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Wild Boar Responses to Red-White Tape: A Field Study

Christos Taklis

Biodiversity GR, Greece
ctaklis[at]gmail.com

Abstract: ***Wild boar (Sus scrofa) is a globally-distributed species with significant impacts on both natural ecosystems and human activities. Traditional methods for excluding wild boar, such as electric fencing, can be expensive and may have limited efficacy. In recent years, red-white tape has emerged as a potential low-cost and easy-to-install alternative for wild boar management. However, little is known about the effectiveness of this method in deterring wild boar from entering specific areas. We conducted a field study to evaluate the responses of wild boar to red-white tape in a natural area on South Pelion, in Greece. Our results showed that in the presence of red-white tape, wild boars did not cross the tape barrier; instead, they were going around to pass the red-white tape fence. We observed a clear visual response in the wild boar, as they tended to approach the tape and then quickly turn away. Our study provides evidence that red-white tape can effectively deter wild boars from entering specific areas. This low-cost and easy-to-install method has the potential to be an efficient and sustainable alternative to traditional wild boar exclusion methods. Further research is needed to evaluate the applicability of red-white tape in different contexts and environments.***

Keywords: wild boars, sus scrofa, red-white tape.

1. Introduction

Wild boars (Sus scrofa) are omnivorous mammals found across much of the world, including Europe, Asia, and parts of North America. They are known for their distinctive appearance, with long, pointed snouts and shaggy, bristly fur. Wild boars are opportunistic feeders, and their diet can include a wide variety of plant and animal matter, including roots, tubers, fruits, insects, and small mammals.

Wild boars are typically active during the day and night, although they are most active during the late afternoon and early evening, making them crepuscular. In our research, the peak activity was after midnight (Johann et al., 2020) and the wild boars were more social at that time. They are social animals that live in groups called sounders, which can consist of up to 20 individuals. Sounders are usually led by a dominant female and include juvenile and adult males, females, and their offspring.
Wild boars have a home range that can vary in size depending on the availability of resources such as food and water. They can move long distances to find food and water, and may travel up to several kilometers in a day. They are also good swimmers and can cross rivers and other bodies of water.

Despite their large size and robust build, wild boars are excellent at navigating their environment, including potential barriers. They have well-developed senses, including a keen sense of smell and good hearing (Morelle et al.2014). However, their vision is generally poor, and they rely more on their other senses to navigate and find food.

Wild boar (Sus scrofa) is a highly adaptable and invasive species that have become a significant ecological and economic problem in many regions of the world (Risch et al., 2021). They can cause extensive damage to crops (Lombardini *et al*., 2017), forests, and other vegetation, and they can also carry diseases that pose a threat to both human and animal health (McGregor et al., 2015). Traditional methods of controlling wild boar, such as fencing and hunting, have had limited success and can be costly and logistically challenging to implement.

In recent years, the use of visual barriers such as red-white tape has emerged as a promising non-invasive alternative for deterring wild boars from entering specific areas (Denzin et al., 2020). Red-white tape is a simple and cost-effective method that involves stringing brightly colored tape between posts or trees to create a visual barrier that is intended to deter animals from entering a particular area. The tape is thought to mimic the appearance of a barrier, such as a fence, without the need for any physical barrier to be constructed.

Despite the potential benefits of red-white tape, there is currently limited research on its effectiveness in deterring wild boar. Most studies to date have focused on its use in deterring other wildlife species, such as deer and birds. Also, there is a limit on the use before it is destroyed by the weather conditions of each area. In our experiment, the red-white tapes lasted up to 3 months. Therefore, there is a need for more research to evaluate the effectiveness of this method in controlling wild boar.

In this study, we aimed to assess the effectiveness of red-white tape as a deterrent for wild boar in a natural area on South-east of mt. Pelion, in Greece. Specifically, we sought to answer the following questions: (1) Does the presence of red-white tape reduce the frequency of wild boar entering a treated area? (2) Do wild boars show a visual response to the red-white tape? (3) Does the use of red-white tape have any unintended impacts on wild boar behavior or ecology?

Our study provides important insights into the potential of red-white tape as a low-cost and easy-to-install method for wild boar management. The results of this study could inform the development of more sustainable and effective wild boar control strategies in the future.

2. Methods

Study Area: We conducted our study in a natural area located South-east of mt. Pelion, in Greece. The study area was approximately 1.200 acres and consisted of a mixture of forest, and olive farm habitats. Wild boar were known to be present in the area, and previous reports indicated that they caused damage to crops and vegetation in the area.

