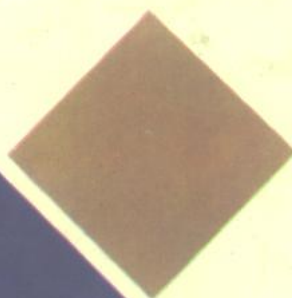
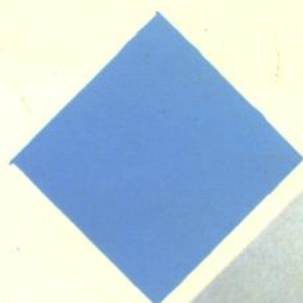




HUNAN VEGETATION

湖南植被

祁承经主编



湖南科学技术出版社

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前言

植物在地面空间的分布不是杂乱无章的，而是有规律地聚生成各种群落，人们如果单从植物个体上来认识植物是不够的，更重要的是要从植物群落学的水平出发，来认识、利用和改造植物，这也就是植被科学研究的课题。植被是覆盖在地球表面的全部植物群落总体，包括森林、灌丛、草丛、草甸、沼泽、水生植物群、农田、园林及各种栽培植被类型。植被对于人类是至关重要的，首先，在芸芸众生的生物圈里，植物充当了“生产者”的角色，由于绿色植物的光合作用制造出淀粉、糖类、蛋白质、脂肪及各种有机物，受供养的其它生物，包括人类才能享有食物来源。其次，植被是调节和维护生态平衡的杠杆，植被与环境进行物质和能量的交流中，使自然环境中的气温、水分、氧气和二氧化碳含量等保持相对的稳定和平衡，这种适宜的环境正是人类正常生活所需要的。人类为了自身的生存和繁衍，必须合理利用、管理和保护植被，在植被遭受破坏的地区，应有计划地恢复和重建植被。在当代科学和文明的世界里，森林和各种植被覆盖的数量和质量水平是评价一个国家进步和发达的标志。

湖南省地处亚热带，植被类型多样。地带性植被——东亚型常绿阔叶林发育良好，成为世界上卓有特色的植被；植物区系丰富复杂，富有中国和东亚特有成分，是我国古老、残遗、特有植物荟萃地区之一，如何开发、利用和保护这些资源，使之能更好地为“四化”建设服务，这是植被科学应予回答的问题。

《湖南植被》是迄今有关植被研究历史性的阶段总结，也是前人对植被科学研究成果的汇集。1949年以前，历史留给我们的资料并不多，仅知有韩马迪(H. Handel—Mazzetti)于1914—1918在湖南采集过大量植物标本，其成果在《中国植物志要(Symbolae Sinicae)》(1929—1936)中发表。20年代辛树帜编写了一个初步的《湖南植物》名录。郑万钧于1949年发表《湘南莽山之森林观察》。张宏达、梁宝汉、陈少卿、钟补勤等均在湘作过短期的调查和采集。自50年代初起，湖南师范学院董爽秋、陈青莲，湖南农(林)学院肖家庚各自组织了植物调查和采集。中国科学院植物研究所委托李泽棠调查雪峰山植物，中国科学院华南植物研究所派谭沛祥、李学根等来湘采集，上述活动对研究湖南植物积累了不少资料。值得一提的是，中国科学院昆明植物研究所吴征镒、李恒于1982年来湘西自治州调查，这是一次极有影响的科学活动，引起了国内植物学界对湘西植物的重视。此外，本省的教学和科研单位，如湖南师范大学生物系，湖南省、地、县林业科研和森林调查单位，以及南岳树木园、湖南森林植物园、湖南林校等，他们对湖南植物的调查、采集、发现和引种做了巨繁的工作。但这些工作多属于植物区系调查性质，还不能说属于专门性的植被调查。本省真正专门性的植被研究工作起步较迟，松一光的《湖南衡山的植被》(1960)、祁承经的《湖南江华植被调查研究》(1963)及《湖南南岳植被基本特点及植物群落的分析》(1963)可算是本省植被研究的首批之作。70年代后期至80年代中期，湖南省林业厅、湖南省生态学会、湘西自治州林业局、中南林学院等对本省许多重要的林区和自然保护区进行较大规模的科学考察，彭德纯等多次领导和组织了这些考察活动，使本省科学考察活动达到了高潮。这些考察成果无疑给本书提供了大量的素材。

