

Pest Problems after Torrential Rain

The rainy season in Hong Kong is normally between April and September. There could be torrential rain, very heavy rain, which sometimes causes flooding. As a result of torrential rain and flooding, the "normal" activities of pests including rodents, mosquitoes and exophilic arthropods may be disturbed.

Rodents

Outdoor rodent burrows may be flooded on days with torrential rain. Rodents may abandon their burrows and migrate to other suitable harboring areas. Signs of possible rodent migration include a large number of rat holes or rodent droppings might be found in a locality within one to two days after heavy rain. The water could wash out the excreta of rodents, which may transmit leptospirosis, from their burrows (Fig. 1). Contraction of the disease through contact of articles, walls or floors contaminated with rodent excreta in flooding is possible. One should wear protective clothing including waterproof boots and rubber gloves in handling articles soaked with water or working in houses or places which flood and are likely infested with rodents.



Fig. 1 The droppings of sewer rats (*Rattus norvegicus*)

Mosquitoes

Stagnant water provides breeding ground for various species of mosquitoes. Pockets of water formed after torrential rain should be identified as soon as possible (Fig. 2). Responsible parties should drain away the water. Any pocket of water

formed near human habitations and cannot be drained away should be treated with larvicide such as Temephos or B.t.i.. Besides, containers holding water provide breeding places for mosquitoes, such as *Aedes albopictus*. Parties concerned should dispose of or keep the containers properly for preventing upsurge in breeding of mosquitoes.

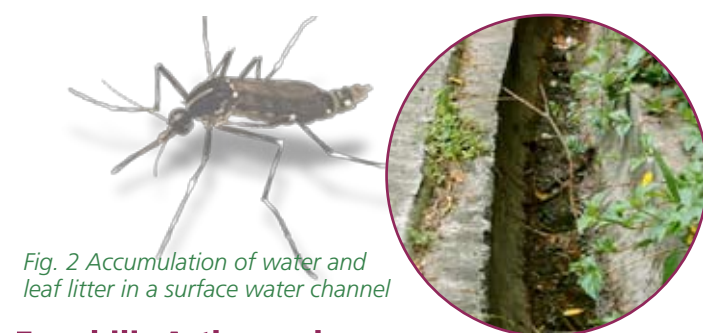


Fig. 2 Accumulation of water and leaf litter in a surface water channel

Exophilic Arthropods

The torrential rain may also disturb the nests of arthropods living outdoors. Some of the arthropods including millipedes and ants may intrude into houses or aggregate in a great number near human habitations suddenly. The intrusion or aggregation is usually temporary. These pests may not cause harm to humans. Millipedes could be collected by tools for release in areas with vegetation away from usual human activities (Fig. 3). Non-judicious killing of these pests should be avoided. If disinfection is required, the operation should be carried out in a minimal scale so as to minimize its impact on the ecological system.

Wet and warm weather creates favorable conditions for pests to fester. Therefore, it is important to remain vigilance on the pest problems during the rainy season. You may ask for assistance from either the Food and Environmental Hygiene Department or pest control companies if necessary.



Fig. 3 A millipede in Order Polydesmida

Vectors of common mosquito-borne diseases in Hong Kong

Apart from causing nuisance, some species of mosquitoes can carry pathogens and transmit the diseases to person through biting. Mosquito-borne diseases are diseases which are caused by pathogens such as virus or parasites and transmitted by vector mosquitoes. Mosquito-borne diseases are reported globally, especially in tropical and subtropical regions. Dengue fever, malaria and Japanese encephalitis are among the notifiable mosquito-borne diseases in Hong Kong.

Dengue fever

Aedes albopictus, which is also known as Asian tiger mosquito, is widely distributed in Hong Kong. It is the local vector of dengue fever. Adults of *Aedes albopictus* have a single white stripe on the dorsal surface of thorax and bands on legs and these features can be easily identified. They are day biters with peak activity within 2 hours after dawn and before sunset and mainly live outdoors. They prefer to breed in all sorts of small clean water collections like tree holes, bamboo stumps, disused tyres and small containers. Their flight range is usually less than 100 metre. Apart from dengue fever, *Aedes albopictus* is also responsible for transmission of Chikungunya fever and potential vector of yellow fever. Proper management of small water bodies including small containers is important in the control of this species of mosquitoes.

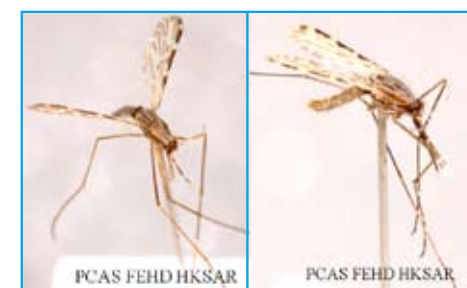


Aedes albopictus

Malaria

Anopheles minimus and *Anopheles jeyporiensis* are the two principal local malaria vectors. Adults of *Anopheles minimus* are medium in size and like to feed on humans, sometimes also animals, with feeding peak at mid-night. After feeding, adults stay indoor areas before dawn. Breeding habitat of *Anopheles minimus* is clear sunlit hilly streams and larval density is higher in the periods from March to April and from September to October. They have been found in Tai Mo Shan, Sai Kung and Pat Sin Range.

Anopheles jeyporiensis breeds in slow-flowing fresh water flooded fields with vegetation. Adults are small to medium in size. Female adults readily feed on not only humans but also animals, and they are most active from 11:00p.m. to 2:00 a.m. They have been found in Tap Mun Chau, Lantau and Luk Keng. Urbanization would eliminate the breeding sites of *Anopheles jeyporiensis* whilst new towns would bring people closer to natural unpolluted streams which are the habitats of *Anopheles minimus*. Keeping the water flowing in the streams and fields swiftly is important in the prevention of the breeding of these mosquitoes.



Anopheles minimus *Anopheles jeyporiensis*

Japanese encephalitis

Culex tritaeniorhynchus is the local vector of Japanese encephalitis. This mosquito breeds in clean or slightly polluted water, either stagnant or semi-stagnant, flooded fields, ground pools, fish ponds, slow flowing streams, irrigation ditches, rice fields and in surface drainage channels around housing estates. Adults are brownish with a white band surrounding the middle of proboscis when viewed dorsally and laterally. They like to live outdoors and would attack mammalian species and birds. They are active at night and peak activity is observed one hour after dark. *Culex tritaeniorhynchus* is widely found in Hong Kong. Previous vector surveys have revealed that mosquito density is the highest from May to July. Elimination of stagnant water is important in the prevention of the breeding of this species of mosquitoes.



Culex tritaeniorhynchus