when an evaluator is placed close to the target (protected of course) during the noise test it is almost impossible for them to distinguish one bow from another! One evaluator in frustration said, “They all sound the same!” Having to see for myself, I set up shop close to the target and listened as an evaluator fired each bow. It was true – at that position, relative to the shooter, the difference between the top and bottom bows was minimal and extremely difficult to discern. I just expected, as I’m sure many of you would, that bows that were worlds apart in the amount of noise they made from the shooter’s perspective would be the very same from a deer’s perspective. Not necessarily so. Looking back at last year’s test I found that we experienced this same thing then as well. I’m still pondering what that means for me in bow selection - you will have to draw your own conclusions on this one! Still on the subject of sound, I was also baffled by the decibel meter results. One bow in particular sounded absolutely loud to most of the evaluators but when put through the decibel meter test scored relatively high (in rank - not noise).

Another request that has been brought up several times is that we do an accuracy test. Unfortunately, I have not figured out a way to do that type of a test with any real merit. If a valid method of testing accuracy ever presents itself I will certainly include it.

Kick back and enjoy the test – the results may not be what you wanted to see but they are what they are without regard to make or model. For those of you who find yourself in Ford vs. Chevy, “my dad can beat up your dad” and “who was the greatest football team of all time?” arguments – this may not be the



test for you. If, on the other hand, you have an open mind and can handle your bow of choice not being at the top of every category (mine came in third!) – this should be interesting!

Have fun!

Jon E. Silks

Hunt hard and be Safe!

Foreward

This is a layman's test with the "average Joe" in mind and was not intended to be "over the top" with technical lingo that most of us do not relate to. This is a good way for someone who hasn't shot a particular bow to get a general idea of the performance in comparison to other models. It isn't just my opinion being expressed here, it is the opinion of a handful of archers who were blindfolded and in most cases had no idea which bow they were shooting. Enjoy the results and approach them with an open mind – it is both interesting and fun!

Individual Categories

Noise level: One of the more important characteristics of a hunting bow is the level of noise that it generates upon release – or is it? For the second straight year we had someone sit very close to the target (protected of course) to evaluate what the game animal might hear when an arrow is released. For the second straight year the results were the same – there was little difference between the quietest bow and the loudest bow! A bow that sounded like a gun to the shooter when released sounded almost exactly the same as a much quieter bow (shooter's perspective again) when heard from the game animal's perspective. For me, this is one of the most interesting results of all.

For this portion of the evaluation each tester was placed in a different orientation in relation to the shooter with their backs turned or blindfolded. There were some interesting results!

Kick/Vibration:

A special challenge exists with this category in that the evaluator has to concentrate extremely hard to separate the noise in their ears with the sensation in their hands. Many times when a bow makes a significant amount of noise we mentally transfer that to our perception of the shock and vibration. The two do not always go hand in hand though. Some of the evaluators opted for ear plugs for this very reason.



Three bows seemed to steal the show in this category with the winner clearly distancing itself from the pack.

Draw Cycle: A bow that draws smoothly is a joy to shoot. When we have fun shooting we go to the practice range more often and in turn we perform consistently and become more accurate. Everybody wins.

For years I shot one brand of bow almost exclusively just for the ultra smooth draw cycle that it boasted. Since then many other manufacturers have recognized the importance of this characteristic and have stepped up to the plate with better designs. The winner of this category may surprise you!

Balance/Feel: The manner in which a bow handle naturally situates your hand and wrist is an important factor for attaining accuracy. Also, the feel of a bow in your hands can make or break your decision to buy or not to buy. A bow that does well in some areas but feels like a 2x4 in your hand will most likely be left on the shelf. Most archers, no matter their hand size, seem to prefer a narrow throat in the grip. This year's winner definitely fits that bill.

Setup and Standards

All bows were set-up with a 29" draw, 65 lb pull, string loop and a new Archery Product's QuikTune 3000 Arrow Rest. Other than these items, nothing was added to or taken away from the bows. The way you buy them is the way they are tested – no modifications.

In case you are wondering, we test at 65 pound pull because some bows that are sent in do not reach 70 pounds when cranked all the way down.

