



THE MASTER NATURALIST CHALLENGE HANDBOOK


AN INTERACTIVE ACTIVITY
TO ENGAGE WITH NATURE
AND
LEARN ABOUT THE LOCAL
ENVIRONMENT

幫助你成為自然探索高手的
9大挑戰

跟大自然互動來認識當地環境



竹湖山居櫟見之丘生態園區
JUHU ECOLOGICAL PARK



成為自然探
索高手的
9大挑戰

(中文)

竹湖山居櫟見之丘生態園區
JUHU ECOLOGICAL PARK

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01 關於{成為自然探索高手的9大挑戰}

竹湖山居櫟見之丘生態園區是位於海拔110 ~ 300 m 的常綠闊葉林。現在所看到的地景與過去30到60年前不同，當時的土地利用主要為農業，如香茅、稻田、檳榔、竹子混合林和水牛放牧。隨著時代變遷，大部分的農民為了更好的就業機會而放棄農業。因此森林逐漸生長，大部分野生動物也回來了。我們想了解自然環境為什麼會演變成目前的狀態，並評估該地區的生態健康狀況。通過當地的生態認知和長期調查，我們正在收集關於環境的資訊，以便我們能夠找到與自然和諧相處的方式；透過獲得的資訊讓我們可以運用在生活和教育上。因此，這些挑戰是為你設計的第一個活動。

" 成為自然探索高手的 9 大挑戰 " 是一項激發你探索和融入竹湖山居園區的活動。這項活動你可以在參訪或住宿期間自行完成，每個挑戰都是由特定動物群或特定主題組成的，包含如鳥類、哺乳動物、昆蟲、菌類、植物等。主題不只包括園區內所有不同的生物多樣性，也同時考慮到季節

變化，有些挑戰最好在特定季節或一天中的某個時段完成。但無論你何時來，總會有活動可以選擇，有些挑戰是只需要短時間即可完成的任務，而有些挑戰則有多個等級 (levels)，其等級是根據需要花費的時間和精力、戶外技能和運氣來分的。

設計這一挑戰的原因是我們希望鼓勵人們重新打開麻木的感官並探索周圍的自然。活動可以單獨或以小組的形式完成，在觀察自然的過程中需要放慢腳步、投入當下、仔細聆聽以及保持好奇心。無論人數的多寡和挑戰的項目，相信一定會有值得回憶和學習的地方。

02 如何開始進行

下載 iNaturalist 應用程式

第一個步驟是你必須要有一個 iNaturalist 帳戶並在你的手機上下載它的應用程式。此應用程式適用於 Google Play 和 Apple Store。

下載 iNaturalist App



加入我們的專案

下載後，你必須登錄或註冊，並到信箱驗證通知信按下確認連結。登入後，你會在螢幕右下方看 "專案"。你需要加入我們創建的專案。在搜索欄中輸入 "Juhu Ecological Park (竹湖山居)" 和 "Oak Hill, Taiwan 殼斗科" 並加入，在此專案裡，你將看到其他成員的所有觀察。

點擊左下角的 "探索" 按鈕並縮放到有興趣的位置，可以查看在世界任何地方進行過的觀察！你可以探索已發現生物的內容、地點和發現者，這是了解你的環境和當地生物多樣性的好方法。如果你是新成員，請盡情摸索。最重要的是，玩得開心！iNaturalist 是全球自然愛好者的應用程式，盡情享受探索周圍植物和野生動物的樂趣吧。

如何進行觀察

觀察自然需要耐心，注意細節和微小動靜，你聽到什麼？你聞到什麼？你看到什麼？打開你的感官來感受你周圍的環境。有目的的融入自然會讓你完全專注於當下；最重要的是放慢腳步、保持安靜、隨時記錄，這樣才能成功的觀察到一些生物。

一些提示和建議

iNaturalist 每次只允許上傳最多 4 張照片。所以請選擇最好的照片。確保你的照片盡量清晰和聚焦。如果你正在尋找動物，請嘗試從不同的角度拍照。如果動物移動得太快，那麼你可以錄影並截取最佳片段。如果你正在尋找植物，請務必拍葉子正面和背面的照片，至少包括一到數樹枝。如果植物有花或果實，也給它拍張照片！同時，你可以觸摸樹葉，感受它的質感，與氣味。這是植物告訴你他的身份的方式，邀請你將標誌性的香氣吸入肺部，與植物結合和相融。做為範例，在我們的專案中已經有許多圖片，你可以先參考。我們希望收集到的觀察盡可能達到研究等級 (Research Grade)，意思是別人有協助辨認你觀察的生物。

02 如何開始進行

如何上傳觀察結果

上傳時，請點擊下方“觀察”然後點選“相機”或“照片圖庫”。網路良好時建議可以用iNaturalist的相機照相，因為它可以同時知道你的定位。照片圖庫是開啟相簿的照片。下一步是辨認物種。請填寫物種名稱（可寫中文或英文學名或別名）。如果不知道的話，你可以讓應用程序為你做出最好的猜測，或者將其留空，有其他的會員可能會為你提出物種建議。接下來要標記你觀察的位置。點擊“探索”然後移動地圖到你觀察的地方，確認後按保存，定位盡量精確。如果當下有良好網路，該應用程序可以直接標記到你所在的位置（左下的綠色箭頭），而且非常精確。順帶一提，如果你將觀察結果標記在正確的位置，你上傳的內容會自動包含在正確的專案裡面了。最後點擊分享上傳你的觀察結果。

