

See “The Fouling Shot”, Journal 229, May-June 2014, “Is A Belief In Fliers Holding Back Cast Bullet Progress?”, pg 229-3, by John Alexander.

And the Cast Bullet Association Forum

http://castbulletassoc.org/forum/view_topic.php?id=9394&forum_id=63&page=2

In particular the post by “Husker P7MB” on April 16, 2013

And “Group Shooting And Mathematics”, “Expected and Unexpected Fliers” by Joe Brennan

This is about fliers, the odd bullet hole that substantially enlarges a group. In the five-shot-group world, it is that hole that turns a four-shot group into a much larger five-shot group. This is NOT about anything else discussed in cites. I do not know how frequently unexpected fliers happen. Every group, no matter how many shots in the group, has one hole that makes the group largest. Without that hole the group would be smaller. These fliers are either caused by random variation or are not; are/may be caused by some difference in the shooter or equipment or conditions. I call, here, the random variation fliers: “expected fliers”; and the others: “unexpected fliers”. In my article cited above is a simple method of identifying unexpected fliers for five and ten shot groups with 95% and 99% certainty. Five shot groups with the five shot group size/four shot group size ratio of >1.6 have 95% probably unexpected fliers; >1.8 have 99% probably unexpected fliers.

The John Alexander article includes a drawing of the group shown by Husker P7MB in his post. I measured the four and five shot groups with a plastic ruler as follows:

White, 2.7”, 1.6”, $2.7/1.6 = 1.7$

Horizontal, 2.9, 1.9, $2.9/1.9 = 1.5$

Vertical, 2.55, 1.05, $2.55/1.05 = 2.4$

Cross hatched, 2.45, 1.45, $2.45/1.45 = 1.7$

Black, 1.4, .95, $1.4/.95 = 1.5$

There ARE THREE GROUPS with unexpected fliers: Vertical, with the ratio of 2.4, White and Cross Hatched, with ratios of 1.7.

Both John and Husker seem to suggest that the unexpected fliers disappear in the composite 25 shot group. Superimposing groups or shooting groups with more shots does not make fliers go away; they’re still there.