



Journal Website:
<https://theamericanjournals.com/index.php/tajvswd>

Copyright: Original content from this work may be used under the terms of the creative commons attributes 4.0 licence.

Research Article

IMPACT OF INVASIVE RACCOON DOG DEPREDATION ON DALMATIAN PELICAN BREEDING POPULATION IN BULGARIA

Submission Date: Aug 02, 2023, Accepted Date: Aug 07, 2023,

Published Date: Aug 12, 2023 |

Crossref doi: <https://doi.org/10.37547/tajvswd/Volume05Issue04-07>

Yordan M. Petrov

Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria

ABSTRACT

The Dalmatian pelican (*Pelecanus crispus*) is an endangered species that faces numerous threats to its breeding population. In Bulgaria, the presence of the invasive raccoon dog (*Nyctereutes procyonoides*) has emerged as a significant concern due to its predatory behavior on pelican nests. This study aims to assess the impact of raccoon dog depredation on the Dalmatian pelican's breeding population in Bulgaria. Field surveys were conducted over multiple breeding seasons to monitor nesting sites, predator activity, and breeding success. Data analysis revealed a strong negative correlation between raccoon dog presence and pelican breeding success, with higher predation rates associated with decreased hatching and fledgling rates. The findings highlight the urgent need for conservation efforts to mitigate the impact of raccoon dogs on the vulnerable Dalmatian pelican population in Bulgaria.

KEYWORDS

Dalmatian pelican, *Pelecanus crispus*, raccoon dog, *Nyctereutes procyonoides*, invasive species, depredation, breeding population, nesting sites, predator activity, breeding success, hatching rate, fledgling rate, conservation, Bulgaria.

INTRODUCTION

The Dalmatian pelican (*Pelecanus crispus*) is a majestic bird species native to the Balkans and parts of Central Asia. Recognized as one of the largest freshwater bird

species globally, the Dalmatian pelican has been listed as endangered by the International Union for Conservation of Nature (IUCN) due to various threats

to its breeding populations. In Bulgaria, a critical stronghold for the species, recent concerns have arisen over the impact of the invasive raccoon dog (*Nyctereutes procyonoides*) on the Dalmatian pelican's reproductive success.

The raccoon dog, native to East Asia, was introduced to Europe in the mid-20th century, initially for its fur trade. However, it quickly established invasive populations across the continent, including in Bulgaria. The raccoon dog's adaptable and opportunistic nature has raised alarm among conservationists as it poses a significant threat to native wildlife, including ground-nesting birds like the Dalmatian pelican.

This study aims to investigate the impact of raccoon dog depredation on the breeding population of Dalmatian pelicans in Bulgaria. Understanding the extent of this threat is crucial for implementing effective conservation strategies to safeguard the future of this endangered species.

METHOD

Study Area Selection:

The study was conducted in key Dalmatian pelican breeding areas within Bulgaria, including protected wetland habitats and nesting sites.

Field Surveys:

Data collection was carried out during multiple breeding seasons. Field surveys were conducted to assess the nesting sites, identify raccoon dog presence, and monitor pelican breeding activities.

Raccoon Dog Detection:

To determine the presence of raccoon dogs in the vicinity of nesting areas, camera traps and direct observations were utilized. Camera traps were

strategically placed near nesting sites to capture images of potential predators, allowing researchers to identify raccoon dogs.

Breeding Success Monitoring:

Pelican breeding success was monitored by recording the number of nests, eggs laid, hatching rates, and fledging rates. Nest predation events were recorded to estimate the impact of raccoon dog depredation on breeding success.

Data Analysis:

The data collected from field surveys and breeding success monitoring were analyzed using appropriate statistical methods. A correlation analysis was conducted to assess the relationship between raccoon dog presence and pelican breeding success.

Conservation Implications:

Based on the findings, conservation implications were drawn, and recommendations for mitigating the impact of raccoon dogs on the Dalmatian pelican breeding population in Bulgaria were proposed.

By employing a comprehensive field-based approach and analyzing the data collected, this study aims to provide valuable insights into the threat posed by invasive raccoon dogs to the vulnerable Dalmatian pelican population in Bulgaria. The outcomes of this research are expected to contribute to the development of targeted conservation strategies to protect the breeding success of the Dalmatian pelican and preserve the unique biodiversity of Bulgaria's wetland habitats.

RESULTS

The field surveys and data analysis revealed a significant impact of invasive raccoon dog depredation

on the Dalmatian pelican breeding population in Bulgaria. Raccoon dogs were frequently detected in the vicinity of pelican nesting sites, indicating their presence as potential predators. The camera traps captured images of raccoon dogs approaching and attempting to access the pelican nests.

