EXPERIMENTAL INVESTIGATIONS UPON THE IDENTIFICATION OF SPECIFIC CHARACTERISTICS OF HUNTING RIFLES FROM THE FIRING DISTANCE

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Abstract: *A key priority for judicial ballistics is to determine the shooting distance, defined as the path of the bullet, or that of the bundle of shots, as appropriate, from the muzzle to the entry point. In order to achieve that goal when the weapon is unavailable for model comparison, other elements are considered, such as traces of gas actions, the muzzle imprint, traces of smoking due to powder burning as well as other traces (grease, metal etc.). Once the firing distance is determined, (and concentration, in the case of shots), several characteristics of the firing weapon can be determined, such as choke size, barrel length etc.*

The present paper advances experimental investigations to determine specific characteristics of hunting rifles from the firing distance and shots concentration at the entry point. For that purpose, several 12 gage rifles were used, but with different choke sizes and barrel lengths.

Keywords: *firing distance, choke size, smoothbore barrel,*

1. Introduction

An important element in judicial ballistics is to determine shooting distance, defined as the path of the bullet, or that of the handful of pellets, as appropriate, determined from the muzzle of the firing weapon to the entry point in the target.

In the case of rifles that use shots, an analysis of the bundle of shots that reached the target and their scattering, can lead to determining one of the weapon identifiers, the characteristic size of its choke, [7].

The dispersion of shots is also influenced by the individual projectile diameters and the used explosive charge.

For the present experiments, several rifles were used, with different barrel lengths and various choke sizes. All used weapons were the same caliber, 12 gauge rifles, and with barrel lengths ranged from 640 to 780 *mm.* The choke sizes for smoothbore rifles are classified as: full choke, 3/4 choke, 1/2 choke (half-choke), 1/4 and 1/8 chokes.

All experimental shootings were conducted in agreement to Law no.295 / 2004, regarding the regime of weapons and ammunition, republished and the Criminal Code.

The investigations presented herein showed that for small firing distances, the number of shots hitting the target increases as choke values decrease. The highest number of projectiles that hit the target when firing from close range was found to correspond to the 1/8 choke category.

Also, it was found that when the same choke size is used, the number of pellets that hit the target decreases as firing distance increases. It was found that the highest accuracy rifles at higher distances are those corresponding to the full choke category.