Chronograph

Oehler Model 35 Proof

Competition Electronics ProChrono (used to confirm the Oehler numbers)

Arrows (speed testing)

Game Tracker Carbon Express 200 – 350 grain

Easton XX78 2315 Super Slam – 540 grain

2005 Test Procedure

The first year we presented this test we used a playoff style bracketing system. The results were confusing to some so we changed the method for 2004 to a positive elimination system. In 2005 we maintained the new method and put in an incredible amount of time and effort to get a true 1 thru 8



rating. Each evaluator spent a significant amount of time working through the evaluation, choosing each place through a process of elimination – no shortcuts!

The poll conducted here on Bowsite.Com was changed this year from selecting a particular bow model to selecting a manufacturer. This was done to give the bow makers more freedom in choosing what they wanted to see representing their company and also made it possible for the testing to be completed earlier in the year. The manufacturers were contacted and the parameters of the test were explained. Each bow maker then chose a model to enter in the challenge.

Once the bows were all received, the procedure was as follows:

Each evaluator worked separately through all four categories. A blindfold was used to keep brand loyalty at bay and was worn from the beginning to the end of each session (noise, kick, etc.).

Example of the “draw cycle” category process: The evaluator is blindfolded. He is handed a bow to draw. The bow is handed back to the helper and he is given a second bow to draw. The evaluator chooses between the two. The one that is not chosen is set to the side. The one that is chosen is then put through the same process with the next bow in line. Each is drawn and one is chosen. Again, the one that is chosen is put up against the next bow in line. This process is continued until only one bow remains. The bow that remains is the evaluator’s #1 pick for that category. That bow is taken out of the testing. The entire process is completed again for the remaining seven bows until only one remains – the evaluator’s #2 overall pick for that category. This process is repeated until all 8 bows have been placed/seated.

Each evaluator’s results are then scored. This was done by simply inverting the numbers of the rankings and rewarding points for ranking. Just as an example we will rate the bows arbitrarily for draw cycle (this is just an example – not actual results):

1. Oneida
2. Bowtech
3. PSE
4. Mathews
5. Hoyt
6. Darton
7. Martin
8. Alpine

The bows would then be given the following scores for one evaluator for the draw category:

- Oneida – 8 points
- Bowtech – 7 points
- PSE – 6 points
- Mathews – 5 points
- Hoyt – 4 points



- Darton – 3 points
- Martin – 2 points
- Alpine – 1 point

The points were totaled for all evaluators in each category. The bow with the highest number of total points in that category was rated #1 and so on down the line to #8. In this way we were able to get a true ranking for each category based on the results from all evaluators.

2005 Individual Bow Specs

Company – Alpine Archery

Model – Denali

MSRP – \$499.00

Finish – Realtree Hardwoods Green HD

Brace height – 7”

Axle to axle length – 34”

Let-off – 80% standard with 65% optional

Advertised IBO – 307 fps

Advertised AMO – N/A

Mass weight – 4.6 lbs

Draw lengths – 26 through 30” in ½” increments

Draw weights – 60, 70 pounds peak



Company – Bowtech
Model – Allegiance

MSRP – \$749.00
Finish –
Brace height – 7”
Axle to axle length – 33-5/8”
Let-off – 65 or 80% adjustable
Advertised IBO – 322-328 fps
Advertised AMO – N/A
Mass weight – 4 lbs. 3 oz
Draw lengths – 24 – 30”
Draw weights – 50, 60, 70, 80, 90 and 100 pound
peak



Company – Darton
Model – Tempest Extreme

MSRP – \$699.99
Finish – Realtree Hardwoods Green HD
Brace height – 7”
Axle to axle length – 36”
Let-off – 70 or 80%
Advertised IBO – 313 fps
Advertised AMO – 240 fps
Mass weight – 4.5 lbs
Draw lengths – 26.5 – 31”
Draw weights – 50, 60 and 70 pounds peak



Company – Hoyt
Model – V-Tec

MSRP – not advertised
Finish – Realtree Hardwoods Green HD
Brace height – 7”
Axle to axle length – 35.5”
Let-off – 65 or 75 %
Advertised IBO – 305 fps
Advertised AMO – N/A
Mass weight – 4 lbs
Draw lengths – 23 – 31.5”
Draw weights – 40, 50, 60, 70 and 80 pond peak



Company – Martin
Model – SlayR

MSRP – not advertised
Finish – New mossy Oak Breakup
Brace height – 6-3/4”
Axle to axle length – 38”
Let-off – 65 or 75
Advertised IBO – 325 fps
Advertised AMO – N/A
Mass weight – 5 lbs 2 oz
Draw lengths – 26 – 31”
Draw weights – 50, 60 and 70 pounds peak



