

# **RAINFALL-TEMPERATURE-HUMIDITY RELATIONSHIPS IN BUSH BUSH FOREST, TRINIDAD.**

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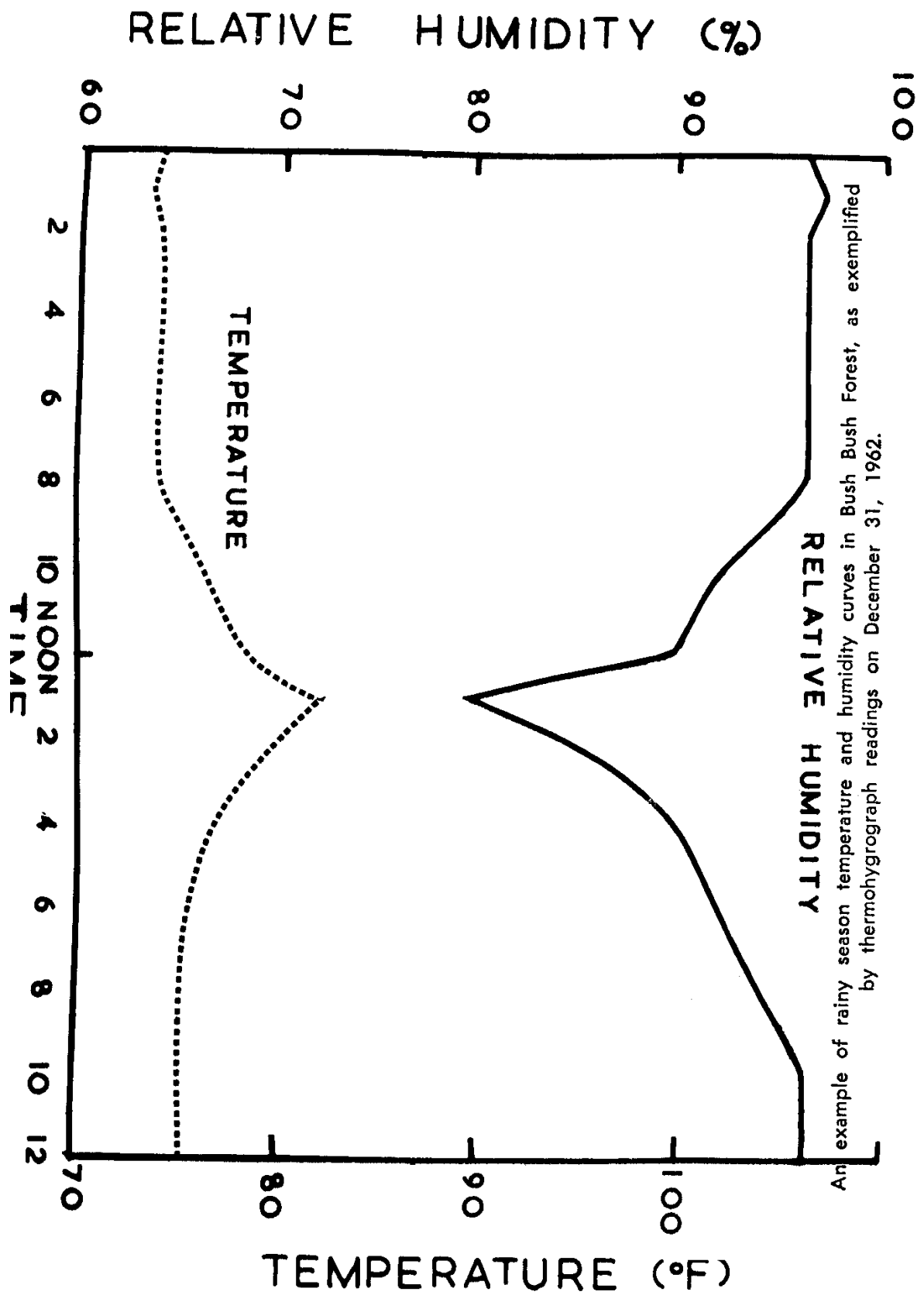
**(Trinidad Regional Virus Laboratory)**

Bush Bush Forest and its environs was proclaimed a Wildlife Sanctuary on July 16, 1968. This forest has been the focus of field activities of the Trinidad Regional Virus Laboratory (TRVL) since September 1959, where Staff Members spent great efforts in studying the ecology of certain arthropodborne viruses (arboviruses). Part of the data collected were records of rainfall starting 1st May 1961. Later in November 1962 a thermohygrograph was installed and operated until 31st December 1964. A preliminary account of the rainfall—temperature—humidity relationship has already been published (Downs et al. 1968). The purpose of this report is to give further details of our observations, which might be of interest to future workers.

The rainfall gauge was of the non-recording type and was made available to TRVL by the Ministry of Works (Drainage Division). It was read daily and the data were eventually made available to the Ministry of Works. The thermohygrograph recorded the temperature and humidity on weekly charts. There was only one year (1963) in which data for the three weather conditions, rainfall, temperature and humidity were available for analysis.

A total of 88.90 inches of rain was recorded in 1963 (Table 1) an increase of 23.37 inches over 1962, but in subsequent years more rain was recorded (Table 2). The mean for eight years of observation was 94.48 inches.

