

OVERVIEW OF TECHNOLOGIES USED IN SWIFTLET HOUSING

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ABSTRACT. Due to excessive ranching from humans and shortage of food sources, swiftlets have changed their habitat from caves to man-made structures. It started when swiftlets started to use empty houses as their new habitat. Consequently, swiftlet ranching has been transformed from traditional ranching in naturally occurring caves to man-made structures. A swiftlet house does not only need to provide suitable conditions for the swiftlets to nest inside, but also has to protect them from predators. A survey was conducted using a questionnaire distributed to swiftlet house operators, as well as interviews and site visit to collect the data on technology usage in swiftlet houses.

Keywords: swiftlet house, technology, attraction methods, protection methods

INTRODUCTION

The natural habitat of edible-nest swiftlets are in caves. Over time, this behaviour changed and swiftlets started to occupy manmade structures as their habitat. This adjustment has given the opportunity for new developments in the edible bird-nest (EBN) industry. Instead of relying on traditional and the limited availability of

caves as a source of edible bird-nest, recent swiftlet ranching in manmade structures are safer and sustainable for the swiftlet industry and swiftlet populations in the long term.

Shops and buildings purpose-built swiftlet houses are the common types of man-made swiftlet houses in Malaysia. However, there are also former factories or empty ancestral homes that have been converted to swiftlet houses.

To attract swiftlets to nest inside a swiftlet house, technologies are installed to create suitable conditions and to make it more appealing to swiftlets. In addition, due to the high market price of EBN, the operator or the owner of the swiftlet house has to ensure the safety of their houses from predator animals and theft. Therefore the objective of this study is to review technologies that are used in swiftlet houses and share these findings to facilitate future swiftlet ranching activities.

MATERIALS AND METHOD

A set of structured questionnaire was developed with the cooperation and after consultations with veterinary officers from the Exotic Animal Section, Department of Veterinary Services and state officers to

obtain the necessary information for the questionnaire.

Other than the questionnaire, appointments and interviews were also conducted during the site visit to some swiftlet houses in order to collect primary data.

There were 254 respondents involved in this study who were selected randomly from a list of registered houses provided by Exotic Animal Section. However, only 235 respondent's data was acceptable to be analysed.

RESULTS AND DISCUSSION

Basic equipment that are essential in a swiftlet house are humidifier and a sound system which includes amplifiers and speakers. Humidifiers are used to maintain a relative humidity required inside the swiftlet house. From the site visits, three types of humidifier widely used in swiftlet houses were basins of water, humidifier machine and tube sprayer. In the past, swiftlet house operators built shallow pools inside the house to humidify it but that practice is no longer popular because the pool has become a place for mosquitoes to breed and a drowning hazard to chicks which were still learning to fly.

There are two types of artificial sounds needed in a swiftlet house: external sound (sound outside the house for bird calling) and internal sound (sound inside the house). One or two big speakers are used as external speakers for bird calls. Meanwhile, for the internal sound, operators use a lot of small tweeter speakers located in the middle and corner of nesting planks. An area of 20 feet

by 70 feet requires at least 40 speakers on each level (Lim, 2009). Bird calling speakers and the humidifiers are normally attached or connected to an analogue or a digital socket timer. This is because bird calling speakers are only allowed to operate during allotted times such as in the early morning, around 6:00 a.m. to 10:00 a.m. and later in the evening, around 4:00 p.m. to 8:00 p.m. (Jabatan Perkhidmatan Veterinar, 2010). Meanwhile, humidifiers need to have a resting interval to ensure the long life span of the machine and to avoid the house to be over humid, in which case, it will breed fungus on nesting planks and the nests.

Other than the essential equipment above, other gadgets that are used in swiftlet houses are temperature controller, humidity controller, hygrometer, solar panel and back-up generator. These gadgets are used as a support system to operate and monitor the condition inside the swiftlet house. Results from the data collected show that 91 swiftlet houses have temperature controllers and 95 swiftlet houses have humidity controllers installed as shown in Table 1.

Table 1. Number of swiftlet houses with support equipment.

