



# 林木種原

RESOURCES OF TREE SPECIES IN HUNAN





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## 序

感謝《湖南林木種源》畫冊的作者和編委們，奉獻了一筆可貴的精神財富。這本書不僅具有較高的藝術欣賞價值，而且更重要的是有着重大的科學研究價值。

綠色是生命的源泉。森林又是綠色的主體。不用說沒有森林不能為社會提供木材和多種林副產品，就是說沒有這片綠色植物進行光合作用，制造氧氣，淨化空氣，保持水土，連人類都沒有生存條件了。而綠色的森林，是由無數品種的樹木個體所組成的。那麼，通過種源調查，弄清某一區域的樹種情況，了解每一個樹種在某一地帶的生長規律和所具有的生態、經濟特性，就能使人們更好地運用生態經濟學的觀點，來指導林業生產，培植發展森林資源，不就有十分重要的意義嗎？

專家們認為，森林生態系統具有整體、協調、循環和再生的特性，是生命系統和環境系統在特定空間的組合。與其他陸地生態系統相比，它具有生物種類豐富，層次結構較多；食物鏈較複雜；光合作用較高；因而生物生產力也具有比較高的特點。我們搞林業，致力於保護和發展森林資源，是為社會主義和人民生產生活服務的，因而，這個系統必然在一定地理環境下與社會制度組合起來，成為一個巨大的林業生態經濟系統。在這個系統中，除了自然因素以外，社會經濟因素具有重要作用。我們如果能夠掌握形成這個巨大系統的樹種生長和社會經濟發展的客觀規律，

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那麼就可以自覺地運用經濟的、技術的、法律的和其它社會手段，合理地調節這個系統的經濟活動與自然之間的物質、能量交換，建立起一種與生態經濟目標相結合的協調發展關係，實現生態經濟的平衡。

寫了上面這些話，只是衷心希望這本畫冊的出版，能夠引起更多的人，在研究每一個樹種自然特性的同時，認真調查當地的社會經濟狀況，進一步研究不同地域的林業生態經濟模式，以充分挖掘森林資源的潛力，有效地發揮森林的生態、社會、經濟三大功能，以達到最佳的整體效益。

成瑞湘

一九九〇年六月於長沙

## Preface

Thanks for the authors and compilers of the album (Resources of Tree Species in Hunan) who offered a piece of precious spirit wealth for us. This album not only has great value of art appreciation, but also has important scientific research value.

Green is the sources of life and forest is the main part of Green. However Without forests there would be not any timbers or forest products for society and it is impossible for mankind to live in the world if there were not green plants undertaking photosynthesis, clearing air and preserving water and soil. Green forest consists of various tree species. So it has very important significance through researching for the resources of tree species in a certain area and understanding the growth regularity, ecological and economic characters of each tree species in the area to make people use ecological and economical viewpoints to direct the forestry production and promote forest resources

Experts pointed out that, as a whole, forest ecological system which has the characters of coordinating, circulating and reproducing is one kind of combination of life system and environment system in a special space. Comparing with the other land ecological systems, it has more abundant species, more complicated structures and food chains and effective photosynthesis. Therefore, it has the character of higher biological productivity.

In order to serve for the socialism and people's life we forestry workers strive to protect and develop forest resources. Forest ecological system is bound to combine with definite geographical environment and social system and becomes a huge forestry ecological and economical system. In this huge system besides natural facts, social and economic facts also play very important roles. If we can master the objective rules of the growth of tree species and development of social economy, we will be able to consciously use the methods of economy, technology, law and other social means to regulate the exchanges of substance and energy rationally between economic activities and natural environment so as to set up a kind of coordinative developing relationship between economic goals and ecological goals and to realize the balance between ecology and economics.

In a word, I sincerely hope that the press of this album can bring more people to research the natural characters of each tree species, at the same time, to investigate their local social and economic conditions and further to study the different forestry ecology-economics models in different areas, so as to make full use of the potentialities of forest resources and effectively bring the ecological, social and economical functions of the forest into full play and gain the best benefits.

