

鼎湖山南亚热带常绿阔叶林凋落物量

屠梦照

(中国科学院华南植物研究所)

鼎湖山自然保护区属我国南亚热带季风区,年降雨量1900毫米左右,年平均温度 21.0°C ,干湿季明显,4—9月为雨季,10月至翌年3月为旱季²⁾。鼎湖山南亚热带常绿阔叶林分布于海拔500米以下,植物种类繁多,以壳斗科、樟科、桃金娘科和茶科等植物为主,热带植物丰富,群落结构复杂,成层现象明显。乔木层一般有三个亚层,上层乔木树种高达20—22米,第二亚层的乔木亦高达13—14米,树冠多为伞形,相互毗连,林冠郁闭度很大。此外,藤本植物和附生植物很多。无论从植物种类或从外貌结构来看,鼎湖山南亚热带常绿阔叶林比较接近于热带森林⁽¹⁾。

有关森林凋落物,特别是热带森林凋落物的研究,国外已有许多报导,而且,1964年Bray曾作过很好的总结³⁾,近十年来这方面的工作有了更大的进展。我国除云南和川西森林定位试验站的部分工作外,所见资料不多。鉴于本文测定结果为一初步报导,作者仅就最近马来西亚巴索自然保护区的有关资料略作比较。

测定方法

在研究植被的2000平方米面积的固定样方中,随机放置6个口为1平方米的凋落物收集器,每月收集一次凋落物,按叶、枝和杂物(包括花、果和其它杂物)三个组份分开,于 80°C 烘箱中烘干后分别称重。如果收集时凋落物十分潮湿,则先略加以烘干,然后进行组份分组。

结果讨论

1. 凋落物总量 鼎湖山森林的年凋落物量1981年为9.2吨/公顷,1982年为7.1吨/公顷(表1),平均8.2吨/公顷。年凋落量有较大的变幅,与马来西亚巴索森林的资料(1972—1973年分别为10.2—7.5吨/公顷)相似⁽⁴⁾。

参加本项工作的有李明佳、黄玉佳同志。

表1 1981—1982鼎湖山森林凋落物量(吨/公顷)

Table 1 Litter Production in Ding Hu Shan (t/ha)

月 份 (month)	1	2	3	4	5	6	7	8	9	10	11	12	年总量 (total/year)
1981	0.7	0.7	1.2	0.8	0.5	0.8	1.3	0.9	0.9	0.4	0.7	0.3	9.2
1982	0.3	0.4	0.6	0.9	0.7	0.6	0.6	0.8	0.7	0.8	0.4	0.3	7.1

2. 凋落物组分 凋落物各组分—叶、枝和杂物占凋落物总量的比值(表2)分别为66%、15%和19%, 而1981年叶和枝+杂物(当时没有加以分开)的比值分别为64%和37%。

表2 1981—1982鼎湖山森林凋落物组分量(吨/公顷)

Table 2 Production of Litter Fractions (t/ha)

组 分 fraction	叶 leaf	枝 twig	杂 物 miscellany
1981	5.9(64%)*	+ 3.3(37%)	
1982	4.7(66%)	1.1(15%)	1.3(19%)

* 括号内值为占凋落物总量的百分数。

凋落物组份比值的變化不大, 这与巴索森林的资料是一致的, 但这里叶和枝的组份比值略低于巴索森林, 而杂物的比值则较高(巴索森林凋落物的组份比为: 叶占72%、枝—17%, 杂物—11%)。看来, 一定森林类型的凋落物组份有一定的比值。

3. 凋落物的节律 从图1可以看到, 鼎湖山森林凋落物有着明显的节律, 一年中出现两个高峰期: 1981年, 一个高峰在旱季末期(3月), 另一高峰在雨季的中期(7月), 而1982年, 除凋落物的高峰期略往后推迟外, 节律趋势一样。不难理解, 同开花、结果等植物物候期的提前或推迟一样, 在不同年份中受当年气候条件的影响, 落叶期完全可能提前或推迟。同巴索森林比较, 鼎湖山森林的凋落节律更为明显, 而且与巴索森林不同, 这里第二个高峰出现在雨季, 其原因, 除环境条件的影响外, 还可能与不同森林树种的生物学特性有直接的关系。

