

Pest Disturbance in Edible Bird Nest Swiftlet House

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Abstract: Many entrepreneurs are very interested to start Edible Bird Nest (EBN) production. However, many of them lack knowledge in pest disturbance in swiftlet house. They suffered losses because they are not concerned about pest disturbance in swiftlet house. This study aimed to identify pest in swiftlet house and to establish pest disturbance in swiftlet house. This research was conducted through field study. Field studies were conducted in nine swiftlet houses from three different areas namely, town, coastal and forested areas. Based on the field study, ants were the biggest pest problem in EBN swiftlet houses where about 69 observations of the houses were infested with the insects at one point or another. Cockroaches were the second biggest problem with 30 observations of the houses infested and rats were found in 18 observations of the houses. Pest disturbance in swiftlet house was the main cause of failure in the swiftlet ranching business. The results showed that there are no significant difference between pest disturbance in swiftlet house with location of swiftlet house. In the management of swiftlet houses, less pest disturbance can be assured to be productive and profitable ranching venture swiftlet.

Keywords: Edible Bird Nest (EBN) Swiftlet, Pest Disturbance, Swiftlet House

1. Introduction

Edible Bird Nest Swiftlet (*Aerodramus fuciphagus*) refers to grey-brown echolocating swiftlets and builder of white nest (Munirah *et al.*, 2020). The distribution of this species is wide spread in South East Asia, stretching from the Bay of Bengal, Myanmar, Thailand, Indochina and Hainan, through the Malay Peninsula, Sumatra, Borneo, Palawan and the western Philippines, and through Java, Bali, and the Lesser Sundas east to Timor (Azahar *et al.*, 2013).

Aerodramus fuciphagus is a small bird around 12 cm in height (Lim, 2006) with a black-brown body. It can fly faster and stronger than the other species of bird (Merican, 2007). Their nests are built from their own saliva (Munirah *et al.*, 2019). It can be assumed that more nutrients and energy are saved and can be used for making bigger nest due to energy surplus from less flying or physical activity (Hendri, 2007). Other characters of Edible Bird Nest (EBN) swiftlets include lack of normal perching ability, more rapid and different wing strokes in flight, smaller than house swifts and superb eyesights (Lim & Cranbrook, 2002). EBN swiftlets breed inside caves or cavern-like spaces and cling to the surface of walls and ceilings roosting or on their self-supporting bracket-shaped nests (Kang *et al.*, 1991).

It is believed that swiftlets select their nest-site primarily for its freedom from pest (Wan & Mohd, 2015). Nest safety is likely to be influenced by the specialised search strategies of the potential pest disturbance (Wan, 2018). It is of almost importance to document pest disturbance in order to better understand how nest-site selection is made by the species and

the benefits of their adaptation towards it (Munirah *et al.*, 2018). Echolocation is an important strategy used by the members of genus *Aerodramus* that enables them to roost and nest in the dark zones of caves, free from visually orienting pest or predators (Wan *et al.*, 2019).

Besides that, pest disturbance also influences production and sustainability of swiftlet. Pest disturbance in swiftlet house may disturb the behavior of the swiftlets in their way of returning to the nest. Adult, nestling and egg are vulnerable from pest (Azahar *et al.*, 2013). Pest in the swiftlets' man-made habitat are rats, cockroaches and red ants (Mohd, 2010). However, in man-made habitat, pest disturbance are influenced by location area of the swiftlet house whether it is in coastal, rural or urban area. Thus, the presence of the pest in swiftlet house can be major factors contributing to the decrease of bird nest production (Ibrahim *et al.*, 2009). Pest prevention in swiftlet house can prevent disturbance to swiftlet, hence can contribute to swiftlet sustainability. Several method that are applied by owners of swiftlet houses to prevent pest includes glue used to trap cockroaches and trap to catch rat (Mohd, 2010).

