



TAIWAN FORESTRY RESEARCH INSTITUTE

林業試驗所簡介

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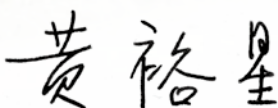
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前言

農委會林業試驗所之前身創始於日據時期（西元1896年），迄今已逾百年。百年來，隨著時代的變遷及社會的需求，逐步調整組織業務，由一個「苗圃」擴大成目前十個林業技術組、四個行政單位及六個研究中心，並不斷地提昇林業試驗研究水準與品質，也已獲得豐碩之成果。

本所施政方向係以森林之永續經營與多目標利用為主，業務重點包括：森林資源保育、珍稀動、植物復育、固有樹種選育及優良樹種引進、育林技術及生物技術之改良、環境保護林之營造、天然林經營、人工林中後期撫育、集水區綜合經營、林產品加工技術改進、自然解說教育及森林遊憩品質提升、植物園及試驗林示範經營等。

森林覆蓋佔台灣面積一半以上，可說是全島自然環境的主體。再者，從生態環境倫理學演進之觀點而言，森林是孕育人類文明之搖籃。因此，本所未來之目標是在提倡森林文化之前提下，整合群體研究力量，發展具有人文內涵之林業科技。換言之，就是在人類與自然共存共榮之謙和意念下，依循森林的自然循環規律，發揮智慧與努力，重新思考順天應人的森林經營理念，以及建立相關技術與制度，實踐在林業經營工作上，使之對人類生活之進步及社會文明之發展，再做出貢獻。相信在本所同仁群策群力下，必能為台灣的林業研究建立新貌。

所長  謹識

preface

The forerunner of the Taiwan Forestry Research Institute (TFRI) was established more than 100 years ago in 1896 during the Japanese colonization period. In accordance with changes over time and needs of society, the TFRI has expanded from just a nursery to an organization of 10 forestry technical divisions, 4 administrative units, and 6 research centers. It has continuously improved its forestry research standards and quality and has obtained abundant achievements.

By emphasizing the sustainable management and multiple-purpose utilization of forests, the TFRI focuses its work on conserving forest resources, restoring rare animals and plants, selectively breeding endemic tree species, introducing superior tree species, improving silvicultural techniques and biotechnologies, establishing environmental protection forests, managing natural forests, setting up tending systems for plantations, integrating watershed management, improving and elevating forest products manufacturing techniques, providing interpretative services and nature education, enhancing forest recreational quality, and demonstrating management of botanical gardens and experimental forests.

Forests cover more than 1/2 of the total area of Taiwan and, hence, are the main component of the natural environment on this island. From ecological and environmental aspects, forests are the cradle of human civilization. Therefore the goal of the TFRI is to integrate the research strengths of our scientific research teams to develop forestry techniques with emphasis on forestry culture. In other words, based on the natural rules of the forest, we will develop new techniques and systems to manage our forests and live harmoniously with the Nature. We believe that forestry research in Taiwan will have a new face through the endeavors of our TFRI colleagues.



Director General, Taiwan Forestry Research Institute

沿革

光緒21年（日明治28年，西元1895），日本據台之初，即由總督府殖產部研議成立苗圃，並於次年1月6日在台北南門町選地8,750坪設立苗圃，為本所創設之濫觴；光緒25年（1899）間曾因興建陸軍衛戍醫院而將苗圃遷設於大龍峒及圓山；翌年（1900）10月再於今日台北植物園現址購地闢建，稱之為「台北苗圃」，除從事育苗外，並進行苗木栽培試驗。宣統3年（明治44年，1911），台北苗圃之基地創立為「林業試驗場」，隸屬於台灣總督府殖產局，負責台灣林業經營及森林資源之調查研究工作；民國10年（大正10年，1921），日人統合全台試驗機構成立「中央研究所」；林業試驗場改隸而稱「中央研究所林業部」，林業試驗場所在地之原台北苗圃則設置為「台北植物園」；民國28年（昭和14年，1939）中央研究所改組，林業部獨立為「林業試驗所」。

民國34年（1945）台灣光復，台灣省行政長官公署於11月1日正式接管，改稱為「台灣省林業試驗所」；民國38年（1949）9月由直隸省政府改隸農林廳。接收之初，設有森林生物、殖育、施業、利用、化學、木酥六科，蓮華池、中埔、恆春、太麻里四分所與八仙山松脂試驗地，之後在組織調整及業務遞嬗下，至今已發展為森林生物、育林、林業經濟、森林經營、集水區經營、森林保護、森林利用、森林化學、木材纖維、林業推廣等十組，秘書、會計、人事、政風四室，福山、蓮華池、中埔、六龜、恆春、太麻里等六研究中心。

民國88年7月，本所改隸行政院農業委員會，改稱為「行政院農業委員會林業試驗所」。

Historical note

In the 21st year of the reign of Emperor Kuanghsu, Ching Dynasty, (or the 28th year of the reign of Emperor Meiji, Japan, A.D. 1895), during the early years of the Japanese occupation of Taiwan, the Regenerative and Products Bureau of the Japanese Governor General's Office planned to establish a nursery, and on January 6, selected an 8750-ping (2.9-ha) lot near Nanmen (south gate) in Taipei City for this purpose. This was the forerunner of the Taiwan Forestry Research Institute (TFRI). In the 25th year of Kuanghsu's reign (1899), the nursery was relocated to the Talongtung and Yuanshan areas to the north due to construction of an army garrison hospital on the original site. In October of the following year, 1900, a new plot was purchased at the present location of the Taipei Botanical Garden to reestablish the so-named Taipei Nursery. The nursery endeavored to nurture seedlings and cultivate saplings. By the 3rd year of Emperor Shuantung's reign, Ching Dynasty (44th year of Meiji, 1911), on the foundation of the Taipei Nursery, a Forestry Experimental Station under the aegis of the Regenerative and Products Bureau of the Governor General's Office was set up to shoulder the responsibility for forest management in Taiwan and to undertake surveys of forest resources. By the 10th year after the founding of the Republic of China (10th year of the reign of Emperor Daisho, 1921), the Japanese unified all research institutions and established the Central Research Institute.

The Forestry Experimental Station was included and was named the Forestry Division of the Central Research Institute. On the site of the Institute's original Taipei Nursery, the Taipei Botanical Garden was established. By the 28th year

of the Republic of China (14th year of Emperor Showa, Japan; 1939), after restructuring of the Central Research Institute, the Forestry Division was recast as the independent Forestry Research Institute.

The 34th year of the Republic of China (1945) saw the retrocession of Taiwan after the defeat of Japan in World War II. The Taiwan Administrative Offices formally took over the Institute on November 1 of that year. It was then renamed the TFRI. In September 1949, the Institute was transferred from directly under the Taiwan Provincial Government to a subordinate Administration of Agriculture and Forestry. Upon taking over from Japanese, there were 6 divisions, namely, Forest Biology, Silviculture, Management, Utilization, Chemistry, and Wood Pulp; 4 branch stations at Lienhuachih, Chungpu, Hengchun, and Taimalee; as well as a pine rosin experimental post at Pashienshan. With subsequent restructuring and shifts in research needs, there are currently 10 divisions, namely, Forest Biology, Silviculture, Forest Economics, Forest Management, Watershed Management, Forest Protection, Forest Utilization, Forest Chemistry, Wood Cellulose, and Forestry Extension; there are also 4 administrative offices: the secretariat, accounting, personnel, and ethics morality; as well as 6 research centers at Fushan, Lienhuachih, Chungpu, Liouguei, Hengchun, and Taimalee, .

In July 1999, the Institute was transferred to the Council of Agriculture, Executive Yuan, and was formally renamed the Taiwan Forestry Research Institute, Council of Agriculture (COA), Executive Yuan.

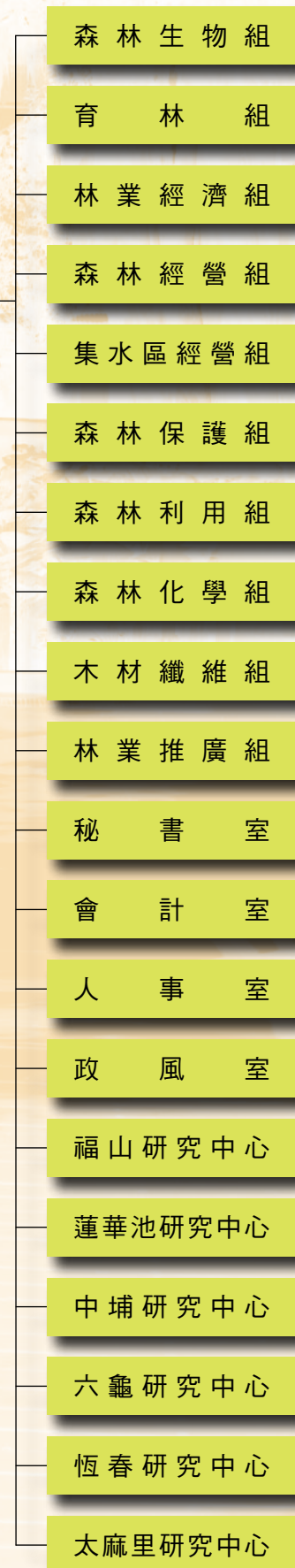
組織編制 與研究人力

組織系統圖



本所目前編制員額計有職員125人（台北總所99人、福山研究中心6人、蓮華池研究中心3人、中埔研究中心4人、六龜研究中心7人、恆春研究中心4人、太麻里研究中心2人），其中行政人員17人，技術人員108人。所內設所長、副所長、主任秘書各1人，組長10人、中心主任6人；技術人員中：研究員20人、副研究員23人、助理研究員59人、技佐6人。副所長、主任秘書、各組組長及各研究中心主任等職位，係由研究員或副研究員兼任；行政人員除3位室主任外，另分專門委員、專員、組員、辦事員、書記等26人。另有技工、工友、司機158人，依工作業務性質，配屬於總所各組、室及各研究中心，協助各項試驗研究工作及經營管理試驗林地。

本所內設組、室與研究中心，為整合試驗研究人力及物力、發揮團隊精神，全力推動重要研究議題，遂於各組內針對研究項目與目標，統合研究人員，配合跨組研究，充分發揮機動靈活的試驗研究組合，共設置27個研究室。組織系統圖如下：



Organization System Diagram

Council of Agriculture, Executive Yuan

Taiwan Forestry Research Institute

The Institute currently has a staff of 125 people (with 99 people at the Taipei headquarters, 6 at Fushan³, 4 at Lienhuachih, 4 at Chungpu, 7 at Liouguei, 4 at Hengchun, and 2 at Taimalee). Among the staff, 17 are administrative and 108 are technical personnel. The Institute is supervised by a director general, a deputy director general, and a secretary general, followed by 10 chiefs of divisions and 6 heads of research centers. Among the technical staff, there are 20 scientists, 23 associate scientists, 59 assistant scientists, and 6 assistants. The positions of deputy director general, secretary general, chiefs of divisions, and heads of research centers are filled by scientists or associate scientists. In addition to the 3 administrative heads, there are section heads, clerks, office assistants, and totaling 26 people. There are also 158 technicians, helpers, and drivers who are assigned to various units of the headquarters, divisions, offices, and research centers based on their job specifications. They assist in conducting research experiments and managing the forests.

The operation of the Institute is internally stratified, based on the establishment of divisions, offices, and research centers. In order to integrate research manpower and resources, foster team spirit, and strive for maximal efficiency in carrying out research projects, a laboratory system was instituted. Based on various research items, objectives, and manpower requirements, 27 laboratories were established under various divisions. These support the carrying out of inter-divisional research and permit easy adjustments to meet research needs.