凋落物组份中, 叶的凋落节律(图2)比较明显, 除1981年7月外, 同凋落物总量的节律相一致, 而枝则无任何规律性, 显然, 这与作者所采用的小面积凋落物收集器的方法有一定的关系, 这也是研究森林凋落物量尚待进一步探讨的问题。

结 语

鼎湖山森林凋落物量的研究仅是初步的结果, 有待于进一步作连续多年的资料收集。同时, 考虑到提高凋落物量测定的准确性, 自1983年起已增加了凋落物收集器的数量。把森林凋落物作为调节和保养森林生态系统的功能来看, 作者已着手开展下列工作:

1. 森林凋落物的分解速率和蓄积量的研究;
2. 凋落物各组份的元素含量和土壤中元素含量的研究。

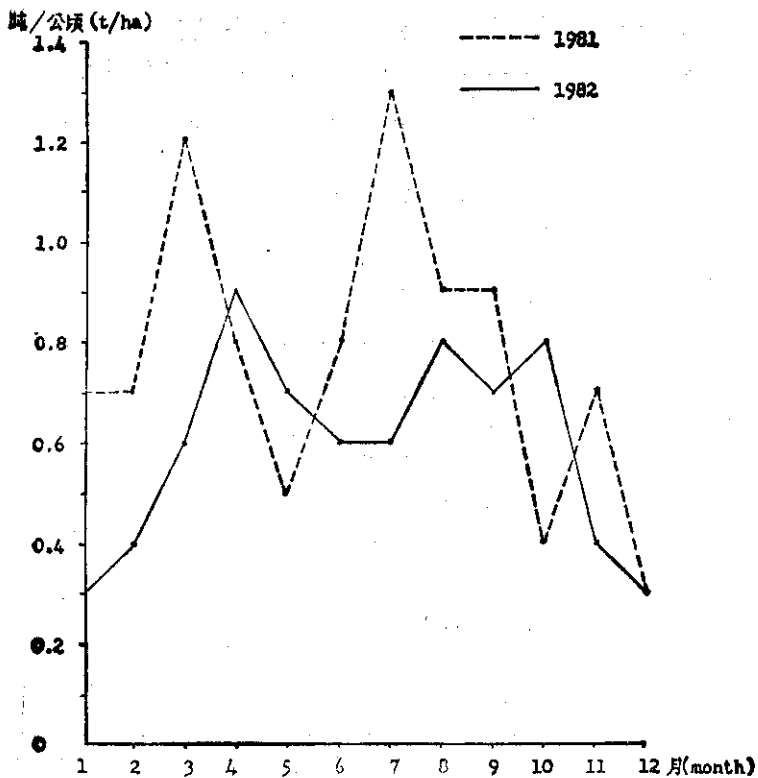


图1 1981—1982年凋落物量节律

Fig. 1 Variation of total litter production in 1981-1982

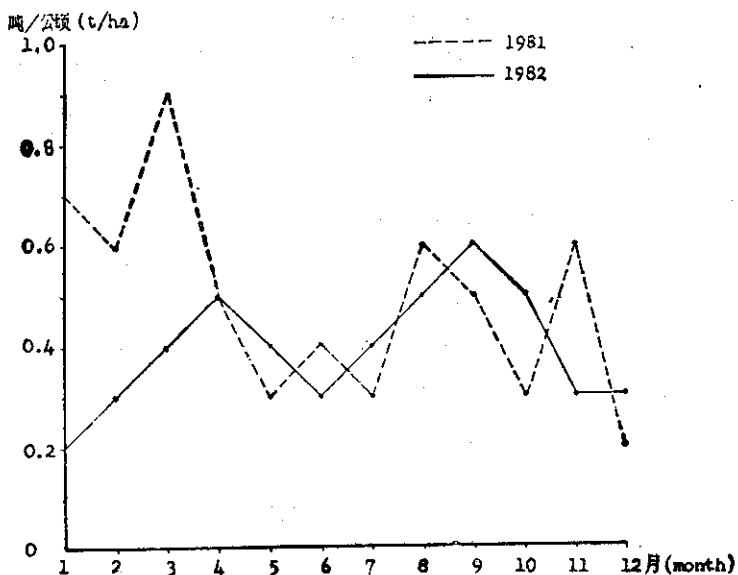


图2 1981—1982年叶凋落量节律

Fig. 2 Variation of leaf fraction in 1981-1982

参 考 文 献

- [1] 王铸豪等, 1982: 鼎湖山自然保护区的植被。热带亚热带森林生态系统研究, 第1集, 79—86页。
- [2] 黄展帆, 范征广, 1982: 鼎湖山的气候。热带亚热带森林生态系统研究, 第1集, 11—16页。
- [3] Bray J. R. and Gorham E., 1964: Litter production in forests of the world. *Adv. Ecol. Res.* 2: 101—157.
- [4] Lim M. T., 1978: Litterfall and mineral content of litter in Pasoh Forest. *The Malayan Nature Journal*, Vol. 30: 375—380.

LITTER PRODUCTION IN DING HU SHAN NATURE RESERVE

Tu Meng-zhao

(*South China Institute of Botany, Academia Sinica*)

Abstract

Ding Hu Shan (Mt. Ding-hu) Nature Reserve, one of our research sites for ecosystem studies, is situated at 23°08' N and 112°35' E, 86 km northwest of Guangzhou (Canton), China. The forest vegetation of the reserve belonging to the subtropical monsoon evergreen broad-leaved forest lies below 500m a.s. land. The annual precipitation averages ca. 1,800 mm with a mean temperature of 21.6°C. The seasonal alternation is very clear. The rainy season is from April to October, and the dry one is from November to March. The principle species in the reserve are those of the families—Fagaceae, Lauraceae, Myrtaceae and Theaceae.

Method

6 traps were randomly placed in a permanent quadrat of 2,000 m² in area for litter collecting monthly. Litter samples were sorted into 3 fractions—leaf, twig and miscellany. Dried at 80°C to oven-dry weight for determining.

