

## MIXED-SPECIES ASSOCIATION AMONG MALAYSIAN PRIMATES DURING THE COVID-19 OUTBREAK IN GENTING HIGHLANDS, PENINSULAR MALAYSIA

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**Abstract:** This is the first report to elucidate primate mixed-species association during Covid-19 outbreak in Malaysia. The observations were carried out at Genting Highlands between 14-24th April 2020 using *ad libitum* sampling. Five Genting Highlands primate species were observed at approximately 66 observation hours which include *Symphalangus syndactylus* (siamang), *Trachypitecus obscurus obscurus* (dusky langur), *Presbytis siamensis siamensis* (Malayan pale-thighed surili), *Macaca nemestrina* (southern pig-tailed macaque), and *Macaca fascicularis* (long-tailed macaque). Primates in Genting Highlands were seen interacting among themselves during the third phase of the MCO. Siamangs, dusky langurs, and long-tailed macaques were observed sharing space and interacting in an old section of Genting View Resorts that is currently under renovation. Malayan pale-thighed langurs were also observed approaching this area. During the third phase of the MCO, siamangs, dusky langurs, long-tailed macaques, and pig-tailed macaques consumed fruits of the fig tree (*Ficus benjamina*), which last for only one week. Strict controls on public movement are believed to have created environmental conditions that enabled Genting Highlands primates to move and interact freely among themselves.

Keywords: Movement Control Order, COVID-19, Malaysian primates, mixed species association.

### Introduction

After initially appearing in Wuhan City, Hubei Province, China, SARS-CoV-2 unfortunately made its way to Malaysia. COVID-19 was confirmed in Malaysia on January 25, 2020, having been brought into the country by a Chinese tourist from Wuhan, who traveled from Singapore to Johor Bahru on January 22, 2020 (CPRC, 2020). In the first wave of infections, only 22 positive COVID-19 cases were recorded and this was followed by 11 days of zero reported cases. However, an explosive second wave of infections began on February 27, 2020, and an astonishing 651 cases had been reported by March 17, 2020 (Figure 1).

The Government of Malaysia immediately announced and implemented the Movement

Control Order (MCO) under the Prevention and Control of Infectious Diseases Act 1988 and the Police Act 1967. The MCO came into force on March 18, 2020 and severely restricted the movement of the public and prevented gatherings nationwide. It closed all kindergartens, public and private schools, public and private higher learning institutions, and government and private premises (except those providing essential services), limited overseas travel, limited foreign visitors and tourists to Malaysia and many other restrictions (Prime Minister's Office of Malaysia, 2020). Despite enforcement of the first phase of this historical and unprecedented order (March 18, 2020–March 31, 2020) throughout the country, the number of new COVID-19 cases continued to increase, only plateauing occasionally (Figure 1). This caused the government to subsequently