Many entrepreneurs are interested to participate in EBN production, but they do not have sufficient knowledge in this area (Wan & Mohd, 2020). To be successful in swiftlet ranching, in-depth knowledge about pest disturbance are very important (Mohd, 2010). Being wild birds, EBN swiftlets are very sensitive towards conditions in their habitat. Conditions in their houses must be conducive and less pest disturbance for them to colonize and breed and should not be stressful to them. Failure to control pest disturbance in swiftlet house will usually end up in failure. The successful EBN swiftlet operators have sufficient knowledge about swiftlet ranching management (Azahar *et al.*, 2013).

2. Objectives

To identify pest in Edible Bird Nest (EBN) swiftlet house and to establish pest disturbance in EBN swiftlet house.

3. Methodology

This research was conducted through field study. Field studies were conducted in nine swiftlet houses from three different areas namely, town, coastal and forested areas.

The field study was conducted in nine swiftlet houses from three different areas (Kuala Terengganu, Marang, Setiu, and Dungun) in Terengganu with the highest swiftlet nesting houses. They included forested, town and coastal areas. Forested area refers to a large area of land covered with trees or other woody vegetation. Town area is an urban area consisting of cities and the region surrounding them. Most inhabitants of town areas have nonagricultural jobs. Coastal areas refers to the interface or transition areas between land and sea. Data on the pest in swiftlet house were recorded and analysed.

The suitable time to record the data and to observe pest in swiftlet house was between 10.30 a.m. to 3.30 p.m. (Retno & Soedarmanto, 2005). The swiftlet house is vacant and the swiftlets are out searching for food and would only come back around 3.30 p.m. (Retno & Soedarmanto, 2005). Swiftlets will be scared away if the inside of the houses were frequently disturbed and visited (Azahar *et al.*, 2013). Therefore, the best time should be chosen to refrain from entering the swiftlet house unnecessarily. The time that was chosen for this study was around 11.00 a.m.

4. Statistical Analysis

Data on pest in swiftlet house in coastal, forested and town area in Terengganu was analysed using Pearson Chi-Square analysis. This analysis was conducted to determine relationship between pest in swiftlet house with location of the swiftlet house.

5. Results & Discussion

Pests in Swiftlet Houses

Ants were the biggest pest problem in EBN swiftlet houses where about 69 observations of the houses were infested with the insects at one point or another. Cockroaches were the second biggest problem with 30 observations of the houses infested and rats were found in 18 observations of the houses (Figure 1.1).

