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Identification of Nuisance Animals in Edible Bird's Nest Farming in Tanjung, North Lombok Regency

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Abstract: The cultivation of edible bird's nest in North Lombok Regency is experiencing rapid growth. This can be attributed to the rising demand for edible bird's nest products. Nevertheless, the primary challenge to its advancement is the presence of nuisance animals. The objective of this study was to identify and categorise nuisance animals present in edible bird's nest cultivation sites within the boundaries of the Tanjung sub-district. The present study employed a descriptive qualitative approach, with data collection undertaken via purposive sampling. The findings of this study identified seven species of nuisance animals in edible bird's nest cultivation in the area of Tanjung Subdistrict. The following animals are included in this category: snakes, rats, geckos, owls, bats, cockroaches, and ants. These animals have the capacity to exert a direct influence on the swiftlet population, thereby diminishing edible bird's nest production, particularly within the confines of the Tanjung Subdistrict.

Keywords: Edible bird's nest, nuisance animals, swiftlets.

Introduction

The cultivation of edible bird's nest in North Lombok Regency is experiencing rapid growth. This can be attributed to the rising demand for edible bird's nest products, which has led to an increase in the number of breeders entering this sector(Lukypa & Manan, 2023). Edible bird's nest, a by-product of swiftlet farming, possesses a high economic value due to its extensive utilisation in various commercial applications, particularly within the culinary, health and beauty sectors (Looi & Omar, 2016). Consequently, it has evolved into a lucrative business opportunity for numerous individuals.

Nevertheless, despite the apparent promise of edible bir's nest cultivation, the practice is not without its challenges (Dai et al., 2021, (Shao et al., 2018). Swiftlet houses, as artificial habitats, present new dynamics that attract other opportunistic or predatory species. The presence of nuisance animals, such as rats, geckos, bats and predatory birds, can disrupt swallows' activities, including nesting, reproduction and colony formation. In animal husbandry and conservation studies, such disturbances result in reduced productivity and have the potential to cause prolonged ecological stress (Teresa Capucchio et al., 2019; Saba et al., 2024).

A primary challenge confronting these communities is the presence of various types of nuisance animals. These animals can cause damage to the nest and even lead to a reduction in the number of swiftlets. These animals can interfere with swiftlets activities in terms of safety and comfort in the nest. The nuisance animals attacking edible bird's nests poses a significant risk to the sustainability of the business. In addition to the destruction of nests, the presence of such animals can also result in a decline in the population of swiftlets in a building or farm. Conversely, a decline in bird population will invariably result in a corresponding decrease in edible bird's nest production. Recent studies, such as Ali et al. (2025), emphasize the urgent need for effective

pest control and environmental management strategies.

These include accurate identification of nuisance species, implementation of physical barriers (e.g., protective netting), and adoption of technology-based deterrents. However, comprehensive data on the types and behaviors of nuisance animals specific to localized edible bird's nest sites particularly in North Lombok remains limited. To address this gap, the present study focuses on identifying nuisance animals that threaten EBN cultivation in Tanjung District, North Lombok Regency. By mapping these threats, the research aims to support the development of integrated pest management strategies that are ecologically sustainable and economically beneficial. Ultimately, effective mitigation not only safeguards the continuity of edible bird's nest production but also reinforces Indonesia's strategic position in the global bird's nest market(Wahyuni, 2021; Muliati & Dawiya, 2022; Afandy & Nugroho, 2021).

Despite its economic promise, the sector faces significant challenges, particularly from the presence of nuisance animals that pose a risk to the sustainability of the business. These animals damage nests, disrupt swiftlet activities, and may reduce swiftlet populations, ultimately affecting the quantity and quality of edible bird's nests produced. This study aims to identify nuisance animals found in edible bird's nest cultivation sites that can threaten the sustainability of the edible bird's nest cultivation business in Tanjung District, North Lombok Regency.

Material and Method

The present research was conducted in December 2024 to February 2025. The sampling locations were three villages in the Tanjung Sub-district of North Lombok Regency: namely, Tanjung Village, Sokong Village, and Medana Village. The designation of the three villages is attributable to the significant presence of edible bird's nest cultivation structures within each locale. The present study encompassed the exploration of six edible bird's nest cultivation buildings.

