For discussion on
8 January 2019

Legislative Council Panel on Food Safety and Environmental Hygiene
Survey Results and Control Strategy Against Biting Midges

Purpose

This paper briefs Members on the survey results of a one-year study on biting midges undertaken by the Food and Environmental Hygiene Department (FEHD) and the Government's control strategy having regard to the situation in Hong Kong.

Background

2. In light of public concern about nuisances caused by biting midges in recent years, FEHD invited a renowned biting midges expert from the Mainland China to visit Hong Kong in 2016 and 2018 respectively to provide advice and recommendations on the control strategy. FEHD also conducted a territory-wide survey on biting midges between July 2017 and July 2018.

Survey Methodology and Results

3. The survey aims to investigate into the species diversity of biting midges and to ascertain if there are any disease carrying species as well as studying the seasonal activities of blood sucking midges. The survey covered potential breeding grounds[1] and locations with complaint records. A total of 257 exercises were conducted at 133 locations for collecting biting midges samples (including collections by nets, light traps at night and human baits). A total of 1 362 samples of biting midges[2] were collected.

---

[1] Eggs of biting midges are usually laid on the surface of wet soil, especially those with plenty of decaying vegetation. Larvae are aquatic or semi-aquatic. Adults have limited activity ranges, usually not more than 100 meters from their breeding places.

[2] Not all biting midges are blood sucking. A total of 852 samples of blood sucking midges were collected in the survey.

4. No biting midges were found to be of species that are capable of transmitting diseases to humans from the survey[3], which indicated that biting midges commonly found in Hong Kong are not disease vectors but they do cause nuisances.

5. Surveys through netting collections are useful for the analysis of the activity areas and distribution of biting midges in Hong Kong. Of the 93 locations where netting collections were carried out, blood sucking midges were found only in 40 locations (43.0%), i.e. nuisances caused by biting midges were found in less than half of these locations (including those with complaint records of biting midges). Meanwhile, of the 56 locations in parks, biting midges were found in 30 locations (53.6%). For the remaining 37 collection locations in places other than parks, biting midges were found only in 10 locations (27.0%). The findings showed that the activities of biting midges were localised and their presence was higher in parks.

6. Surveys through placing light traps at night facilitates the study of blood sucking biting midges (*Culicoides* species) which are active at night. Of the 67 locations where light traps were placed at night, all *Culicoides* species found were from rural areas and none were collected in urban areas. The findings showed that the blood sucking midges which were active at night were mainly present in the rural environment and caused less nuisance in the urban setting.

7. Four locations, namely Hong Kong Park, Lok Wah Street Playground and Tsz Wan Shan Service Reservoir Playground, Yau Yue Wan Children's Playground and Shing Mun Valley Park, were selected for conducting human bait collections each month to enumerate the average landing rate[4] of blood sucking midges with a view to analysing the seasonal activities of blood sucking midges. Data on the average monthly landing rate are set out in **Annex**. The results showed that blood sucking midges were more active in warm and humid weather (from May to November) with their activities reaching the peak in June. Their activeness decreased gradually as weather turned cold and dry. In other words,

[3] This is consistent with the findings of the biting midges expert that there have not been any cases of infectious diseases related to biting midges in China.

[4] Landing rate is the per hour average number of biting midges landing on exposed skin of each collector.

activities of biting midges were seasonal with peak season in hot and humid summer.

Control Strategy Against Biting Midges

8. Based on the experiences of other regions, the most effective measures for preventing proliferation of biting midges are environmental control, reduction of potential breeding places and enhancing public awareness of adopting self-protection measures through health education. With reference to the survey results and expert advice, we have developed targeted control strategies against biting midges by taking into account their habitual behaviours as well as their seasonal and localised activity patterns.

9. Although the biting midges species found in Hong Kong are not disease vectors, their bites can still cause discomfort and irritation. As such, the Government accords importance to the prevention and control of biting midges and has stepped up inter-departmental co-ordination. The terms of reference of the Pest Control Steering Committee under the Food and Health Bureau also cover the prevention and control of biting midges after being upgraded from the Anti-mosquito Steering Committee in July 2018.

10. As biting midges are more active in warm and humid weather between May and November, the Government will strengthen co-ordination of the preventive work carried out by departments in premises under their purview before the rainy season, including removal of dried leaves on soil surface and application of larvicide if necessary, in order to prevent their breeding. The anti-mosquito and environmental improvement measures taken by departments can also reduce potential breeding places of biting midges.

11. The survey revealed that biting midges were more likely to be found in parks. As parks are frequented by the public and are more likely to cause nuisances, targeted control measures are required. FEHD has formulated technical guidelines on the prevention and control of biting midges for relevant departments' reference, with a view to tackling the issue at source by reducing

the potential breeding sites. Suggested measures include growing taller plants, pruning plants regularly and covering soil surface with gravels. Adult control measures (such as installation of insect trapping device) can be used for supplementing as appropriate to reduce the population of biting midges. FEHD will organise training and talks on the control of biting midges for the relevant departments, including the Leisure and Cultural Services Department and the Housing Department to enhance effectiveness of the control work.

12. To enhance the general public's knowledge on blood sucking midges and raise their awareness of adopting self-protection measures, FEHD will step up its health education through the use of posters and leaflets. The public should wear light-coloured, long-sleeved clothes and trousers and apply insect repellent when having outdoor activities. They should also clear potential biting midges breeding grounds at home, such as removing fallen leaves, decaying materials as well as silt in sand traps and surface channels.