A summary of recorded temperatures for Bush Bush forest in 1963 appears in Table 3. The table gives the mean maximum—minimum temperatures together with recorded extremes for each month and the mean daily range of temperatures. Mean minima fell between 73.6 in January and 75.7 F. in August while mean maxima fell between 79.0 F. in December and 83.5 F. in February. The mean daily range was between 4.1 and 9.6 F. Recorded extremes were between 69.0 and 88.0 F. Pittendrigh (1948) quotes the following temperature figures for Trinidad: Mean minima were between 68 F and 72 F while mean maxima were between 86 F. to 89 F with a mean daily range of about 17 degrees and concluded that the temperatures were stable. The Bush Bush temperature is therefore more striking in its stability and constancy.



An example of rainy season temperature and humidity curves in Bush Bush Forest, as exemplified by thermohygrograph readings on December 31, 1962.

Mean maxima—minima relative humidity together with the mean for each month is presented in Table 4, which shows that the maximum humidity in Bush Bush forest is quite close to saturation in all months. Maximum humidity reached saturation during the late afternoon and remained so for most of the night. Minimum humidity was recorded around noon. As would be expected, maximum—minimum temperatures show an inverse relationship to that of humidity. An example of rainy season temperature and humidity recordings is shown graphically in Figure 1, for one day in December 1962.

In concluding this summary of rainfall—temperature—humidity conditions in Bush Bush forest it would be worthwhile to quote from Allee (1926) on environmental conditions at Barro Colorado Island, Panama: "The animals of the lower forest could range over the Island with extremely constant external conditions. They would need only to avoid the higher temperature, light intensity, and lower humidity of the sun flecks in order to keep under air conditions so constant that they must excite the envy of any experimental ecologist with experience in trying to control environmental factors for land animals in the laboratory. If the animals are nocturnal or tend to rest during mid-day the environment they encounter shows even less variation".

#### REFERENCES

- Allee, W.C. 1926. Measurement of environmental factors in the tropical rain forest of Panama. *Ecology*, I: 223-30.
- Downs, W.G., Aitken, T.H.G., Worth, D.B., Spence, L., Bush Bush Forest, Trinidad, W.I., Sept. 1959 — Dec. 1964. I. Description of the study area. *Am. J. Trop. Med. Hyg.*, 17 : 224—236.
- Pittendrigh, C. 1948. The bromeliad — Anopheles — malaria complex in Trinidad. I. The bromeliad flora. *Evolution*, 2 (1) : 58—89.
- (Trinidad Regional Virus Laboratory, P.O. Box 164, Port-of-Spain, Trinidad).

**TABLE 1****RAINFALL IN BUSH BUSH FOREST, TRINIDAD 1963  
(IN INCHES)**

MONTH	RAINFALL
January	6.00 (21)*
February	2.04 (14)
March	2.16 (18)
April	2.30 (16)
May	9.00 (20)
June	9.09 (24)
July	11.72 (25)
August	5.99 (24)
September	8.67 (24)
October	13.72 ( 9)
November	11.92 (25)
December	6.29 (21)
Total	<hr/> 88.90 (241) <hr/>

\* No. of days with rain is given in brackets.

**TABLE 2****RAINFALL IN BUSH BUSH FOREST, TRINIDAD,  
1962 — 1969 (IN INCHES)**

Year	Rainfall
1962	65.53
1963	88.90
1964	106.34
1965	103.66
1966	112.57
1967	98.26
1968	89.93
1969	90.66*
Mean	<hr/> 94.48 <hr/>

\* estimate.

**TABLE 3**

**TEMPERATURES RECORDED IN BUSH BUSH FOREST FOR 1963 (in °F.)**

Month	No. of days *	Mean Daily Maxima	Mean Daily Minima	Recorded Max.	Extremes Min.	Mean Daily Range
January	31	81.1	<b>73.6</b>	84	<b>69</b>	7.1
February	28	<b>83.5</b>	73.8	<b>88</b>	70	<b>9.6</b>
March	31	81.0	74.0	84	72	7.0
April	29	82.3	74.8	84	71	7.5
May	31	80.6	75.4	83	72	5.0
June	27	80.0	75.3	82	74	4.6
July	31	80.4	74.6	83	71	5.8
August	31	82.3	<b>75.7</b>	85	74	6.6
September	30	81.1	75.0	84	72	6.1
October	30	82.7	74.5	<b>87</b>	72	8.5
November	25	80.3	73.6	84	<b>69</b>	6.6
December	28	<b>79.0</b>	74.8	82	73	<b>4.1</b>

\* Records given in this table are based on the number of days in which good records were obtained from the thermohygrograph.

**TABLE 4**

MEAN MAXIMA—MINIMA RELATIVE HUMIDITY  
FIGURES % FOR BUSH BUSH FOREST DURING 1963

	Mean Maxima	Mean Minima	Mean rel. humidity *
January	97.5	80.7	89.1
February	97.6	74.3	85.9
March	96.8	75.1	83.9
April	95.9	71.5	83.7
May	97.2	84.0	90.6
June	<b>99.2</b>	89.6	94.4
July	98.9	89.0	93.9
August	<b>99.2</b>	88.2	93.7
September	98.9	89.3	94.1
October	98.1	85.5	91.8
November	99.6	93.0	96.3
December	98.7	90.2	94.4

\* Mean of the daily means.