Other Equipment	Number of Swiftlet House
Temperature controller	91
Humidity controller	95
Hygrometer	37
Backup generator	14
Solar panel	7

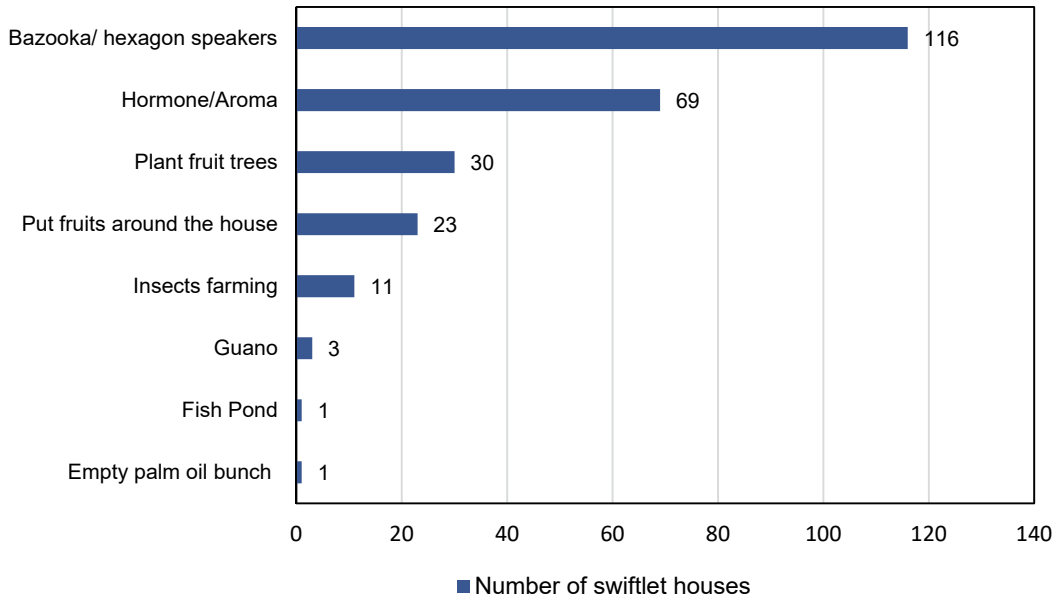


Figure 1. Methods used in swiftlet houses to attract swiftlets.

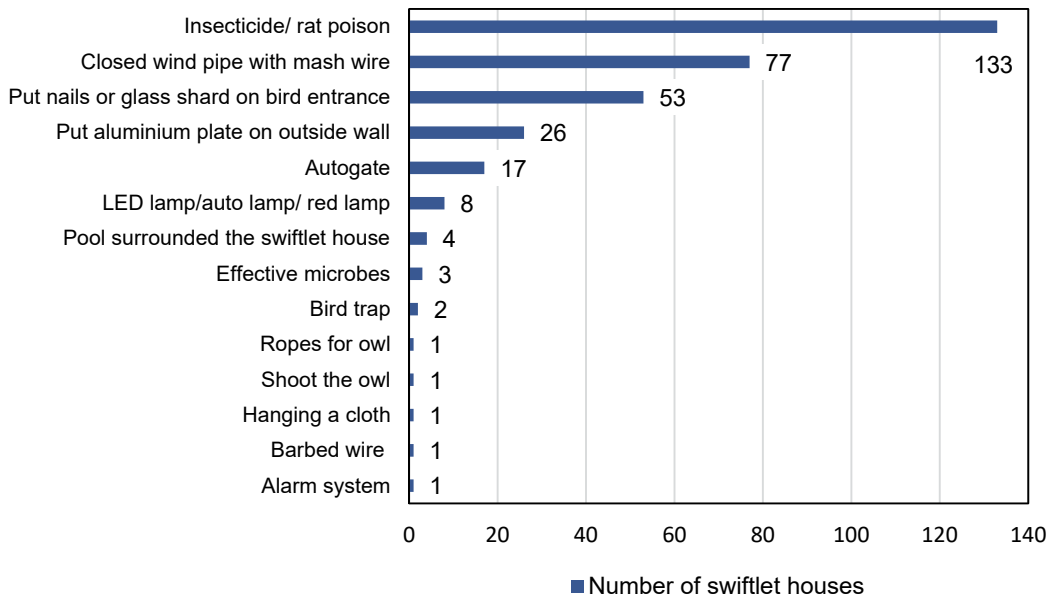


Figure 2. Methods used in swiftlet houses to prevent theft and natural predators.