The present study employed a qualitative descriptive approach with the objective of providing a comprehensive description of the conditions and phenomena that occurred in the field related to nuisance animals and nuisance animals in edible bird's nest cultivation. The rationale behind the selection of this methodology is that it facilitates the acquisition of a comprehensive understanding of the prevailing circumstances, unmarred by the introduction of extraneous factors or the manipulation of objects within the field. The data collection technique of the types of pest and nuisance animals was obtained through purposive sampling. The process of species identification was adapted in order to align with the extant taxa that had been identified at the research site.

Furthermore, data were collected through in-depth interviews with edible bird's nest building owners. The objective of conducting these interviews was to gather information and experiences regarding encounters with animals that have the potential to be considered a nuisance. The encounter criteria both nuisance were frequently moderate, and infrequent and rare.

The animals that were identified were then grouped in a table according to their taxonomy. The identification of potential nuisance and disturbance animals in edible bird's nest farming was conducted through a comprehensive review of relevant literature. The following discussion will present a range of possible forms of disturbance and suggestions for further management of these animals.

Result and Discussion

The results of this study obtained several types of nuisance animals found both inside the edible bird's nest building and around it. Data on the types of nuisance animals obtained in this study can be presented in Table 1.

Tabel 1 Data on nuisance animals in edible bird's nest cultivation in Tanjung Subdistrict

No	Name of Nuisance Animals	Presences	Description
1.	Snakes (*Lycodon capucinis*, *Phyton*	Infrequent	This species has been documented preying on both

	reticulatus, Trimeresurus albolabris)		the juveniles and the offspring of swiftles inhabiting the edible bird's nests under research.
2.	Geckos (*Gecko gecko*)	Moderate	- Preying on eggs in edible bird's nests
3.	Rats (*Rattus rattus*)	Moderate	This species has been documented preying on both the juveniles and the offspring of swiftles inhabiting the edible bird's nests under research.
4.	Owls	Rare	This species has been documented preying on both the juveniles and the offspring of swiftles inhabiting the edible bird's nests under research.
5.	Bats	Infrequent	- Preying on eggs in edible bird's nests
6.	Cockroaches	Moderate	- Disturbing juvenile in swiftlets and causing microorganisms in edible bird's nests
7.	Ants	Moderate	- Disturbing juvenile in swiftlets and causing dead.

a. Snakes

The most prevalent snake species observed in the present study was the lizard snake (*Lycodon capucinis*). This snake species was discovered in the edible bird's nest houses of all farmers from the three villages. The length of the snakes found ranged from 60 centimetres to 110 centimetres. The results of the study documented 11 encounters with the snake species under investigation. In addition to the lizard snake, other snake species were identified, including a 1-metre python in Medana Village, and a red-tailed green snake in Tanjung Village and Sokong Village. A snake was discovered in the corner of the edible bird's nest building. The presence of certain species was also observed in the vicinity of the shrubbery adjacent to the edifice.

b. Rats

Rats are a species of rodent that have been observed in all edible bird's nest farm buildings in the district of Tanjung Subdistrict. The species of rodents encountered in this context are the house mouse (*Rattus rattus*) and the shrew. House mice (*Rattus rattus*) are larger in size than shrews (*Sciurus vulgaris*). The size of the house mice found is 3-8 centimetres, while the size of the shrew is 3-5 centimetres. The total number of rats found was 44.

c. Geckos

In addition to snakes and rats, geckos are another type of nuisance animal commonly found in edible bird's nest buildings. The species of gecko that was found was predominantly grey in colour (*Gecko gecko*). The results of the observations and interviews conducted indicate that the size of the geckos found ranged from 4.5 cm to 12 cm. The total number of geckos found was 33.

d. Owls

The order Strigiformes comprises nocturnal birds of prey, commonly known as owls. This bird is considered to be one of the most prevalent nuisance species found within the confines of edible bird' nest farmers. The precise taxonomic classification of the birds in question remains uncertain, as they have been observed to forage on swiftles eggs and juvenile before swiftly departing the premises. The number of owls recorded in this study was three, with two being found in Tanjung Village and one in Medana Village.

e. Bats

The presence of bats has been documented prior to the entry of swiftlets into the building.

