

LanYang Museum of Yilan County

檜意人森—Cypress special exhibition

Exhibition script



Curating unit : Department of Forestry and Natural Resources
of National Ilan University

May of 2015

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壹、計畫緣起

檜木為台灣扁柏屬(*Chamaecyparis*)植物統稱，現存分布於太平洋兩側之北美、日本及台灣，共有六種及一變種，台灣包括紅檜(*Chamaecyparis formosensis*)及台灣扁柏(*Chamaecyparis obtusa* var. *formosana*)兩種，為本屬物種分佈之南界，為台灣檜木在世界台灣扁柏族群中具其演化分布之物種特殊性。台灣檜木主要分布於全台約海拔 800~2600 m 的雲霧帶之中高海拔針闊葉林，台灣檜木樹形優美、高大通直之長壽命針葉樹種，形成檜木林中為主要優勢樹種，擁有著各式各樣的附生、伴生植物，形成豐富多樣的森林生態系統。而紅檜與台灣扁柏不論在林木生長特性及生育習性亦有差別。此外，檜木因材質佳、通直、耐腐朽及抗蟲等優點，是具高經濟價值樹種，並列為台灣貴重針葉五木之一。因此台灣檜木資源在歷經近百年的開發利用，包括台灣三大主要林場如阿里山、八仙山及太平山林場，均是以檜木利用而與地方產業發展與生活文化息息相關，所形成檜木產業與文化，在黃春明的鄉土文學小說裡對羅東文化與太平山林場檜木就有深刻的描述。

台灣天然林不斷遭受破壞，衍生社會大眾對生態環境與生物保育的重視，台灣林業的發展對森林資源的利用已由過去的掠奪式經營改變為保育式的永續經營，森林經營政策實施目標亦由林木利用調整為維護森林生態系功能之完整，如何維護台灣重要的檜木資源永續管理，已是全民關心的重要議題。

本檜木特展的企劃構想，將以台灣檜木林的物種特性與生態特徵展現其價值，包括檜木分布、檜木林生態系及檜木生長形態特徵與生活史，檜木產業文化演變，檜木資源保育等主題等進行軸線撰寫腳本，並依主題腳本內容建議展示題材，展示則以靜態及動態模式搭配現場解說教育方式提供策展單位設計與製作，以達檜木特展的功能與社會推廣教育的功能。

Part One Origin of project

The cypress is a general term for *Chamaecyparis* (*Chamaecyparis*), which are distributed on both sides of Pacific including North America, Japan and Taiwan, and there are six species and one variety now. Taiwan has two kinds of the cypress, one is Taiwan red cypress, benihi (*Chamaecyparis formosensis*) and the other is Taiwan false cypress, hinoki, (*Chamaecyparis obtusa* var. *formosana*), those are the southernmost distribution of *Chamaecyparis* population. The evolution and distribution of Taiwan cypress displayed the species specificity in cypress of the world?. Taiwan cypress mainly distributed in cloud forest belt, medium-high altitude coniferous-broadleaf forest at an altitude from 800 to 2600 meters. With the graceful, tall, and straight tree-form, Taiwan cypress is longevous coniferous species and thus become the dominant

tree species in the forest. Because of having all kinds of epiphytic and companion plants, they formed an abundant and diverse forest ecosystem. However, the growth characteristics and habits are difference between Taiwan red cypress and Taiwan false cypress. Furthermore, the material of cypress is good, straight, decay resistant and insect resistant so the cypress wood has a high economic value and are recommended as the five precious coniferous species of Taiwan. Therefore, the resources of Taiwan cypress after nearly a century of exploitation, including Taiwan three main forest stations as Alishan, Basianshan, and Taipingshan Forest Station, were based on the use of cypress to be related to the development of local industries and culture of life. About that cypress industry and culture, the Chun-Ming Hung's local literary fiction has been described profoundly for Luodong culture and Taipingshan Forest Station.

The natural forests of Taiwan were destroyed continuously so that the public paid attention to ecological environment and biological conservation. The development of Taiwan forestry for the utilization of forest resources has been changed from exploitation management to conservation and sustainable management. The implementation goal of forest management policy also adjusted the forest utilization to maintain the entire function of forest ecosystem. How to preserve the major cypress resources of Taiwan and sustainable management that is an important issue of national concern.

The planning idea of this cypress special exhibition will show the worth of Taiwan cypress forest with species characteristics and ecological features. The main axis of script is composed of several subjects including the distribution of cypress, the ecosystem of cypress forest and the morphological characteristics of cypress growth and life history, the evolution of industrial culture of cypress, and the conservation of cypress resources, etc. and the subjects are exhibited according to the recommended script contents. Using the mode of static and dynamic model combined with live commentary education provided to the curating unit to design and produce the exhibition for the functions of cypress special exhibition and social extension education.

貳、計畫構想

主要展示台灣檜木及檜木林生態的相關標本、照片、模型等素材，將近年來研究成果淺白以圖文說明，並設計互動展覽，使民眾彷彿進入檜木林般與檜木親近。並從人文歷史及自然生態部分認識檜木。展覽主軸為：從自然角度介紹檜木差異及生長繁殖特性，再擴大到檜木林的生態與特色，由森林的生態導入宜蘭經由檜木產生的文化與人文影響，最後聚焦在三大檜木林場中的太平山林場百年演變，讓民眾了解檜木文化

在百年來的轉化與蛻變。

Part Two Idea of project

The exhibition mainly displayed the related specimens, photographs, models and so on of Taiwan cypress and cypress forest ecology. To show the recent study achievements in plain graphic description and to design interactive exhibition make public seem close to the cypress as into the forest and understand the cypress from human history and natural ecology.

Mainly axis of exhibition is: from the natural perspective to introduce the differences of cypress and the characteristics of growth and reproduce, and then extended to the ecology and characteristics of cypress forest. Through the forest ecology to expand the culture and human impact of Yilan were produced by cypress, and finally to focus on the centurial evolution of Taipingshan Forest which is one of the three main cypress forest station let public understand the transformation and metamorphosis of cypress culture over the century.

Part Three Items of project

The items of this special exhibition contained display, promotion of ecotourism, and propaganda of locally ecological education that is illustrated respectively as follows:

I. Exhibition

1. The concept of exhibition :

The relationship between cypress and Taiwanese was changed considerably from Japanese colonial period up to now. The early economic activity of logging was shifted to ecotourism and environmental protection at present. This exhibition is divided into two parts to introduce Taiwan cypress. The part of natural ecology is introduced the ecology of Taiwan cypress forest and the particularity of cypress. The other part of human culture is introduced the change of cypress culture in Yilan through the ages, and by a variety of exhibits to interact with public achieved the purpose of subject "檜意人森".

2. Time of exhibition (provisional): 2015/7/27 (Mon.) -2015/12/7 (Mon.)

3. Place of exhibition: Lanyang museum special exhibition room

4. The content of exhibition:

(1) The display in entrance: To make a cypress tree hole with the art materials is set in the entrance, and let the visitors to enter the exhibition through it.

(2) Space planning of special exhibition room:

The exhibition is divided into four subject areas: 1. Species and distribution of cypress (From the world to see Taiwan), 2. Taiwan cypress forest

ecosystem, 3. Growth of Taiwan cypress, 4. Industrial culture and sustainable resources.

The exhibition is showed in wall charts, movable billboards, and physical models. All of the exhibits can be disassembled easily for transportation. And there are living shows, interactive zone, and film screening area. The layout of exhibition and the visit moving lines are as Figure II. After visiting the subject A, the tourists can visit clockwise or counterclockwise in order. Each subject had a linked item with next one.

參、計畫項目

本特展展示項目包含展示、推廣生態旅遊與在地生態教育宣導，分別說明如下：

一、展示

(一)展示構想：

檜木與台灣人之關係，從日治時期至今有相當大的變化，從早期的伐木的經濟活動轉變成如今的生態旅遊及環境保護為主。本展覽主要分為兩部分介紹台灣檜木，自然生態部分介紹台灣檜木林生態及檜木之特殊性，人文文化部分介紹古往今來宜蘭對於檜木文化的轉變，並以多樣化的展品與民眾互動，達到主題『檜意人森』的目的。

(二)展覽時間(暫定): 2015年7月27日(一)~2015年12月7日(一)

(三)展示地點：蘭陽博物館特展室

(四)展示內容：

(1)入口展示：在展場入口處以美工材料製作檜木樹洞，讓參觀者穿越樹洞進入展場。

(2)特展室空間規劃

展示共分四大主題區：一、檜木種類及分布(從世界看台灣)；二、檜木林的生態系；三、檜木生活史；四、產業文化與永續資源。以掛圖、活動看板、實物模型展示。展品皆可輕易拆卸運輸。另設有活體展示、互動區與影片放映區。展場布置與參觀動線如圖二。遊客由主題一參觀後可往順時針方向與逆時針方向順序參觀，每個主題皆設有與下一主題連結之項目。

Part Three Items of project

The items of this special exhibition contained display, promotion of ecotourism, and propaganda of locally ecological education that is illustrated respectively as follows:

II. Exhibition

5. The concept of exhibition :

The relationship between cypress and Taiwanese was changed considerably from Japanese colonial period up to now. The early economic activity of logging was shifted to ecotourism and environmental protection at present. This exhibition is divided into two parts to introduce Taiwan cypress. The part of natural ecology is introduced the ecology of Taiwan cypress forest and the particularity of cypress. The other part of human culture is introduced the change of cypress culture in Yilan through the ages, and by a variety of exhibits to interact with public achieved the purpose of subject "檜意人森".

6. Time of exhibition (provisional): 2015/7/27 (Mon.) -2015/12/7 (Mon.)

7. Place of exhibition: Lanyang museum special exhibition room

8. The content of exhibition:

(1) The display in entrance: To make a cypress tree hole with the art materials is set in the entrance, and let the visitors to enter the exhibition through it.

(2) Space planning of special exhibition room:

The exhibition is divided into four subject areas: 1. Species and distribution of cypress (From the world to see Taiwan), 2. Ecosystem of cypress forest, 3. Growth of cypress, 4. Industrial culture and sustainable resources. The exhibition is showed in wall charts, movable billboards, and physical models. All of the exhibits can be disassembled easily for transportation. And there are living shows, interactive zone, and film screening area. The layout of exhibition and the visit moving lines are as Figure II. After visiting the subject A, the tourists can visit clockwise or counterclockwise in order. Each subject had a linked item with next one.



Figure II. The layout of exhibition and the visit moving lines

(3) The content of exhibition:

A. Subject 1: Species and distribution of cypress

The purpose of exhibition: From the distribution of cypress in the world, let public understand deeply the distribution of cypress in Taiwan.

A1: The distribution of cypress in the world

A2: And the distribution of cypress in Taiwan

B. Subject 2: Taiwan cypress forest ecosystem

The purpose of exhibition: The specialty and the species richness of cypress forest in Chilanshan area are introduced with the last cypress scene of Yilan in subject1, and then gave an example of Chilanshan to introduce the cypress ecosystem. With analog forest to understand the ecological characteristics of cypress forest, and by various markers to introduce the species and the environment of cypress forest let visitors enter into B area as in cypress forest.

B1: The potential points of Taiwan in world heritage

B2: Cypress forest soil

B3: The Taiwan cypress forest ecosystem -animals and plants

B4: The Taiwan cypress forest ecosystem -second generation cypress

B5: The companion rare plants

B6: Three-dimensional bird's-eye view of cypress forest

B7: Ecology videos

C. Subject 3: Life history of cypress

The purpose of exhibition: The life history of cypress is introduced by means of the presentation of cypress forest or wood. The differences between Taiwan Red cypress and Taiwan Yellow cypress, and the characteristics of life reproduction are described comprehensively.

C1: Taiwan Red cypress VS Taiwan Yellow cypress

C2: The reproduction of cypress

C3: The growth of the Taiwan Red cypress and Taiwan Yellow cypress

C4-1: Tree ring generation

C4-2: Tree rings and climate change

C4-3: Forest management and carbon sequestration

C5: The characteristics of cypress wood

D. Subject 4: Industrial culture and sustainable resources

The purpose of exhibition: The industrial culture of cypress is gotten into this subject via the cultural scenes of cypress in Subject 1 or tree ring and history. That introduced the cultural history of Luodong in Yilan which was driven by cypress industry mainly in Taipingshan, and the characteristics of cypress wood. By the forestry change through the ages, let us understand that human

transformed the use of cypress forest to protect and restore the cypress.

D1: Annual rings and history

D2: Cypress and Yilan

D3-1: Information regarding planning station routes and lesson plans about
cypress ecological culture tours in the Lanyang area.

