

FIGHTING FIRES

in Raja Musa Forest Reserve

TEXT BY: NOOR AZURA AHMAD/GEC IMAGES BY: R. NAGARAJAN, CHIN SING YUN

HAZE IS AN UNWELCOME

INTRUSION into our everyday lives, tainting the air with a smoky infusion of grey. While Malaysians generally associate haze with large-scale burning in a neighbouring country, let's not forget that peat fires can also burn right here in Malaysia. The far-reaching blanket of smoke that originates from peatland fires in dry periods could start with very little provocation, such as a stray cigarette butt dropped by a careless smoker while traversing the forest.

In Selangor, peat is found in North Selangor, Kuala Langat South and Kuala Langat North peat swamp forests. One of the most notable peat swamp forests is the Raja Musa Forest Reserve (RMFR) near Kuala Selangor. Located 50 km north of Klang Valley, near Bestari Jaya (previously Batang Berjuntai) township, the RMFR is a significant block of remaining peat swamp forest in the west coast of Peninsular Malaysia. It is also an important ecosystem for biodiversity conservation, freshwater source and carbon storage.

Peatlands play a big role in mitigating climate change. By accumulating carbon from dead leaves and plants within a water-saturated environment, they stop the carbon from going back into the atmosphere as CO₂. When peat is dried, they degrade through a decaying process, releasing some of the carbon back into the atmosphere. When they burn, the problem becomes exponentially worse. Therefore, peat fires should not be allowed to even start, as they can easily get out of control.

Unlike mineral soils, peat is made up of more than 65% organic matter which turns into tinder in hot and dry weather. To make matters worse, the fire burns underground and can smoulder for a long time, just waiting for an opportunity to burst back into full flame. It takes a lot of water to properly douse a peat fire. The area needs to be completely saturated with water before the fire and any smouldering embers can be thoroughly extinguished.







PROTECTING THE PEAT

The 23,486 hectares (ha) Raja Musa forest reserve is part of the 73,000 ha North Selangor Peat Swamp Forest. A 4,000 ha pilot site for sustainable management of peatland forests is located in this reserve. Half of the pilot site is in the forest reserve while the other half is privately owned land outside the boundaries. The reason for this unusual arrangement is to establish cooperation with the private sector in rehabilitating degraded peat areas.

The pilot project is undertaken by the Global Environment Centre (GEC) under an MOU with the State Government of Selangor to rehabilitate and protect the RMFR. The site was previously degraded by logging and encroachment and the land is covered in lalang and ferns – weeds that are especially prone to burning in hot weather. Much of the peatlands near RMFR are criss-crossed with large canals, originally to drain it for agriculture and mining activities.

While draining is essential in agricultural areas to allow for planting, in uncultivated areas, it's an invitation to fire. Even in agricultural land, the water table should not be allowed to fall more than 50cm from the ground surface. This is sufficient to allow for crops and at the same time keep the soil sufficiently hydrated to prevent burning.

According to the information gathered by the Forestry Department, 592 hectares of RMFR have been affected by fire between 2002 and October 2009. The areas destroyed by fire were subsequently encroached for agricultural activities; this trend was first detected in 1998. In 2008, the Selangor State Government decided to save the RMFR and the Forestry Department is currently playing a key role in rehabilitating the area.

Another important action in mitigating the threat of fire in degraded peatlands is by restoring the water table by blocking drainage canals to maintain the minimum water

level. Most free draining canals within the RMFR have been blocked by the Selangor Forest Department through an effort that started in 2008.

Because the weather plays a big part in forest fires, the Malaysian Meteorological Department have also been enlisted to help solve this issue. Maps have been generated daily by MMD, using the **Fire Danger Rating System (FDRS)** to indicate danger zones based on weather information. The maps assist the relevant departments, such as the Department of Environment (DOE), Fire and Forestry Departments in planning their patrolling and emergency preparations. At this stage, the system is still being tested in RMFR. Assisting this effort are ASEAN's APFP and SEApeat projects which are being executed by Global Environment Centre as the Regional Project Executing Agency to support the ASEAN Haze and Transboundary Agreement.

Knowing the tendency of peat to burn, GEC staff are always wary of fire in the project area, trying their best



CHALLENGES COMMONLY FACED IN FIRE SUPPRESSION

Peat soil is full of organic matter which fuels the fire

Very hot and windy weather

Limited water availability

Lack of manpower and equipment

to spot any fires before they spread. Generally, when a fire is spotted, the situation is first assessed. If it cannot be put out immediately, the fire fighting team is called in to help. The fire fighting team, consisting of the local Fire Department/BOMBA, Forestry Department staff and volunteers would pump water from surrounding canals and wells to douse the flames. When it comes to fighting peat fires, many factors need to be considered, including the condition of the soil, vegetation and wind direction.

For example, when a fire was spotted in RMFR on 20th June 2011, the fire fighting team immediately sprang into action and tried to suppress the fire. But the wind changed direction and the fire swiftly raged out of control. Eventually, it took 9 firemen from the nearby Bestari Jaya firehouse, 12 forest rangers and GEC team members 3 days to douse the burning area. 10 hectares were burnt, much of it populated with big mahang (*Macaranga pruinosa*), mahang gajah (*Macaranga gigantea*), Tenggek burung (*Euodia roxburgiana*) and lalang grass. The

suspected source of fire was an agricultural smallholding outside the forest reserve boundary. Therefore, reducing trespassers in the area is important since most fires are started by human activities.

Another essential activity in rehabilitating this area is replanting the open land with suitable forest trees. Trees provide shade, helping to keep the soil from drying out in hot weather. They are also less likely to catch fire compared to lalang and shrubs. With the help of volunteers and support from donors, 70 000 trees have been replanted in RMFR since 2008. Currently, the on-going rehabilitation efforts are supported by European Union, HSBC Bank Berhad, Bridgestone Tyres Sales (M) Sdn Bhd, International Fund for Agricultural Development (IFAD) and Global Environment Facility (GEF).

There is a lot of work that still needs to be done, but we are well on the way to rehabilitate a wasted land and return it to its original function of sequestering carbon and mitigating climate change. With the peatlands restored, we can all breathe easier in the absence of suffocating haze. 🐾



GLOBAL ENVIRONMENT CENTRE

(GEC) is a non-profit NGO established in 1998 to address key environmental issues. Based in Malaysia and supporting activities worldwide, GEC is focused on bringing together all parties to help foster lasting changes for environmental benefit. The **ASEAN Peatland Forests Project (APFP)**, funded by GEF/IFAD, and led by the ASEAN Secretariat, aims to demonstrate, implement and scale up the sustainable management and rehabilitation of peatland forests while the **SEApeat** project, funded by the European Union, seeks to reduce deforestation and GHG emissions via degradation of peatland forests in Southeast Asia. www.aseanpeat.net