Company – Mathews
Model – Switchback

MSRP – \$769.00
Finish – Realtree Hardwoods HD
Brace height – 7”
Axle to axle length – 33”
Let-off – 65 or 80%
Advertised IBO – 318 fps
Advertised AMO – 241fps
Mass weight – 4.34 lbs
Draw lengths – 26 – 30”
Draw weights – 40, 50, 60 and 70 pound peak



Company – Oneida
Model – Black Eagle

(all specs given for “Medium”)
MSRP – \$799.00
Finish – Realtree Hardwoods HD
Brace height – 6-3/8”
Axle to axle length – 45 1/2” tip to tip
Let-off – Varies with configuration
Advertised IBO – 305 fps
Advertised AMO – N/A
Mass weight – 4 pounds
Draw lengths – 28 – 31.5”
Draw weights – 35 to 55, 50 to 70 and 60 to 80 pounds



Company – PSE
Model – Vengeance

MSRP – \$650.00
Finish – Mossy Oak Breakup
Brace height – 7-5/8”
Axle to axle length – 34 1/2”
Let-off – 65 or 80%
Advertised IBO – 308 fps
Advertised AMO – N/A
Mass weight – 4.2 lbs
Draw lengths – 26 – 30”
Draw weights – 60 and 70 lb peak



Results

Scores

Kick/Vibration:

1. Mathews Switchback – Category score: 71
2. Bowtech Allegiance – Category score: 62
3. Hoyt V-Tec - Category score: 48
4. Oneida Black Eagle - Category score: 34
5. Alpine Denali - Category score: 31
6. Darton Tempest – Category Score: 29
7. PSE Vengeance - Category score: 26
8. Martin Slay-R - Category score: 22

Noise Level:

1. A tie! Mathews Switchback and Hoyt V-Tec - Category score: 61
2. N/A
3. Bowtech Allegiance - Category score: 52
4. Darton Tempest - Category score: 45
5. PSE Vengeance - Category score: 39
6. Alpine Denali - Category score: 35
7. Oneida Black Eagle - Category score: 15
8. Martin Slay-R - Category score: 12

Balance/Feel (Grip):

1. Hoyt V-Tec - Category score: 62
2. Mathews Switchback - Category score: 56
3. PSE Vengeance - Category score: 51
4. Bowtech Allegiance – Category Score: 46
5. A Tie! Oneida Black Eagle and Darton Tempest – Category score: 36
6. N/A
7. Martin Slay-R – Category score: 27
8. Alpine Denali – Category score: 10



Draw Cycle:

1. Oneida Black Eagle - Category score: 61
2. Mathews Switchback - Category score: 53
3. Bowtech Allegiance - Category score: 47
4. Hoyt V-Tec - Category score: 42
5. Alpine Denali - Category score: 35
6. Martin Slay-R - Category score: 29
7. PSE Vengeance - Category score: 28
8. Darton Tempest - Category score: 25

Speed Results

(rounded up to the next whole number)

Easton XX78 - 540 grain

1. Bowtech Allegiance - 252 fps
2. Hoyt V-Tec – 244 fps
3. Darton Tempest – 239 fps
4. Martin SlayR – 237 fps
5. PSE Vengeance – 236 fps
6. A tie! Mathews Switchback & Oneida Black Eagle – 235 fps
7. N/A
8. Alpine Denali – 228 fps

Carbon Express – 350 grain

1. Bowtech Allegiance – 307 fps
2. Hoyt V-Tec – 297 fps
3. Martin SlayR – 291 fps
4. Darton tempest – 290 fps
5. Mathews Switchback – 289 fps
6. PSE Vengeance– 288 fps
7. Oneida Black Eagle – 285 fps
8. Alpine Denali – 275 fps



2005 Decibel Meter Results

Equipment:

- Quest 2700 Impulse Sound level Meter
- Quest QC-10 general Purpose Calibrator
- Electret .5” free-field microphone
- Tripod

This particular test was the most interesting for me. We listened to many archers who wanted a decibel test done for each bow and refined our testing to include this sound pressure level test. I have learned a great deal about sound but still have only scratched the surface. What I have learned is that this test, as performed, is limited. A flat reading of “peak decibels” does not take frequency or duration into account and both are of paramount importance when attempting to determine the effect any given sound will have on a game animal. We will employ a sound studio in 2006 in an effort to more completely evaluate this aspect.