D3-2: Cultural and creative products

D4: The crisis and conservation of cypress



各展區展示內容如下表：

A. 主題一、檜木種類及分布

展區	主題	Subject	意象	內容	Content	展示方式	展具	圖片/模型/標本
A1	目前世界檜木分布	The distribution of cypress in the world currently	以世界地圖模型使參觀者可以了解世界檜木種類及台灣本土檜木之分布。	<p>扁柏屬 (<i>Chamaecyparis</i>) 是柏科下的一屬，本屬可分為六種一變種。扁柏屬植物具有的濃鬱香氣、防蟲性佳、不易腐朽等極佳的木材特性，為高經濟價值樹種。</p> <p>(1) 日本花柏 (Japanese False Cypress, Sawara 學名： <i>Chamaecyparis</i></p>	<p>Chamaecyparis is one of the genres of Cupressaceae, which can be divided into six species and one variant. The plants of Chamaecyparis have many excellent properties, including rich fragrance, insect resistance, decay resistance, and of high economic worth.</p> <p>(1) Japanese False Cypress, Sawara Scientific name:</p>	1. 以大型輸出海報製作看板展示七種檜木與世界各地分布範圍，並以翻牌展示各種類照片及簡介。示意圖請見附件一。	海報，解說板	<p>世界不同種類檜木之相片 A1P1 日本花柏 The photos show different types of cypress in the world. A1P1 Japanese False Cypress</p>  <p>A1P2 日本扁柏 A1P2 Japanese cypress</p> 

			<p><i>pisifera</i>)</p> <p>分佈：日本本州北部至九州北部海拔 300~2600 公尺山區。</p> <p>(2)日本扁柏、黃檜 (Japanese cypress, Hinoki cypress, Hinoki cypress, Hinoki falsecypress)</p> <p>學名：</p> <p><i>Chamaecyparis obtusa</i></p> <p>分佈：日本本州中部以南海拔 80~2500 公尺山區。</p> <p>(3)美國側葉扁柏、大西洋雪杉、雪松、尖葉扁柏 (Atlantic White</p>	<p><i>Chamaecyparis pisifera</i></p> <p>Distribution: In the mountain areas of Japan north of Honshu to north of Kyushu at elevations between 300 and 2600 meters.</p> <p>(2) Japanese cypress, Hinoki cypress, Hinoki falsecypress</p> <p>Scientific name: <i>Chamaecyparis obtusa</i></p> <p>Distribution: In the mountain areas, south of central Honshu in Japan at elevations between 80 and 2500</p>		<p>A1P3 美國側葉扁柏 A1P3 Atlantic White Cypress</p>  <p>A1P4 羅森檜 A1P4 Lawson's cypress</p>  <p>A1P5 加拿遜扁柏 A1P5 Alaska yellow-cedar</p> 
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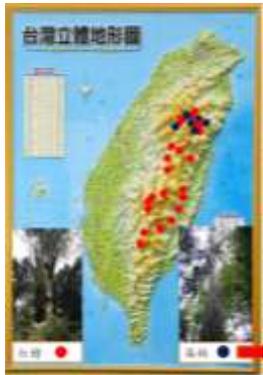
			<p>Cypress) 學名：<i>Chamaecyparis thyoides</i> 分佈：美國東部大西洋海岸邊，屬平地分佈物種，常生於沼澤地或濕地等環境。</p> <p>(4)羅森檜、美洲花柏 (Port Orford-cedar, Lawson's cypress) 學名：<i>Chamaecyparis lawsoniana</i> 分佈：美國加州西北部太平洋沿岸、俄勒岡州西北部，海拔1500~2000公尺，</p>	<p>meters. (3) Atlantic White Cypress Scientific name: <i>Chamaecyparis thyoides</i> Distribution: The eastern United States. This species is distributed in the plains and often grows in swamps or wetlands.</p> <p>(4) Port Orford-cedar, Lawson's cypress Scientific name: <i>Chamaecyparis lawsoniana</i> Distribution: The Pacific coast of</p>			<p>A1P6 台灣扁柏 A1P6 Taiwan false cypress</p>  <p>A1P7 紅檜 A1P7 Taiwan red cypress, benihi</p> 
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				<p>喜山坡或峽谷。主要分布於地形起伏之沼澤地。</p> <p>(5) 加拿遜扁柏、阿拉斯加黃杉 (Alaska yellow-cedar) 學名：<i>Chamaecyparis nootkatensis</i> 分布：原生於北美洲西岸，從阿拉斯加南部的奇奈半島 (Kani Peninsula) 至加州最北端。</p> <p>(6) 台灣扁柏、厚殼仔、黃檜(Taiwan Hinoki, Taiwan Yellow False cypress) 學名：<i>Chamaecyparis</i></p>	<p>northwestern California in United States, and northwestern Oregon. At elevations between 1500 and 2000 meter. This species likes hillsides and valleys, and is mainly distributed in rippling swamps.</p> <p>(5) Alaska yellow-cedar Scientific name: <i>Chamaecyparis nootkatensis</i> Distribution : Originally along the western coast of Northern America</p>			
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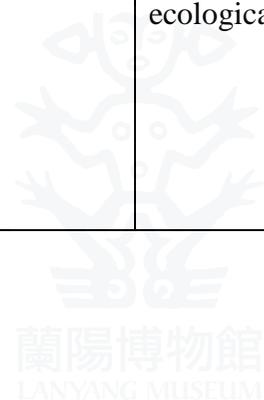
				<p><i>obtusa</i> var. <i>formosana</i> 分佈:臺灣中北部海拔 1300~2600 公尺山區。 (7) 紅檜、松蘿、薄皮、水古杉 (Benihi, Taiwan Red cypress) 學名 <i>Chamaecyparis formosensis</i> 分佈:臺灣全島 800~2200 公尺之山區</p>	<p>and from the Kani Peninsula of southern Alaska to the northernmost tip of California. (6) Taiwan Hinoki: Taiwan False cypress, Yellow cypress Scientific name: <i>Chamaecyparis obtusa</i> var. <i>formosana</i> Distribution: The mountain areas of north central Taiwan at elevations between 800 and 2200 meters. (7) Benihi, Taiwan Red</p>			
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					<p>cypress</p> <p>Scientific name:</p> <p><i>Chamaecyparis</i> <i>formosensis</i></p> <p>Distribution: All Taiwan's mountains at elevations between 800 and 2200 meters.</p>			
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展區	主題	Subject	意象	內容	Content	展示方式	展品圖片/模型/標本
A2	台灣檜木分布	Distribution of Taiwan cypress	從世界地圖拉回台灣讓參觀者了解台灣檜木在哪裡生長。	<p>紅檜及台灣扁柏分布</p> <p>檜木分布在中海拔的山谷至山腰之針闊葉林，雲霧繚繞之霧林帶地區，這些地方終年雲霧繚繞，被稱為霧林帶，也因為是檜木主要的生長區域，因此又被稱為「檜林帶」。</p> <p>目前台灣檜木林，由於紅檜與台灣扁柏生態習性不同，台灣扁柏族群主要在台灣北部，而中南部則以紅檜較多，所以有「北台灣扁柏、</p>	<p>The distribution of Taiwan Red cypress and Taiwan False cypress</p> <p>The cypress is distributed in coniferous-broadleaf forests at mid-elevation valleys to hillsides. These areas are misty throughout the year, so are called cloud forest belts. When an area consists of mainly cypress growth, it is also called a “cypress belt”.</p> <p>For Taiwan cypress distribution, people often say that “the</p>	<p>以台灣立體模型使參觀者可以了解台灣本土檜木分布範圍及海拔高度，同時介紹分布之特色。</p> 	<ol style="list-style-type: none"> 立體台灣地圖模型：廠商製作 The model of three-dimensional Taiwan map: produced by manufacturer 照片 Photos A2P1 台灣扁柏 A2P1 Taiwan false cypress 

				南紅檜」之說。	Taiwan False cypress is distributed in the north and the Taiwan Red cypress is found in the south”. Because the two Taiwan cypress species have different ecological habits.		A2P2 紅檜 A2P2 Taiwan red cypress, benihi 
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B. 主題二、檜木林生態

展區	主題	Subject	意象	內容	Content	展示方式	展品圖片/模型/標本來源
B1	檜木林生態－台灣世界遺產潛力點	The Taiwan cypress forest ecosystem -the potential point of Taiwan in world heritage	由 A2 山檜木林的世界，並介紹台灣檜木林作世界遺產潛力點之特色。	你的眼神望向炭火煙燻泛黑的松木火柱 那是太陽高掛雲層閒散的季節 二千公尺海拔溪澗漂流的饋贈 水鹿在檜木林環繞的山脈啃食青綠嫩芽 山豬露出獠牙跌竄小木屋附近的芋葉田 台灣世界遺產潛力點 宜蘭棲蘭山區蘊藏著全臺灣尚存的原始巨型台灣檜木天然林，不僅是世界古地史殘存的珍稀林相，其獨特的生態系統和完整的基因庫，更是提供地球生物在冰河	As you look upon the burned black pines,during the season which the sun is suspended above the clouds. It is a gift drifting in the stream at an-elevation of 2000 meters. Sambars graze upon the green shoots in the mountains surrounded by cypress forest. Wild boars expose their tusks and stampede on the taro field near the log cabin. --- the potential point of world heritage in Taiwan	掛圖及海報 說明棲蘭山特色	1. 海報：廠商製作 Posters produced by manufacturer  2. 棲蘭山風景照片 Photo of Chilanshan B1P1 棲蘭山檜木林相 B1P1 Chilanshan cypress forest 

			<p>時期大遷徙的解謎關鍵，以及研究自然演替、復育的大本營。</p>	<p>The Chilanshan area in Yilan has the last pristine giant natural forest of Taiwan cypress. It is not the only remaining pristine forest in the world, but its unique ecosystem and complete gene pool provides a key to the puzzle of earth organisms during the Great Migration of the Ice Age, and is an important place for studying natural evolution and restoration.</p>	<p>B1P2 棲蘭山檜木神木 B1P2 Chilanshan' s “divine” cypress tree</p> 
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B2	檜木森林土壤	Cypress forest soil	<p>介紹檜木森林土壤之特別處與形成原因。</p>	<p>檜木林土壤 冷濕之檜木林中土壤淋洗作用極緩慢，上層土壤礦物成分氧化鐵還原為二價鐵成鐵灰色之洗出層(E層)，經淋洗至下方。洗出層之鐵離子經氧化、結膠在洗入層(B層)，形成薄膠層(Bsm)。</p> <p>薄膠層緻密不透水，當然也影響到水的通透性。堅實的層次結構，對於檜木的根部而言，形成穿透的障礙。同時檜木根系為淺根性，不易從更深的土層中獲取養分，也無法深入土層來強化支撐功能，致時有風倒發生。</p>	<p>Cypress forest soil The leaching effect is extremely slow in wet and cold soils. The mineral composition of the upper soil is divalent iron reduced from iron oxide and the wash-out layer (E layer) is iron gray as a result of leaching to below. The wash-out layer is oxidized and gummed at the illuvial layer (B layer) to form a thin layer (Bsm). The thin layer is dense and impermeable, affecting the permeability of the soil. The solid gradation structure of cypress roots is a barrier to</p>	<p>由真實土壤剖面來解說檜木林特殊土壤結構，與其他土壤不同之處。</p>	<ol style="list-style-type: none"> 1. 解說牌：廠商製作 Interpretive board: produced by manufacturer  2. 土壤標本 B2S1 Soil specimen B2S1 
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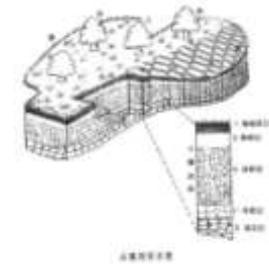
penetration. Moreover, cypresses are shallow-rooted, so they cannot obtain nutrients from deeper soil layers and are subject to wind-falls.