Forest Biology Division

Silviculture Division

Forestry Economics Division

Forest Management Division

Watershed Management Division

Forest Protection Division

Forest Utilization Division

Forest Chemistry Division

Wood Cellulose Division

Forestry Extension Division

Secretariat Office

Accounting Office

Personnel Office

Ethics Morality Office

Fushan Research Center

Lienhuachih Research Center

Chungpu Research Center

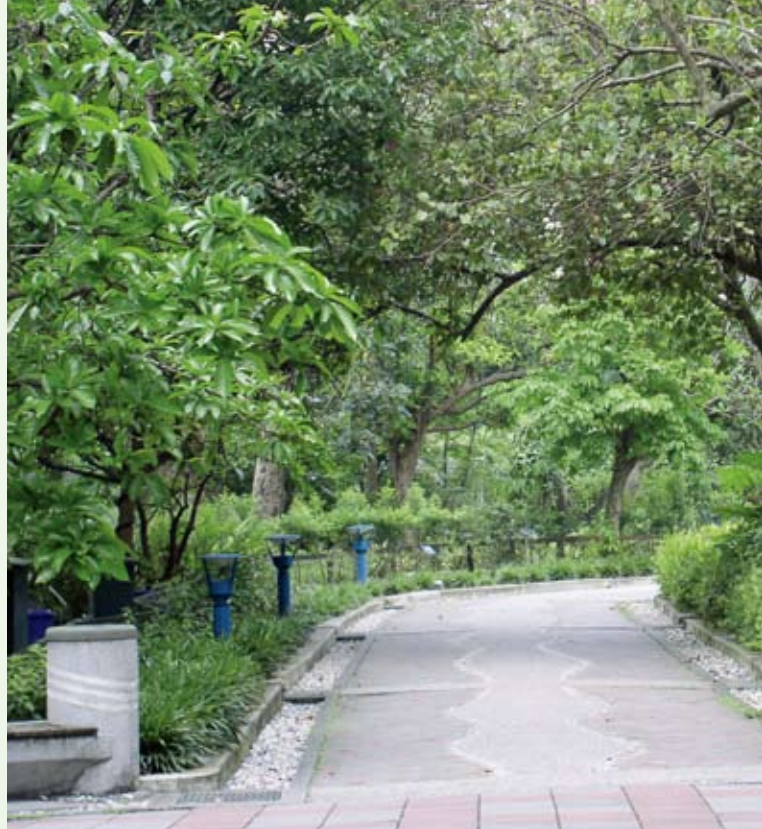
Liouguei Research Center

Hengchun Research Center

Taimalee Research Center

森林生物組

Forest Biology Division



本組簡介

本組主要任務在執行生物多樣性公約第一條款（生物多樣性的保育）與第二條款（生物多樣性的永續利用）的研究。主要目標在達到：充份瞭解及完整記錄台灣的植物多樣性；促進對植物多樣性的保育及認知；對台灣植物的多樣性提供永續利用之方法；進而提供決策者在生物多樣性保育的充分資訊及可行的建議。依研究主題區分有森林植物分類研究室、森林生態研究室、植物多樣性資源保育研究室，並負責台北植物園與本所植物標本館的經營與管理。

研究重點

分類學研究是生物多樣性研究的基楚，標本館的經營管理則是分類學研究所不可或缺的依據。至2007年館藏已逾28萬份標本，並建置有資料庫及網站，供國內外學者便利查尋。研究人員同時進行各科屬之系統分類、遺傳變異與種化研究。

生物多樣性的最高層級為生態系，歷年來本組對各地區植群型、植物組成及植群演替進行調查，近年來更從事長期的森林動態、森林水澤生態及授粉生態之研究。

在生物多樣性保育與永續利用方面，進行物種稀有及瀕危程度之評估及其生物學探討與保育研究。對於本土植物同時進行其永續利用之研究，包括化學成份分析、稀有植物的繁殖培育、景觀植物與果樹的開發等。

植物園是全球推行生物多樣性保育的重要據

點，本組長期以來進行台北植物園經營管理，包括植物展示與遊客服務，並建置導覽網站；更成立自然教育研究室，負責志工培訓與解說教育研究與推行。期能提供民眾認知、學生學習及學者研究之材料，充分發揮植物園的保育、教育及研究的功能。



體胚培養研究進行柳葉石櫟的保育
Embryo culture research for conservation of *Pasania dodonifolia*.



森林湖泊（崙埤）的生態調查
Ecological survey of a forest lake (Lunbi Lake).



稀有植物評估圖鑑是保育研究的基礎資料
A directory of rare plants is our basic research tool.

台北植物園是最佳的保育教育場所
Taipei Botanical Garden provides an excellent environment for conservation education.



標本是最重要的生物多樣性分類研究材料及證據
Specimen vouchers form the basis for taxonomic research on biodiversity.

About us

The main missions of the Forest Biology Division are to execute research pertaining to the implementation of the first and second objectives in the Convention on Biological Diversity, i.e., the conservation and sustainable use of biological diversity. The division's primary objectives are to understand and record fully the floral diversity in Taiwan; to promote the conservation and enhance awareness of the plant diversity; to develop methods for sustainable use of plant diversity of Taiwan; and finally to provide policymakers with sufficient information and practical suggestions concerning the conservation of biodiversity. According to the research themes, the division includes 3 laboratories, i.e., forest plant taxonomy, forest ecology, and plant biodiversity resources conservation. The division is also responsible for the management of the Taipei Botanical Garden and the TFRI herbarium.

Research focuses

Taxonomy is the foundation of all biodiversity research, and the maintenance and management of a specimen collection provides indispensable evidential basis for taxonomic scholars. By 2007, there were over 280,000 specimens in the herbarium. A database and website on each of the specimen have been developed to allow easy access of the information for scientists in Taiwan and abroad. Researchers in the division also studies the systematics, genetic variation, and speciation of various plant families.

An ecosystem is the highest level of biodiversity. The research team of the division has researched vegetation types, compositions and successions in many areas over a period of years. Recently, monitoring of long-term forest dynamic, forest wetland ecology, and ecology of

pollination have also been conducted.

In the arena of biodiversity conservation and sustainable use, the division undertakes to evaluate the degree of rarity and endangerment of plant species, and study their biology and conservation. With respect to certain endemic species, sustainable use of the plant resources is also researched by performing chemical analyses, cultivating and propagating rare plants, and developing landscape plants and fruit trees.

Botanical gardens are key sites in efforts to conserve plant biodiversity. The division has managed both the plant displays and tourist services at Taipei Botanical Garden for many years, and has developed a website for the Garden. Furthermore, a natural education laboratory is established to train volunteers and provide interpretive education services and academic research materials to the public, students bent on learning, and scholars. These efforts help the Botanical Garden to fulfill its functions as a center for conservation, education and research.



台北植物園導覽系統網站提供民眾便捷的查詢途徑
The Taipei Botanical Garden website provides a useful information gateway for public inquiries.

育林組

Silviculture Division



本組簡介

台灣森林資源豐富，有許多特有及高經濟價值的樹種，利用育林技術可瞭解林木生態更新與遺傳性狀，進而利用育種與其特殊成分進行多用途的開發與利用。育林組的主要任務是研究林木的培育與生長，從蒐集各地種源之採種、促進種子發芽、培育苗木至出栽造林，最後選育栽培有價值的林木樹種。利用組織培養、基因轉殖的技術改良林木，促進生長，研究瞭解森林天然更新機制，加速恢復森林原貌，而樹木生長所依賴的土壤，其理化性質等都是本組的研究目標。

研究重點

育林技術研究室：發展造林種苗培育技術和苗圃經營管理，輔導工業區和民間社區之綠美化栽植技術及發展海岸環境林更新技術，並研究天然林及人工針、闊葉林的更新機制。

森林遺傳和林木種子研究室：林業試驗所林木種子冷藏庫每年採集種子，進行種子的儲藏和發芽的研究，並配合國家苗木培育計畫，提供種子和發芽技術。林木生物技術有用基因的研究，將木質素基因轉殖到林木上，提升製漿率及降低漿廠經營成本。利用組織培養，培育年輕化之經濟樹種，及生產二次代謝物。管理林木種子園和營養系園，如台灣紅檜、扁柏、香杉和台灣肖楠等，這些優良品系能生產高品質的後裔。

土壤研究室：研究森林土壤分類和鑑定，使得國土規劃更為完善。建立林區土相土壤圖，便於森林土壤之經營管理。研究森林土壤養分循環、不同土壤層之微生物變動和有機物分解等。最後也是最重要的研究是森林和各種不同的樹木對固定二氧化碳的效率，碳和氮在土壤中的循環變化等。



四湖海岸防風林內緣以木麻黃更新佔優勢
Casuarina trees dominate the inner edges of a Sihhu coastal windbreak forest.



地被移除促進天然更新
Removal of ground vegetation
cover enhances natural
regeneration.



在六龜研究中心建立之台灣肖楠優良營養系種子園
Superior clonal seed orchard of Taiwan incense cedar
established in the Liouguei Research Center.



利用生物反應器生產二次代謝物
Valuable secondary metabolites are produced in a
bioreactor.



不同樹種枯枝落葉之分解與養分循環研究
Study of the decomposition and nutrient cycles of leaf
litter from different tree species.



伐取人工闊葉林估算生物量及碳吸存量
Harvesting of a broadleaf plantation to estimate the
biomass yield and amount of carbon sequestered.

About Us

There are abundant forest resources in Taiwan, including many tree species of high economic value. By applying silvicultural technologies, we are able to understand the ecological regeneration processes and genetic characteristics of forest trees. Subsequently, these enable the multipurpose development and utilization of tree breeding and special ingredients of certain tree species. The chief missions of the Silviculture Division are to study the nursery and growth of trees; starting from collecting tree seeds from mother trees distributed in different places, promoting seed germination, cultivating tree seedlings until they are ready for out-planting in forest sites, and lastly, selecting tree species with high economic value for suitable sites. In addition, we use tissue cultural and transgenic technologies to improve and promote the growth of seedlings, and research the natural regenerative mechanisms to accelerate restoration of original forest structures of the land. The physical and chemical characteristics of forest soils on which the growth of tree depends are also the subject of research of this division.

Research focuses

Silvicultural Technology Laboratory: The lab endeavors to develop seedling cultivation technology for silvicultural purposes and manage nursery operations. The lab offers guidance in planting techniques in the greening and beautification processes of industrial zones and communities, develops regeneration technologies for coastal environmental protection forests, and studies the regenerative mechanisms of natural and man-made coniferous and broadleaf forests.

Forest Genetics and Tree Seeds Laboratory: The tree seed bank of TFRI engages in tree seed collection each year. Then the storage and germination characteristics of the seeds are studied. The lab provides the necessary seeds and germination technology in keeping with the requirements of national seedling cultivation plans. The forest biotechnology group researches useful genes, such as transferring lignin biosynthesis-inhibiting genes into trees to generate transgenic trees with increased pulp yields and reduced operational costs of pulp mills. The lab also uses tissue cultural methods to cultivate rejuvenated plantlets of economically important tree species, as well as produces valuable secondary metabolites. A further duty of the lab is to manage seed orchards and clonal gardens of forest trees, such as for Taiwan red cypress (*Chamaecyparis formosensis*), Taiwan Hinoki cypress (*Chamaecyparis obtusa* var. *formosana*), Luan-tai-fir (*Cunninghamia konishii*), and Taiwan incense cedar (*Calocedrus macrolepis* var. *formosana*). Superior strains of these species can generate high-quality offspring for future afforestation needs.