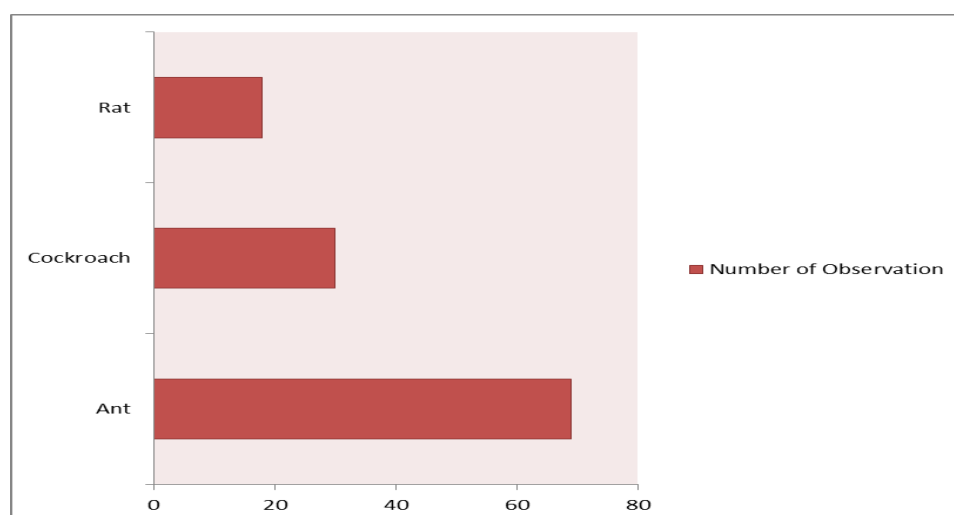


Figure 1.1. Pests in EBN Swiftlet House

Pests are a problem that should be a great concern in any EBN swiftlet house. Pests such as ants, cockroaches and rats can cause swiftlets to move out of the present to the neighbouring swiftlet houses (Hendri, 2007). Eventhough swiftlet feed on insect, some species of insect will disturb swiftlet population (Agromedia, 2007). Ants not only will distrub development of EBN swiftlet juveniles but will also kill them once the population is uncontrollable (Nasir, 2009). Very prolific cockroaches are very dangerous in EBN swiftlet houses as they will feed on swiftlet nests, thus lowering the nest quality. The nests' integrity will also be compromised resulting in them being released from their nesting planks (Munirah *et al.*, 2010). EBN swiftlets will normally not reproduce and will often move away to other houses if the number of pests exceeded the tolerable number (Nasir, 2009).

Rats were pest of both the swiftlets and their eggs. EBN producers must always be on their toes for the early tell-tale signs of the presence of rats in their swiftlet house. The presence of rats in swiftllet house will be so traumatic to the swiftlets that their normal behaviour will be badly affected (Azahar *et al.*, 2013). As the result, swiftlet will be so scared that they will never again come back to their original house and instead, they will be searching for a new house.

6. Statistical Analysis Results

There are no significant different between ant, cockroach and rat disturbances in swiftlet house with the location of swiftlet house in coastal, forested and town area (ant, $X^2(2, N = 9) = 7.69$, $p > .05$; cockroach, $X^2(2, N = 9) = 10.09$, $p > .05$ and rat, $X^2(2, N = 9) = 4.091$, $p > .05$).

Ant disturbance in swiftlet house is not influenced by location of swiftlet house, however it is influenced by how owners manage their swiftlet house in terms of cleaning nesting planks and pest control (Nasir, 2009). According to Mohd (2010), to prevent ants, pesticide in the form of powder are used in the swiftlet house.

Cockroach and rat disturbance is not influenced by location of swiftlet house but is influenced by management farming practices in swiftlet house in terms of cleaning nesting planks and pest control (Munirah *et al.*, 2018). Besides use pesticide in the form of powder, owners also suggested to apply glue to nesting planks to prevent cockroaches from disturbing as the cockroaches will stick to the glue on the planks (Hendri, 2007).

7. Conclusion

Based on the field study, ants were the biggest pest problem in EBN swiftlet houses where about 69 observations of the houses were infested with the insects at one point or another. Cockroaches were the second biggest problem with 30 observations of the houses infested and rats were found in 18 observations of the houses. Pest disturbance in swiftlet house was the main cause of failure in the swiftlet ranching business. For swiftlets to flourish, they need less pest disturbance that make them comfortable and unthreatened. This is very important, because comfortable swiftlets are the most productive ones. As a conclusion, to be successful in this industry, less pest disturbance are some of the crucial factors that need to be taken seriously before building any EBN swiftlet house.

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References

1. Agro Media, R. (2007). *Budi Daya Walet*. Jakarta Selatan Indonesia: PT AgroMediaPustaka.
2. Azahar, I., Abdullah, A.A., & Munirah, A.R. (2013). An Overview of the Study on the Right Habitat and Suitable Environmental Factors that influences the Success of Edible Bird Nest Production in Malaysia. *Asian Journal of Agricultural Research*, 8(1), 1-16.
3. Hendri, S.C. (2007). *Strategi Jitu Memikat Walet*. Jakarta Selatan Indonesia: PT AgroMedia Pustaka.
4. Ibrahim, S.H., Teo, W.C., & Baharun, A. (2009). A Study on Suitable Habitat for Swiftlet Farming. *UNIMAS E-Journal of Civil Engineering*, Volume 1.
5. Kang, N., Hails, C.J., & Sigurdsson, J.B., (1991). Nest Construction and Egg-laying in Edible-nest Swiftlet *Aerodramus Spp* and The Implication for Harvesting.
6. Lim, C.K., & Cranbrook, Earl of (2002). *Swiftlet of Borneo: Builders of Edible Nest*. National History Publication (Borneo), Kota Kinabalu.