3. 照片

Photos

B2P1 土壤剖面示意圖

B2P1 Schematic profile of soil



B2P2 土壤剖面

B2P2 Soil profile



							<p>B2P3 檜木風倒照片 B2P3 Cypress wind-fall photo</p> 
B3	檜木林生態系－動物	The Taiwan cypress forest ecosystem - animals and	以互動式展示呈現檜木林中的動植物，讓遊客實際操作並認識檜	檜木林植物組成植物社會主要組成，在上層優勢種以台灣扁柏、紅檜；中層優勢種為棲蘭山杜鵑 (<i>Rhododendron</i>	Cypress forest plant composition In main hierarchy of plants, the Taiwan False cypress and Taiwan Red cypress	繪製檜木林生育地情況及動植物分布，並以大型展版輸出。	<p>1. 操作版檜木林生態系展示示意圖：請見附件二。 Schematic diagram of the operating boards of cypress forest</p>

	plants	<p>木林生態系所孕育的物種。</p>	<p><i>chilanshanense</i>)、山櫻花 (<i>Prunus campanulata</i>)、太平山櫻 (<i>Prunus matuurai</i>)、台灣檫樹 (<i>Sassafras randaiense</i>)等；下層優勢種為深山野牡丹 (<i>Barthea barthei</i>)、假柃木等；地被層一葉蘭 (<i>Pleione formosana</i>)、玉山箭竹 (<i>Yushania niitakayamensis</i>)等。</p> <p>檜木林動物組成哺乳動物的分布與相對數量方面，以臺灣煙尖鼠 (<i>Soriculus fumidus</i>)的出現頻度較高，而數量相當少的細尾長尾鼯 (<i>Soriculus sodalis</i>)較</p>	<p>are the dominant species at the upper layer, <i>Rhododendron chilanshanense</i>, <i>Prunus campanulata</i>, <i>Prunus matuurai</i> and <i>Sassafras randaiense</i>, etc. are dominant at the middle layer, and <i>Barthea barthei</i>, <i>Pleione formosana</i>, and <i>Yushania niitakayamensis</i>, etc. are dominant at the lower layer.</p> <p>Cypress forest animal composition.</p> <p>In the distribution and relative quantity of mammals, the <i>Soriculus fumidus</i> had a higher frequency of occurrence and the small number of</p>	<p>遊客可以翻牌/挑戰遊戲操作，搭配動植物介紹說明，認識檜木林生態系。示意圖請見附件二。</p>	<p>ecosystem: please see the Appendix 2</p> <p>2. 樹幹模型</p> <p>Tree trunk model</p> <p>B3P1 檜木模型照片</p> <p>B3P1 Cypress model</p>  <p>B3P2 檜木模型照片</p> <p>B3P2 Cypress model</p> 
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				<p>為特殊。嚙齒目中，以赤腹松鼠為主 (<i>Callosciurus erythraeus</i>) 臺灣野豬 (<i>Sus scrofa</i>)、山羌 (<i>Muntiacus reevesi</i>) 及臺灣野山羊 (<i>Capricornis swinhoei</i>) 等中、大型哺乳類的足跡多見於林道的二側。</p> <p>昆蟲特有種多達 94 種。而寬尾鳳蝶 (<i>Agehana maraho</i>)、大紫蛺蝶 (<i>Sasakia formosana</i>) 二種屬於瀕臨絕種保育類動物等 8 種屬於珍貴稀有保育類動物。臺灣 18 種保育類昆蟲中，有 10 種分布於本區。</p>	<p><i>Soriculus sodalist</i> is more special.</p> <p><i>Callosciurus erythraeus</i> is the primary type of rodent, and the <i>Sus scrofa</i>, <i>Muntiacus reevesi</i> and <i>Capricornis swinhoei</i> are also very common. The tracks of large mammals are often found on both sides of forest roads.</p> <p>There are up to 94 kinds of endemic species of insects.</p> <p><i>Agehana maraho</i> and <i>Sasakia formosana</i> are two kinds of endangered animals which belong to eight protected species. Of the 18 kinds of protected insects, there</p>		<p>B3P3 檜木模型照片 B3P3 Cypress model</p>  <p>B3P4 檜木樹冠模型照片 B3P4 Cypress tree crown model photo</p> 
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are 10 kinds of species found in this area.

B3P5 棲蘭山杜鵑
B3P5 *Rhododendron chilanshanense*



B3P6 山櫻花
B3P6 *Prunus campanulata*



							<p>B3P9 台灣檫樹 B3P9 <i>Sassafras randaiense</i></p>  <p>B3P10 一葉蘭 B3P10 <i>Pleione formosana</i></p> 
B4	檜木林生態系－二代木	The ecosystem of cypress forest-second generation	以實體模型介紹檜木林特殊現象之二代木。二代木樹洞噴灑噴霧與	二代木現象 檜木森林中不同於一般樹木外型的有趣現象：不少檜木的根部下常常會有一個空洞或樹洞。	The phenomenon of second generation cypress Unlike other types of trees, there is an interesting	實體模型展示並輔以解說牌 樹洞中噴灑檜木精油及	1. 二代木模型 Second generation cypress model

		cypress	檜木香精。	<p>檜木小苗常常生長在倒木、樹幹基部或有苔蘚的石頭上，小苗逐漸長大，根部會沿著倒木或石頭兩側生長延伸到地面，一段時間後，小樹苗長成大樹，地面的倒木（一代木）腐爛就形成了一個空洞，此時的生長在一代木上的檜木（二代木）就像是叉開腳站著。</p>	<p>phenomenon in cypress forests: cypress roots often have a hollow or a tree hole.</p> <p>Cypress seedlings often grow in fallen wood, trunk base, or mossed stones. The seedlings grow up, the roots will grow along both sides of fallen wood or stones and extend to the ground. After some time, the seedlings become big trees and the fallen wood on the ground (first generation cypress) decays to form a hole. Now, the cypress (second generation cypress) grows in the first</p>	水霧	<p>B4P1 二代木 B4P1 Second generation cypress</p>  <p>2. 展示相片 The photos of exhibition B4P2 二代木樹洞 B4P2 The hole of a second generation cypress</p> 
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					<p>generation cypress looks like it is standing with splayed feet.</p>		<p>B4P3 二代木上小苗 B4P3 A seedling in the second generation cypress</p>  <p>B4P4 棲蘭山鴛鴦湖檜 木原始林 B4P4 The original cypress forest in Yuanyang Lake of Chilanshan</p>
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							 <p>B4P5 棲蘭山二代木林相解說圖</p> <p>B4P5 Diagram explaining of second generation cypress forest in Chilanshan</p>  <p>3. 昆蟲照片</p> <p>Insects photos</p> <p>B4P6 寬尾鳳蝶</p> <p>B4P6 <i>Agohana maraho</i></p>
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							 <p>B4P7 高山粉蝶 B4P7 <i>Aporia agathon moltrechti</i></p>  <p>B4P8 紅點粉蝶 B4P8 <i>Gonepteryx mahaguru taiwana</i></p>
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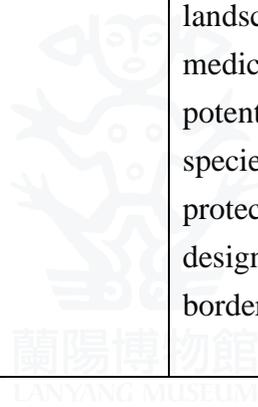
展區	主題	Subject	意象	內容	Content	展示方式	展品圖片/模型/標本來源
B5	伴生珍稀植物	Associated rare plants	以實體介紹檜木林中的各種伴生植物，除了從照片觀賞外亦可看見實體。	台灣粗榧 學名： <i>Cephalotaxus wilsoniana</i> 分布海拔從 650 至 2,800 m，集中在 1,800 至 2,300 m 間的針闊葉混合林或針葉林，其開花結實不良，繁殖力低，傳播的效率又不佳，隱藏著導致瀕臨絕滅的潛在危機。另台灣粗榧富含的生物鹼類及雙黃酮類化合物，證實具有抗癌細胞的效果。極具藥用及園藝植物資源開	Taiwan plummyew scientific name: <i>Cephalotaxus wilsoniana</i> They are distributed at elevations between 650 and 2,800 meters and concentrated in coniferous-broadleaf forests or coniferous forest	掛圖及標本 介紹檜木林常見混生樹種及其他珍貴稀有植物。 展示檜木林伴生種標本及以海報介紹其特殊生態地位。	1. 海報：廠商製作 Posters: produced by manufacturer 2. 植物資料相片 Plants photos B5P1 台灣粗榧 B5P1 Taiwan plummyew 

			<p>發潛力。 台灣紅豆杉(南洋紅豆杉) 學名：<i>Taxus sumatrana</i> 台灣紅豆杉或稱南洋紅豆杉，屬於裸子植物，是台灣貴重針葉五木之一。利用台灣紅豆杉生產紫杉醇，在可見的未來，將會為台灣創造商機。</p> <p>台灣檫樹 學名：<i>Sassafras randaiense</i> 是樟科落葉性喬木，目前本屬植物世界僅存3種，臺灣檫樹為分布範圍狹隘，族群數量稀少的種類，僅零散分布於臺灣海拔900-2,400 m之山地，是瀕臨絕種野生動物之國寶蝶—寬尾鳳蝶 (<i>Agehana maraho</i>) 以其葉為食，族群數量稀少、景</p>	<p>between 1,800 and 2,300 meters. There is a potential crisis of extinction, because of its poor flowering and fruiting, low fertility, and poor efficiency of spreading. In addition, it has been confirmed that the Taiwan plum yew is rich in alkaloids and biflavonoids and is effective anti-cancer cells. It has the potential to be a resource of medicinal and</p>		<p>B5P2 台灣紅豆杉 B5P2 Taiwan yew</p>  <p>B5P3 台灣檫樹 B5P3 Taiwan sassafras</p>  <p>4. 蠟葉標本 Wax leaf specimens B5P4 蠟葉標本</p>
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				<p>觀綠美化與藥用潛力等因素，目前已劃設保護區予以保護。</p>	<p>horticulture. Taiwan yew scientific name: <i>Taxus sumatrana</i> The Taiwan yew is a gymnosperm, one of five coniferous plants. Using the Taiwan yew to produce taxol will create business opportunities for Taiwan in the foreseeable future. Taiwan sassafras scientific name: <i>Sassafras randaiense</i> This is a</p>		<p>B5P4 Wax leaf specimens</p>  <p>4. 種子果實標本 Specimens of seeds and fruits</p> <p>B5P5 種子標本 B5P5 Seed specimens</p> 
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					<p>deciduous tree of Lauraceae. There are currently only three species for this tree in the world. The distribution of Taiwan sassafras is very limited and the populations distributed piecemeal at elevations between 900 and 2400 meters on mountains in Taiwan. Its leaves are served as food for the endangered butterfly <i>-Agehana maraho</i></p>		
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					<p>considered a national treasure. Due to such factors as small populations, the afforestation and beautification of landscape, and the medicinal potential, this species is protected behind designated borders.</p>		
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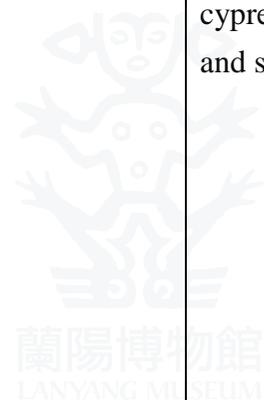
B6	檜木林立 體俯瞰圖	Three- dimension al bird's-eye view of cypress forest	遊客藉由 3D 鏡片觀 賞檜木林 分	觀看檜木林分立體照	Seeing the stereoscopic photos of the cypress forest stand	將兩張航照圖以 重疊式 3D 技術 重現	<ol style="list-style-type: none"> 1. B6V1 3D 立體鏡架 B6V1 3D spectacle frames 2. B6P1 航照圖 B6P1 Aerial photos 
B7	生態影片	Ecology videos	以影片介 紹檜木林 生態習性 及霧林帶 特色的生 態系統	影片介紹	Introducing ecology videos	影片介紹	影片：世界遺產-台灣檜木 Videos: World heritage-Taiwan cypress

C. 主題三、檜木生長

展區	主題	Subject	意象	內容	Content	展示方式	展品圖片/模型/標本來源
C1	紅檜與台灣扁柏	Taiwan Red cypress and Taiwan Yellow False cypress	以實體標本與海報介紹紅檜與台灣扁柏差異並讓遊客以放大鏡看細部構造。 (C1V1)	<p>特徵比較</p> <p>樹冠：台灣扁柏呈圓錐形，枝下高較高／紅檜呈橢圓形，枝下高較低。</p> <p>幼葉：台灣扁柏白色氣孔帶明顯／紅檜則較不明顯。</p> <p>鱗片葉：台灣扁柏葉先端較鈍／紅檜葉先端尖銳。</p> <p>樹幹：台灣扁柏樹幹通直，樹皮厚且樹皮深裂亦較深／紅檜則樹幹偶有分枝，樹皮薄且淺裂。</p> <p>毬果：台灣扁柏形狀較大，為圓球</p>	<p>Comparing the features</p> <p>Tree crown: The crown of the Taiwan Yellow cypress is conical and the clear length is higher.</p> <p>The crown of the Taiwan Red cypress is elliptic and the clear length lower.</p> <p>Spire: The white stomatal band of the Taiwan Yellow cypress is obvious. The white stomatal band of the</p>	以牆壁上之小櫥櫃方式展示各種紅檜與台灣扁柏構造的特徵，並可實際觸摸紅檜與台灣扁柏樹皮，並以顯微鏡觀察葉部及種子細部構造。(可請專家將特徵繪製成親民的圖片。ex.甚麼是XY氣孔帶)	<p>1. 海報：廠商製作 Posters produced by manufacturer</p> <p>C1P1 紅檜林木 C1P1 Taiwan red cypress</p>  <p>C1P2 台灣扁柏林木 C1P2 Taiwan false cypress</p> 