*Cheng Rui-xiang*

June, 1990 in Changsha

# 前言

森林是陸地生態系統的主體，是人類賴以生存的必要條件。它不僅有其直接的經濟價值，更具有保護生態環境等多種效能。因此，森林的枯榮，林業的興衰，關係到國民經濟和社會文明的發展。保護森林，發展林業，維護生態平衡，已成為當今世界人們共同關注的戰略問題。

樹種是發展林業、擴大森林資源的基礎。樹種不同，產生的經濟和社會效益、生態效益也各不相同。杉木等針葉林具有較高的木材產量和經濟效益；許多闊葉林，則對涵養水源、保持水土、調節氣候、保護環境等有着顯著的作用。據測定：每公頃闊葉混交林可蓄水 223.5—538.5 噸。因此，大力推廣多林種、多樹種造林，有着非常重要的意義。

湖南是中國南方重點林區省份之一，位於長江中游，屬中亞熱帶常綠闊葉林地區，自然條件優越，年平均氣溫 16—18℃，年降雨量 1200—1800 毫米，無霜期 260—310 天，一年之中四季分明，雨熱同季，有利於各種林木的生長。植物種類繁多，樹種資源豐富。據湖南省林業廳對樹種資源普查結果：在全省 21 萬平方公里（其中林業用地 12 萬平方公里）的土地上，共有木本植物 108 科，478 屬，2470 種。其中喬木樹種約佔三分之一。不少是闊葉林，俗稱“雜木林”，許多是優良鄉土速生珍貴樹種，與國民經濟建設有着密切的關係。近幾年來，隨

着營林事業的不斷發展，林種有些調整，造林樹種有所增加，但仍有不少價值高的樹種尚未得到合理的開發和利用。特別是由於歷史的種種原因，有些樹種資源成片遭毀，一些珍稀樹種趨於瀕危滅絕。為保護和合理開發利用湖南樹種資源，滿足國民經濟和人民生活的需要，我們組織編印了《湖南林木種源》這本畫冊，以助於人們開拓視野，增強保護樹種資源的意識，推動林業技術進步，為多林種多樹種造林，綠化美化提供更多的種源，從而進一步提高林分質量和林業經濟效益。

畫冊共分四個部分，即：優良速生用材樹種；主要經濟林樹種；珍稀古木；樹種基因庫。每一部分的描述都有一個着重點，按分類系統編排，共編印 157 個樹種、237 張照片，並附有“湖南森林資源分佈圖”和“湖南珍稀樹種分佈示意圖”，作為湖南樹種資源的一個縮影。對每個樹種的分佈、形態特征及主要用途都作了扼要的介紹。為適應對外開放的需要，採用圖文并茂、中英文對照的形式編印。所編印的樹種絕大部分是湖南的鄉土樹種，僅有少數是從外地引種成功具有推廣價值的栽培種。

編者  
1990.4

# Foreword

Forest is the main part of the ecological system in the land and indispensable to mankind. It has not only direct economic values, but also functions as protecting ecological environment and so on. Therefore, the prosperity and declension of the forest affect the development of the national economy and social civilization. At the present time, to protect forests, to develop forestry and to maintain ecological balance have become a strategic problem which people concern most in the world.

Tree species are the basis for enlarging forest resources and promoting forestry. Different tree species produce different economic, social and ecological benefits. Coniferous trees such as China fir can create more timber and economic benefits, while many broadleaved trees can show more functions on conserving soil and water, adjusting climate, protecting environment and so forth. Based on scientific tests, one hectare of mixed broadleaved forest can maintain 223.5-538.9 tons of water. So it has very important significance to spread vigorously using varied tree species in afforestation and afforesting various forests.

Hunan, situated at the middle reaches of Changling River, is one of the major forest provinces in South China, belonging to the middle subtropical evergreen broad-leaved forest area. Its natural conditions are good with the annual mean temperature  $16^{\circ}\text{C}$ - $18^{\circ}\text{C}$ , annual rainfall 1200-1700 millimeters, no frost period 260-310 days, and the four seasons are distinct with most heat and rainfall at the end of spring to summer. These natural conditions are very beneficial for the growth of various tree species and there are numerous plant species with abundant resources of tree species in Hunan. According to the result of the surveying on resources of tree species made by the Forestry Department of Hunan province, there are 2470 species of woody plants belonging to 478 general and 108 families in the area of 210000 square kilometers of the province (which forest land is 120000 square kilometers). Among them there are about one third tree species, most of which are broadleaved trees being locally named as "mixed forest". Among the tree species there are many local precious and fast growing ones having close relations with the national economy. In recent years, along with the steady development of forest management, more and more tree species have been used in afforestation, but there are still a lot of valuable tree species having not been exploited or utilized rationally. Particularly for historical causes, some tree species were ruined in tracts as the "mixed forest" and some precious and rare species are in dangerous state. In order to rationally protect and exploit and utilize the tree species in Hunan and meet the needs of the national economy and the people's living, we compiled this picture album (Resources of Tree Species in Hunan). We hope this album can help people to enlarge their field of vision, strengthen their consciousness

of protecting resources of tree species and promote the progress of forestry technology. We also expect this album can provide more tree species for afforestation and forest management by using varied species and various forests as well as making green or beautifying by planting trees, so as to further promote the qualities of standing forests and forestry economic benefits.