7. Lim, D.C. (2006). *Makes Millions From Swiftlet Farming: A Definitive Guide*. Malaysia: TrueWealth Sdn Bhd.
8. Mardiasuti, A. (1996). *Current situation of the Edible-nest Swiftlet in Indonesia: A revision*, Surabaya, Indonesia.
9. Merican, H.S. (2007). *The 2007 Malaysian Swiftlet Farming Industry Report*. Penang Malaysia: SMI Association of Penang.
10. Mohd, A.S. (2010). *Industri Sarang Burung Walit Satu Industri Bernilai Tinggi*. Jabatan Perkhidmatan Veterinar Negeri Terengganu. Page 1-25.
11. Munirah, A.R., Puspa, L.G., Eni, N.M.Z., Roslida, A.R., Noor, E.S.S., & Mustafa, M. (2020). Location and Premise Size of Successful Edible Bird Nest (EBN) Swiftlet Houses in Terengganu, Malaysia. *International Journal of Advanced Science and Technology*, 29(3), 9356-9362.
12. Munirah, A.R., Puspa, L.G., Chong, J.L., Norasmah, B., Mustafa, M., Hazimi, F., & Asyraf, A. (2019). Suitable Ranching Practices in Successful Edible Bird Nest Swiftlet Houses in Terengganu. *International Journal of Recent Technology and Engineering*, 7(4), 60-64.
13. Munirah, A.R., Chong, J.L., & Puspa, L.G. (2018). Environmental Parameters in Successful Edible Bird Nest Swiftlet House in Terengganu, Malaysia. *Journal of Sustainability Science and Management*, 13(1), 127-131.
14. Retno, O., & Soedarmanto, I. (2005). The Detection of *Staphylococcus aureus* in swiftlets' nest using Immunohistochemistry (Streptavidin Biotin).
15. Wan Khairy, W.I & Mohd Rafi Yaacob (2020). Kajian Keberkesanan Pemilihan Lokasi Melalui Kaedah 'Ceklok' untuk pembinaan Rumah Burung Walit (RBW). *Journal of Entrepreneurship and Bussiness*. E-ISSN: 2289-8298. Volume 4, issue 2, page 1-16.
16. Wan Khairy, W.I, Mohamad Nur Arifuddin Mad Yusof, Chong Ju Lian, Mohd Rafi Yaacob, Vijaya Kumaran Jayara (2019). *Megaderma Iyra* predation on *Aerodramus* spp. Impact on Malaysian bird nest industry.
17. Wan Khairy, W.I (2018). Investigating The Effectiveness of Location Selection for Building Swiftlet Bird House (SBH) Through Mapping Technique SIG FKP.
18. Wan Khairy, W.I (2018). Kajian Keberkesanan Pemilihan Lokasi Melalui Kaedah 'Ceklok' untuk Pembinaan Rumah Burung Walit (RBW).
19. Wan Khairy, W.I (2018). Kajian Keberkesanan Pemilihan Lokasi Melalui Kaedah 'Google Map, Birdcall & Observation' (GBO) untuk pembinaan RBW.
20. Wan Khairy, W.I & Mohd Rafi Yaacob (2018). Strategi Pengurusan Rumah Burung Walit. Pengalaman Usahawan Berjaya (UMK Press).
21. Wan Khairy, W.I, Mohd Rafi Yaacob & Azuan Abdullah (2015). The Importance of Technical Knowledge in Sustainability of Malays Bird's Nest Industry in Malaysia. *Journal of Applied Environmental and Biological Science*., 5 (4) 190-196. ISSN:2090-4274.