				<p>形／紅檜形狀較小，為橢圓形。</p>	<p>Taiwan Red cypress is not obvious.</p> <p>Scale leaf: The leaf apex of the Taiwan Yellow cypress is blunt. The leaf apex of the Taiwan Red cypress is acute.</p> <p>Tree trunk: The trunk of the Taiwan Yellow cypress is straight and the bark is thick and parted. The trunk of the Taiwan Red cypress branches occasionally and the bark is thin</p>	<p>C1P3 紅檜枝葉</p> <p>C1P3 The branches and leaves of the Taiwan red cypress</p>  <p>C1P4 台灣扁柏枝葉</p> <p>C1P4 The branches and leaves of Taiwan false cypress</p>  <p>C1P5 紅檜葉子</p> <p>C1P5 The leaves of the Taiwan red cypress</p> 
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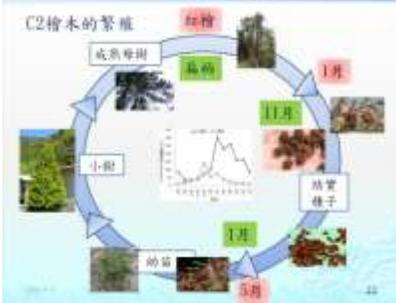
					<p>and lobed.</p> <p>Cone: The cone of the Taiwan Yellow cypress is round and larger. The cone of the Taiwan Red cypress is elliptic and smaller.</p>	<p>C1P6 台灣扁柏葉子</p> <p>C1P6 The leaves of the Taiwan yellow cypress</p>  <p>C1P7 紅檜樹皮</p> <p>C1P7 The bark of the Taiwan red cypress</p> 
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						<p>C1P8 台灣扁柏樹皮 C1P8 The bark of the Taiwan yellow cypress</p>  <p>C1P9 紅檜毬果 C1P9 Cones of the Taiwan red cypress</p>  <p>C1P10 台灣扁柏毬果 C1P10 Cones of the Taiwan yellow cypress</p> 
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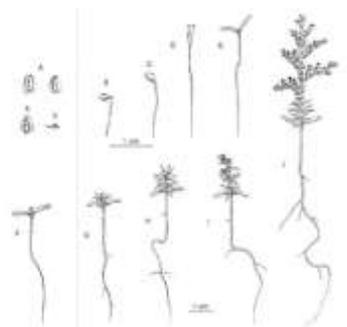
展區	主題	Subject	意象	內容	Content	展示方式	展品圖片/模型/標本來源
							<p data-bbox="1693 248 2051 379">C1P11 紅檜種子 C1P11 Seeds of the Taiwan red cypress</p>  <p data-bbox="1693 730 2051 861">C1P12 台灣扁柏種子 C1P12 Seeds of the Taiwan yellow cypress</p> 

C2	檜木繁殖	The reproduction of cypress	<p>以海報與簡單易懂之研究圖介紹紅檜與台灣扁柏生長繁殖特徵</p>	<p>結實物候： 紅檜與台灣扁柏結實周期為1至2年。主要結實下種時間台灣扁柏始於11月間較紅檜早1至2個月，主要下種期約5個月。</p> <p>檜木下種分布： 檜木是以種子繁殖更新，毬果成熟時果鱗開裂，種子細小飛散飄落林地。檜木更新。</p>	<p>The phenophase of fructification: The phonological cycle of Taiwan Red cypress and Taiwan Yellow cypress is 1 to 2 years. As to main fructification and seeding time, the Taiwan Yellow begins in November advanced by 1 to 2 months over the Taiwan Red cypress and the major seeding period is around 5 months.</p> <p>Seeding distribution of cypress: The cypress is reproduced and regenerated by seeds. When cones are mature, the fruit scales crack and the tiny seeds scatter and</p>	<p>將檜木更新表內容繪製成紅檜台灣扁柏對比圖，搭配文字介紹，將檜木的更新及繁殖特徵作清楚呈現。</p>	<ol style="list-style-type: none"> 1. 海報：廠商製作 Posters produced by manufacturer 2. 紅檜與台灣扁柏照片 Photos showing Taiwan red cypress and Taiwan false cypress  <p>C2P1 台灣扁柏小苗 C2P1 Seedlings of the Taiwan yellow cypress</p> 
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					<p>fall to the forest floor, allowing the cypress to reproduce.</p>	<p>C2P2 紅檜小苗 C2P2 Seedlings of the Taiwan red cypress</p>  <p>C2P3 棲蘭山紅檜小樹 C2P3 Young Taiwan red cypress in Chilanshan</p> 
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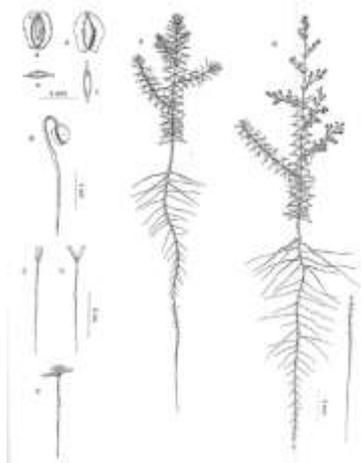


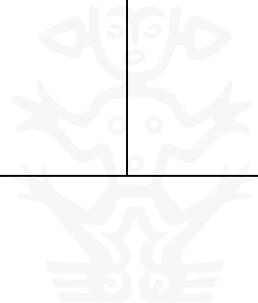
展區	主題	Subject	意象	內容	Content	展示方式	展品圖片/模型/標本來源
C3	紅檜與台灣扁柏生長	The growth of the Taiwan Red cypress and Taiwan Yellow cypress	以實體標本與海報介紹紅檜與台灣扁柏生長特性	<ul style="list-style-type: none"> ● 種子 ● 種子發芽 ● 1年生小苗: ● 下胚軸頂出子葉 ● 長出真葉 ● 2年生小苗 ● 3年生小苗 	<ul style="list-style-type: none"> ● Seeds ● Seed germination ● Annual seedlings ● Cotyledons sprout from hypocotyls ● Leaves grow ● Biennial seedlings ● Three year seedlings 	將檜物的生長各階段的照片以看板輸出，搭配擬人化的檜木寶寶角色及實體標本展示，讓遊客一覽檜木成長生活史。詳細配置規畫請建附件三。	<ol style="list-style-type: none"> 1. 海報：廠商製作 Posters produced by manufacturer 2. 紅檜與台灣扁柏幼苗照片 Photos show seedlings of the Taiwan red cypress and Taiwan yellow cypress <p>C3P1 檜木小苗 C3P1 Cypress seedling</p> 

						<p>C3P2 檜木小苗 C3P2 Cypress seedling</p>  <p>C3P3 紅檜苗木生長手繪圖 C3P3 A hand-drawn picture showing growth of a Taiwan red cypress seedling</p> 
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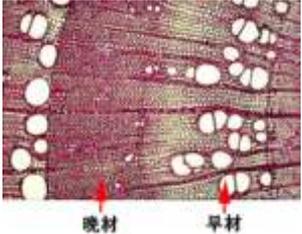
							<p>C3P4 台灣扁柏生長手繪圖 C3P4 A hand-drawn picture showing growth of a Taiwan yellow cypress seedling</p>
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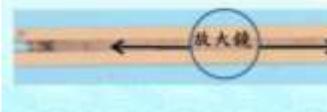


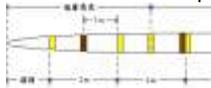
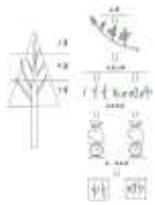
蘭陽博物館
LANYANG MUSEUM

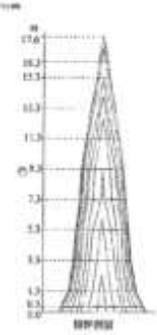
展區	主題	Subject	意象	內容	Content	展示方式	展品圖片/模型/標本來源
C4-1	樹輪生成	Tree ring generation	介紹樹輪生成原因，並實際觀察樹輪的細部構造。	<p>由樹幹橫向之木質細胞生長形態可分為早材及晚材而呈輪狀，故稱樹輪。生長輪相互的境界，稱為生長輪界。</p> <p>溫暖帶地區生長之樹木，通常一年具有一個生長期，亦稱年輪。</p>	<p>The growth morphology of xylem cells on lateral trunk can be divided into early wood and late wood. They form ring-shaped circles called tree rings. The borders of growth ring called growth ring boundaries.</p> <p>The trees live in the temperate zone which generally has one primary growth period in a year, so they are also called annual rings.</p>	<p>以大型地貼輸出，將檜木橫切面及生長輪特徵作清楚呈現。讓民眾得以直接站立於地貼輸出上，感受千年檜木的巨大，並延伸檜木生長速度緩慢，體會檜木資源之珍貴。</p>	<ol style="list-style-type: none"> 地貼海報：廠商製作 Floor sticker posters produced by manufacturer C4-1P1 樹輪照片 C4-1P1 Photo showing tree rings  樹輪標本 The specimens of tree

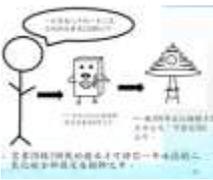
							<p>ring</p> <p>C4-1P3 台灣扁柏樹輪照片</p> <p>C4-1P3 Photo showing Taiwan yellow cypress tree rings</p> 
C4-2	數輪與氣候變遷	Tree rings and climate change	介紹樹輪在各種研究的應用	樹輪與歷史 60年代 JeffreyDean 在 Betatakin 遺址 (亞利桑納州西北部	Tree rings and history In the 1960s, JeffreyDean in Betatakin site (northwestern Arizona cliff site) collected 292	以故事的方式呈現樹輪與歷史、氣候的研究內容。	<ol style="list-style-type: none"> 1. 海報：廠商製作 Posters produced by manufacturer 2. 樹輪研究相片 Photo showing tree

				<p>的崖壁遺址) 採集 292 個樹輪樣本進行研究，結果不但比前人更準確地定出遺址的起始年代，直到達到它的鼎盛時期，隨後很快廢棄。這樣的科研成果可以引導學者作樹輪生長與歷史變遷研究。</p> <p>樹輪與氣候： 台灣山區的台灣冷杉和紅檜樹輪資料，最長可以建立長達 1100 年的樹輪寬度年表，根據樹輪寬度與反應分析顯示台灣山區的樹輪生長反應出冬季溫度、夏季溫度，以</p>	<p>tree ring specimens for research so that he confirmed the initial years of the site more accurately than the previous until it reached its peak, then quickly discarded . Such findings may guide the researchers to study the growth of tree rings and historical change.</p> <p>Tree rings and climate: The tree ring data of Taiwan fir and Taiwan Red cypress in Taiwan mountain area, that can create a tree ring width chronology up to 1100 years. According to the tree ring width and response analysis, the growth of tree rings can</p>	<p>展示實體鑽取樹輪工具與成品，在展示櫥櫃外配置可移動放大鏡並標示年分，使遊客可以與之互動。</p>	<p>rings C4-2P1 樹輪研究相片 C4-2P1 1. Photo showing tree rings</p>  <p>3. C4-2V1 鑽取樹輪工具一組 C4-2V1 A tree ring drilling tool set</p> <p>C4-2P2 生長錐照片 C4-2P2 Photo showing growth cone</p>  <p>C4-2P3 樹輪研究標本(樹蕊)</p>
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				<p>及春末夏初之際的降水量變化，可以提供近五百年的古氣候訊息。</p>	<p>reflect the winter temperatures and summer temperatures in Taiwan mountain area, and the precipitation changes on the late spring and early summer can provide the paleoclimate information nearly five hundred years.</p>		<p>C4-2P3 Photo showing tree rings (tree core)</p> 
C4-3	立木生物量及樹幹解析	Analysis of biomass of standing trees and trunks	<p>介紹林業特殊計算林木生長之方式及計算林木貯藏碳的方式。</p>	<p>森林調節著氣候，自 19 世紀來工業快速發展，森林大面積下降，所示之二氧化碳增加，二氧化碳濃度值從工業化前的約 280 ppm 增加到 2005 年的約 379 ppm，造成溫室效</p>	<p>The forests regulate the climate. Since the 19th century, the industry developed rapidly, and forest areas were decreased substantially, resulting in the increase of carbon dioxide. The concentration of carbon dioxide was increased</p>	<p>以實體之樹幹解析標本展示與海報相片說明，向參觀者說明樹幹解析與樹木生長關係。將樹輪組與樹幹生長圖</p>	<p>1. 海報：廠商製作 Posters produced by manufacturer</p> <p>2. 照片 Photos</p> <p>C4-3P1 樹幹生物量調查照片 C4-3P1 Photo showing trunk biomass survey</p>