Forest Soil Laboratory: The lab undertakes the classification and appraisal of forest soils, enabling improvements in national land use programs. Soil phases and soil maps of forestland areas are established to facilitate the management and control of forest soils. The lab also studies changes in soil microorganisms and decomposition of organic substances in different layers of forest soils. Lastly and most importantly, the lab researches how the forests and different trees affect the efficiency of carbon dioxide sequestration, and the changes in carbon and nitrogen cycles in forest soils.

林業經濟組

Forestry Economics Division



本組簡介

本組研究方向主要在於永續森林經營的多元效益及社區林業與發展，探討台灣森林與環境經濟效益之關係，包括台灣森林涵養水源效益、遊憩效益及碳吸存效益等，並加強以社區為基礎的林業經營研究。本組現有職員5人，包括研究員1人、助理研究員3人、約聘1人，另配置技工3人，協助各項研究業務之推動。

研究重點

本組研究重點包括以宏觀的角度，進行森林生態系經營之環境價值評估研究，使社會增進對林業研究與建設之支持；辦理社區林業之促進公眾參與及建立夥伴關係研究，讓林業走出去，民眾走進來；加強森林文化之研究與推動，提昇林業經營水準與形象；辦理森林生態旅遊遊客滿意度、解說效果與經濟效益評估。在木材供需及市場調查方面，分析原木、製材、合板、單板、組合板、紙漿材等歷年進出口變動及用材與漿材消費量變動，所建立之林業經濟資訊系統項目包括自民國70年起之林產品進出口資料，可提供各單位查詢及統計分析。目前進行之研究計畫為「森林生態系經營與社區發展互動關係之研究」、「生態旅遊之遊客滿意度、解說效果與經濟效益評估」、「台灣地區森林碳匯供需之成本效益與制度設計之探討」及「台灣原住民族之傳統知識與社會階層關係之探討」。未來將從事碳吸存與

碳交易研究、原住民傳統生態知識和傳統領域對林業經營之影響與衝擊之研究及林業政策之研究與評估。

◎林業經濟研究室

- 森林與環境經濟效益研究
- 以社區為基礎的森林生態系經營研究
- 木材與林產品供需分析
- 原住民傳統領域對林業經營之影響
- 碳交易、碳排放權之研究
- 森林文化之研究



2007年11月加拿大亞伯達大學教授John Parkins拜訪南投縣魚池鄉五城村「蓮花池護溪保育協會」。

Prof. John Parkins (University of Alberta) visited the Lienhuachih Creek Protection and Conservation Association at Wucheng, Nantou County, in November 2007.



2007年3月林試所研究人員、國立東華大學王鴻濟教授與鸞山村民會談傳統知識與林學的結合及應用策略。
Villagers from Luanshan met TFRi researchers and Prof. Wang Hong-Jin (National Donghua University), and discussed strategies for integrating and applying traditional knowledge and modern forestry in forest management, in March 2007.



2003年8月吳俊賢組長和Dr. John Parkins一起拜訪加拿大英屬哥倫比亞省McBride村社區林。
Dr. Chin-shien Wu, Chief of the Forestry Economics Division, and Dr. John Parkins visited McBride Community Forest in British Columbia, in August 2003.



2006年6月吳俊賢組長赴加拿大參加「社會與資源經營管理國際研討會」(ISSR)
Dr. Chin-shien Wu, Chief of the Forestry Economics Division, attended the 2006 International Symposium on Society and Resource Management (ISSRM) in Canada, in June 2006.

About Us

The main thrust of the division is to study the multiple benefits of sustainable forest management and community forestry development, in order to explore the forests of Taiwan in relation to their environmental economic benefits, including benefits of water resource nourishment, recreation, and carbon sequestration, and strengthen community-based forest management research. The division consists of 5 scientists, including 1 senior scientist, 3 assistant scientists, and 1 contractual worker. There are also 3 technicians to assist various aspects of the research work.

Research focuses

The emphases of the division's research include studying environmental valuation of forest ecosystem management from a macroeconomic perspective, thus enhancing society's support of forestry research and investment; fostering public participation and building partnerships in community forestry endeavors, thus allowing forestry to reach out and the public to participate; strengthening the study and promotion of forest culture, thus elevating the forest management level and public perceptions; and evaluating the degree of visitor satisfaction with ecotourism at forest recreational sites, the efficiency of interpretative services, and economic benefits. As to the supply and demand of wood and market surveys, changes in import/export of logs, lumber, plywood, veneer, particleboard, and pulpwood, and consumption of timber and pulp logs over the years were analyzed. The forest economic database thus established has detailed forest products import/export information since 1981 and is open to various organizations for inquiries and statistical

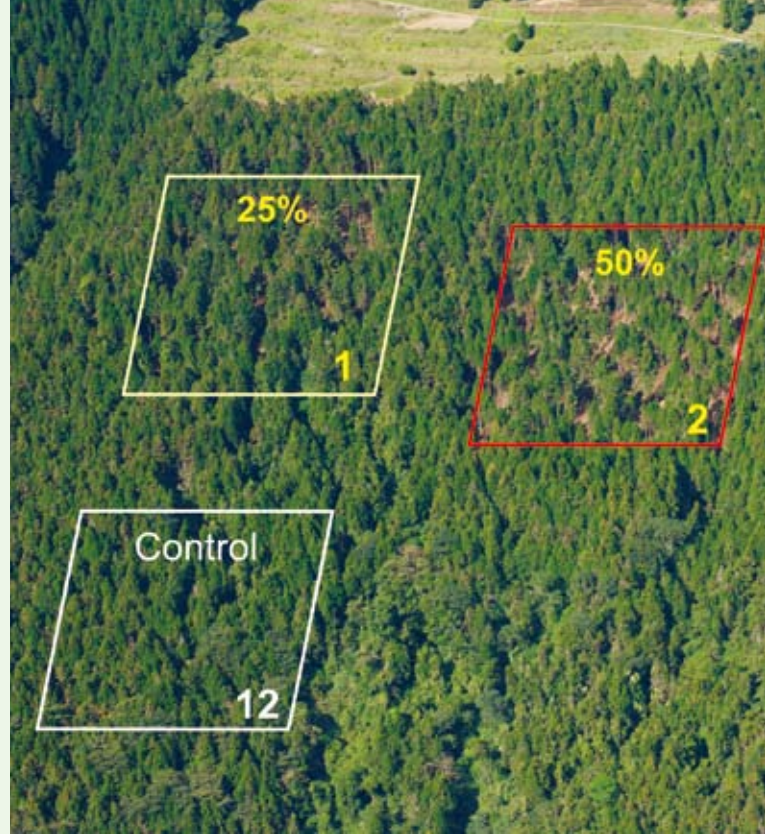
analyses. At present, ongoing research includes "Study on the interactive relationship between forest ecosystem management and community development," "Visitor satisfaction survey, effect of interpretative services, and economic benefit evaluation of ecotourism," "Investigation of the cost effectiveness of supply and demand in Taiwan forest carbon sink and the system design," and "Investigation of the traditional folklore and social caste relationships among aboriginal tribes of Taiwan." We intend to engage in carbon sequestration and carbon trading research in the future, and examine the influences and impacts of traditional ecological knowledge and territories of the aboriginal people on forest management, as well as the research and evaluation of forestry policies.

Forestry Economics Laboratory: The lab engages in the following:

- Research on forest and environmental economic benefits;
- Study of community-based forest ecosystem management;
- Supply and demand analyses of wood and forest products;
- Influences of traditional territories of aboriginal people on forest management;
- Study of carbon trading and carbon emission credits; and
- Study of forest culture.

森林經營組

Forest Management Division



本組簡介

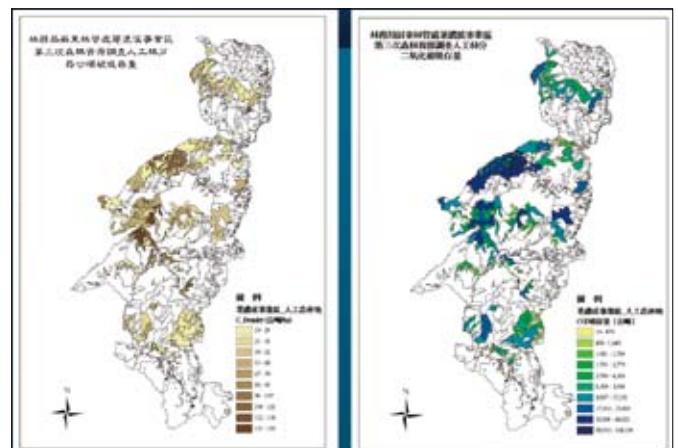
台灣林業在面臨自然保育意識的抬頭，以及全球環境變遷等壓力下，森林經營的趨勢將以維護完整而健全的森林生態系為基礎，並且符合永續發展為目標。因此，針對不同之林地分級經營目標，建立不同之經營管理策略。針對目前人工林經營，人工林中後期撫育，生長與收穫和森林生產力之推估，來尋求符合生態系經營理念的施業方式。發展合理的森林規劃模式和生態監測體系，增加森林生態的多樣性，並應用航、遙測與地理資訊系統等技術、建立長期的森林資源資料庫和加強林地分級作業體系的規劃，兼顧森林資源合理的利用與保育，使森林經營朝多元化發展，以達成生態上、社會上及經濟上可行的森林永續經營。

研究重點

本組使用航遙測、數值地形模型及地面調查等資料，應用遙測影像處理系統、地理資訊系統及決策支援系統等技術，從事林地分級與森林生態系經營規劃研究，並以最新的地景生態學原理及生態系經營適應性經營方法，作為台灣森林永續經營目標之策略規劃依據。

林分經營研究乃針對不同林分經營目標，建立不同之林分疏伐、修枝、間植等撫育經營策略，並長期從事人工林及天然林經營、永久樣區之建立與分析、進行林分質與量、生長收穫模

擬、數學規劃、作業研究，林分經營作業模式之策略規劃及準則與指標之擬訂與評估、森林作業之勞動科學和森林美學等研究，以維持林地生產力及森林生物多樣性，並以適應性經營方法，達成森林生態系永續經營，期能發揮最大化之森林功能與森林服務。



老濃溪事業區人工林型蓄積圖（左）與碳吸存估算結果，（右）個別林分每公頃吸存量分級圖

(L) Projected timber volume of the plantation in the Laonong River Work Circle and estimate of the carbon storage. (R) Carbon sequestration in individual forest stands (ton/ha).



人倫柳杉人工林孔隙疏伐後空照
An aerial photo of a Japanese cedar (*Cryptomeria japonica*) plantation after gap thinning in the Renren area.



香杉鼠害孔隙疏伐後形成之複層多樣之林相
Squirrel-damaged *Cunninghamia konishii* plantation fully recovered with multistory and diverse structure, after gap thinning.



台灣杉人工林疏伐修枝後15年林相
A Taiwania plantation, 15 yr after thinning and pruning practices.



柳杉人工林行列疏伐複層林營造
Multistory reforestation after row thinning of a Japanese cedar (*Cryptomeria japonica*) plantation.

About us

Facing a growing awareness of nature conservation and the stresses of global environmental changes, forestry in Taiwan must follow the trends of management based on maintenance of intact, healthy forest ecosystems and comply with the goals of sustainable development. Therefore, different management strategies must be tailored for different forestland site classes. With regard to current plantation management, intermediate- and late-stage tending practices and the estimation of forest growth, harvest yields, and productivity shall be carried out to seek the right practices that comply with the ideals of ecosystem management. This division also endeavors to develop rational forest planning models and ecosystem monitoring systems, increase the biodiversity of forest ecosystems, and apply aerial and remote sensing and geographic information system (GIS) technologies to establish long-term forest resources databases, as well as strengthen the planning for a forestland site classification system. A further goal is to balance the reasonable utilization and conservation of forest resources and achieve sustainable management that is feasible in terms of its ecological, social, and economical aspects.

