

# TAWAU HILL PARK SPRINGS, SABAH, MALAYSIA

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Tawau Hill Park (N04°14'42.7", E117°53' 03.3") is located 20 km north of Tawau town. This 280 km<sup>2</sup> virgin lowland dipterocarp forest has been advertized as a state park since 1979 and it houses many interesting species such as *Phalaenopsis gigantea*, *Presbytis rubicunda*, *Tarsius bancanus*, *Otus lempiji* and the rhinoceros hornbill. Within a few kilometres of the park headquarters itself, two waterfalls and 11 warm sulphurous springs are found.

The natural setting of this park, made up of this beautiful combination, has lured tourists regularly, especially the local people of Tawau. Throughout the year of 1999, 17,624 tourists arrival had been recorded. This figure is expected to rise further once the road-upgrading project is completed.

One of the tourist attractions is the warm sulphurous springs situated 3.2 km from the Bombalai Hostel. An hour walking along the jungle track will lead you to the first spring (labeled 2A). As seen in Figure 1, eleven warm sulphurous springs (25-33.7°C) occur along the 250 m stretch of the Upper Tawau River. The temperature distribution of the springs is noteworthy; as the spring water got hotter to the south. The elevation of this site is approximately 370 m above sea level. The springs outlets are on the riverbed or by the bank just below the water level. According to Lim *et. al.*

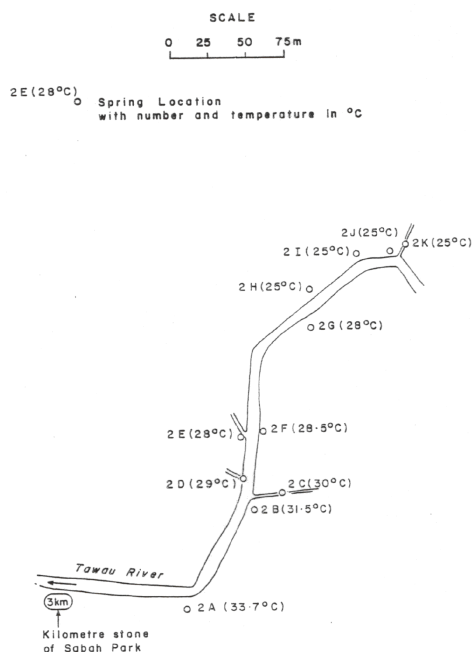


Figure 1. Distribution of warm sulphurous springs in Tawau Hill Park.

(1990), the northeasterly alignment of the springs indicates structural control. The close proximity of these springs to major northeasterly trenching lineaments observed on LANDSAT imagery had been noted by Lim (1988).

The spring waters are acidic (pH 3.68-4.10). A strong hydrogen sulphide smell can be detected at 150 m range before reaching the first spring (2A). The waters of Spring 2A emerge from among boulders of rhyolitic rocks (Figure 2). The boulders surrounding the springs are characteristically sulphur coated (Figure 3).



Figure 2. Spring water emerging from boulders of rhyolitic rocks.

It is not possible to obtain a total flow discharge of this area; however, Spring 2B has a flow discharge of 0.15 L/s, a pH of 4.04 and a temperature of 31.5°C. The chemistry of Spring 2B is summarized in Table 1. The temperature was 23.6°C and the pH 6.50 at 10 m downstream from this spring. At 10 m upstream, the temperature was 23.1°C and the pH



**Figure 3.** *The sulphur-coated boulders downstream of the spring.*

7.51. The Tawau River flow rate here is approximately 1,600 L/s. The temperature downstream of all the springs was 24.3°C and the pH 6.35. Upstream of all the springs, the stream temperature was 23.1°C and the pH 7.51.

From the data available on these springs, they indicate that there are heat transfer processes at deeper level to a hydrothermal reservoir in the nearby region (Lim *et. al.*, 1991). We do notice that the geothermal water is not hot enough for any direct use in this region; however, we strongly believe that these springs have an important role to play in the nature tourism industry of Tawau Hill Park. According to the local people, the spring water has its own medicinal properties for skin treatment. Bathing in these springs is popular here.

**Table 1. Chemistry Characteristic of Spring 2B (Lim, et al., 1991)**

Sample	T2B
Site temp. °C	31.5
pH at 25°C	3.7
Dissolved SiO <sub>2</sub>	Not analyzed
Total SiO <sub>2</sub>	32 ppm
Ca	138.66 ppm
Mg	14.91 ppm
K	3.55 ppm
Na	14 ppm
Li	Not detected
HCO <sub>3</sub>	7.32 ppm
SO <sub>4</sub>	500 ppm
Cl	6 ppm
F	0.23 ppm
B	Not detected
As	5 ppm
Fe	1.4 ppm
Mn	0.4 ppm
Total solids	64 mg/L
Turbidity	Not analyzed
Conductivity	835 Fmhos

## REFERENCES

- Lim, P. S., 1988. "Geology and Geothermal Potential of the Tawau Area, Sabah." *Geological Survey Malaysia 1987 Annual Report*: 402-413.
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