				<p>應原因之一，此為待解決的最重要議題。</p> <p>適當的森林經營，了解林木碳吸存能力，可有助於二氧化碳的減量。林木碳吸存能力以林木生物量推估。立木生物量調查分析：可分為樹幹部、冠層部兩部分。</p> <p>樹幹部:樹幹解析-林木材積計算來分析樹生長狀況，樹幹形狀與材積間有一定的關係。</p> <p>冠層部:枝葉生物量-以枝葉量來分析樹生長狀況。</p>	<p>from about 280ppm before industrialization to about 379ppm in 2005. That is one of the reasons causing the greenhouse effect, and is the most important issue to be solved. The proper forest management and understanding the carbon sequestration ability of forest can help reduction of carbon dioxide.</p> <p>The carbon sequestration ability of forest is estimated by forest biomass. The survey and analysis of biomass of standing tree: can be divided into tree trunk and tree crown.</p> <p>Tree trunk: trunk analysis- to analyze the</p>	<p>結合作為背景，並將樹幹生長圖以 LED 燈作為背景，參觀者只要按下相對應的生長年分，當時的樹幹大小 LED 燈即會亮。C30 樹幹解析示意圖</p>  <p>C4-3P5 枝葉生物量解析示意圖</p> 	 <p>C4-3P2 枝葉生物量調查照片</p> <p>C4-3P2 Photo showing biomass of branch and leaf surbey</p>  <p>C4-3P3 圓盤照片</p> <p>C4-3P3 Photo of disk</p>
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				<ul style="list-style-type: none"> ● 一立方公尺紅檜樹幹固定碳量為 187 公斤。 ● 一株 100 年生紅檜樹才 3 立方公尺，可固定 561 公斤。 ● 台灣每人平均一年二氧化碳排放量為 11260 公斤 ● 需要 20 株 100 歲的檜木才可將你一年吐出的二氧化碳全部固定在樹幹之中。 <p>C4-3P7 碳吸存示意圖</p>	<p>growth conditions of tree by calculating the timber volume calculation.</p> <p>There is a certain relationship between trunk shape and volume.</p> <p>Tree crown: the biomass of branch and leaf- to analyze the growth conditions of tree by the amount of branch and leaf.</p> <ul style="list-style-type: none"> ● The amount of fixed carbon of a cubic meter Taiwan Red False cypress is 187kg. ● A 100 years Taiwan Red False cypress of 3 cubic meters has the fixed carbon of 561kg 	<p>C4-3P6 樹幹剖面示意圖</p> 	 <p>C4-3P4 樹幹解析照</p> <p>C4-3P4 Photo showing trunk analysis</p> 
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					<ul style="list-style-type: none"> ● The average carbon dioxide emissions per person a year is 11260kg in Taiwan. ● The all carbon dioxide you breathing out in a year are needed 20 100-year-old cypress to fix into the trunk. <p>C4-3P7 The schematic diagram of carbon sequestration</p>		
							

展區	主題	Subject	意象	內容	Content	展示方式	展品圖片/模型/標本來源
C5	檜木木材	Cypress wood	介紹世界各種檜木木材，與台灣重要針葉樹木材特徵。	台灣扁柏、紅檜、台灣肖楠、香杉、柳杉、紅豆杉、阿拉斯加扁柏，如下表：	Taiwan Yellow cypress, Taiwan Red cypress, Taiwan Incense Cedar, Luanta-fir, Japanese Cryptomeria, Taiwan Yew, Alaskan Cedar show on following table:	以實物木材展示，使參觀者可以實際觸摸各種木材進而體會差異，並輔以文字介紹其特徵。	1. 海報：由廠商製作 Posters produced by manufacturer 2. 木材切片：另行購買。 Wood chip: purchased separately



D. 主題四、產業文化與永續資源

展區	主題	Subject	意象	內容	Content	展示方式	展品圖片/模型/標本來源
D1	年輪與歷史	Annual rings and history	連結 C4 之樹輪構造配合台灣之林業歷史，將自然之樹輪與人文之歷史結合。	<ol style="list-style-type: none"> 1. 1916 年設置宜蘭出張所於竹林。 2. 1924 年平地森林火車開通，第一架蒸汽集材機，土場至羅東森林鐵路的開通。 3. 1945 年太平山林場設置 4. 1960 年蘭陽林區管理處：太平山林場專心致力於林木生產，產地為太平山分場及大元山分場。產量達到另一個高峰。 5. 1970 年：森林育 	<ol style="list-style-type: none"> 1. In 1916, Yilan Branch Office was set up in Jhulin. 2. In 1924, the forest railway was opened on the flatlands, the first steam skidder was introduced, and the forest railway from Tuchang to Luodong was opened. 3. In 1945, the Taipingshan forest station was established. 4. In 1960, forest district office of Lanyang: Taipingshan forest station was focused on the production of 	<p>整面牆以巨大年輪作為背景，將事件分為 1.運材工具 2.文化影響 穿插在其中 展現運輸之轉變。</p>	<ol style="list-style-type: none"> 1. 海報：廠商製作 Posters produced by manufacturer  2. 林業歷史照片 Photos showing forestry history

			<p>樂興起:森林鐵道增至羅東站與台灣鐵路連線,“中華號”客車開通,每天三個班次往返羅東與土場,幾乎班班客滿,顯見70年帶森林鐵道受歡迎的程度。</p> <p>6. 1982年伐木作業結束,成立太平山森林遊樂區:正式開始實施森林多目標經營,以國土保安、治山防災、造林育苗、自然保育、森林育樂等為主要經營方向。</p> <p>7. 1989羅東林管處成立</p>	<p>wood, and the producing areas were the branches Taipingshan and Dayuanshan. Production reached another peak.</p> <p>5. In 1970, forest recreation increased in importance: The forest railway was extended to Luodong station and connected with Taiwan railways. Chung-hwa Express was opened. Three trains ran daily between Luodong and Tuchang and each was almost full of passengers. Obviously, the forest railways were popular</p>	<p>D1P1 初期木工伐木 D1P1 Woodworkers logging in the early days.</p>  <p>D1P2 竹林車站 D1P2 Jhulin station</p> 
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					<p>during 70s.</p> <p>6. In 1982, logging ended and the Taipingshan Forest Recreation Area was established: Multi-objective management of forests was implemented formally. The main directions of operation were homeland security, forest regulation and disaster prevention, afforestation and seeding, nature conservation, and forest recreation.</p> <p>7. In 1989, the Luodong forest district office was established.</p>	<p>D1P3 太平山林場合照 D1P3 Group photo in Taipingshan forest station</p>  <p>D1P4 中華號通車 D1P4 The Chung-hwa Express opens.</p> 
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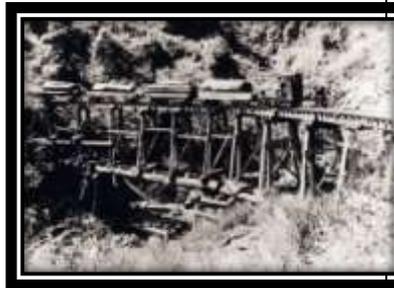
							<p>D1P5 最後伐採的一支檜木</p> <p>D1P5 The last logged cypress wood</p> 
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展區	主題	Subject	意象	內容	Content	展示方式	展品圖片/模型/標本來源
D2	檜木與宜蘭	Cypress and Yilan	營造時光穿廊的意象，訴說宜蘭的產業發展與檜木密不可分的歷史故事。	<p>運材轉變歷史(參考</p>  <p>)</p> <p>一.集材方式</p> <p>1.1915年~修羅滑道木滑道:邊坡土壤較鬆者，以枝條併購成木滑道，原木順著滑道溜相止擋場。</p>	<p>Transportation of wood changed the over the years (refer to</p>  <p>)</p> <p>A. The skid</p> <p>1. In 1915 slide was erected.</p>	<p>大型輸出老照片為展示底圖，掛上宜蘭與檜木相關照片，營造時光穿廊意象，讓遊客彷彿置身走入時光隧道，一同認識林業</p>	<p>1. 海報：廠商製作 Posters produced by manufacturer</p> <p>2.相關照片*12 Related photos*12</p>

				<p>土滑道:邊坡土壤堅實者，直接將原木滑向止滑場，再用軌道旁的台車裝材，準備出運。</p> <p>2.1916年~蒸氣集材:薪材為燃料，蒸氣為動力，數根支柱加設主索，利用搬器運行集材。</p> <p>3.1953年~柴油集材:材油機帶動捲筒鋼索，拉集木材操作。</p> <p>二.山地運材</p> <p>1.1915年~木馬</p> <p>2.1916年~伏地索道</p> <p>3.1919年~台車</p> <p>4.1925年~山地運材軌道車</p> <p>5.空中索道</p> <p>三.平地運材</p> <p>1.1917年~管流運材:推至於土場的原木，放入濁水溪，利用水流搬運至員山貯木池。</p> <p>2.1924年~平地森林鐵路:</p>	<p>Wooden slides: The loose soil of slopes was incorporated in to wooden slides to help logs slid down to the stopper field.</p> <p>Earth slides: When the soil of slopes was solid, logs could be slid down directly to the stopper field. Logs were then loaded onto the trolleys beside tracks and ready for shipping.</p> <p>2. In 1916, steam logging. Steam logging used firewood as fuel and steam as power and a number of pillars to set hold the main cable.</p> <p>3. In 1953- Diesel logging. The diesel</p>	<p>工作的蓬勃，體認宜蘭的產業發展與檜木的密不可分。詳細配置內容請見附件四。</p>	<p>D2P1 木滑道 D2P1 The wooden slide</p>  <p>D2P2 土滑道 D2P2 The earth slide</p> 
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			<p>山地運材卸放牧材，在土場轉裝平地森林鐵路發車，有時掛運客車廂運至羅東竹林站。</p> <p>四.羅東儲木池： 森林鐵路通車後，宜蘭出張所移轉至羅東，改名羅東出張所，基地面積達 22 公頃，包含儲木池、儲木場。池中皆為太平山生長之高品質檜木。</p> <p>五.羅東鎮的檜木香： 羅東即是太平山木材的集散地，當時鎮內的木材相關產業蓬勃發展，在其都心外圍可見到廣大的貯木池和製材工廠。</p> <p>林場幼稚園： 成立林場幼稚園主要是為了讓林場人的孩子能儘早學習、適應國小生活。光復後的那個年代，在太平山林</p>	<p>engine drove the reel cable to pull and collect logs.</p> <p>B. The transport of logs on mountains</p> <ol style="list-style-type: none"> 1. In 1915, wooden horse 2. In 1916, prostrated cable way 3. In 1919, trolley 4. In 1925, logs were transported by rail cars in the mountains 5. Aerial cableway <p>C. The transport of logs on the flat</p> <ol style="list-style-type: none"> 1. In 1917, transported logs were transported by drifting: The logs pushed to Tuchang were placed into Jhuoshuei River, and then transported to Yuanshan by water. 	<p>D2P3 蒸氣集材 D2P3 Steam logging</p>  <p>D2P4 柴油集材 D2P4 Diesel logging</p> 
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			<p>場工作的員工已達1千多人，民國41年第一屆林場幼稚園成立，在民國46年隨著林場易名而更改為蘭陽林區管理處附設幼稚園，一直到民國70年6月底才熄燈。在這29年間，培育了幾千位孩子。當時僅林場員工可以為孩子申請入學，因為可以喝到牛乳加上老師教學有方，所以成為羅東區第一間最搶手的幼稚園。</p> <p>太平山實習：-----</p> <p>「他記得一九四五年〈昭和二十年，民國三十四年〉四月從小學考進初農森林科時，鋤頭柄的長度比自己的個子還高，老師卻嚴格要求，每個人都必須扛著鋤頭到大礁溪實習林場學育苗造林。三年初農畢業，可考上高農森林科繼續就</p>	<p>2. In 1924, forest railway on the flatland: Logs were transported from the mountains to the flatland and were switched to the forest railway in Tuchang. Sometimes, the forest train was linked to the passenger cars to travel to Jhulin station of Luodong.</p> <p>D. The log basin of Luodong: After the forest railway was opened, the Yilan Branch Office was transferred to Luodong, and was renamed the Luodong Branch Office. The station covered an area of 22 hectares, including the log basin and the log yard. The</p>		<p>D2P5 木馬山地運材 D2P5 Logs were transported in the mountain by wooden horse</p>  <p>D2P6 伏地索道 D2P6 Prostrated cable way</p> 
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			<p>讀，這時實習的領域擴大，一年級第一個學期結束，其他中學生可以放寒假了，他們卻由老師帶隊深入太平山林場實習。二年級改到阿里山林場，前後都至少有一個星期時間進駐山區林場。觀摩和實習重點，除了等高線和林班面積、材積測量，還包括育苗、造林、伐木、製材、運材的作業技術。」</p> <p>文化工作隊：</p> <p>太平山文化工作隊陣容龐大，經常前往各地做「林業宣傳」，林業宣導不留餘力，應用寓教於樂的方式四處演出，宣揚「保林、造林」的重要性。</p> <p>從天照大神到鄭成功宗教信仰是工作人員的精神寄託，1918年日本人在太平山設立的第一座神社</p>	<p>logs in the basin were the high-quality cypress that grew in Taipingshan.</p> <p>E. The cypress flavor in Luodong: Luodong was the distribution center for wood in Taipingshan. Wood-related industries flourished in town. There was a wide log basin and many wood factories in the surrounding areas.</p> <p>The kindergarten at forest station: To establish the kindergarten in the forest station was established in order to allow workers' children to learn and adapt to elementary school living as early as</p>		<p>D2P7 台車運材 D2P7 Logs transported by trolley</p>  <p>D2P8 軌道運材 D2P8 Logs transported by rail</p> 
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			<p>在紅檜神木旁供奉天照大神，每年6月18日為例祭日，舉行造林祭，台灣光復後改祭為國姓爺成為現在的鎮安宮，由於來自平地的員工大部分都信仰媽祖，因此媽祖出巡開始成為太平山年度盛事，是最重要的祭典。</p> <p>林業的另一片天空－在結束的地方開始：</p> <p>林業經營政策轉變後，太平山開始限制林木伐採，林業逐漸沉寂。政府開始注意森林對國土保安的重要性。森林經營目標改以國土保安、發揮森林最大之公益功能為主，減少森林砍伐朝森林資源保育等多目標發展，但是，不再開採森林的林務單位要做什麼？於是，換個角度，我們看到了一個水水的蘭陽，他有一片</p>	<p>possible. After the Retrocession of Taiwan, more than one thousand employees worked at the Taipingshan forest station. In 1952, the first forest station kindergarten was founded. In 1957, the name of the kindergarten was changed to the Kindergarten of Lanyang Forest District Office with the renaming of forest station. It was closed down until the end of June 1981. During the 29 years it existed, thousands of children were educated there. Only forest station workers' children could apply for admission, but</p>		<p>D2P9 空中索道(運材) D2P9 Aerial cableway (log transport)</p>  <p>D2P10 鳩之澤空中索道(運人) D2P10 The aerial cableway at Jiuzhize (transport people)</p> 
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				<p>鬱鬱蒼蒼的山林。現在的太平山國家森林遊樂區，就是太平山林場的範圍，重新規劃定位脫胎換骨而來，並開始以一種超越時空的美麗，回到自然的規律裡。蛻變的森林 從產業到文化：</p> <p>太平山林業與蘭陽平原乃至羅東鎮的發展息息相關，羅東林業文化園區這個區域曾在歷史上扮演過極重要林業生產空間，承載著羅東人的記憶與對林業深厚的在地情感，以「林業文化」重新找到它的歷史位置，賦予林業充滿活力的未來。</p>	<p>they were given milk to drink and the teachers taught well so it became the most popular kindergarten in Luodong. Practice in Taipingshan:</p> <p>“He remembered when he entered the Forestry Department of Agricultural High School from elementary school in April 1945, the length of a hoe handle was taller than him, but teachers strictly required everyone carry a hoe to Dajiaoxi Experimental Forest Station to learn seeding and afforestation. After three years, he graduated from Agricultural Junior High School, and then he went</p>		<p>D2P11 平地管流運材 D2P11 Logs transported by drifting through the flatlands</p>  <p>D2P12 平地森林鐵路 D2P12 The forest rail in the flatland</p> 
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to go Agricultural Senior High School. The field of practice was expanded at this time. After the first semester in the first year, other high school students went on winter vacation, but those at Agricultural Senior High School were taken by their teachers to the Taipingshan forest station to practice. In their second year, they went to the Alishan forest station and stayed at least one week. The focus of the observation and practice included operational techniques of seeding, afforestation, logging, production, and transportation. It also