本书内容共分四篇、二十章。第一篇为总论，包括自然条件及植被的基本性质。第二篇论述植被类型。自然植被共论述5个植被型组、12个植被型、146个群系；栽培植被共论述14个类型。第三篇为植被分区。将全省分为2个植被亚地带、5个植被区、18个植被小区。第四篇论述植被合理利用和保护。包括农林资源的正确管理、农业生态建设、经济植物资源的合理利用、自然保护区管理和保护植物等。最后附植被照片及植被类型图(1/200万)。

本书各篇章(节)的执笔人均附注于相应章节的首页下方。全书由祁承经主持修改和审定，肖育檀在全书的汇总、编排、图表编制和发行事务上承担了大量工作。照片大部分由祁承经拍摄，张冬林、梁锦业、彭德纯、袁正科、蒋传敏等提供了部分照片。曹铁如、张冬林承担照片冲印的部分工作。祁承经、肖育檀负责全书校对。沈丽娜在抄写、打字、制表上做了许多的工作。绘图工作由彭重华承担。

本研究专著是湖南省科委下达的课题，省科委主任陶敏、副主任李邦贵对本题给予了大力支持和资助，同时本书的发行得到湖南省林业厅成瑞湘厅长的鼎力资助。一些地区、县林业局、湘西自治州林业局均给予了支持，在此一并致谢。

由于编者水平所限，书中错误和不妥之处在所难免，欢迎读者批评指正。

祁承经

1988年10月

HUNAN VEGETATION

SUMMARY

Hunan province is located at $24^{\circ}39' - 30^{\circ}08'N$ and $108^{\circ}47' - 114^{\circ}51'E$, stretching across wide areas from the south bank of Changjiang River to the north of Nanling mountain range, with an area of 211, 800km², making up 2.2% of the total area of china. The northern part of Hunan is Dongting lakes and plain, and its central part is crisscrossed with hills and basin, whereas its east, south and west are fringed with a series of mountains, from the east to the west there are Mofu mountains, Wugong mountains, Nanling mountain range, Xuefeng mountain range, and Wuling mountain range. The most the them are over 1,000m in elevation with the highest peak of 2,115m in altitude. Therefore topography of Hunan may be by and large viewed as a kind of "horse-shoe" landform that faces north wards. In the climate division of china, Hunan belongs to middle-subtropical monsoon zone, with mean annual temperature of $15.8 - 18.6^{\circ}C$, accumulate temperature of daily temperature $\geq 10^{\circ}C$ of 5,000—5800 $^{\circ}C$, mean monthly temperature of $4.0 - 7.3^{\circ}C$ in January and extreme lowest temperature of $-5 - -10^{\circ}C$ in normal year. Mean annual precipitation is 1,200—1,700mm, but the rain season are from April to Semptember and 40—46% of the total precipitation fall in April to June. Mean anuual relative humidity is 80%. The zonal soil types are Red earth eastern part of Hunan and Yellow soil in the west. From mountain foot to mountain top with over 1,000m in altitude, a series change in the soil vertical zone occurs, there are Red earth, Mountain Red soil, Mountain Yellow soil, Mountain Yellow-brown soil, and Mountain Meadow soil in sequence.