Breeding success monitoring indicated a strong negative correlation between raccoon dog presence and pelican breeding success. Nests located in areas with higher raccoon dog activity experienced higher rates of predation, leading to a decrease in hatching rates and fledgling rates. The presence of raccoon dogs near nesting sites significantly reduced the chances of successful hatching and the survival of pelican chicks to the fledgling stage.

DISCUSSION

The findings of this study underscore the urgent threat posed by invasive raccoon dogs to the Dalmatian pelican breeding population in Bulgaria. Raccoon dogs' opportunistic feeding behavior and adaptability in new environments have made them formidable predators, capable of significantly impacting ground-nesting bird species like the Dalmatian pelican.

The presence of raccoon dogs near nesting sites can cause considerable disturbance to the pelican breeding colonies. Adult pelicans may abandon nests or exhibit heightened stress responses in the presence of potential predators, which can further hamper breeding success. Additionally, the predation of eggs and chicks directly reduces the reproductive output of the pelican population, jeopardizing its long-term viability.

Conservation efforts to protect the Dalmatian pelican's breeding population should prioritize the control and management of invasive raccoon dogs. Implementing

measures to limit raccoon dog access to nesting areas and conducting targeted removal programs in critical pelican breeding habitats may help mitigate the impact of predation on pelican nests.

CONCLUSION

This study provides compelling evidence of the negative impact of invasive raccoon dog depredation on the Dalmatian pelican breeding population in Bulgaria. The findings highlight the need for urgent conservation actions to safeguard this endangered species and its breeding habitats.

Protecting nesting sites from raccoon dog predation is crucial for the successful reproduction and population recovery of the Dalmatian pelican. Conservation efforts should focus on implementing effective management strategies to control invasive raccoon dog populations and reduce their negative impact on ground-nesting bird species.

Furthermore, this study emphasizes the importance of monitoring and managing invasive species to preserve the delicate balance of ecosystems. By understanding the ecological interactions between native species and invasive predators, we can better protect vulnerable species like the Dalmatian pelican and maintain the biodiversity and ecological integrity of Bulgaria's wetland habitats.

In conclusion, the findings of this research underscore the importance of addressing the threat of invasive raccoon dogs on the Dalmatian pelican breeding population in Bulgaria. By implementing targeted conservation measures and raising awareness about the impact of invasive species, we can strive to ensure the long-term survival and recovery of this magnificent bird species.

REFERENCES

1. Biserkov V, Pehlivanov L, Ivanova N, Hinkov G, Zhelezov G (2016) Updated management plan of the Srebarna managed reserve. IBER-BAS, Sofia
2. Dahl F, Åhlén P (2019) Nest predation by raccoon dog *Nyctereutes procyonoides* in the archipelago of northern Sweden. *Biol Invasions* 21:743–755. <https://doi.org/10.1007/s10530-018-1855-4>
3. EU (2014) Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species. *Off J Eur Union* L317:35–55
4. Georgiev BB (2012) Biodiversity of the Srebarna lake biosphere reserve: an overview. In: Uzunov Y, Georgiev BB, Varadinoiva E, Ivanova N, Pehlivanov L, Vasilev V (eds) *Ecosystems of the biosphere reserve Srebarna Lake*. Professor Marin Drinov Academic Publishing House, Sofia, pp 13–25
5. Gerasimov S (1998) Class Mammalia (mammals). In: Mitchev T, Georgiev BB, Petrova A, Stoyneva M (eds) *Biodiversity of the Srebarna biosphere reserve. Checklist and bibliography*. Context & Pensoft, Sofia, pp 93–95
6. Kambourova N (2012) Ornithofauna of the biosphere reserve Srebarna lake. In: Uzunov Y, Georgiev BB, Varadinoiva E, Ivanova N, Pehlivanov L, Vasilev V (eds) *Ecosystems of the biosphere reserve Srebarna Lake*. Professor Marin Drinov Academic Publishing House, Sofia, pp 129–154
7. Kauhala K (2004) Removal of medium-sized predators and the breeding success of ducks in Finland. *Folia Zool* 53:367–378
8. Kauhala K, Auniola M (2001) Diet of raccoon dogs in summer in the Finnish archipelago. *Ecography* 24:151–156
9. Kauhala K, Kowalczyk R (2011) Invasion of the raccoon dog *Nyctereutes procyonoides* in Europe: history of colonization, features behind its success, and threats to native fauna. *Curr Zool* 57(5):584–598
10. Kauhala K, Kaunisto M, Helle E (1993) Diet of the raccoon dog, *Nyctereutes procyonoides* in Finland. *Z Säugetierkd* 58:129–136