D2P13 平地森林鐵路
D2P13 The forest rail in the
faltland



D2P14 羅東儲木池
D2P14 The log basin at
Luodong



				<p>including, contouring, the area of compartment, and the measurement of volume of wood.”</p> <p>Cultural work team:</p> <p>The cultural work team of Taipingshan often went to the provinces for the “propaganda of forestry” sparing no effort. They to propagate the importance of “forest protection and afforestation” through educational performances.</p> <p>From Amaterasu to Zheng Cheng-gong:</p> <p>Religion was the spiritual sustenance of workers. In 1918, the Japanese established the first shrine in Taipingshan to</p>	<p>D2P15 製材廠 D2P15 Sawmill</p>  <p>D2P16 木材乾燥廠 D2P16 Wood drying factory</p> 
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worship Amaterasu next to the “divine cypress” . The anniversary of death was on June 18th of each year, during which and would afforestation rites were held. After Retrocession, it was used to worship Zheng Cheng-gong and was renamed the Jhen-an Temple. Most employees from the flatland were believers in Matsu, therefore Matsu processions became the most important annual event in Taipingshan. Coming full circle: After the policy of forestry management shifted, deforestation was limited in Taipingshan,

D2P17 鋸木廠內原木大剖作業

D2P17 Logs were cut longitudinally in the sawmill



D2P18 木材防腐槽

D2P18 Wood preservation groove



and forestry declined gradually. The government began to pay attention to the importance of forests to the homeland security. The goals of forestry management were changed to strengthen homeland security, to maximize the public welfare function of forest, to reduce the deforestation, and to conserve the forest resources. But what should be done with a forest that is no longer being logged? We witnessed a beautiful Lanyang with its lush forests. The Taipingshan Forest Recreation Area is

D2P19 林場幼稚園
D2P19 The forest station kindergarten



D2P20 舊太平山小學遠足
D2P20 Students of old Taipingshan elementary school hiking



				<p>the scope of Taipingshan forest station that is being re-positioned and being returned to nature with its timeless beauty.</p> <p>The forests of transformation from industry to culture:</p> <p>The forestry of Taipingshan had a close relationship with the Lanyang Flatland and the development of Luodong. The Luodong Forestry Culture Garden a very important forestry production area historically, serves to carry the memory and the deep feelings for forestry that the Luodong people feel. It</p>	<p>D2P21 新太平山小學武士舞表演</p> <p>D2P21 Students of new Taipingshan Elementary School performing a warrior dance</p>  <p>D2P22 文化工作隊</p> <p>D2P22 Cultural work team</p> 
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rediscovered its historical roots using the “culture of forestry” and gave forestry a vital future.



D2P23 運動會
D2P23 Games



D2P24 迎神會
D2P24 The “Receiving God” ceremony



D2P25 醫務室
D2P25 Infirmary

						 <p>D2P26 羅東林管處儲木池 D2P26 Luodong Forest District Office log basin</p>  <p>D2P27 羅東林管處舊火車頭 D2P27 The old locomotive in the Luodong Forest District Office</p>
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							 <p>D2P28 羅東文化林區 D2P28 Luodong Forestry Culture Garden</p> 
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D3. 蘭陽地區檜木生態文化之旅路程及解說教案規畫

展區	主題	Subject	意象	內容	Content	展示方式	展品圖片/模型/標本來源
D3-1	蘭陽地區檜木生態文化之旅路程及解說教案規畫	Information regarding planning station routes and lesson plans about cypress ecological culture tours in the Lanyang area.	蘭陽檜木的珍貴及保護推廣站點及文化之旅，檜木小知識融入生活之中，使民與檜木可以和睦相處之目的。	提供蘭陽地區檜木生態文化之旅路程及解說教案規畫站點，可進一步深入去了解檜木的一切。	Providing information regarding planning station routes and lesson plans about cypress ecological culture tours in the Lanyang area and to help visitors understand more about cypress.	大型地圖及照片輸出，並以文字輔助說明	<p>1. 海報：廠商製作 Posters produced by manufacturer</p> <p>D3-1P1 員山生態館 D3-1P1 Yuan Shan Ecocenter</p>  <p>D3-1P2 傳藝中心檜木小站 D3-1P2 The cypress station in the National Center for Traditional Arts</p> 

							<p>D3-1P3 棲蘭山森林遊樂區 D3-1P3 Chilan Forest Recreation Area</p>  <p>D3-1P4 福山植物園 D3-1P4 Fushan Botanical Garden</p> 
D3-2	文 創 產 品	Cultural and creative products	<p>檜木的利用方式多元化，小小的木片或碎削都可以激發出創新的小玩意，給予檜木</p>	<p>主要以實體文創產品展出，吸取民眾的目光，使大眾重視檜木廢材的利用，推廣木工產品及文創產業，使檜木貼近生活，更加的多元，有樂趣。</p>	<p>Mainly displaying cultural and creative products to attract the public so they it will pay more attention to the</p>	<p>大型地圖及照片輸出，並以文字輔助說明，以實體展示文創產品</p>	<ol style="list-style-type: none"> 1. 海報：廠商製作 Posters produced by manufacturer 2. 文場品展示 To display the cultural and creative products

			<p>的新的生命 力。</p>	<p>use of cypress wood waste, and to popularize the woodworking products and cultural and creative industries making cypress a part of our lives and creating more diversity and more fun.</p>	<p>D3-2P1 嘉義檜意森活村文創 產品照片 D3-2P1 Photo showing cultural and creative products of 檜意 森活村 in Chiayi</p>  <p>D3-2P2 檜木小豬 D3-2P2 Cypress wood pigs</p>  <p>D3-2P3 文創鑰匙圈</p>
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						<p>D3-2P3 Cultural and creative key-rings</p>  <p>D3-2P4 檜木彩繪蛋 D3-2P4 Painted cypress wood eggs</p> 
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展區	主題	Subject	意象	內容	Content	展示方式	展品圖片/模型/標本來源
D4	檜木的危機與保育	The crisis and conservation of cypress	<p>檜木為珍貴的天然資源，但卻遇到的重重危機，我們該如何保護它呢？</p> <p>木材為人類生活不可或缺的資源，檜木又廣為大眾趨之若鶩，因此消費的價值觀以及正確的遊憩觀念，是你我可以一同保護珍貴檜木資源重要助力。</p>	<p>檜木林面臨的危機： 檜木林分布於山地霧林帶，生命期長且生長緩慢，受氣候變遷及雨量不均等氣象因素，常造成枯死倒木、土石崩塌等干擾破壞；尤其人為因素，如不當的開發利用、非法採伐及買賣、不當的遊憩行為(ex.剝樹皮等)等嚴重破壞檜木林生育地與生態系的修復能力。</p> <p>檜木保育你我做起： 1.棲地保護意識 2.檜木森林永續經營 3.拒買來源不明的檜木製品 4.禁止一切不當遊憩行</p>	<p>The crises of cypress: Cypress forests are distributed in the cloud forest belt in the mountains. They live long and grow slowly and have been affected by climate change and uneven rainfall among other weather factors often resulting in fallen tree and landslides.</p> <p>Human factors such as improper exploitation, illegal logging and trading, unsuitable recreation (e.g., barking), in particular, could severely damage the habitats of cypress and the restoration capabilities of the ecosystem.</p> <p>The conservation of cypress starts with you and me:</p>	<p>大型圖片輸出搭配實體器材，以文字解說呈現檜木目前遇到的危機及檜木林的保育。</p>	<p>1. 海報：廠商製作 Posters produced by manufacturer</p>  <p>2.相關照片 Related photos</p> <p>D4P1 檜木照片 D4P1 Photo showing cypress</p> 

			<p>為</p> <p>森林永續經營觀念，特別強調經營必須維持生態系的完整性與穩定性，讓生態系得以生生不息，永續提供服務與產品。</p> <p>森林依據不同生態系之特色與永續經營目標，可區分為四種經營區：林木經營區、國土保安區、自然保育區及森林遊樂區。</p> <p>1. 林木經營區 以林木資源永續利用為主要目的，採用循環更新收穫之經營，注重環境友善之作業原則，創造健康穩定的經濟森林。</p> <p>2. 國土保安區 以維護環境保安為</p>	<p>1. Awareness of habitat protection</p> <p>2. Sustainable management of cypress forests</p> <p>3. Don't buy cypress wood products of unknown origins</p> <p>4. Prohibit all unsuitable recreations</p> <p>The sustainable management of forests emphasized the integrity and stability of ecosystem must be maintained.</p> <p>According to the different characteristics of ecosystem and sustainable management targets, the forests can be divided into four management areas: forest management area, national protective area, nature conservation area, and forest recreation area:</p>	<p>D4P2 天然災害 D4P2 Natural disaster</p>  <p>D4P3 天然更新困難 D4P3 The difficulty of natural regeneration</p>  <p>D4P4 檜木原始林 D4P4 Virgin cypress forests</p>  <p>D4P5 台灣自然保護區域</p>
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			<p>主要目的，如水源涵養、扞止土沙及防風等，森林經營為維護生物多樣性及健康的森林為主，發揮森林之環境功能，獲得最佳保育水土資源之功效。</p> <p>3. 森林遊樂區 以提供生態旅遊、環境教育及森林育樂為主要目的，通常分為遊樂活動、營林、生態保育及景觀保護等區域，重視景觀價值，森林經營以美化景觀為考量。</p> <p>4. 自然保護區 以保護特殊地景、珍稀有動植物或生態系為目的，需最少人為干擾，但若森林受到天然災害或外來病蟲害危害，導致目標物種滅絕之疑慮，必須保護措施</p>	<p>1. Forest management areas The primary purpose is to ensure that forest resources can be sustainable development by the management of cyclically renewed harvests, emphasizing environmentally friendly operational principles to create healthy, stable, and economic feasible forests.</p> <p>2. National protective area The primary purpose is to preserve the security of environment, such as water conservation, and prevention of soil, sand, and wind erosion. The management of forests is for the maintenance of biological diversity and the health of the forest to</p>		<p>圖 D4P5 Chart showing Taiwan nature reserve</p> 
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				及必要復育作業。	<p>realize the environmental function of the forest and to obtain the best conservation effect of soil and water resources.</p> <p>3. Forest recreation areas The primary purpose is to provide eco-tourism, environmental education and forest recreation that is usually divided into recreational activities, silviculture, ecological conservation, and landscape protection.</p> <p>4. Nature conservation areas The primary purpose is to protect the unique landscapes, rare animals, and plants, and ecosystems. It needs the least human interference, but if the forest is suffers from natural</p>		
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					disasters or exotic species and diseases leading to the extinction of target species, we must take necessary protective measure and engage in restoration works.		
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E.活動教案

