

Mathematical Facts on the Johnson World Record Muskellunge

Claimed L 60.25" G 33.5" W 67.5 lbs.

IGFA All Tackle World Record

National Freshwater Fishing Hall of Fame Line Class Record

Although the photographs of Mr. Johnson's fresh muskie were determined to have been of a fish much shorter than 60.25" by an expert in photogrammetry in the WRMA 2008 Cal Johnson Summary Report, the WRMA found additional evidence that the fish could not have had a girth of 33.5" even if the fish was as long as reported. In fact, using the claimed length of 60.25", it is a mathematical certainty that the girth of the fish could not have been as large as claimed.



Image of Mr. Johnson's record used for measurements

The WRMA opted to compare the girth circumference of the fresh fish to a perfectly round cylinder to give the record every benefit of the doubt. Even though muskies are a distinct oval and never round, comparing the largest side width measurement of the fresh fish to a perfect circle of 33.5" will remove any ambiguity.

The first step was to measure the maximum side width and length of the image of the fresh fish to determine the side width percentage of the overall length. Measured from the tip of the lower jaw to the end of the lower lobe of the tail, this was determined to be 16.52%. The WRMA then converted the 16.52% to inches based on the claimed length of 60.25". The "real world" side width is 9.9533". (9.9533" is 16.52% of 60.25").

First, a refresher on determining the circumference of a circle based on diameter. The distance around a circle is the circumference. The distance across a circle through the center is the diameter. To determine the circumference of a circle from the diameter you multiply the diameter by 3.14, referred to as (pi). For any circle, if you divide the circumference by the diameter you get 3.14.

Using (pi) we can now calculate what a perfectly round circumference (girth) would be using the known 9.9533" diameter. $9.9533" \times 3.14$ (pi) = a circumference of 31.25". Obviously, a perfectly round girth falls short of the claimed 33.5" girth by 2.25". The 33.5" claimed girth of the fresh fish is simply not possible based on the claimed length of 60.25".

The WRMA focused on only using pure math in this study, a perfectly round cylinder comparison in place of a *correct oval shape* effectively removes all assumptions. If Mr. Johnson's record were *perfectly round*, it would still be 2.25" smaller than the claimed girth of 33.5". This is 100% mathematical proof that this fish could not have possessed the 33.5" claimed girth sworn to on the affidavits.

The girth discrepancy is actually greater than 2.25" because the biological description mandates that all muskellunge have a *laterally compressed oval shape*. (See Additional Facts on page 3).

Visual aid



Taping the ends of a 33 1/2" string together for the circumference (girth) and generously allowing for the 9.9533" diameter vertical measurement replicates an accurate three-dimensional "slice" of the Johnson record. It is a biological impossibility for a muskellunge to have been wider side to side than top to bottom.

Additional Facts

1. Mr. Johnson's muskie would have to be wider "side to side" than "top to bottom" to possess a girth of 33.5" based on its own measurements. (The side width or depth of the fish at 9.9533" is less than the diameter of the claimed girth of 33.5" (10.669")).
2. Pure math mandates that the maximum side width (depth) of a muskie must always be greater than 31.85%, the diameter percentage of a perfect circle. Johnson's fish having a side width (depth) of 9.9533" means the side width is only 29.71% of the claimed circumference. A muskie with a correctly shaped oval body should have a side width (depth) of approximately 35.61% of its girth.
3. A perfectly round circumference of 33.5" would require a diameter of 10.669" ($33.5" / 3.14 = 10.669"$). Therefore, in order for Mr. Johnson's fish to add up mathematically it would have to have a length of 64.582" ($10.669" / 16.52\% = 64.582"$) to be round and a ridiculous 72.215" ($33.5 \times 35.61\% =$ a side width (depth) of 11.93") ($11.93" / 16.52\% = 72.215"$) using a correct muskie oval shape to maintain the 16.52% side width of the overall length. The more oval the fish is, the longer the total length would have to be in order to maintain a 16.52% side width to length percentage.
4. Any reduction in the 60.25" fish length decreases the side width accordingly. *The net result would be an even greater girth discrepancy.*
5. Using a biologically correct oval shaped muskie *and the given length of 60.25"*, the WRMA has calculated the girth to be between 27.75" and 28" using a divisor of 35.61%. We have determined this to be a reliable divisor to obtain the girth from the side width image of a muskie. The 9.9533" side width of the fish results in a girth of 27.95". This is 5.55" less than the claimed girth of 33.5" ($9.9533" / 35.61\% = 27.95"$).



The above known photographs of Mr. Johnson holding his muskie with a claimed girth of 33.5" (his approximate waist size) is impossible based upon its own measurements.