Research focuses

The division carries out forestland classification and forest ecosystem management planning research by applying a range of monitoring tools such as aerial and remote sensing, digital terrain modeling and ground surveys, and computer analytical technologies of image analysis, GIS, and decision support systems. Combined with modern theories of landscape ecology and adaptive ecosystem management, these databases enable the

division to formulate strategic planning goals for the sustainable management of Taiwan's forests.

Research on stand management carried out by the division endeavors to establish tending practices such as thinning, pruning, and interplanting for individual stand management goals, undertake long-term management of plantation and natural forests, establish and analyze permanent plots, carry out qualitative and quantitative evaluations of stands, simulate growth and harvest yields with mathematic modeling and operational research, formulate and evaluate the strategic planning of stand management operation models and their indicators and criteria, and study labor theory of forest operations and forest aesthetics. The knowledge accrued is used to underpin the maintenance of forestland productivity and forest biodiversity, and with adaptive management methods, achieve sustainable management of forest ecosystems, allowing forests to provide their maximum functions and services to the public.



試驗林地理資訊查詢暨支援管理系統系統架構，圖中顯示中埔研究中心四湖海岸環境林研究中心轄區
Framework of the GIS-based inquiry, support, and management system of experimental forests. Shown is the Sihhu Coastal Environmental Forest of the Chongpu Research Center.

集水區經營組

Watershed Management Division



本組簡介

本組成立於1978年，著重於森林集水區經營研究工作，主要目標在瞭解上游森林集水區水文特性及不同土地利用造成的衝擊，從而建立適當的森林集水區經營法則。現有研究人員9人、技工5人。本組因研究方向分設森林水文氣象研究室、水化學研究室及防災研究室。

研究重點

森林水文氣象研究已在台灣北、中、南部設置12處試驗集水區及13處森林氣象觀測站，長期觀測天候狀況、降雨量及溪流水流量，以探討水文循環與水平衡等問題，提供森林經營之參考。另以駢對試驗方法，在蓮華池試驗集水區內進行小面積之皆伐作業，以評估森林作業對水文之影響，證明皆伐區之溪流水流量增加，且森林涵養水源的功效有其上限。對於集水區養分與泥砂輸出之研究，在數個試驗集水區進行監測，以期建立完整之水文基本資料，供為水資源保育及森林生態系研究之基礎。

台灣颱風豪雨季節溪流水化學成分變異甚大，雨季時集水區流失大量的泥砂與營養鹽。經由六個地點的雨水酸鹼性質監測，顯示北台灣酸雨較嚴重，中台灣高海拔山區酸雨較輕微，中台灣淺山地區酸雨居中。森林遊憩對溪流水質的影響以大腸菌數量最為關連。

由於台灣特殊的物理環境與地質條件，集水

區內坡地的集約土地利用，造成嚴重之土壤沖蝕與地表逕流，因此上游集水區不同土地利用的土壤沖蝕與地表逕流觀測分析，為研究重點之一，同時偏重逕流係數建立與土壤沖蝕率推估，以供森林經營與水庫營運之參考。此外坡地崩塌機制、林道穩定探討及簡易有效的減少土壤沖蝕設施，亦為研究題材。



森林氣象觀測設施
A forest meteorological observation facility.



試驗集水區量水堰
An experimental watershed weir.



林道崩塌
Landslides on forest roads.



格籠擋土牆
A grid retaining wall.

About us

This division was founded in 1978 with the mandate to research the management of forest watersheds. Our main purposes are to understand the hydrologic characteristics of upstream forest watersheds and the impacts of different land uses, hence to enable the establishment of suitable management rules for forest watersheds. The division currently has 9 research scientists and 5 technicians. Based on various research needs, the division is further divided into the Forest Hydrology and Meteorology Lab, Water Chemistry Lab, and Disaster Prevention Research Lab.

Research focuses

In total, 12 experimental watersheds and 13 forest meteorological stations have been set up in northern, central, and southern Taiwan for forest hydrology and meteorology research. Long-term observations of weather conditions, rainfall and streamflows are carried out in order to investigate the hydrological cycle and water balance. These activities provide critical data for forest management planning. Also, through the use of paired watershed design, we performed small area clearcutting in the Lienhuachih experimental watershed to evaluate the impacts of forest operations on hydrology, and proved that streamflows in the clearcut sites increased, and the water-retaining capacity of the forest has an upper limit. We have conducted surveillance of nutrients and sediment transport in several experimental watersheds in a bid to establish comprehensive hydrological data for further studies on water resource conservation and forest ecosystems.

Chemical compositions of stream water in Taiwan during typhoon and torrential rain seasons are extremely variable. And enormous amounts of silt and nutrient salts

are lost from the watersheds during the rainy season. Through monitoring the pH of rain water at 6 locations, we established that acid rain is quite serious in northern Taiwan, while the high-mountain regions of central Taiwan have relatively minor acid rain concerns, and the hilly areas of central Taiwan have intermediate rain acidity. Studies on forest recreational activities indicate that the influence on stream water quality is manifested in a high correlation with coliform bacteria counts.

Due to the unique physical environments and geological conditions, intensive land use on steeply sloped watersheds in Taiwan has caused serious soil erosion and surface runoff. Therefore, a focus of our research is to analyze soil erosion and surface runoff due to different land uses of upstream watersheds. Particular emphases are on estimating regional watershed runoff coefficients and soil erosion rates, so as to provide a data source for forest management and reservoir operation. Additionally, our research topics include mechanisms of slope landslides, stabilization of forest roadbeds, and easy, effective means to reduce soil erosion.



水文資訊收集
Collection of hydrologic data.

森林保護組

Forest Protection Division

本組簡介

本組成立於1991年，著重於森林保護之研究工作。現有研究人員9人、技工8人，與約聘人員14人。本組設有森林病理研究室、森林火研究室、森林昆蟲研究室及野生動物研究室，以維護森林之健康及生物多樣性。近年來成立林木健康服務網，提供民眾進行樹木病蟲害診斷與諮詢服務。

研究重點

本組的森林病理研究室主要研究重點包括：林木病害之診斷調查及評估、林木病害防治技術之研究、分子診斷試劑之研發與製備、木材腐朽菌及其引起病害之調查研究及林木病原微生物之蒐集、鑑定與保存。

森林火研究室之主要任務為配合森林經營過程中保護森林免於不當森林火災之危害。除協助林務局在防救森林火災之技術發展外，並針對林火原理、燃料系統及林火資料庫等基礎進行研究。成立迄今已建置林火燃料實驗室及林火資訊工作室。

森林昆蟲研究室負責昆蟲標本館之管理與研究、森林昆蟲之調查與監測技術研究、森林害蟲之生物學及其防治研究，以及外來種昆蟲之生物防治研究等。昆蟲標本館現有館藏昆蟲針插標本10萬份，已進行影像數位化資料建檔。森林害蟲



行政院農業委員會
林務局
Forestry Bureau



行政院農業委員會
林業試驗所
Taiwan Forestry Research Institute

服務網宗旨

有關林木的健康問題，我們提供相關的知識與諮詢服務，如有發現林木不健康的情形，您可經由服務網提供的 **診斷線上申請服務**或 **下載診斷申請書**填寫後傳真至服務中心提出診斷申請，或利用 **其他方式**提出申請，我們會儘快請專業人員為您提供相關的診斷與防治建議，以幫助林木回復健康。

案件診斷報告

案件編號	診斷結果
ID 20070005	生理性
ID 20070118	病害
ID 20070117	蟲害
ID 20070116	蟲害
ID 20070115	蟲害
ID 20070114	病害

林才 Forest

最新消息

- 2006-10-11 東南亞10國官員本周可望會面 共
- 2006-10-09 2006年林業有害生物發生面積1
- 2006-10-08 印尼官員稱已為解決煙霧問題盡
- 2006-10-06 解決林火問題 印尼停發變更林地
- 2006-10-06 美國免除瓜地馬拉外債換取森林

[...更多新聞]

常見病蟲害簡介

常見病害



研究的重點工作則有苗木害蟲及林木疫情蟲害監測及防治。

野生動物是健全的森林生態中不可或缺的一環，其與植物間的互動亦影響森林的發展或演替，因此野生動物研究室的主要任務可分為兩項，其一在於了解森林環境中的動物族群及多樣性，並提供經營管理策略，另一項則是評估野生動物對森林之影響如取食、破壞、危害或者傳播等，可協助制定森林生態系經營管理方案。



福山試驗林，蒐集地形、植被等相關資料，以建立樣區的背景資料庫。
Topographic and vegetation data collected at the Fushan Experimental Forest, in order to establish a background database for a sample plot.

商如何協助印尼撲滅森?/a>

38億歐

力 林火仍難撲滅

許可證

果育

[更多新聞]

常見蟲害



林
病



昆蟲標本館之管理與研究。
Management and research carried out at the Insectarium.

林木健康服務網提供林木病蟲害診斷諮詢服務。
The Forest Health Service website provides
information on diagnosing diseases and insect damage
to trees.



林火防救器材測試與推廣教育。
Testing equipment for forest fire prevention, fire fighting,
and public awareness campaigns.

About us

The division was established in 1991 to carry out research related to forest protection. Currently there are 9 scientists, 8 technicians, and 14 contractual workers. The division oversees 4 laboratories of Forest Pathology, Forest Fire, Forest Entomology, and Wildlife which function together to maintain the health and biodiversity of forest ecosystems. In recent years, a forest health service website was established to allow public inquiries and diagnostic services about tree damage caused by diseases and insects.

Research focuses

The main research goals of the Forest Pathology Lab are diagnostic survey and evaluation of tree diseases; prevention and curative technologies of tree diseases; research and preparation of molecular diagnostic reagents; survey and research on wood-decaying fungi and the symptoms they cause; and the collection, identification, and preservation of pathogenic microorganisms which cause tree diseases.

The main mission of the Forest Fire Lab is to protect forests from damage caused by inappropriate fires in conjunction with forest management practices. In addition to assisting the Taiwan Forestry Bureau to develop forest fire prevention and fighting techniques, the lab also studies the foundations of forest fire theories, combustion systems, and forest fire databases. Since the founding of the lab, a forest fire combustion lab and a forest fire information office have been established.

The work of the Forest Entomology Lab includes management and digital archiving of the insect collection, survey and monitoring of forest insect biodiversity and ecology, and management of forest insect pests. The insect

collection has more than 110,000 pinned specimens and a database of those pinned specimens, and over 250,000 specimens preserved in spirits. Research on forest insects, including pests, focuses on the monitoring and study of insect biodiversity, and the prevention and treatment of nursery pests and forest tree pest outbreaks.

Wild animals are integral parts of healthy forest ecosystems. Their interactions with plants also affect the development and succession of forests. Thus, the main tasks of the Forest Wildlife Lab are 2-fold: to understand the status of fauna in forest environments and its diversity; and to evaluate the impact of wildlife activities, such as their feeding, destruction, endangerment, and transmission of seeds in the forest. Through these results, a complementary strategy for forest ecosystem management plan can be formulated.



自然保護地區生物多樣性監測。
Monitoring biodiversity in a nature reserve.