教案	主題	意象	內容	展示方式	展品圖片/模型/標本來源
教案 1	檜木雕刻” SHOW TIME”	結合檜木及人文藝術，再造檜木新生命。	<ul style="list-style-type: none"> ● 開放徵雕刻圖樣，雕刻圖樣以宜蘭人文歷史、產業及特有動植物等與宜蘭相關之題材。 ● 邀約雕刻大師現場雕刻，開放現場雕刻時段，如每日 3 小時。讓民眾親品檜木芳香與大師雕製 	舞台表演	3. 雕刻段木:行文羅東林管處提借大型檜木漂流木，雕展結束後，以雕刻藝術品歸還。
教案 2	檜木學堂	<ol style="list-style-type: none"> 1. 認識檜木的外觀特徵 2. 以不同切面之紅檜與臺灣扁柏等段木，欣賞檜木木材細緻紋理構造。讓大眾認識珍貴的台灣檜木。 	<ul style="list-style-type: none"> ● 以 3~5 段大型圓木段展示橫切面、徑切面及旋切面檜木紋理。 ● 以現場解說人員，以團康帶動的方式，現場教學。 	展示台互動教學	1.展示原木段:行文羅東林管處借取，展覽結束後歸還。

附件一、照片及標本器材清單

Appendix 1

A 區圖片一覽表

圖片編號	內容	拍攝地點	拍攝時間	攝影者	提供者	版權取得
A1P1	日本花柏	未知	未知	未知	植物圖庫 http://zhiwu.xinyue365.com/7876.html	2015/5/11 引用
A1P2	日本扁柏	日本京都	103/10	蔡宗穎	蔡宗穎	取得版權
A1P3	美國側葉扁柏	美國教堂山-北卡羅萊納州植物園	2004/10/27	C. J. Earle	The Gymnosperm Datadase http://www.conifers.org/cu/Chamaecyparis_thyoides.php	2015/5/11 引用
A1P4	羅森檜	舊金山植物園	2006/8/26	Eric Hunt	維基共享 http://en.wikipedia.org/wiki/Chamaecyparis_lawsoniana	2015/5/11 引用
A1P5	加拿遜扁柏	未知	2011/3	Lisa	部落格分享 http://lh2treeid.blogspot.tw/2011/03/chamaecyparis-nootkatensis-alaska.html	2015/5/11 引用
A1P6	台灣扁柏	棲蘭山	未知	林世宗	宜大森資所育林實驗室	已取得
A1P7	紅檜	棲蘭山	未知	林世宗	宜大森資所育林實驗室	已取得
A2P1	台灣扁柏照片	棲蘭山	未知	同提供者	宜大森資所育林實驗室	已取得
A2P2	紅檜照片	棲蘭山	未知	同提供者	宜大森資所育林實驗室	已取得

B 區照片一覽表

編號	內容	拍攝地點	拍攝時間	攝影者	提供者	版權取得
B1P1	棲蘭山檜木林相	棲蘭山	未知	同提供者	宜大森資所育林實驗室	已取得
B1P2	棲蘭山檜木神木	棲蘭山	未知	同提供者	宜大森資所育林實驗室	已取得
B2P1	土壤剖面示意圖(非檜木林)	無	無	無	中國百科網 http://www.chinabaike.com/article/316/327/2007/2007022053361.html	2015/5/11 引用
B2P2	檜木林土壤相片	棲蘭山	未知	未知	宜大蔡呈奇教授	已取得
B2P3	檜木風倒照片	棲蘭山	未知	同提供者	宜大森資所育林實驗室	已取得
B3P1	檜木模型照片	觀霧	2015/3	同提供者	宜大森資所育林實驗室	已取得
B3P2	檜木模型照片	觀霧	2015/3	同提供者	宜大森資所育林實驗室	已取得
B3P3	檜木模型照片	觀霧	2015/3	同提供者	宜大森資所育林實驗室	已取得
B3P4	檜木葉模型照片	觀霧	2015/3	同提供者	宜大森資所育林實驗室	已取得
B3P5	棲蘭山杜鵑照片	棲蘭山	未知	同提供者	棲蘭山森保處	已取得
B3P6	山櫻花照片	棲蘭山	2014/12	同提供者	宜大森資所育林實驗室	已取得
B3P7	太平山櫻照片	棲蘭山	2015/3	同提供者	宜大森資所育林實驗室	已取得
B3P8	太平山櫻照片	棲蘭山	2015/3	同提供者	宜大森資所育林實驗室	已取得
B3P9	台灣檫樹照片	棲蘭山	2014/3	同提供者	宜大森資所育林實驗室	已取得
B3P10	一葉蘭照片	棲蘭山	2015/3	同提供者	宜大森資所育林實驗室	已取得
B4P1	二代木照片	棲蘭山	未知	同提供者	宜大森資所育林實驗室	已取得
B4P2	二代木樹洞照片	棲蘭山	未知	同提供者	宜大森資所育林實驗室	已取得
B4P3	二代木上小苗照片	棲蘭山	未知	同提供者	宜大森資所育林實驗室	已取得

B4P4	棲蘭山鴛鴦湖檜木原始林	棲蘭山	未知	同提供者	宜大森資所育林實驗室	已取得
B4P5	棲蘭山二代木林相解說圖	棲蘭山	未知	同提供者	棲蘭山森保處	請廠商繪製
B4P6	寬尾鳳蝶照片	棲蘭山	未知	江仕偉	宜大森資所育林實驗室	已取得
B4P7	高山粉蝶照片	棲蘭山	未知	同提供者	棲蘭山森保處	已取得
B4P8	紅點粉蝶照片	棲蘭山	未知	同提供者	棲蘭山森保處	已取得
B5P1	台灣粗榧照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
B5P2	台灣紅豆杉照片	棲蘭山	未知	同提供者	棲蘭山森保處	已取得
B5P3	台灣檫樹照片	棲蘭山	未知	同提供者	宜大森資所育林實驗室	已取得
B5P4	蠟葉標本照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
B5P5	種子標本照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
B6P1	檜木林航照圖	羅東林管處	無	無	宜大森資所育林實驗室	商借

B 區標本一覽表

編號	項目	來源	尺寸	估計重量	數量	備註
B2S1	檜木林土壤標本	土壤博物館	0.3*1(m)	10kg	1	商借
B3S1	樹幹模型	廠商製作	1*1*3(m)	10kg	2	請廠商製作
B3S2	二代木樹頭模型	廠商製作	2*3*1.5	500kg	1	請廠商製作
B5S1	台灣粗榧標本	棲蘭山	39*27cm(8開紙)	1g	1	宜大森資所育林實驗室
B5S2	台灣紅豆杉標本	棲蘭山	39*27cm(8開紙)	1g	1	宜大森資所育林實驗室
B5S3	台灣檫樹標本	棲蘭山	39*27cm(8開紙)	1g	1	宜大森資所育林實驗室
B5S4	假桧木標本	太平山	39*27cm(8開紙)	1g	1	宜大森資所育林實驗室

B5S5	玉山箭竹標本	太平山	39*27cm(8開紙)	1g	1	宜大森資所育林實驗室
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B 區影片

編號	內容	拍攝地點	拍攝時間	影片長度	提供者	版權取得
B7V1	檜木林生態系統影片	棲蘭山	未知	21 分鐘	世界遺產-台灣檜木	羅東林管處

B 區器材

編號	項目	來源	尺寸	數量	備註
B6V1	重疊式 3D 立體鏡	羅東林區管理處	1.5*1.5*1.5(m)	1	



C區圖片一覽表

編號	內容	拍攝地點	拍攝時間	攝影者	提供者	版權取得
C1P1	紅檜林木照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C1P2	台灣扁柏林木照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C1P3	紅檜枝葉照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C1P4	台灣扁柏枝葉照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C1P5	紅檜葉子照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C1P6	台灣扁柏葉子照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C1P7	紅檜樹皮照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C1P8	台灣扁柏樹皮照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C1P9	紅檜毬果照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C1P10	台灣扁柏毬果照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C1P11	紅檜種子照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C1P12	台灣扁柏種子照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C2P1	台灣扁柏小苗照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C2P2	紅檜小苗照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C2P3	棲蘭山紅檜小樹照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C3P1	檜木小苗照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C3P2	檜木小苗照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C3P3	紅檜苗木生長手繪圖	無	無	無	宜大森資所育林實驗室	
C3P4	台灣扁柏生長手繪圖	無	無	無	宜大森資所育林實驗室	
C3P5	台灣扁柏小樹照片	棲蘭山	未知	未知	宜大森資所育林實驗室	已取得

編號	內容	拍攝地點	拍攝時間	攝影者	提供者	版權取得
C3P6	紅檜小樹照片	棲蘭山	未知	未知	宜大森資所育林實驗室	已取得
C4-1P1	樹輪照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C4-2P1	樹輪照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C4-2P2	台灣扁柏樹輪照片	棲蘭山工作站	未知	棲蘭山森保處	宜大森資所育林實驗室	已取得
C4-2P3	樹輪研究相片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C4-3P1	生長錐照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C4-3P2	樹蕊照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C4-3P3	樹幹生物量調查照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C4-3P4	枝葉生物量調查照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C4-3P5	圓盤照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C4-3P6	圓盤組照片	未知	未知	同提供者	宜大森資所育林實驗室	已取得
C4-3P7	碳吸存示意圖	無	無	無	宜大森資所育林實驗室	已取得

C區器材一覽表

編號	項目	來源	尺寸	數量	備註
C1V1	放大鏡	蘭陽博物館	0.3*0.2*0.3(m)	2	
C4-2V1	樹輪鑽取工具	宜大森資所育林實驗室	0.3*0.05	1	
C4-2V2	放大鏡	蘭陽博物館	0.3*0.2*0.3(m)	1	

C 區標本一覽表

編號	項目	來源	尺寸	估計重量	數量	備註
C1S1	台灣扁柏及紅檜樹葉標本	太平山	0.15*0.1(m)	0.1KG	4	
C1S2	台灣扁柏及紅檜樹皮標本	棲蘭山	0.3*0.3(m)	0.5KG	2	
C1S3	台灣扁柏及紅檜毬果標本	宜大林世宗教授			1	
C1S4	台灣扁柏及紅檜種子標本	宜大林世宗教授			1	
C3S1	紅檜幼苗標本	太平山	0.15*0.1(m)	0.1KG	4	
C3S2	台灣扁柏幼苗標本	棲蘭山	0.15*0.1(m)	0.1KG	4	
C4-1S1	樹輪切片標本	棲蘭山	R:0.1 厚 0.05		1	
C4-2S1	樹蕊標本	棲蘭山	0.3*0.05(m)	0.1KG	3	
C4-3S1	樹幹解析標本	棲蘭山	0.5*0.1	10KG	10	
C5S1	紅檜木材標本	宜蘭大學生物資源學院森資所	0.3*0.3(m)		1	
C5S2	台灣扁柏木材標本	宜蘭大學生物資源學院森資所	0.3*0.3(m)		1	
C5S3	肖楠木材標本	廠商購買	0.3*0.3(m)		1	
C5S4	香杉木材標本	廠商購買	0.3*0.3(m)		1	
C5S5	紅豆杉木材標本	廠商購買	0.3*0.3(m)		1	

D 區照片一覽表

編號	內容	拍攝地點	拍攝時間	攝影者	提供者	版權取得
D1P1	初期木工伐木照片	未知	未知	未知	林務局羅東林管處	已取得
D1P2	竹林車站照片	未知	未知	未知	林務局羅東林管處	已取得
D1P3	太平山林場合照照片	未知	未知	未知	林務局羅東林管處	已取得
D1P4	中華號開通照片	未知	未知	未知	林務局羅東林管處	已取得
D1P5	最後伐採的一支檜木照片	未知	未知	未知	林務局羅東林管處	已取得
D2P1	木滑道照片	未知	未知	未知	林務局羅東林管處	已取得
D2P2	土滑道照片	未知	未知	未知	林務局羅東林管處	已取得
D2P3	蒸氣集材照片	未知	未知	未知	林務局羅東林管處	已取得
D2P4	柴油集材照片	未知	未知	未知	林務局羅東林管處	已取得
D2P5	木馬山地運材照片	未知	未知	未知	林務局羅東林管處	已取得
D2P6	伏地索道照片	未知	未知	未知	林務局羅東林管處	已取得
D2P7	台車運材照片	未知	未知	未知	林務局羅東林管處	已取得
D2P8	軌道運材照片	未知	未知	未知	林務局羅東林管處	已取得
D2P9	空中索道(運材) 照片	未知	未知	未知	林務局羅東林管處	已取得
D2P10	鳩之澤空中索道 (運人) 照片	未知	未知	未知	林務局羅東林管處	已取得
D2P11	平地管流運材照片	未知	未知	未知	林務局羅東林管處	已取得
D2P12	平地森林鐵路照片	未知	未知	未知	林務局羅東林管處	已取得
D2P13	平地森林鐵路照片	未知	未知	未知	林務局羅東林管處	已取得
D2P14	羅東儲木池照片	未知	未知	未知	林務局羅東林管處	已取得