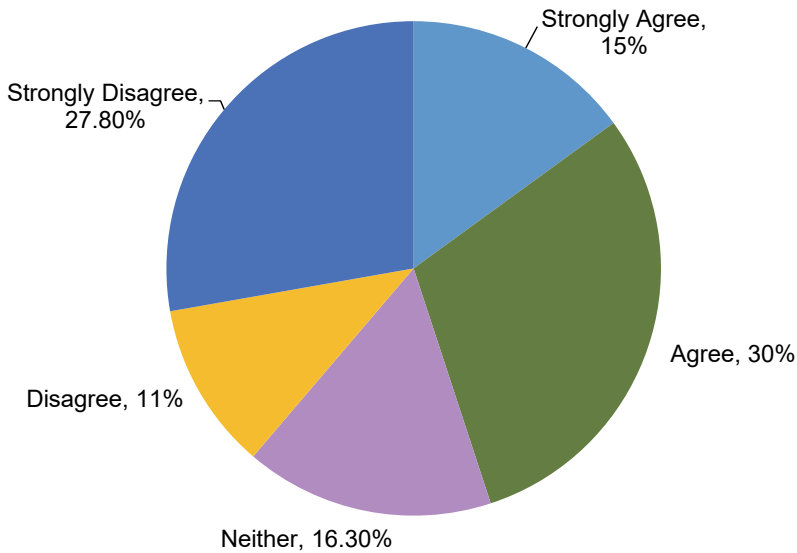


Figure 3. Percentage of respondents' opinion about installation of security equipment to ensure the safety of swiftlet house.

Swiftlet ranching is an expensive business that requires high initial costs in order to build up a swiftlet house, but can also give high turnover in revenue, if the house is successful in producing bird nests. For this reason, operators use additional methods to attract the swiftlets to nest inside. In the questionnaire, operators are required to select one or more additional methods that they use in their swiftlet houses. There are several methods that are usually used in the industry which are changing according to trends. Figure 1 shows that 116 respondents had invested in good speakers or a sound system such as bazooka or hexagon type of speakers. *A. maximus* and *A. fuchiphagus*; the type of swiftlets that produced edible-nest are among the 16 types of swiftlet that have the ability of echolocation (Brinklöv S, 2013).

Hence, their hearing is sensitive to sound waves.

The other methods that have been used by a quarter of the respondents are hormone or aroma. Hormone or aroma are sprayed around the house and nesting planks. The uses of aroma or hormone sprays are to attract swiftlets and encourage swiftlets to build nests. Additional attraction methods that are popular are; planting fruit trees in swiftlet house compounds, placing fruits around the house, insect farming, placing swiftlet guano, creating fish pond and placing empty oil palm bunches.

Aside from attracting swiftlets into the swiftlet houses, operators also have to ensure the safety of the swiftlet house from burglary and theft, and the safety of the swiftlets from its natural predators. For example, in a case of an owl which entered a

swiftlet house, the swiftlet house had to be closed for at least 6 months to be cleaned up and restart. In some worse cases, the swiftlet house was closed permanently due to owl attacks.

Similar to attraction methods, operators use one or more prevention methods at any given time. In Figure 2, result shows that insecticides are the highest prevention methods used in swiftlet houses with 133 houses using it. Location of the swiftlet houses can also influence the type of prevention methods used in a house. For example, a swiftlet house located in an oil palm plantation may need prevention from owls, bats and snakes but a house that is located in a city or a village focuses on prevention from human intervention.

Based on the observations of the site visits, almost all of the swiftlet houses have iron cast door with complicated locking system to prevent theft. Another method used at swiftlet houses to prevent theft is to install barbed wire on the roof and at the opening section of the bird entrance. Due to the nature of the high value of swiftlet nests, some operators are willing to install high technology alarm systems. In Kota Bharu, Kelantan, a group of swiftlet house operators hired security guards to protect their swiftlet houses from thieves. From the interview with operators who had experienced theft and burglary, the burglars did not only take the nests which translate to loss of income to the operator, but have also killed the chicks thereby affecting the cycle of swiftlets.

Around 15% of the respondents strongly agreed with installation of security equipment such as video surveillance to increase the security of swiftlet houses

(Figure 3). The percentage of respondents who agreed and disagreed with this statement were 45% and 38.8% respectively.

Based from interviews with respondents and the site visit, technology advancement in swiftlet houses are focusing on operating and monitoring the premises. For nest collecting activities, operators still use traditional tools.

CONCLUSION

Technologies are used in swiftlet houses to create similar conditions to caves which are their natural habitat. Additional technology or methods can be utilised to attract more swiftlets, for the safety and protection of the swiftlet house and production of edible-nests which have a high market value. Operators of swiftlet houses use trial-and-error to establish suitable methods and keep up with the current trends of technology in use, not only in Malaysia but also in neighbouring countries such as Indonesia and Thailand.

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ACKNOWLEDGEMENT. This research was supported by Centre of Excellence on Swiftlet. We thank our colleagues from states' Department of Veterinary who provided information and expertise that greatly assisted the research.