森林利用組

Forest Utilization Division



本組簡介

本組主要任務在探討國產及進口重要經濟用材之基本性質，期能達成適材適用與全材利用之節能減碳目標；研發高附加價值之木竹材加工技術，提升木竹產品國際競爭力，漸次取代生活中耗能工業材料，扮演碳吸存的積極角色；推廣綠建築概念之木結構應用、廢棄物減量與再利用、開發短輪伐期造林木加工利用技術與建立林產品生產履歷制度等為今後主要之研究方向。

研究重點

木竹材基本性質

目標為研究國產及進口主要樹種之解剖特性及基本材料性質，目前木材標本館內蒐集有國產標本包括針闊葉樹木材標本300種及54種竹材標本；國外產木材標本計含亞、美、歐、非及大洋洲等闊葉樹材163科、730屬、2172種，針葉樹材9科、40屬、221種，提供公民營機構加工利用、鑑定及木材性質之諮詢服務。同時並導入新的非破壞試驗技術，以評估立木或板材之健康狀態及物理機械特性。

木竹材加工技術

木竹材加工技術之研發包括乾燥、切削、層積膠合、壓縮加工、雷射雕刻與噴砂等及中小徑造林木之加工利用。積極推動竹炭研發計畫，包

括土窯建造、竹炭燒製、性質檢測與加工利用等，目前炭窯建造與竹炭燒製技術均已獲得良好之成果。

木結構與綠建築

藉由建材及結構之改良，克服木屋易腐朽、遭白蟻為害、火災、易漏水及使用年限短等負面印象，以達舒適及耐久目的，為未來木結構研究重點。綠建築研發推廣擬著重於複合材料之開發應用、舊木料之回收再利用與節能新材料及新工法之研發。



木材展示館展示各類型木竹材標本
Bamboo and wood samples displayed at the Wood Collection Exhibition Hall.



以孟宗竹為主體，正面嵌入台灣重要針、闊各五木之直尺
A ruler made of Moso bamboo and inlaid with 10 species of Taiwan's most important commercial woods.

竹炭土窯之外貌與燒製時，每窯所需約250公斤之相思樹薪材
A bamboo charcoal earthen kiln. The kiln needs approximately 250 kg of acacia fuelwood for each firing.



1998年蓮華池研究中心木屋，為框組壁工法與鋼筋水泥混合式構造
Wood building constructed in 1998 at Lienhuachih Research Center, using a hybrid of wood platform construction and reinforced concrete.

About us

The missions of this division are to research the basic properties of domestic and economically important imported woods in order to find suitable uses, achieve waste reduction and energy savings of the entire wood stock for each timber resource, research high value-added processing technologies for wood and bamboo, enhance the competitiveness of wood and bamboo products in global marketplaces, prompt the gradual replacement of energy-intensive industrial products in daily use with forest products so as to allow realization of the active carbon sequestration potential, promote the construction of wood structural buildings that comply with green building concepts, reduce wastes through recycling, develop processing technologies for short-rotation plantation wood, and establish a forest products production history system in the future.

Research focuses

Basic properties of wood and bamboo

The objective is to investigate the anatomical and basic properties of domestic and imported woods. There are 300 samples of domestic hardwoods and softwoods, as well as 54 samples of native bamboos in the Wood Collection. In total, 2172 hardwood species in 730 genera and 163 families, and 221 softwood species in 40 genera and 9 families have been collected from Asia, the Americas, Europe, Africa, and Australia-Oceania. The collection is a reference resource for wood processing, identification, and property counseling to public and private institutions. Non-destructive testing techniques

were also introduced to facilitate assessment of the health status of standing trees or wood panels, as well as their mechanical properties.

Wood and bamboo processing

The objective is to develop wood and bamboo processing technologies such as drying, cutting, glulam, compressive processing, laser engraving, sandblasting, and processing of small-diameter logs. Active promotion of a bamboo charcoal development project was also undertaken which includes constructing earthen kilns, bamboo charcoal production, quality testing, and process technology with good results.

Wood structural construction and green building

Through improvements in wood-based building materials and structural designs, negative perceptions regarding the nature of wood as susceptible to decay, termite damage, fire, water leakage, and short durability can be overcome. To achieve a comfortable and durable wood structural construction is the focus of future objectives of wood structural research. R&D on green building promotion are centered on development and applications of wood-based composite building materials, reclamation of old structural members, and development of novel energy-conserving materials and construction methods.

森林化學組

Forest Chemistry Division



本組簡介

本組任務乃在符合生態及環保的原則下，研究以森林資源為基材，應用化學及生物技術開發多功能林產品，從而提高森林資源的經濟效益。現有研究員2人、副研究員2人、助理研究員1人及技工3人，另有特聘研究員及研究助理各1人；分屬木材改良實驗室、木材保存實驗室、天然物化學實驗室及木材生技實驗室。研究目標為增進木質纖維材料品質，延長林產品使用年限，開創森林副產物多樣化的利用方式以及應用生物科技以改善傳統林產加工技術。

研究重點

木材改良實驗室

應用化學改良措施以減輕木質材料之化學性及生物性劣化，增進木質纖維材料品質而延長產品使用年限。為落實環境永續的理念，本組之研究方向朝採用環境友善化加工技術，以提昇木質材料之耐燃性和耐久性。

木材保存實驗室

依照標準方法測試造林木耐腐防蟲性，建立天然耐久性知識庫，作為篩檢木材品等之準則及加工利用之參考。防腐劑處理可延長木質材料使用壽命，為兼顧環境保護需求，本組研究目標以開發環保型保存藥劑為重點。

天然物化學實驗室

為開發本土植物之新用途提昇森林之附加價值，本組以不同方法提煉植物精油及其他特殊林產物，經各種分析儀器如氣相層析儀等確認其結構，並與其他學門結合研究其效能與加工利用。

木材生技實驗室

應用基因體、功能性基因等研究方法，探討木材抽出物對微生物及昆蟲的影響，評估其特有的酵素作為生物製漿或生質燃料之可行性，應用木材抽出物或微生物等以開發有利環境的木材保存方法。



感應耦合電漿光譜儀
An inductively coupled plasma spectrometer.



高效率液相層析儀
A high-performance liquid chromatograph.



氣相層析質譜儀
A gas chromatograph.



傅立葉轉換紅外線光譜
A Fourier-transformation infrared spectrometer.



示差掃描熱分析儀
A differential scanning calorimeter.



熱重分析儀
A thermogravimetric analyzer.



紫外光可見光譜儀
UV/Vis spectroscopy.

About us

The goal of the Forest Chemistry Division is to develop chemical and biotechnological approaches for fabricating multifunctional forest products that comply with ecological and environmental protection principles and also enhance the economic value of forest resources. The division has 2 senior researchers, 2 associate researchers, 1 assistant researcher, and 3 technicians; there are also a contract researcher and research assistant. Their work is conducted in 4 laboratories: the wood modification lab, wood preservation lab, natural products chemistry lab, and wood biotechnology lab. Our research goals are to increase the quality of materials based on lignocellulosic fibers, extend the lifespan of wood products, develop new applications for forest byproducts in a multifaceted mode, and apply biotechnological means to improve traditional wood processing technologies.

Research focuses

Wood Modification Laboratory

This lab applies chemical techniques to counteract chemical and biological degradation of wood, improve the quality of lignocellulosic fiber materials, and extend the lifespan of forest products. The lab researches adaptations of environmentally friendly processing methods to improve the fire-retardant properties and durability of woody materials in keeping with the commitment to environmental sustainability.

Wood Preservation Laboratory

This lab applies standardized tests to assess the decay and insect resistance of wood harvested from plantations and to establish a database of natural wood durability that can be used as criteria for lumber grading and guides to processing. Preservative treatments can extend the service life of woody materials, and the lab focuses on developing environmentally friendly preservative chemicals in keeping with our commitment to environmental protection.

Natural Products Chemistry Laboratory

This lab focuses on adding value to forest resources by developing new products and usages of endemic plants. Different methods are used to isolate essential oils and other special forest byproducts from various plant sources and elucidate their chemical structures using instrumental means such as gas chromatography. The lab then engages in interdisciplinary research to determine their functionality and processing techniques for potential commercial utilization.

Wood Biotechnology Laboratory

This lab studies the interactions of wood extractives and microorganisms and insects using genomic and functional gene approaches, and evaluates the feasibility of using specific enzymes for biopulping and biofuels applications. A further goal is to utilize wood extractives and microorganisms for more-healthy wood preservation solutions.

木材纖維組

Wood Cellulose Division



本組簡介

本組於日據時期即為木酥科，於現址設有日式廳舍及造紙工廠，65年（1976）與森林化學系、木材利用系及林務局農林航空測量隊合建林產研究大樓，並隨後發展於周邊改建造紙工廠、設置溫濕度控制室、手工抄紙實驗室、脫墨淨漿室等，發展至今，木材纖維組包括林產大樓一樓、地下一樓、五樓及周邊建物，原造紙工廠隨時代變遷，漸次減為一年運作一次，到禁止抽取地下水後完全停工改為參觀教學用途。目前人員編制為職員5人，計研究員1人、副研究員1人、助理研究員2人、研究助理1人，此外，尚有技工5人協助各項研究事務及行政工作，本組在有限的人力下，發揮群策群力團隊精神，不自限於各研究室，近來研究發展方向如下：

研究重點

本組研究是以木材纖維在造紙工業的應用為主軸，因應時代發展而有不同的研究重點，早年以開發各種木材及非木纖維原料，涵蓋省產及鄰近地區進口樹種，及省產農林廢棄物之製漿利用，充裕國內製漿工業的料源，近年來則著眼於回收纖維的再生利用、生物技術運用於漿紙製程、製程用水管理及廢水處理等以符合資源循環利用、減少廢棄物及化學藥品用量、減輕產業對環境衝擊等環保需求，此外，順應減少溫室氣體排放、強調可更新資源利用以及奈米技術發展的趨勢，探討機能紙、手工紙、特殊林產抽出成

分、奈米生物材料與生質燃料等具可永續發展的高附加價值產品的開發研究。

◎木化製漿與污染防治研究室

- 木材纖維形態及木材化學組成分析
- 生物技術於漿紙製造之研究
- 製漿、漂白廢水之處理
- 造紙廢水之測試分析及新處理技術開發
- 紙業減廢及密閉化
- 濕端化學與用水管理
- 再生紙

◎造紙及紙質文物維護研究室

- 造紙技術之研究與發展
- 紙張性質之測試與評估
- 特種紙的研製與開發手工造紙及手工紙加工方法研究
- 紙質文物維護保存研究



氣相層析-質譜儀分析
GC-MS analysis of the extractive components.



紙質文物修復
Restorative technique of an artwork on aged paper.



手工抄紙
Forming handmade paper.



奈米微晶-粒徑分析儀
Analysis of nanoscale crystallites using a laser particle size.



金花紙
A gold-speckled handmade paper specimen .