D2P15	製材廠	未知	未知	未知	林務局羅東林管處	已取得
D2P16	木材乾燥廠照片	未知	未知	未知	林務局羅東林管處	已取得
D2P17	鋸木廠內原木大剖作業照片	未知	未知	未知	林務局羅東林管處	已取得
D2P18	木材防腐槽照片	未知	未知	未知	林務局羅東林管處	已取得
D2P19	林場幼稚園照片	未知	未知	未知	林務局羅東林管處	已取得
D2P20	舊太平山小學遠足	未知	未知	未知	林務局羅東林管處	已取得
D2P21	新太平山小學武士舞表演照片	未知	未知	未知	林務局羅東林管處	已取得
D2P22	文化工作隊照片	未知	未知	未知	林務局羅東林管處	已取得
D2P23	運動會照片	未知	未知	未知	林務局羅東林管處	已取得
D2P24	迎神會照片	未知	未知	未知	林務局羅東林管處	已取得
D2P25	醫務室照片	未知	未知	未知	林務局羅東林管處	已取得
D2P26	羅東林管處儲木池	未知	未知	未知	林務局羅東林管處	已取得
D2P27	羅東林管處舊火車頭照片	未知	未知	未知	林務局羅東林管處	已取得
D2P28	羅東文化林區照片	未知	未知	未知	林務局羅東林管處	已取得
D3-1P1	員山生態館照片	員山生態館	未知	同提供者	宜蘭大學森資系育林實驗室	已取得
D3-1P2	傳藝中心檜木小站	傳藝中心	未知	同提供者	宜蘭大學森資系育林實驗室	已取得
D3-1P3	棲蘭山森林遊樂區照片	棲蘭山森林遊樂區	未知	同提供者	宜蘭大學森資系育林實驗室	已取得
D3-1P4	福山植物園照片	福山	未知	同提供者	福山教育中心	已取得
D3-2P1	嘉義檜意森活村文創產品照片	嘉義檜意森活村	未知	同提供者	宜蘭大學森資系育林實驗室	已取得

D3-2P2	檜木小豬照片	嘉義檜意森活村	未知	同提供者	宜蘭大學森資系育林實驗室	已取得
D3-2P3	文創鑰匙圈照片	嘉義檜意森活村	未知	同提供者	宜蘭大學森資系育林實驗室	已取得
D3-2P4	檜木彩繪蛋照片	嘉義檜意森活村	未知	同提供者	宜蘭大學森資系育林實驗室	已取得
D4P1	檜木照片	棲蘭山	2015/4/2	同提供者	宜蘭大學森資系育林實驗室	已取得
D4P2	天然災害照片	未知	未知	同提供者	宜蘭大學森資系育林實驗室	已取得
D4P3	天然更新困難照片	棲蘭山	未知	同提供者	宜蘭大學森資系育林實驗室	已取得
D4P4	檜木原始林照片	棲蘭山鴛鴦湖	未知	同提供者	宜蘭大學森資系育林實驗室	已取得
D4P5	台灣自然保護區域圖	無	無	無	行政院農委會林務局自然保育網	已取得

展示品

編號	項目	來源	尺寸	估計重量	數量	備註
D4S1	文創產品	未知	0.2*0.1		5	

附件二、
Appendix 2



圖 1. 檜木世界分布圖

說明：

1. A 為大型展示看板輸出世界檜木分布圖，並搭配色塊或 LED 燈，展示檜木世界分布。
2. B 為大型輸出看板下方搭配可翻轉解說牌：
 - 正面：以該種類檜木照片當底圖，搭配名稱、學名。
 - 反面：文字說明。

附件三、
Appendix 3

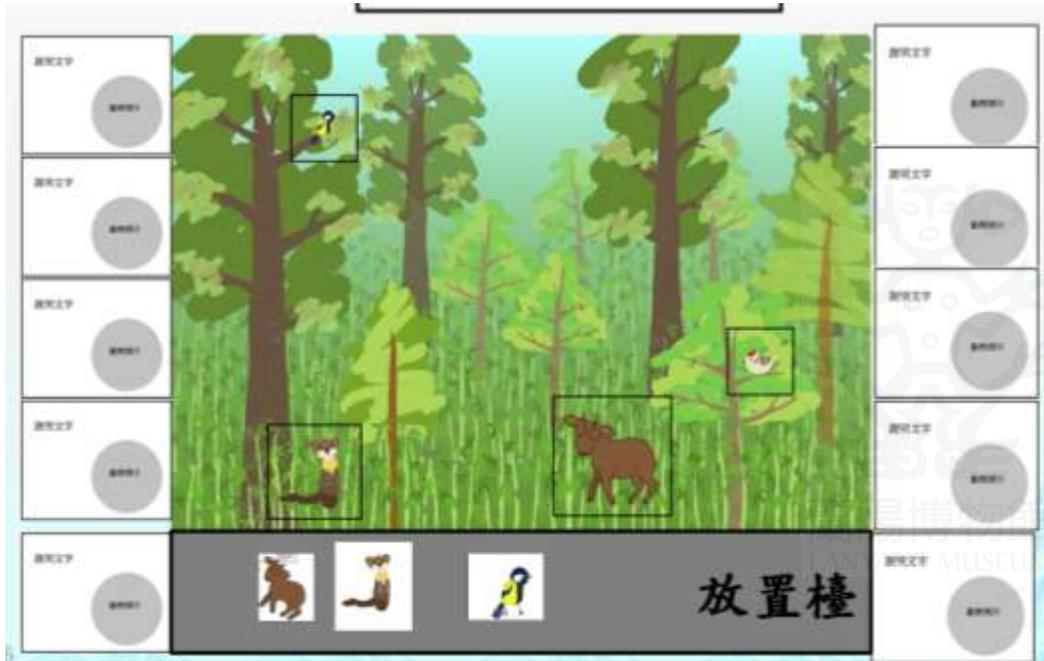


圖 2.翻牌版檜木林生態系展示示意圖

說明：

1. 以繪圖方式將檜木林的植物組成呈現於一平面上，並搭配生態系中各階層的動物。
2. 將此動物框起，製作成可翻轉式解說牌，解說牌反面為該物種文字介紹。

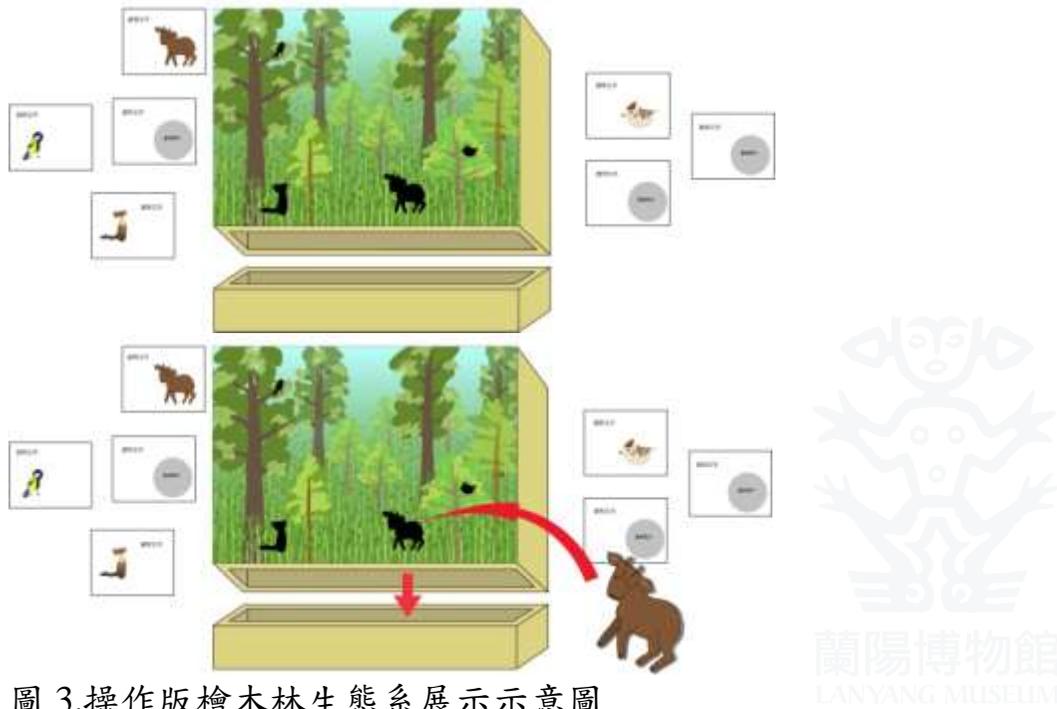


圖 3.操作版檜木林生態系展示示意圖

說明：

1. 以繪圖方式將檜木林的植物組成呈現於有深度的展示板上，並搭配生態系中各階層的動物。
2. 將動物範圍挖空。
3. 製作相對大小可放入挖空動物中的動物平面模型。
4. 搭配動物物種介紹說明海報。
5. 遊客可選擇相對圖形的動物，並將動物放入檜木林生態系中的棲息位置，搭配海報說明，因而認識檜木林中生物組成。

附件四、

Appendix 4

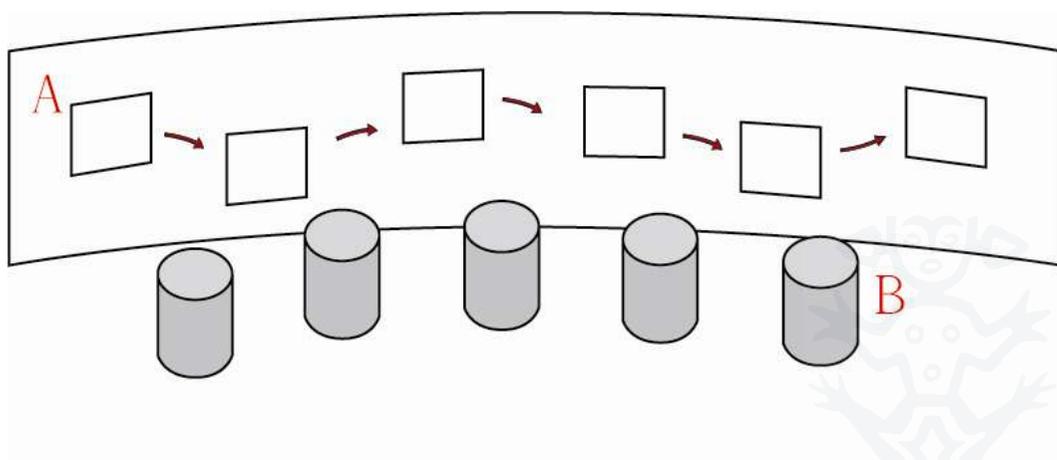


圖 4.檜木成長展示示意圖

說明：

1. A 位置為將檜木成長史的各個重要階段以照片或繪製圖片呈現，並搭配文字說明。
2. B 位置為檜木小苗的壓克力標本展示。

附件五

Appendix 5、

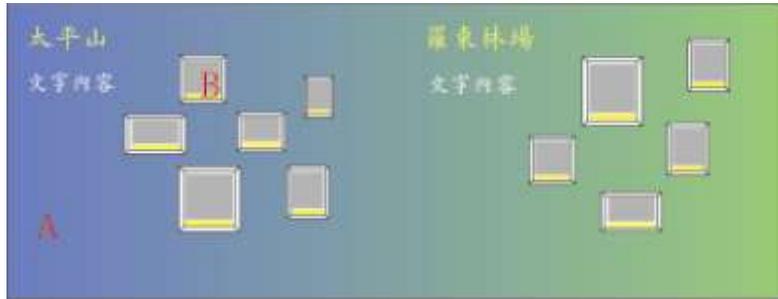


圖 5.檜木與宜蘭展示示意圖

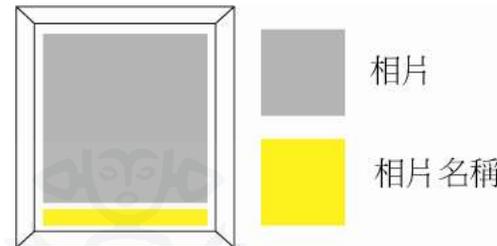


圖 6.相框內相片及相片名稱或簡易說明之配置

說明：

1. A 為該場域照片，依各主題場域不同將照片連接成一大圖輸出。
2. 底圖場域照片搭配該場域名稱及文字介紹。
3. 上方以相框掛上該場域內各類型照片，相框內配置如圖 6，並以相片牆之復古風格布置該場域之相片。

附件六、

Appendix 6



圖七.以宜蘭有關檜木景點介紹，使遊客了解宜蘭各地有關檜木特色之景點。包蘭人文及自然資源介紹。