

Characteristics of the white-tailed deer hunting exploitation (*Odocoileus virginianus*) in Chihuahua, Mexico

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ABSTRACT

Objective: To describe the characteristics of the number of hectares (located in the UMAs registered in the state of Chihuahua) used for the white-tailed deer free-range production, the level of exploitation of the species, and its economic value.

Design/Methodology/Approach: This study determined the number of Units for the Conservation, Management, and Sustainable Use of Wildlife (UMAs) registered in the state of Chihuahua, where white tailed deer had been exploited since 2015. Forty-three municipalities in the state of Chihuahua, with a total of 159 UMAs, were analyzed. Twenty-three randomly selected UMAs were characterized, taking into account the hectares and the presence of white-tailed deer per municipality. Finally, the exploitation value of the species use per community was established in order to determine its exploitation and economic value.

Results: The total area used for the exploitation of the white-tailed deer reaches 1,067,380 hectares. Thirty-two municipalities had potential for the exploitation of white-tailed deer. Thirty-three deer were hunted per season in the 23 UMAs under study, which accounts for a \$990,000 Mexican pesos gross income for the state of Chihuahua per season; this exploitation generates a total of 115 temporary jobs for the communities surrounding the 23 UMAs studied. Chihuahua's UMAs welcome a total of 33 white-tailed deer hunters per season. Hunters pay \$30,000 to \$34,000 Mexican pesos for each white-tailed deer specimen.

Study Limitations/Implications: The study provides an overview of the current state of the UMAs in the state of Chihuahua that have a permit for the white-tailed deer hunting exploitation. Each of the UMAs under study has specific characteristics, including: the services offered, the associated hunting species, and the exploitation populations under an integrated sustainability arrangement. This study does not include the benefits of exploiting associated species, such as the collared peccary (*Dicotyles tajacu*) and the wild turkey (*Meleagris gallopavo*).

Findings/Conclusions: Based on the number of registered UMAs, 32 out of 40 municipalities use 100% of their registered area for the exploitation of white-tailed deer. The white-tailed deer hunting exploitation increases the profitability and productivity of livestock ranches.

Keywords: Deer, hunting, Chihuahua, UMA, sustainable.

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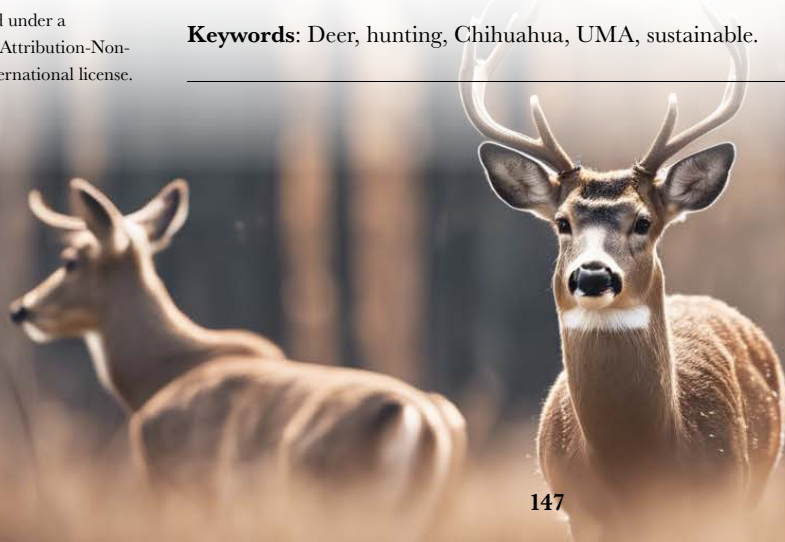
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INTRODUCTION

The white-tailed deer exploitation guideline is linked to the historical characteristics of the communal exploitation and management of natural resources, as part of which livestock is the main economic activity, while hunting is a casual and opportunistic practice. This pattern has been relatively stable; however, during the last five years, a new trend has emerged: hunting exploitation has become important under the UMA system. In Mexico, white-tailed deer has played a fundamental cultural, aesthetic, hunting, and economic role (CONABIO 2012).

The Cervidae family is widely distributed in the Americas. Four species can be found in Mexico: *Mazama temama*, *M. pandora*, *Odocoileus hemionus*, and *O. virginianus* (González *et al.*, 2005). *O. virginianus* (commonly known as white-tailed deer) includes 38 species, 14 out of which are distributed throughout the Mexican territory. Currently, 70% of the Mexican surface has some degree of habitat degradation. Fifty percent of the vegetation cover has been lost as a consequence of livestock, agriculture, deforestation, and uncontrolled hunting activities, as well as human population expansion, and air, water, and soil pollution. This situation has severely damaged species diversity and abundance, pushing them to the brink of extinction and endangering a vast number of them. Consequently, the objective of this study was to gather information about the number of hectares used for the white-tailed deer exploitation in the state of Chihuahua, in order to establish an exploitation trend pattern for this species.

MATERIALS AND METHODS

Twenty-three out of 159 registered UMAs in the 43 municipalities of the state of Chihuahua were analyzed. The number of hectares where white-tailed deer were reported were taken into account in the characterization of the municipalities. The number of deer hunted per season, the price of the deer as trophy, the hunting species within the ranch, and the number of employments generated per season were also included in the analysis. This information was gathered through visits and direct surveys with the owners of the 23 registered UMA ranches where the white-tailed deer exploitation is carried out. The presence of white-tailed deer was confirmed in each of the UMAs through transect tours, during which hints that proved the presence of the deer were recorded.

RESULTS AND DISCUSSION

Sixty-four percent of the surface of Chihuahua has the UMA hunting exploitation registration. In total, 1,067,380 hectares are used for the white-tailed deer exploitation, which accounts for 72.6% of the registered UMA area (INEGI 2009). This area has different types of vegetation, which has an impact on the number of deer (Del Angel and Mandujano, 2017). The municipality of Madera recorded the highest number of hectares (344,732) used for hunting exploitation and the same number of hectares for white-tailed deer exploitation. Meanwhile, the municipality of Delicias recorded only 75 hectares with an UMA register for white-tailed deer hunting exploitation. Thirty-two municipalities have potential for the white-tailed deer hunting exploitation. Thirty-three

deer were hunted per season in the 23 UMAs under study, which accounts for a \$990,000 Mexican pesos gross income per season for Chihuahua. The average income per UMA per season reached \$43,043 Mexican pesos, which results in a sustainable exploitation that generates an income for the UMAs and a total of 115 temporal employments for the surrounding communities. Chihuahua's UMAs welcome a total of 33 white-tailed deer hunters per season. Hunters must pay \$30,000 to \$ 34,000 Mexican pesos for each white-tailed deer.

The successful inclusion of the white-tailed deer in the populations of the state of Chihuahua is the result of the actions that the owners of the UMAs constantly carry out. These practices include the improvement of the habitat and the application of the management strategies described in the Plan de Manejo Tipo for the preservation and sustainable exploitation of the white-tailed deer (SEMARNAT, 2014; Villarreal, 1999; Villarreal-Espino, 2006).

Some of the owners have started to use an assisted reproduction technique and reproductive handling, in order to increase the trophy quality and the number of births (Mellado *et al.*, 2013; González-Maldonado *et al.*, 2021; Asher, 2011; DelGiudice, 2007). The UMAs located in Mexico take into account the analyses about their management and administration carried out by the CONABIO (2012).

CONCLUSIONS

The white-tailed deer hunting exploitation UMAs in the state of Chihuahua carry out a sustainable exploitation, generate temporal employments in the nearby communities, and offer hunting services.

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