About us

The Wood Cellulose Division was first founded at the present site as the Department of Wood Pulp in early 1900s during the Japanese Occupation Period and consisted of several Japanese style office building and a paper factory. In 1976, in conjunction with the Forest Chemistry and Forest Utilization Divisions and the Aerial Survey Institute of the Taiwan Forestry Bureau, a new Forest Products Research Building was erected on the site. A papermaking pilot mill, a constant temperature and humidity laboratory, a handmade paper lab, and a deinking lab were subsequently built nearby. Currently, the Division occupies the first, basement and 5th floors of the Forest Product Research Building and the surrounding buildings. The pilot paper mill gradually reduced its operational frequencies to once a year, and upon cessation of groundwater pumping, became a demonstrative facility only. The division has a staff of 5 scientists, consists of 1 senior researcher, 1 associate researcher, 2 assistant researchers and 1 research assistant. In addition, there are 5 technical workers to assist in research and administrative duties. Despite of a limited staffing level, the division shows excellent team work spirit and often engage in cross-laboratory and interdisciplinary projects. The research directions of the division are elaborated below:

Research focuses

The research focuses of the division are centered on the applications of wood fiber to papermaking industry. In order to cope with changing time, different research spectrum is engendered. In earlier years, the division strived to develop various woody and non-wood fiber materials for pulping and papermaking which encompassed indigenous and imported species from the nearby regions, as well as various agricultural and forestry wastes thus amplified the raw material sources for the domestic pulping industry. In recent years, the focus has

shifted toward recycling and reuse of wastepaper fibers, utilization of biotechnology to pulping and papermaking processes, process water management and wastewater treatment to comply with resource recycling, waste and chemical reduction objectives and to lessen the environmental impact of the industry. In addition, issues such as reducing the greenhouse gas emission, emphasis on the efficient use of renewal resources and following the trend of nanotechnology to explore their applications to papermaking; developing high-value addition functional papers, handmade papers, special extractive components from forest products; and development of biomass-based nano-composite materials and biofuels etc. so as to enable sustainable development of the pulp and paper industry.

Wood chemistry, pulping and pollution abatement laboratory

- Fiber morphology and wood chemistry analyses
- Biotechnology applied to the study of pulping and papermaking
- Treatment technology for pulping and bleaching effluents
- Analysis and new treatment technology development for papermaking wastewater
- Waste reduction and system closure for the paper industry
- Wet-end chemistry studies and process water management
- Papermaking from secondary fibers

Papermaking and preservation of paper-based cultural items laboratory

- R&D on papermaking technologies
- Measurement and evaluation of paper properties
- Development and preparation of specialty and handmade papers and process technological study for handmade papers.
- Maintenance and preservation technologies for paper-based cultural relics

林業推廣組

Forestry Extension Division



本組簡介

為本所試驗研究與林業技術諮詢服務對外聯繫之總窗口。主要業務包括研究管理及科技計畫管考、資訊與網路系統管理、圖書資訊收集與交換、出版學術研究期刊及推廣性刊物等。因此，建置提供本所研究人員完善的研究資源環境及將本所研發之重要成果，運用各種宣導方式，提昇本所於社會形象與存在價值，以獲致最有效之技術服務績效，是本組業務發展與推動之重心。

業務重點

- 研究管理：包括本所自辦、委辦與產學合作各項研究計畫之彙整與管考。
- 資訊服務：林業研究網路、資訊安全、研究資料倉儲及辦公室自動化系統之建構與管理制度。
- 圖書館經營管理：圖書與期刊購置、典藏及自動化系統管理、館際合作、珍本圖書保存。
- 科學技術推廣：台灣林業科學季刊、林業研究專訊雙月刊、林業叢刊等刊物出版及其管理。
- 研究成果之智慧財產權申辦與技術移轉相關業務。
- 國際合作等相關業務。

資訊室：提升為民服務水準及林業試驗研究品質，建置與維運本所林業研究網絡、開發與建

置應用系統、經營本所全球資訊網、產出網站與研究資料目錄網、促進行政與研究業務自動化，並提昇本所網際網路資訊通訊安全。此外，結合新3D/VR技術建置虛擬林業導覽，提供民眾利用網際網路進行無遠弗屆的導覽服務。

圖書館：本所圖書館為林業專業之圖書館，創設於日治大正時期，至今已有八十餘年之歷史。目前圖書館包括圖書室與期刊室兩間，藏書近三萬冊，中西日文期刊六萬餘冊，並提供摘要及全文資料庫以服務本所研究人員研究之需。



出版品陳列--豐富與多樣的出版品
Displayed publications: rich and varied publications.



陳列館外觀--林業推廣組辦公大樓
External view of the Forestry Exhibition Hall, the head office for the Forestry Extension Division.



機房--完善的機房設施與管理
Information control room: setup of a perfect information control room and its management.



軌道式書架--專業研究的林業圖書館
Mobile book shelves on tracks: a special library for forestry research.



圖書室--明亮舒適的圖書閱覽室
Reading room: brightly lit and comfortable reading room of the library.

About us

This division functions as the main window of communication of the public with research units in TFRI and its forestry technology consultation services. The main areas of business include research management, science and technology program progress reviews, information and network management, collection and exchange of library materials, and publication of research periodicals and promotional papers. As a result, we strive to provide a perfect research resource environment to institute members and enhance TFRI's public role and image by using various means of communicating our research results to the public, and in this manner we achieve the highest accreditation for our technological services.

Business focuses

- **Research Management:** Compilation, tracking, and assessment of self-administered, TFRI sponsored external, and academic and industrial cooperative research projects.
- **Informational Services:** Establishment and management of forestry research networks, information security, a research information database, and an office automation system.
- **Library Management:** Subscription and purchasing of journals and books, shelf storage of these publications, management of an automation system, participation in inter-library cooperation, and the preservation of rare books and manuscripts.
- **Science and Technology Extension:** Publication of the quarterly Taiwan Journal of Forest Science, bimonthly Forestry Research Bulletin, and the forestry monograph series.

- **Intellectual Property (IP) and Technical Transfer:** Application of IP for research achievements and technical transfer cases.

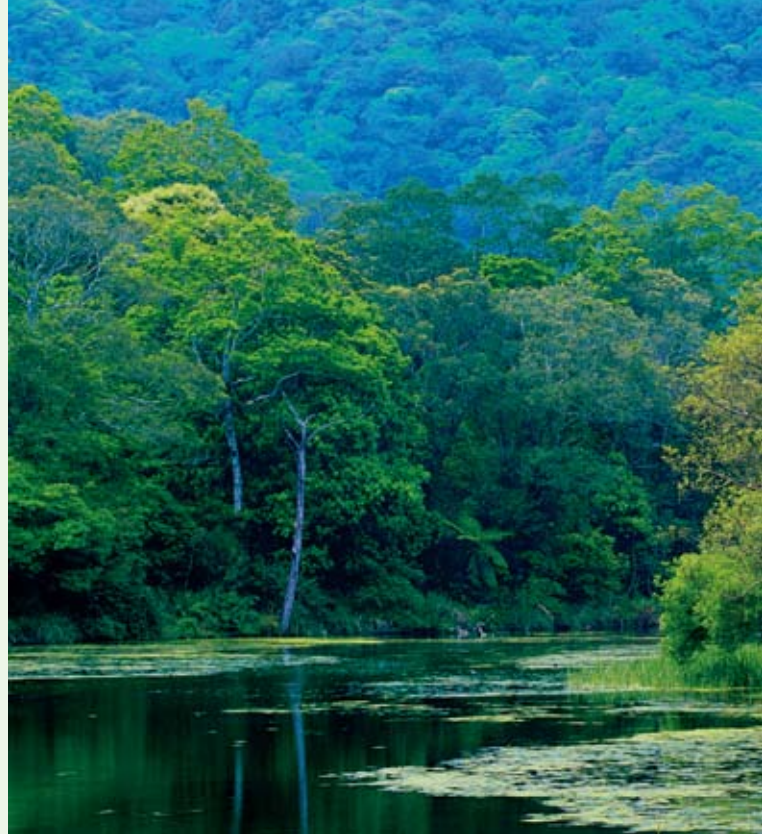
- **International Cooperation:** Involvement in international cooperation and exchanges.

Information Office: In order to expand the service level to the public and increase the quality of forestry research, the office was established to maintain and operate a forestry research network, develop and set up application systems, manage the TFRI global information network, and website for research output catalogues, thus enhancing the automation of administration and research business, and elevate the internet information and communication security of the TFRI. In addition, novel 3D virtual reality technologies are combined to create virtual forest tours, allowing the public to access the tours remotely through the internet.

The Library: The TFRI library is dedicated to serving forestry-related disciplines. Established in the Meiji-Daisho era of Japanese colonial rule, the library boasts a history of more than 80 yr. Currently the library consists of 2 units, a reading room and periodical room, with a collection of almost 30,000 catalogued books, and more than 60,000 periodicals in Chinese, Japanese, and various western languages. Abstract and full-text services are offered through subscription to electronic databases to the research staff of the institute.

福山研究中心

Fushan Research Center



中心簡介

本中心位於台北、宜蘭兩縣交界處，海拔400-1,400公尺之間，年平均氣溫18.5°C，年平均雨量4,125公厘，年平均相對濕度為94.1%。福山試驗林規劃成三區，最北為水源保護區，面積355.7公頃，哈盆溪與粗坑溪均發源於區內，植群以天然闊葉樹林為主，本區域除供各項研究調查外，不進行任何開發，一般遊客亦不得進入。植物園區位於試驗林中段，面積計409.5公頃，除供為試驗研究之場所外，地勢較為平坦之30公頃地區，開發為行政管理區與植物展示區，有系統的收集台灣植物，栽植展示，發揮學術研究、環境教育、資源保育及森林遊憩等功能。植物園區之南為哈盆自然保留區，面積332.7公頃，為農業委員會依文化資產保存法公告之自然保留區，其目的在於保存本區之自然生態體系，以供基因保存，永久觀察與研究。

研究重點

福山長期生態研究

福山試驗林每年均有多項長期生態研究計畫於此進行，探討森林生態系之組成及功能，包括生物因子如微生物、真菌、植物及動物等，非生物因子如光照、雨量、氣候、土壤、營養鹽等，並研究擾動（如颱風、空氣污染等）對此生態系產生之長、短期效應，及本區生態系的演替。迄今所發表的研究報告已逾百篇，建立極為豐富的

基本資料，深具學術價值及教育功能。

福山亞熱帶雨林森林動態樣區之設置與調查

此一25公頃之亞熱帶森林動態樣區設立於國有林地內，以進行長期森林動態學研究為目的，為福山地區森林更新、養份循環等相關研究的核心地點。其成果除能瞭解本區植物社會與其動態變化外，更能提升台灣在長期生態與亞熱帶雨林研究之國際學術地位。



福山厥類植物區
The Fushan Fern Garden.



福山水生植物池
The Fushan Aquatic Plant Pond.



福山1號水文觀測站
No. 1 hydrological station at Fushan.



福山自然中心展示室
Display Room of the Fushan Nature Center.



福山森林動態樣區調查
Surveillance activities associated with the Fushan forest dynamics plot.

About us

This research center is located in a region straddling Taipei and Ilan Counties, at elevations of 400~1400 m. The area has an average annual temperature of 18.5°C, average rainfall of 4125 mm, and average annual relative humidity of 94.1%. The Fushan Experimental Forest is designated into 3 zones. The northernmost is a 355.7-ha headwater conservation area with a predominately natural broadleaf forest. Both Hapen and Tsukeng Creeks originate in the area. This area is maintained in its original state and is open only to various research and surveillance activities; casual visitors are not permitted to enter. The central zone is a 409.5-ha botanical garden; in addition to providing sites of research and experimentation, a relatively flat area of 30 ha is developed into an administrative complex and a plant display area. A systematic collection of endemic Taiwanese plants is cultivated for display to maximize the garden's academic research, environmental education, resource conservation, and forest recreation functions. South of the botanical garden is the 332.7-ha Hapen Nature Reserve, a proclaimed nature reserve designated by the Council of Agriculture in accordance with the Cultural Heritage Preservation Act. The purpose is to protect the natural ecosystem of this region to preserve its genetic resources, allowing for perpetual ongoing observation and research. Research focuses

Research focuses

The long-term ecological research (LTER) of Fushan

Every year, there are several LTER projects carried out at the Fushan Experimental Forest, investigating the various components of the forest ecosystem and their

functions, including biotic factors such as microorganisms, fungi, vegetation, and animals; and non-biotic factors such as light intensity, rainfall, climate, soil, nutrient salts, etc. Also examined are the long- and short-term effects of disturbance events such as typhoons and air pollution on the ecosystem, as well as the evolving successional patterns of the ecosystem. To the present, over 100 research papers have been published, and exceptionally rich basic knowledge and information have accrued which are imbued with very worthwhile academic and educational functions.