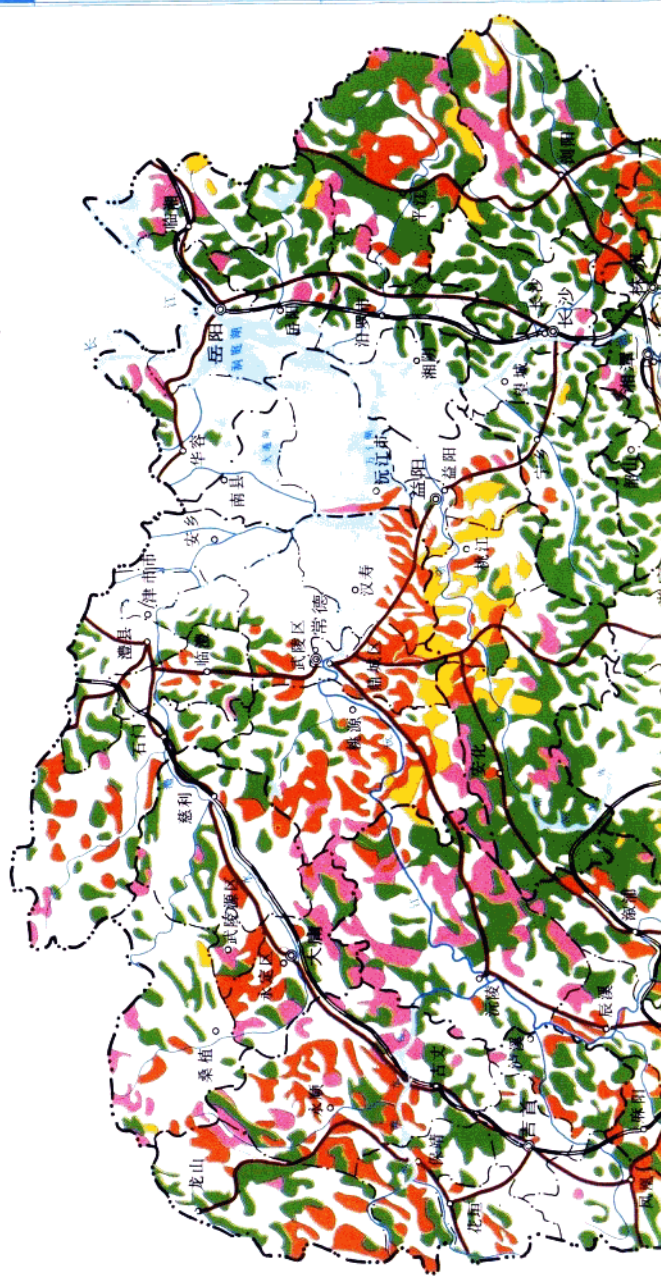
This album consists of four parts: Superior Timber Tree Species; Rare and Valuable Tree Species; Economic Tree Species and Gene Pool of Tree species, and compiles 174 species and 238 pictures according to the classification system. "The Map of Forest Resources Distribution in Hunan" and "The Sketch Map showing the Distribution of Rare and Valuable Tree Species in Hunan" were attached to the album as an epitome of the resources of tree species in Hunan. The distribution, morphological characters and major uses of each species are also briefly introduced. Both Chinese and English description along with the photographs are adopted in order to meet the need of opening to the outside world. Most of the species in the album are the original species in Hunan and only a few species are successfully introduced, which have the value of extending cultivation.