Another note of interest is that each bow generates different sounds at different levels in different directions! Sound confusing? – It is. A bow that rates well when tested from the right side of the shooter may do poorly when placed to the left, etc. Also, it is amazing to me how all of the bows sound almost identical when listened to from “down range”. Perhaps noise is not as critical as once believed but I will wait until next year’s studio test to draw any hard conclusions. If things turn out the way I expect, frequency will have more to do with the offensiveness of a sound rather than decibels.

For now, look at these results and compare them with the results from our subjective noise category. I think you will find the outcome to be quite interesting – especially for one bow in particular.

Average decibel level taken over 5 shots. Microphone placed exactly 6 feet from the right side surface of the bow.

1. Mathews Switchback: 90.8 dB
2. Bowtech Allegiance: 90.9 dB
3. Martin Slay-R: 93.0 dB
4. Alpine Denali: 93.1 dB
5. Hoyt V-Tec: 94.3 dB
6. PSE Vengeance: 94.9 dB
7. Darton Tempest: 95.3 dB
8. Oneida Black Eagle: 98.0 dB

Average decibel level taken over 5 shots. Microphone placed exactly 1.5 feet from the left side surface of the bow.

1. Mathews Switchback: 97.0 dB
2. PSE Vengeance: 97.9 dB



3. Alpine Denali: 99.0 dB
4. Martin Slay-R: 99.7 dB
5. Bowtech Allegiance: 100.4 dB
6. Hoyt V-Tec: 101.2 dB
7. Darton Tempest: 101.9 dB
8. Oneida Black Eagle: 107.3 dB

Overall Score for Subjective Categories

1. Mathews Switchback – Overall Score: 240
2. Hoyt V-Tec – Overall Score: 213
3. Bowtech Allegiance - Overall Score: 207
4. Oneida Black Eagle - Overall Score: 146
5. PSE Vengeance - Overall Score: 144
6. Darton Tempest - Overall Score: 135
7. Alpine Denali - Overall Score: 111
8. Martin Slay-R - Overall Score: 90



Bow Evaluation Commentary

Jon Silks Personal Bow commentary

Darton Tempest:

The new Tempest is an improvement over last year's flagship from Darton Archery. The limbs have been made more parallel and come standard with Sim's Ultra Limb Savers. The kick/vibration of the Tempest is still higher than I would like to see but they have made some progress in that area. I personally rated this rig at #3 in the noise category and thought the draw was fairly smooth, rating it at #4. The overall ranking for the Tempest was #6.

Alpine Denali:

Alpine came out with a multi-piece riser that sports a small rear handle brace similar to that of a Hoyt Tec riser. I was a little surprised at the results for the Denali - #7 overall. After shooting it a few times when it first arrived I expected it to be a solid middle-of-the-pack performer. The grip rating came down to a small area above the handle that pushes into your thumb and I believe that the balance/feel category was affected by the relatively high mass weight of 4.6 pounds. The Denali's noise level rated at number 6 and kick/vibration at number 5.

Martin SlayR:

I was surprised that Martin chose to enter the SlayR rather than the Shadowcat. The SlayR is relatively heavy and loud, whereas the Shadowcat would be more competitive in those categories. Still, the SlayR did have a comfortable grip and fairly smooth draw. In the speed ratings the SlayR did well scoring a #3 position with the lighter arrow and #4 with the 540 grain arrow. We also had a tough time keeping this bow in time and had to tune it several times. I am hoping that Martin is picked again next year and enters their top bow.

Hoyt V-Tec:

The V-Tec improved Hoyt's ratings this year with a jump from #3 in 2004 to a #2 in 2005, bumping Bowtech from that spot. With a solid #2 ranking in both speed tests, a flat out win of the feel/balance category and a tie with Mathews in the noise category, the V-Tec is an impressive performer! The lowest score for Hoyt came in the draw cycle category mostly because it seemed harder to pull the 65 pounds on the V-Tec vs. some of the others.

Mathews Switchback:

Mathews' 2005 flagship, the Switchback, is one of the sweetest shooting rigs ever designed. There is absolutely no kick or vibration upon release. It was the clear winner of the sound level meter test and tied with Hoyt in our traditional noise test. The only area that Mathews fell in from last year was speed. In 2004 the Outback won both speed tests, however, this year the Switchback ranked #5 with a 350 grain arrow and tied for #6 with a 540 grain arrow. When all of the results were in and the score tallied – the



Mathews Switchback was our overall #1 pick for 2005. Congratulations to Matt and the rest of the design team at mathews!