Establishment and research of the dynamic forest plot in the Fushan subtropical rainforest

The 25-ha subtropical forest dynamic plot was established in national forest, and is dedicated to long-term forest dynamic research. It is a core location for carrying out research on forest regeneration, nutrient cycling, and other related research in Fushan area. Besides helping to understand the plant community and its dynamics, these research achievements can help Taiwan gain international recognition in areas of long-term ecosystem and subtropical rainforest research.

蓮華池研究中心

Lienhuachih Research Center



中心簡介

本中心成立於1918年，原名為「藥用植物栽培試驗地」，現稱為「行政院農委會林業試驗所蓮華池研究中心」。

本中心轄有試驗林地461公頃，位於海拔576-925公尺之間，年平均氣溫21℃，年平均雨量2,200公釐，保有中部低海拔地區僅存最完整之天然闊葉樹林。

本中心轄下之畢祿溪工作站位於梨山附近，海拔2,100-3,370公尺，屬溫帶型氣候，為天然針葉林與針闊葉林之森林植群，該站主要從事中部高山試驗集水區水文及中高海拔森林生態之相關研究。

研究重點

本中心依據熱帶森林科學中心（CTFS）長期進行永久樣區研究所發展而成之作業模式，在蓮華池試驗林設置面積25公頃的蓮華池闊葉林長期動態樣區，藉由永久樣區內之木本植物普查工作，分析並了解蓮華池地區之低海拔天然闊葉林之植物社會組成與特性，所得之研究成果，可成為長期生態研究之基礎資料庫，有助於更多元化，跨學科之研究，更能提供作為發展森林生態系永續經營模式之最佳資料庫與理論根據。

目前區內之動植物相調查，計有高等植物879種、野生鳥類78種、已調查採集昆蟲蝶類標本463種、蛙類22種、蜥蜴類10種、爬蟲類11種，哺乳類10種。蓮華池擁有多樣且完整的生物相，為台

灣中部低海拔天然闊葉林的縮影。

重要研究工作如下：

- 臺灣中部森林生態及自然資源保育
- 蓮華池闊葉林長期動態樣區設置與生物資源調查
- 經濟林之試驗研究
- 杉木、肖楠、闊葉樹種、竹類等之育林研究，與熱帶樹種之引種試驗
- 森林集水區試驗研究
- 集水區水文及氣象之長期觀測與中部試驗集水區之經營管理與維護



蓮華池研究中心后崙苗圃
The Houllun Nursery of the Lienhuachih Research Center.



蓮華池研究中心辦公室。
Office building of the Lienhuachih Research Center.



蓮華池研究中心畢祿溪工作站
Bilushi Workstation of the Lienhuachih Research Center.



蓮華池研究中心肖楠木屋教室
A classroom building constructed of Taiwan incense cedar at the Lienhuachih Research Center.



珍稀植物-桃實百日青
A rare plant: the Nakai podocarp (*Podocarpus nakaii* Hay)

About us

This center was founded in 1918 as the Medicinal Plants Cultivation Experiment Field, and is now formally known as the Lienhuachih Research Center, TFRI, COA, Executive Yuan. The center oversees 461 ha of experimental forests, and is located at elevations of 576~925 m. The average annual temperature is 21°C, and average rainfall is 2,200 mm. We have central Taiwan's most intact, low-elevation natural broadleaf forests.

The Pilushi Workstation, located near Lishan with an elevation range of 2,100~3,370 m, is classified as a temperate-zone forest with flora of natural coniferous tree stands and mixed conifer-broadleaf stands. The workstation mainly undertakes hydrological research of high-montane experimental watersheds and mid- to high-elevation forest ecological studies.

Research focuses

A 25-ha Lienhuachih Broadleaf Forest Dynamic Plot was established in accordance with guidelines developed by the Center for Tropic Forest Science (CTFS) for undertaking long-term permanent plot studies. Through a general survey of woody plants in the permanent plot, the composition and characteristics of the region's low-elevation natural broadleaf forests can be analyzed and understood. The research results accrued can become a basic database of long-term ecological research and are helpful in fostering even more-diverse and interdisciplinary research that provide the best foundation and theoretical support for a sustainable management model of forest ecosystems in the region.

Current research on the fauna and flora of the region indicates that there are 879 species of higher plants, 78

species of wild birds, 463 species of insects and butterflies specimens, 22 species of frogs, 10 species of lizards, 11 species of other reptiles, and 10 species of mammals. A diverse and intact biota exists in the Lienhuachih region that is representation of central Taiwan's low-elevation broadleaf forests.

Important research topics:

- Conservation of forest ecology and natural resources in central Taiwan.
- Establishment of the Lienhuachih long-term forest dynamic plot and its biological resource study.
- Silvicultural research on China-fir, incense cedar, broadleaf trees, and bamboo, and introduction experiments of tropical tree species.
- Forest watershed experimentation research.
- Long-term observation of watershed hydrology and meteorology, and management and maintenance of central Taiwan's experimental watershed.



珍稀寄生植物-菱形奴草
A rare parasitic plant: *Mitrasemon yamamotoi*

中埔研究中心

Chungpu Research Center



中心簡介

本中心創始於民國前4年的嘉義埤子頭苗圃，從事橡膠樹繁殖試驗，幾經更迭，91年（2002）更名為林業試驗所中埔研究中心，現有研究人員5名及技工10名。主要任務為海岸環境保護林、工業區環境綠美化及都市園林營造等技術研發。

研究重點

海岸環境保護林研究

具耐鹽與抗風特性的木麻黃類為海岸人工林主要樹種，然人工純林的建造諸多問題不易解決，無法達到林分的永續生長與環境保護機能。透過原生海岸樹種與木麻黃混合造林，可改變林分結構，增強林分組織功能，同時可探討海岸林自我更新能力以解決上述問題。

環境保護林育林及作業

利用植物的特性改善及維護人類的活動環境受到重視，環境保護林兼具綠美化功能，尤其是氣候土壤環境條件極差的臨海工業區，更需要發揮植物再生能力來達成環境保護的目的。另外依環境需求選用不同的樹種運用於都市林、公園林、休閒遊憩、防災、水土保持及防風等，始能發揮樹種的特性。

植物園經營管理

轄管的山仔頂、埤子頭植物園及四湖海岸植

物園，各發展成不同類型及功能的植物園區，做為學術研究、休閒遊憩、解說教育與資源保育等多功能之展示區。研究中心設有環境保護及綠美化的展示館，發展為符合社會需求的环境教育場地及知識傳播場所。



山仔頂植物園
The Shanzhiding Botanical Garden.



四湖鹽溼地造林地
Afforestation site on the Sihhu salty wetlands.



環境保護林研究大樓
The Environmental Protection Forest
Research Building.



海欖果更新試區
A natural regeneration area of the Odollam
cerberus tree (*Cerbera manghas*).



四湖海岸木麻黃林下造林
Underplanting operation carried out at a
Casuarina stand of the Sihhu coastal forest.



海欖果母樹林
An Odollam cerberus tree (*Cerbera manghas*)
seed stand.



埤子頭植物園
The Bizihtou Botanical Garden.

About us

The forerunner of the center was a rubber tree propagation experimental site established in 1907 at the Bizihtou Nursery of Chiayi City. After several transformations, the center was named the Chungpu Research Center of the TFRI in 2002. Currently there are 5 researchers and 10 technicians affiliated with the center. The main mission of the center is to research the technologies of coastal environmental protection forests, environmental greening and beautification of industrial parks, and urban forestry.

Research focuses

Coastal protection forestry

The major tree species planted in the coastal plantations are salt-tolerant and wind-resistant *Casuarina* spp. However, several problems associated with the construction of pure man-made forests are difficult to resolve, causing them to fail to achieve sustainable stand growth and an environmental protection function in the long run. Through mixing several endemic coastal tree species with *Casuarina* spp. for afforestation, the structure of the forest is modified and stand component functions are enhanced; at the same time, these practices allow investigations of the regeneration capability of coastal forests and the resolution of the aforementioned problems to be carried out.

Silviculture and operations of environmental protection forests

With importance placed on utilizing the characteristics of plants to improve and maintain spheres of human activities, environmental protection forests also

serve to green and beautify our environments. Particularly in coastal industrial parks often with extremely poor soil and climate conditions, the regenerative capability of the plants is vital to environmental protection purposes. In addition, different tree species are selected based on their special adaptability to urban areas, parks, recreational sites, disaster prevention, soil and water conservation, and windbreaks, to allow them to fully exert their unique characteristics.

Botanical garden management

The Shanzihding and Bizihtou Botanical Gardens, and the Sihhu Coastal Botanical Garden overseen by the center each has developed its own style and function, and has become a display area used for academic research, recreation, education, and natural resource conservation. The center has established an environmental protection and greening exhibition hall as well, providing a venue for environmental education and extension of knowledge that conforms to society's needs.



木賊葉木麻黃國際種源試區
International provenance trial site of she-oak trees (*Casuarina equisetifolia*).

六龜研究中心

Liouguei Research Center



中心簡介

民國15年（1926），日本京都帝國大學在高雄六龜地區設立「台灣演習林」；民國35年（1946）由台灣行政長官公署接收，成立「第二模範林場」；民國37年（1948）歸併於高雄山林管理所；民國38年（1949）復將有關金雞納事業部分劃歸本所設立試驗中心，並於翌年成立「金雞納試驗場」；民國53年（1964）改稱為「六龜分所」；民國91年改稱「六龜研究中心」。本中心轄有試驗林地9,882公頃，位於海拔250~2,600公尺之間，年平均氣溫扇平為24°C，年平均雨量為3,400公厘，為熱帶、溫帶樹種育苗造林試驗之最適環境。主要建物有辦公室、溫室、苗圃、工作室、森林生態保育館、林業會館、教育推廣中心、倉庫及宿舍等。

六龜研究中心轄區內之工作站：

- 扇平工作站
- 鳳崗山工作站
- 多納工作站

研究重點

自然生態環境

六龜試驗林位於台灣南部，面積9,882公頃，海拔250~2,600公尺間，屬荖濃河流域，森林組成樹種以樟科及殼斗科為主。人工林面積1,560公頃，主要造林樹種為台灣杉、香杉、紅檜、牛樟、烏心石、

台灣櫟、光臘樹及台灣赤楊等，均為重要之臺灣原生針闊葉樹種。

人文社會經濟

六龜試驗林屬於高雄縣茂林鄉，轄區內有茂林、萬山及多納村，擁有豐富景觀遊憩價值之資源，族群以排灣及魯凱族為主，為典型之農村社會，轄區與六龜鄉之關係相當密切，故本試驗林經營計畫之編定，亦將此鄰近地區之經濟與社會層面需求納入考量。

試驗研究方面

- 建構森林生態系的經營理論
- 森林生態系永續經營體系之建立
- 台灣南部經濟樹種之選育及育林技術研究



進行光度試驗用之溫室
A greenhouse for light-intensity experiments.



研究中心辦公室
Office building of the Liouguei Research Center



林業教育推廣中心
The Forestry Education Extension Center.



林業會館
The forest hostel.



扇平竹類標本園
The Shanping Bamboo Specimen Garden.



苗圃
A nursery.