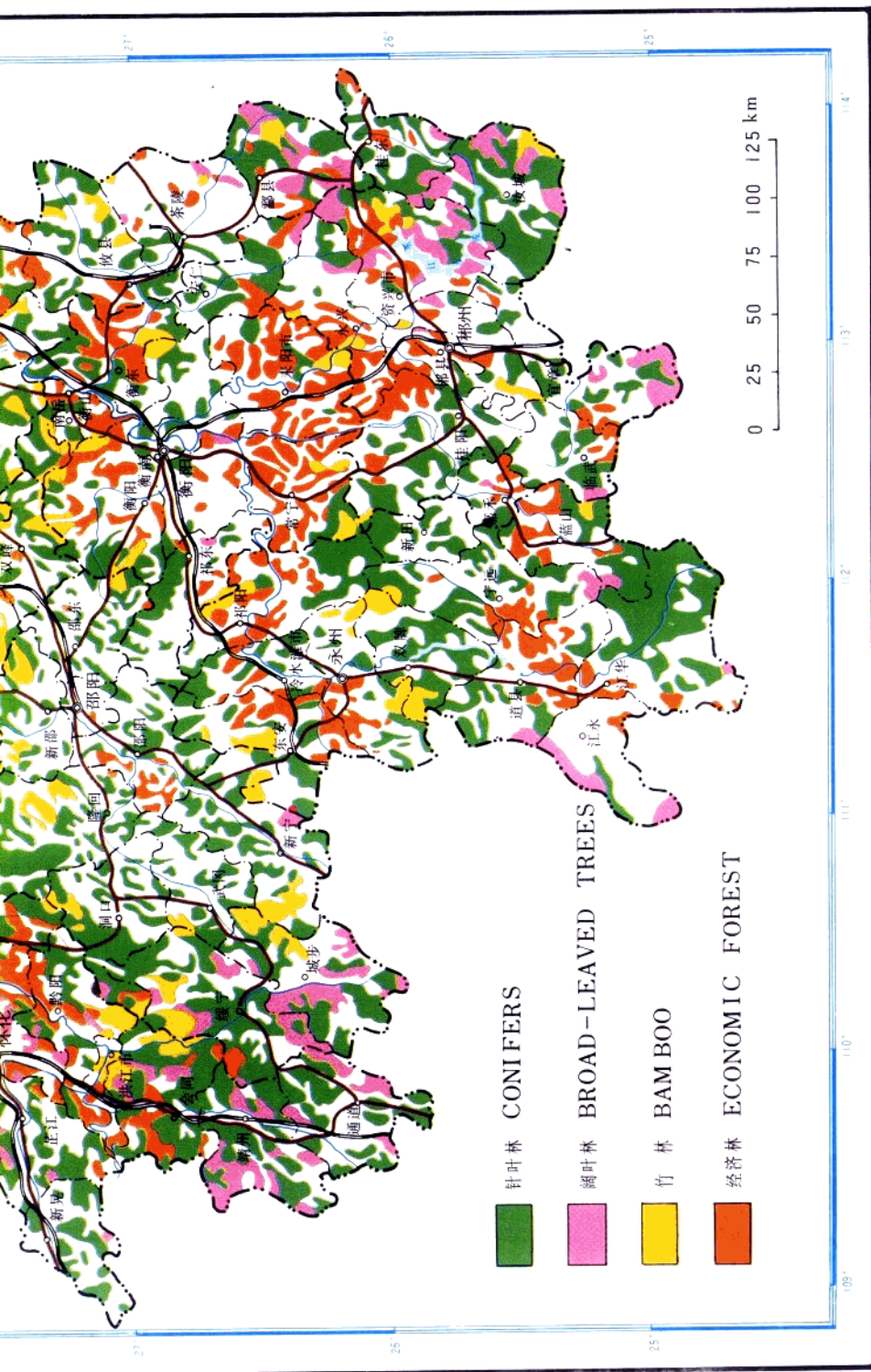
**The Editor**  
April, 1990.



# 湖南省森林分布图

## FOREST DISTRIBUTION OF HUNAN PROVINCE













農田林网一瞥

A scene of farming fields and shelter belt









湖南省寧鄉縣飛播造林一瞥  
A glimpse of afforestation by plane in  
Ning-xiang County, Hunan Province









人造水杉林

Afforested metasequoia area













# 一、優良用材樹種

## SUPERIOR TIMBER TREE SPECIES

根據湖南省林木種源普查結果，全省共有木本植物108科（按恩氏系統）、478屬，2470種（包括變種）。其中喬木樹種約佔三分之一，即800種左右。

本篇選入用材樹種彩片64種，主要內容其一是速生用材，如杉木、馬尾松、椿樹、泡桐等等；其二是優良珍貴用材，如樟、梓、楠、桐等等。還有衆多的珍稀樹種，屬國家重點保護的種類則放在“珍稀古木”中敘述，有特殊經濟價值的種類則放在“經濟樹木”中敘述。

According to the result of general investigation on the forest tree resources, there are 2470 species (including varieties) of woody plants fall into 478 genera, 108 families (according to Engler's system) in Hunan, of which one-third are arbors even if 800 species or so.

This chapter selected 69 timber tree species with coloured photos, some of them are quick-growing timber trees such as: *Cunninghamia lanceolata*, *Pinus massoniana*, *Toona sinensis*, *Paulownia fortunei* etc., others are valuable timber trees such as: *Cinnamomum* spp. *Catalpa* spp. *Phoebe* spp. *Cyclobalanopsis* spp. etc.. As for other valuable and rare tree species, the species protected by the state are described in the chapter "Species rare and valuable tree Species"; the species with special economic value are described in the chapter "Economic tree".