The subject will enter the building. It is important to note that not all species of bat will enter the building. Despite the substantial number of bats present, the majority of them are observed to be merely traversing the vicinity of the swiftlets's entrance hole. The total number of bats found was 63.

f. Cockroaches

Cockroaches are creatures that have a propensity to inhabit unhygienic environments. In some of the cultivator buildings observed, the population of cockroaches was found to be significantly high. The presence of cockroaches was observed in the building, with specimens being found on the floor and also crawling on the walls. Furthermore, the presence of the substance was also detected in nests accessible to the animal in question.

g. Ants

The ant species identified included red ants, black ants, and large red ants. Nevertheless, the species exerting the most significant impact is the red/fire ant. The population is sizable, and if left unchecked, it will have a detrimental effect on the swiftlets' well-being.

Discussion

The Presence of Nuisance Animals

A study was conducted at edible bird's nest cultivation sites in three villages in the North Lombok district's Tanjung sub-district. The study revealed the presence of several types of nuisance animals that disturb edible bird's nests. These include snakes, rats, owls, bats, geckos, cockroaches, and ants. These pests pose a significant challenge to edible bird's nest farmers, as their impact can be detrimental to the quality of nests and the quantity of edible bird's nest production. It is imperative to recognise that each type of nuisance animal exhibits a distinct pattern of attack and impact on swiftlet cultivation, necessitating a tailored control strategy to address these variations (Powell et al., 2017). The location and position of the edible bird's nest building also greatly influences the presence of pest animals. The presence of paddy fields, gardens and uncultivated shrubbery has also been demonstrated to increase their presence.

Figure 1. The Buildings of edible bird's nest in Tanjung

It is an established fact that snakes and rats are capable of damaging edible bird's nests by consuming eggs or young birds. In the natural world, snakes are known to be a source of concern for certain species. The existence of snakes is of paramount importance in the maintenance of universal equilibrium (Asri & Yanuwiadi, 2015). The presence of snakes in the edible bird's nest cultivation building in Tanjung Village is hypothesised to be a consequence of the presence of rats in and around the building. However, the presence of snakes in the vicinity of the nest has been observed to be a common occurrence, with these reptiles entering the nest with the intention of prey ingestion, either of swiftlets eggs or chicks.

Concurrently, the presence of rats in the building can also damage the nest in a manner analogous to snakes, by preying on swiftlet eggs (Rahim et al., 2021). The presence of snakes and rats has been demonstrated to have a detrimental effect on the number of swiftlets that successfully breed, which in turn will reduce nest production. Furthermore, the presence of snakes within the nest can result in the degradation of its structural integrity, rendering it unsuitable for subsequent reuse. It has been observed that a number of edible

bird's nest farm buildings are situated in close proximity to landfills. This results in a location that is highly favoured by rats. The high population density of rats in the vicinity of the building is not unexpected. In addition to seeking sustenance in these locations, rats will also explore new areas in search of a suitable site for the construction of a new edible bird's nest (Ivakdalam, 2016, Nurdi et al., 2025)

Furthermore, the financial burden imposed by these creatures has led to their categorisation as a significant nuisance. It is a well-documented fact that birds of prey are known to cause damage to nests and to drive swiftlets away from the area. These birds pose a dual threat to swiftlets: they are predators that compete with swiftlets for food, and they can also damage the well-established nest structure. In certain instances, these birds of prey may engage in the predation of adult swiftlets, or even the destruction of their nests, thereby rendering them unfit for utilization by other swiftlets. The presence of these pests has been shown to disrupt the swiftlets's life cycle and reduce their survival rate (Ardigurnita et al., 2020). It has been observed that the presence of swiftlets in proximity to the owl population has resulted in a notable increase in the predation of swiftlet chicks. This owl activity is primarily nocturnal, coinciding with the period of increased vulnerability of the swaiftlets. Attacks by owls have been demonstrated to result in a significant number of swiftlet chicks perishing or sustaining injuries (Kartika et al., 2021). This phenomenon consequently leads to a decline in the population of swiftlets within the affected locale.