Experimental Design: We divided the study area into two parts: one area was left untreated as a control, and the other area was fenced with red-white tape. We installed the tape in two different methods. In the first method, we strung it horizontally between trees at a height of approximately 50-60 cm above the ground. Additionally, strips of tape (30-35 cm long), spaced 10 cm apart, were hung from the tape so they won't touch the ground or the grass. The length of the tape (i. e. the distance between trees) was approximately 2.50 m. In the second method, we strung the red-white tape between trees at a height of approximately 10-20 cm above the ground, but without vertical tape stripes. As for the first method, the length of the tape was approximately 2.50 meters. The treated area was approximately 0.003 acres, and the control area was 0.650 acres.

Data Collection: We monitored wild boar activity in both the treated and control areas using camera traps (Taklis et al 2021). We placed two camera traps, positioned to capture images of wild boars as they entered or moved within the area. The cameras were set to record with the movement trigger as the animal passed in the range of the camera sensor, and we collected data over a period of two months, from 21 May 2021 until 22 July 2021.

Data Analysis: We used statistical analysis to compare the frequency of wild boar entering the treated and control areas. We also analyzed the camera trap data to determine the number of individual wild boars captured in each area and the time spent by each individual in the area. We used descriptive statistics to summarize the field observation data.

Ethical Considerations: We followed all ethical guidelines for the humane treatment of animals in the course of this study. All camera traps were set up in accordance with local regulations and did not pose a risk to wildlife or humans. Field observations were conducted from a distance that did not disturb the animals, and no animals were captured or harmed in the course of this study.

3. Results

Frequency of Wild Boar Entering the Treated and Control Areas: Our results showed that the presence of red-white tape had a significant impact on the frequency of wild boar entering the treated area. We observed no wild boar passed through the red-white tape compared to the control area where there were present.

Wild Boar Visual Response to Red-White Tape: Field observations indicated that wild boar showed a clear visual response to the red-white tape. In all cases, wild boar approached the tape, but then turned away or changed direction before reaching it. We also observed some instances where wild boars appeared hesitant to pass through the red-white take (Fig.1), and they would approach the tape cautiously before turning away.

Figure 1: Wild boar hesitate to pass through the red-white tape

Unintended Impacts of Red-White Tape: We did not observe any unintended impacts of the red-white tape on wild boar behavior or ecology during the study period. We did not observe any changes in wild boar movement patterns, foraging behavior, or use of habitat in the treated area compared to the control area.

4. Discussion

Our study provides evidence that red-white tape can be an effective method for deterring wild boar from entering specific areas. None of the wild boars passed through the red-white tape suggests that the tape can be an effective alternative to traditional methods of wild boar control, such as fencing and hunting.

The clear visual response of the wild boar to the red-white tape supports the hypothesis that the tape acts as a visual barrier that mimics the appearance of a physical barrier, such as a fence. This visual barrier may be effective in deterring wild boar by creating a perceived obstacle that the animals are unwilling to cross.

But wild boars have relatively poor eyesight and they rely more on their sense of smell and hearing to navigate their environment. Therefore, it is possible that a visual barrier, such as red-white tape, may not be immediately recognized by wild boars as a physical barrier or threat. If wild boars come into contact with red-white tape and experience negative consequences, such as a loud noise or unpleasant odor, they may avoid the tape in the future.

Additionally, the effectiveness of red-white tape as a visual barrier may depend on the specific context and environmental factors. For example, if wild boars are highly motivated to access a particular resource, such as food or water, or be under pressure, such as hunting, they may be less deterred by visual barriers than if they were simply exploring a new area. The lack of unintended impacts on wild boar behavior or ecology is an important finding, as it suggests that the use of red-white tape is unlikely to cause any harm to wild boar populations or the wider ecosystem. However, further research is needed to assess the long-term effectiveness of this method and its applicability in different types of habitats and under different environmental conditions.

5. Conclusion

Our study provides important evidence that red-white tape can be an effective method for deterring wild boar from entering specific areas. The results of this study could inform the development of more sustainable and effective wild boar control strategies in the future. However, further research is needed to assess the long-term effectiveness of this method and its potential applicability in different types of habitats and under different environmental conditions.

But the price to buy and install the tape might be cheap and affordable for everyone (i. e. the prices in Greece varies between 1.80€ to 3.50€ for 200 m.), however, maintaining and replacing the tape may also require ongoing costs and efforts, which means if the landscape to be fenced is big or if the community is farming all year, it might be better to use alternative methods. In terms of environmental considerations, the use of plastic tape in natural areas may raise concerns about the potential impact on wildlife and the ecosystem. While plastic tape is generally considered safe for use in agriculture and other controlled environments, it may be less advisable to use this material in natural areas where it could become entangled with other animals or contribute to plastic pollution.

6. Future Scope

Further research is needed in different habitats, and we aim to do the research over and over again in the future in different habitats and different situations (i. e. hunting seasons or even with predators close such wolves area) so we can have better knowledge and results over time and improve this method as better as we can.

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Author Profile

Christos Taklis a Marine and Conservation Biologist from London's School of Science and Management. He specializes in the sharks conservation as also in wild boar behavior. Currently works at Biodiversity GR.