About us

In 1926, the Imperial Kyoto University of Japan established a Taiwan Experimental Forest in the Liouguei area of Kaohsiung County. Since being taken over by the Taiwan Administrative Office in 1946, it became the Second Model Forest, and in 1948 merged with the Kaohsiung Mountain and Forest Administration. In 1949, the portion of the cinchona work component became an experimental center of the TFRI, and was named the Cinchona Experimental Field in 1950, and the Liouguei Branch in 1964. It was renamed the Liouguei Research Center in 2002. The center oversees a 9,882-ha experimental forest with an elevation range of 250~2,600 m. The average annual temperature is 24°C, and the average annual rainfall is 3400 mm at the Shanping Workstation. It is an optimal place for silvicultural experiments with tropical and subtropical tree species. Main buildings in the center include offices, greenhouses, nurseries, workshops, a Forest Ecological Conservation Hall, forestry hostels, a Forestry Education Extension Center, storehouses, and dormitories.

Workstations under the Liouguei Research Center

- Shanping Workstation
- Fengkangshan Workstation
- Duona Workstation

Research focuses

Natural ecological environment

The Liouguei Experimental Forest, a 9,882-ha reserve in southern Taiwan, at elevations of 250~2,600 m, is a part of the Laonong River drainage system. The

forest composition is dominated by trees of the *Lauraceae* and *Fagaceae*. On its 1560 ha of plantations, the major tree species are Taiwan-fir (*Taiwania cryptomerioides*), Luanta-fir (*Cunninghamia konishii*), Taiwan red cypress (*Chamaecyparis formosensis*), stout camphor tree (*Cinnamomum kanehirae*), Formosan michelia (*Michelia formosana*), Taiwan zelkova (*Zelkova serrata*), Formosan ash (*Fraxinus griffithii*), and Formosan alder (*Alnus formosana*), all of which are important endemic conifer and broadleaf species of Taiwan.

Cultural, social, and economic aspects

The Liouguei Experimental Forest is located in Maolin Township, Kaohsiung County, and encompasses the 3 villages of Maolin, Wanshan, and Duona. These sites are endowed with rich resources for scenery, recreation, and tourism. The main aboriginal groups in the area are the Paiwan and Rukai indigenous tribes with typical agrarian societies. The communities also have strong links with Liouguei Township; hence in planning for the management of the experimental forest, we took the economic and social needs of these neighboring areas into consideration.

On-site research topics

- Develop management theories for forest ecosystems.
- Advance technologies for sustainable management of forest ecosystem.
- Select and breed economically important forest trees from southern Taiwan and conduct silvicultural research.

恆春研究中心

Hengchun Research Center



中心簡介

本中心之發展肇始於日本據台時期，於台灣總督府殖產局下轄有鵝鑾鼻庄龜仔角、港口庄、豬勞束（里德）及高士佛等四個區域並分設為母樹園，其後，於龜仔角試驗區設置辦公室，並於四周設熱帶經濟植物之標本園並附設苗圃，為恆春熱帶植物園的前身。

本中心所轄試驗林位處恆春半島，是本所所轄區域位置最南之研究中心。區內天然景物及歷史遺跡甚多，峭壁巉巖，隨處可見珊瑚礁岩及鐘乳石，珊瑚礁海岸林極為茂盛，生物資源豐富。因所處緯度較低，鄰近南亞生物區系，本中心設置之龜仔角及港口苗圃肩負有蒐羅恆春半島、綠島及蘭嶼地區特有物種之保育任務。

研究重點

熱帶植物園之經營研究

熱帶植物種子研究和國際種子之交換：植物種子採集對象以恆春半島和綠島、蘭嶼等地為主，目前種子採集年目標訂為100種。

標本館之經營管理：現已歸檔之標本約5,000份，預定年目標為300種6,000份標本。

自然教育之推廣：製作之各種解說資料及植物園區各型之解說牌，並設有解說志工團，提供免費的解說導覽服務。

植物園展示區之經營管理：本園區目前共計有17個植物展示區以為研究、保育及教育所用。展示

區中設置步道、植物解說牌及適量之休憩設施。

試驗林經營管理

本中心所轄試驗林地共870公頃，包含辦公廳舍、恆春熱帶植物園、墾丁高位珊瑚礁自然保留區、龜仔角苗圃、港口苗圃、里德苗圃及各試驗林區等。所設之苗圃，為配合委託育苗計畫、稀有特有物種蒐集及植物園經營計畫之苗木培育場所。各試驗林區提供各研究單位及大專院校進行試驗及研究計畫。墾丁高位珊瑚礁自然保留區內設有長期動態樣區10公頃，研究方法比照國際共同標準進行林分動態長期監測，並做為熱帶地區跨國之研究交流。



水生植物展示區
The aquatic plants display zone.



恆春高位珊瑚礁原始林
A natural forest of the Hengchun
uplifted coral reef.



植物園區內的野生獼猴
Wild macaque monkeys frolicking in the Hengchun
Tropical Botanical Garden.



全台最大的板根—銀葉樹
The largest buttress tree roots in Taiwan: the looking-
glass tree (*Heritiera littoralis*).



稀有樹種—恆春哥納香
A rare and endangered tree
species: *Goniothalamus*
amuyon Merr.

About us

The research center was founded during the Japanese occupation period under the auspices of the Regenerative and Products Bureau of Taiwan Governor-General's Office (Taiwan Sotokufu Minseibu Shokusankyoku). The bureau established a seed orchard in each of its 4 jurisdictions: Gueizihjiao at Erluanbi Village, Gangkou Village, Chulaoshu (Lideh), and Gaoshifo; and set up an office at Gueizihjiao. Around the office there were many specimen gardens and nurseries for tropical economic plants, which was the forerunner of today's Hengchun Tropical Botanic Garden.

The experimental forest of the Hengchun Research Center is located on the Hengchun Peninsula and is the southernmost research center under TFRI's jurisdiction. This area is replete with many natural sceneries and historical relics; there are steep cliffs and jagged terrains; uplifted coral reefs and stalactites are common sights. The coastal forests on the uplifted coral reefs are exceptionally lush and rich in bioresources. Due to its low latitudes and close proximity to the South Asian Biome, the research center endeavors to collect and conserve endemic plant species from the Hengchun Peninsula, Green Island, and Orchid Island in its Gueizihjiao and Gangkou Nurseries.

Research focuses

The Hengchun Tropical Botanical Garden

The garden researches tropical plant seeds and engages in international seed exchanges. Seeds are collected primarily from the Hengchun Peninsula, Green Island, and Orchid Island. The goal is to collect seeds of 100 different species per year.

Management of the specimen gallery: At present, there are about 5,000 sorted specimens kept on file. We have a target of an annual increment of 6,000 pieces from 300 different species.

Extension of nature education: The center disseminates various explanatory materials and posts interpretive signs in the botanical garden and offers free interpretive tour services to visitors through volunteer interpreters.

Management of the display zones in the botanical garden: In total, 17 plant display zones currently exist in the botanical garden dedicated to research, conservation, and educational purposes. In the display zones, there are walking trails, plant information signs, and suitably placed recreational facilities.

Management of the experimental forest

The center oversees an 870-ha experimental forest including office buildings, the Hengchun Tropical Botanical Garden, the Kenting Uplifted Coral Reef Natural Reserve, Gueizihjiao Nursery, Lideh Nursery, and other experimental forest sites. The nurseries endeavor to raise seedlings on a contractual basis and collect rare endemic plant species, as well as supply seedlings needed for the botanical garden management plan. The experimental forest sites, on the other hand, offer the research units and universities places to conduct experiments and research projects. A 10-ha long-term dynamic plot was established inside the Kenting Uplifted Coral Nature Reserve to conduct long-term monitoring of stand dynamics in accordance with common international protocols. The research results from the plot can be used for multinational research exchange purposes of tropical forestry.

太麻里研究中心

Taimalee Research Center



中心簡介

太麻里研究中心設立於1933年，當時是中央研究所林業部於台東設置的『藥用植物試驗場』，專門從事金雞納樹之育苗造林試驗；1939年改隸林業試驗所，稱為『麻里蒲蘆支所』；1945年光復後定名為『太麻里分所』；並於2002年改名『太麻里研究中心』。本中心目前轄有試驗林地974公頃，位於海拔90-1,450公尺之間，年平均氣溫24℃，年平均雨量1,800公釐，為特用植物、海岸林及闊葉樹種選育之最佳試驗場所；主要建築物有辦公室一棟、溫室、苗圃、倉庫及宿舍等。

研究重點

太麻里研究中心的研究以經濟及特用樹種之培育為主，目前重要的研究方向為紅豆杉培育、牛樟種源保存及人工林經營。

紅豆杉是台灣原生紅豆杉科植物，其枝葉可用於提煉抗癌藥物-紫杉醇。本研究中心與本所育林組共同合作進行紅豆杉的栽植與生產，主要栽植區位於本研究中心第一林區，用以生產紅豆杉枝葉，並於本研究中心進行枝葉粉碎與乾燥前處理等工作。

牛樟是台灣特有種樟科植物，其木材紋理細緻美觀，且具有芳香的精油味，在工藝及家具利用上有很高的經濟價值。本中心轄區內有牛樟天然林分布，並在第一工作站設置牛樟種原保存區，保存珍貴太麻里牛樟母樹種原。另外本中心

自1998年起在第一及第二林區進行牛樟的造林試驗調查，可提供牛樟造林撫育及經濟利用的重要資訊。



溫室
A greenhouse.



紅豆杉栽植區
Planting area of Taiwan yew trees. (*Taxus sumatrana* Miq.)



研究中心辦公大樓
The office building of the research center.



牛樟種原保存區
Stout camphor parent tree (*Cinnamomum kanehirae*) reserve.

About us

The Taimalee Research Center was established in 1933 by the Forestry Department of the Central Research Institute in Taitung as the Medicinal Plants Experimental Field specifically for the cultivation and afforestation of cinchona trees. In 1939, it was transferred to the Forestry Research Institute, and was called Malipulu Branch. In 1945, after the retrocession of Taiwan, the name was changed to the Taimalee Branch; and in 2002, renamed the Taimalee Research Center. The center has jurisdiction over 974 ha of experimental forest, which is situated at 90~1,450 m in elevation with an average annual temperature of 24°C, and an average annual rainfall of 1800 mm. The forest is most suitable for the selective growing of coastal and broadleaf trees. The major buildings include an office, greenhouses, nurseries, storehouses, and dormitories.

Research focuses

The most important objective of the center is to cultivate and breed certain economically important and specialty plants. At the moment, research is focused on the cultivation and breeding of Taiwan yew, (*Taxus sumatrana* Miq.) preservation of stout camphor parent trees, and management of plantations. Taiwan yew is an endemic yew tree in Taiwan, the branches and leaves of which can be extracted to provide taxol, a well-known anticancer drug. The center cooperates with the Silviculture Division to cultivate and produce branch and leaf materials of Taiwan yew trees from a planting site center in the first compartment. The harvested materials are further pretreated by pulverizing and drying them at the center facilities.

Stout camphor tree (*Cinnamomum kanehirae*) is an indigenous tree of the *Lauraceae* with a delicate and appealing wood grain and essential oil having a fragrant odor with high economic value in making artifacts and furniture. This tree is naturally distributed in forests of the research center, and a stout camphor parent tree reserve was established in the First Workstation to protect the precious Taimalee stout camphor mother trees. Since 1998, the center has also undertaken afforestation experiments of stout camphor trees (*Cinnamomum kanehirae*) in the first and second compartments of the experimental forest to provide important information regarding silvicultural practices and economic utilization of this valuable tree species.



牛樟造林地
A plantation of stout camphor trees.



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