13. The expert invited by FEHD considered that there is no need to introduce an index for long-term surveillance particularly for biting midges in Hong Kong[5] as the biting midges found locally are not disease vectors. Nevertheless, the Government will continue to keep in view the situation of biting midges in the territory. A breakdown of the complaint figures[6] relating to biting midges has been kept since mid-2016 to facilitate timely adjustment of the control strategy. FEHD will consider conducting another round of territory-wide survey to look into the change of the situation of biting midges in Hong Kong if necessary.

Conclusion

14. Members are invited to note the content of this paper.

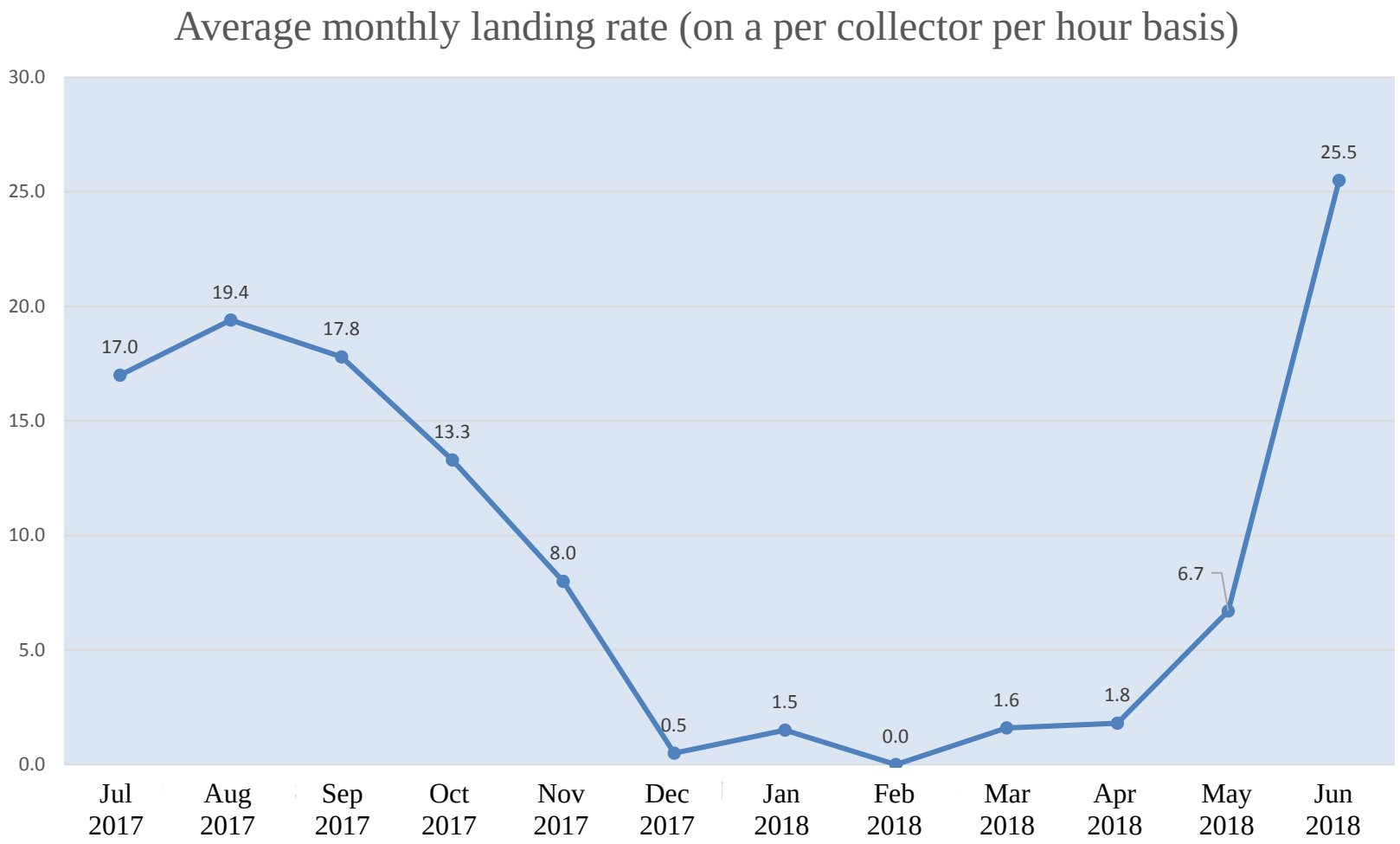
---

[5] The World Health Organization does not publish any guidelines for systematic surveillance targeted at biting midges. Other places including the Mainland China, Singapore as well as countries in America and Europe do not formulate regular surveillance programmes for biting midges.

[6] Between July 2016 and June 2017, a total of 279 complaints were received by various departments. During the period from July 2017 to June 2018, the number of complaints received was 148, indicating that the nuisances caused by biting midges in public places had been alleviated.

Food and Health Bureau
Food and Environmental Hygiene Department
January 2019

Annex


Average monthly landing rate (on a per collector per hour basis)
30.0
25.0
20.0
15.0
10.0
5.0
0.0
17.0
19.4
17.8
13.3
8.0
0.5
1.5
0.0
1.6
1.8
6.7
25.5
Jul 2017
Aug 2017
Sep 2017
Oct 2017
Nov 2017
Dec 2017
Jan 2018
Feb 2018
Mar 2018
Apr 2018
May 2018
Jun 2018