Oneida Black Eagle:

Oneida shocked me a bit with their strong performance in this test. When all of the scores were added up the Black Eagle ranked #4 overall and had a commanding win in the draw cycle category. Another surprise was the kick/vibration category where Oneida came in at #4 despite the high level of noise generated by the bow's design. When Oneida finally finds the solution to the noise issue – look out!

Bowtech Allegiance:

The Allegiance is an all out top performer that packs a devastating punch with the speed it generates. When all was said and done the Bowtech secured the overall #3 ranking and far outdistanced the rest of the pack in the two speed tests! I have personally selected this rig for my 2005 hunting bow and have already smoked a turkey in Missouri with it! The Allegiance scored well in every subjective category with its best showing in the kick/vibration class.

PSE Vengeance:

The Vengeance had its best showing in the feel/balance category with a #4 ranking and ended up at #5 overall. The vengeance reminds me of a sports team that lost a game by a significant amount but seriously challenged the other team and made things interesting. In other words, the Vengeance is a great bow despite its final placement.



2005 Evaluation Team & Special Thanks

I can't express my appreciation enough for the folks that offered to be a part of the 2005 evaluation team. To make this annual test possible they spent a considerable amount of time and energy carefully testing each rig.

Skip Neiffer: A true veteran of bowhunting, Skip is the nephew of noted American archery pioneer Bob Swinehart. He has been bowhunting since the 60s in Canada and across the USA and has taken black bear, elk, mule deer, and whitetail deer. Skip has given much of his energy and time over the years to help others find bowhunting success - especially with black bear.

Jake McKeever: Jake is just getting started in the archery and hunting world. He has begun to learn the fine art of turkey calling and is falling fast for bowhunting.

Gregg Keeton: Gregg is an accomplished big game hunter with Whitetail deer, Moose and Black Bear listed in the Pope and Young Club record book. More importantly he is also a great friend and dad. Gregg is the consummate volunteer and has given thousands of hours to organization like the Ohio Bowhunter's Association (OBA), NWTF and a group that dedicates itself to giving handicapped youth a chance to enjoy the sport of hunting. In 2004 the OBA awarded Gregg a Lifetime Achievement Award!

Matthew Simpson: Matt is a bowyer at heart with a special skill for making top-notch longbows. He has built two bows for me and guided me through the process of making my own! Matt has recently taken up compound bows and pursues whitetails in Ohio and Kentucky.

Kenyon Woods: Kenyon took my son, Tyler, on his first ever turkey hunt this year in Kentucky. He purposefully goes out of his way to give young kids the opportunity to share in the outdoors. Katie Keeton took her first gobbler last year on a hunt with her uncle Kenyon! Kenyon has taken many big game animals with his bow over the years including Caribou, Black Bear and Whitetail deer.

Kindell Keeton: Kindell is a world class turkey caller with many trophies and ribbons to prove it. At the 2005 NWTF Grand Nationals, Kindell was the first runner up in the intermediate division. He is a member of Woodhaven Call's sponsored staff and has taken several big game animals in his short career.

Tim Coyle: We call Tim "Mr. Black Bear". He has a passion for chasing black bear in Canada and actually prefers it to hunting any other big game species. Tim has also taken many whitetail deer over the years.

I would also like to thank **Tyler, Rachel** and **Michael** Silks for the tremendous effort they put forth with bow handling and record keeping – great job guys!!



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New Archery Products for providing all of the QuikTune 3000 Arrow Rests

Easton for providing test arrows

Carbon Express for providing test arrows

Oehler for providing the chronograph

And of course, all of the manufacturers who provided the bows for testing.

About Bowsite.com

Bowsite.com is the #1 Bowhunting website on the Internet. Over 20,000 daily visitors have come to trust Bowsite.com with their honest, no-nonsense approach to bowhunting and archery information.

In a recent survey, Bowsite.com was rated the most trusted information source for new equipment buyers. Using a combination of feature articles, interactive content, and an open forum, we provide bowhunters with a place to go for straight answers on archery gear, outfitters, game laws and techniques.

Bowsite.com is proud to produce this feature for the third year in a row and look forward to many more in the years to come. We hope you enjoyed this exclusive report and sincerely appreciate your visit.



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