Due to the warm climate and abundant rainfall, the flora are richness and varied in Hunan. According to the statistic, vascular plants have 4,324 species (including some varieties) among 1,245 genera and 248 families, some of which in Hunan flora having a comparatively high species — density in China, may be considered as the representatives floristic elements in Hunan. In these families some belong to tropic and subtropic in East Asia, for example, *Fagaceae*, *Lauraceae*, *Theaceae*, *Magnoliaceae*, *Hamamelidaceae*, *Aquifoliaceae*, *Daphniphyllaceae* may be listed in this kind, at same time, these families usually become the dominant components of evergreen broad-leaved forest. Second, some northern temperate families, such as *Betulaceae*, *Corylaceae*, *Juglandaceae*, *Ulmaceae*, *Aceraceae*, *Tiliaceae* (*Tilia*), *Rosaceae*, *Caprifoliaceae* are also plentiful in the mountains of Hunan. Moreover, some East Asia endemic and China endemic elements, for example, *Taxodiaceae*, *Cephalotaxaceae*, *Taxaceae*, *Styracaceae*, *Cornaceae*, *Stachyuraceae*, *Lardizabalaceae*, *Hydrangeaceae*, *Nyssaceae*, *Helwingiaceae* (from *Cornaceae*), *Nandiniaceae* (from *Berberidaceae*), *Sargentodoxaceae*, *Bretschneideraceae*, and *Eucommiaceae* pay important action in Hunan, or have a higher species-density constituting the fundamental elements of Hunan flora.

Varied plant communities occur in Hunan, in this work, 5 vegetation type groups, 12 vegetation types and 146 formations are listed. In each formation, its geographic distribution, ecological conditions, floristic composition, layer and synusia constructure, community dynamics and economic uses are mentioned. In whole plant communities the zonal vegetation types are mostly significant, that are evergreen broad-leaved forests, usually dominated by *Castanopsis*, *Cyclobalanopsis*, *Lithocarpus*, *Machilus*, *Phoebe*, *Cinnamomum*, *Schima*, *Manglietia*, *Michelia*, *Sloanea*, *Ormosia*, *Exbucklandia*, *Altingia*, etc., Meanwhile, in the vertical zone mixed evergreen and deciduous broad-leaved forest, dominated by *Fagus*, *Quercus*, *Castanea*, *Magnolia*, *Betula*, *Carpinus*, *Liquidambar*, *Celtis*, *Tilia*, *Acer*, *Cladrastis*, *Stewartia*, *Ulmus* etc., are widely distributed in the mountain from 800–1,500m in altitude, especially, some notable and endemic coniferous forests, such as *Tsuga chinensis*, *T. longi-*

bracteata, *Pinus kwangtungensis*, *cathay argyrophyphylla*, *Pseudotsuga sinensis*, *Pseudolaria amabilis*, are rarely discovered in some places at the mountains, they are characterizing plant communities in Hunan. At the top of mountain, broadleaved elfin forests with moss or without, dominated by *Rhododendron*, *Quercus*, *Illicium*, *Clethra*, *Enkianthus*, *Lyonia*, *Daphiniphyllum*, *Eurya*, *Cleyera*, *Gautheria* are covered. Due to economic exloitations and man-made-destructions, the areas of above mentioned origin forests is decreasing and reducing, on the other hand, the secondary and man-made vegetation such as some pine and Chinese fir forests, bamboo forest, shrubland, and grassland are widely covered, as well as in tea orchard, oiltea orchard, orange orchard and varied crop plantations.

In this works, vegetation regionalization of Hunan is mentioned, first, whole province can be divided into both the northern vegetation subzone and the southern vegetation zone, the later contains more restrict tropical floistic elements, 5 vegetation regions in secondary division and 18 vegetation local region in the tertiary division are divided, In each region, its natural conditions, major vegetation types and its horzotal distribution, as well as its vertical distribution are described in detail.

At last, natural Reserves and rare, relic and endangered plants are listed. The problems of economic plant resources and its rational utilization are put forward and discussed. The existing problems in the agri-forestry production and the ways, by which the agri-forestry production can be well-developed, as well as the problems in the agricultural ecology construction are discourssed in detail.

Qi Chengjing

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