Despite the absence of direct predation on nests or swiftlets by bats, there is evidence to suggest that they can, nevertheless, compromise the quality of the nests produced. It is a well-documented fact that bats often inhabit the same environment as swiftlet nests, and that they deposit faeces on the nests, thereby causing them to become soiled (Syahrantau & Yandrizal, 2018, Rajani et al., 2021). The presence of bat droppings has been demonstrated to have a detrimental effect on the quality of the nest, which consequently impacts its market value. This renders bats a species that must be considered in the context of the management of swiftlet nest cultivation..

Geckos are also a prevalent problem in the cultivation of edible bird's nests. It is well documented that geckos are predators that have been observed preying on swiftlet eggs and chicks that are still in the nest (Hakim et al., 2024; Budiman, 2009). The presence of geckos in swiftlet nesting areas has been demonstrated to have a detrimental effect on the number of swiftlets that successfully breed, as geckos are known to attack eggs or chicks that are not yet able to fly. Furthermore, geckos have been observed to often seek refuge in inaccessible locations, which poses a significant challenge to swiftlet farmers in terms of identification and control.

It is an established fact that other nuisance animals frequently present in cultivation areas include ants and cockroaches. The behaviour of ants, characterised by their tendency to colonise new environments, has the potential to disturb nests and the development of swiftlets. The presence of substantial numbers of ants has been demonstrated to disrupt the comfort of swiftlets, compromise the quality of their nests, and even result in the destruction of eggs or juveniles. Furthermore, ants have been demonstrated to induce infection or inflammation in birds, which can have a detrimental effect on the productivity of the swiftlet colony (Ardiansyah et al., 2023). In addition to ants, cockroaches pose a significant threat to the health and well-being of swiftlet cultivation areas.

Cockroaches are regarded as pests that not only disturb comfort, but can also damage new nests. Cockroaches have been observed to have a detrimental effect on the structural integrity of edible bird's nests, as well as on the materials used in their construction (Dalle et al., 2024). In addition, they have been shown to disrupt the edible bird'ss' nest-building process. The presence of cockroaches in the nest has been demonstrated to have a detrimental effect on the quality of the edible bird's nests produced, with the potential to cause permanent damage that has the capacity to result in a significant reduction in edible bird's nest production.

Strategy for Reducing

It is imperative to identify the various types of nuisance animals that have the potential to compromise the efficacy of edible bird's nest farming. The identification of the types of nuisance animals present is the first step in the design and implementation of effective control measures. This may include the utilisation of repellents, the installation of protective wire or fencing, or indeed the deployment of technology to detect and treat the presence of nuisance animals (Putra & Himayati,

2022). Consequently, effective management of these two types of pest animals is imperative to ensure the sustainability and quality of swiftlets cultivation. In an effort to address this issue, various measures have been implemented by cultivators to mitigate the presence of such animals. A potential solution to the issue of intruders gaining access to the building is to close all entrances that could be used to enter the building undetected (Janra et al., 2020). The implementation of this process entails the utilisation of barbed wire, which is then employed to construct a cover over the swiftlets's entrance hole. The cover is opened in the morning prior to the swiftlets's departure and closed at night when all the birds have entered the building.

In addressing the issue of nuisance animals, farmers have a range of methods at their disposal. The utilisation of traps baited with poison is a strategy employed by some individuals to control the population of rats. This phenomenon is not exclusive to humans; it is also observed in animals such as cockroaches and ants. Cultivators have recourse to the use of insecticidal poisons for the eradication of such pests. As posited by Yoshihara et al., (2021), the primary method employed by swallow house managers to address the issue of cockroach infestations involves the utilisation of insecticide in the form of a crumble, which is strategically placed within the swallow house.

Conclusion

A total of seven nuisance species have been recorded in edible bird's nest farms within the boundaries of the Tanjung Subdistrict. These animals pose a significant threat to the health of the swiftlet population, as well as the viability of their eggs.

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