Results and Discussion

The annual total litterfall was 9.2 t/ha in 1981 and 7.1 t/ha in 1982. Thus, the litter production from year to year varies considerably.

The percentage of various fraction shows another pattern of variation. For example, in 1982, the leaf fraction was 67%, twig fraction, 14%, miscellany fraction, 19%; whereas in 1981, the leaf fraction was 64%, the twig + the miscellany fraction was 37% (in this year, only 2 fractions were sorted). The figures express no noticeable changes in this aspect.

Monthly variations of the litterfall in total and the leaf fraction are illustrated in figs. 1 and 2 respectively. As the fig. 1 shown, the monthly litter production varies greatly, but the trend of fluctuation over a year seems to be the same in these 2 years. In addition, there are 2 peaks in

each year. In 1981, one occurs at the end of the dry season (March), the other, in the mid of the rainy season (July), in 1982, both peaks all occur one month later. The delay of peak occurring may be caused by the climatic condition in different year.

Fig. 2 shows the variation of leaf fraction by month. The time trend matches that of the total litterfall as shown in fig. 1. No variation rhythm has been found in twig fraction. This may be due to our trap mouth is too small to collect the twigfall wholly.

Being aware of the importance of studying the litter production in ecosystem, now, we place more litter traps in the quadrat and begin to study its decomposition and accumulation. The study of mineral content of various litter fractions in relation to the mineral content in the soil has been also carried out in our laboratory.