標記正確的位置有助於我們了解物種的分佈模式和季節變化。我們信任並參考你的觀察，因此對我們很重要。

建議

如果你選擇動物愛好者，我們非常鼓勵你在註釋部分添加額外的觀察特徵，例如性別、年齡（幼體或成體）和觀察到的行為如覓食、進食、休息、競爭、棲息、靜止的、死的等。請注意是否周圍有良好的Wi-Fi和網路信號。在無法獲得良好網路的地區，建議先進行觀察，然後在連接到網路後再上傳。但是，你必須記住你是在哪裡進行觀察的。



02 如何開始進行

iNaturalist App 畫面與專案的介面



掃描以下閱讀更多資訊關於如何在iNaturalist 開始 (只有英文):



Map Legend

QUALITY GRADE

- Research Grade
- Needs ID, Casual

GEOPRIVACY

- Open
- Obscured

TAXONOMIC GROUPS

- Amphibians, Birds, Ray-Finned Fishes, Mammals, Reptiles, Other Animals 兩棲類、鳥類、鰭魚、哺乳動物、爬行動物、其他
- Mollusks, Arachnids, Insects 軟體動物、蜘蛛、昆蟲
- Plants 植物
- Fungi 真菌
- Chromista 色藻界
- Protozoans 原生動物
- Unknown 未知

02 如何開始進行

註冊成為會員



填寫表單

開始參加挑戰活動前，需要填寫一份表單。這個表單是註冊成為會員，讓我們知道一些關於你的背景資訊。我們使用這些資訊來更好的管理你的觀察中收集的數據。除非必要我們才會聯繫你。

第二種表單是你在完成一個等級或挑戰時必須填寫的。這讓我們知道你做了什麼，並幫助我們更好的管理會員的活動歷史記錄。

有兩個挑戰在進行中時，需要填寫表單（也算是一個記錄表），如山羌調查員（線上的）與鳥類學家（紙本的）挑戰。雖然是記錄表的功能但使用相同的平台，所以我們仍然稱為表單。

單獨或組隊如何進行

你可以單獨或組隊參加任何挑戰。如果你是一個小隊，每個新成員都必須先註冊成為我們會員。之後，你可以決定是你們要整體一起觀察還是單獨觀察。如果你們作為一個團隊一起行動，那麼你們將分享一組觀察結果。如果某個隊員決定一起跟著但分開觀察，那麼每個隊員的觀察結果會變成不同。這取決於你。如果你們是一起執行，那麼你們只需要派一個人填寫一次完成表單。如果你小組的隊員分開執行，則每個隊員都必須填寫完成表單。當你完成一個level或挑戰時，獎勵也會有所不同。作為一個團隊一起執行的小組，你們共同分享獎勵。單獨行動將獲得單獨的獎勵。假如，有一群5個人一起出去執行，其中3人想一起執行，而其中2人想單獨執行。前三人選出代表填寫完表單，共享獎勵。決定分開執行的兩個人將各自填寫完表單並獲得各自的獎勵。

閱讀第5節（第21頁）了解更多關於獎勵類型的資訊。



03 9 大挑戰

註冊並成為我們
網站的會員



挑戰 1

野生動物攝影師

去尋找野生動物吧！錄製一個 10 ~ 20 秒長的影片並發布在我們的網站裡的生態論壇上。

1. 你必須註冊會員並登入
2. 你會在論壇頁面找到 "Create a post/ 發文"。
3. 選擇"野生動物"的分類，並加上 #wildlifefilmmaker 或 #野生動物攝影師的標籤。

提示：行動間盡量保持安靜，並確保光線和焦點良好。

加分題：敘述或解釋影片內容，那就太棒了（影片配音或文字說明）！

挑戰 2

山羌調查員

數一數你今天遇到了幾隻山羌！

本次調查使用步行計數法 (walked count method)。我們正在嘗試收集資料來估計不同地區山羌相對豐度 (relative abundance)，並進一步了解與山羌相關的生態問題，我們希望這可以協助未來的管理策略。牠們並不難找，你會發現遇到牠們會很驚喜與興奮！你準備好接受挑戰了嗎？保持安靜，緩慢且穩定地移動，利用你的好眼力。如果你沒有信心獨自完成，可以請我們的人員陪同。提醒調查過程中保持表單開啟，因為你需要記錄一些描述性信息。（請注意，你仍然需要填寫任務回報表單。）

掃描一下詳細閱讀如何進行山羌調查的步驟：



四條步道選項：

1. 從餐廳到大草原 (魚池)
2. 從餐廳到山稜線, 就是到滑索 500 m 的終點
3. 從滑索起點到櫟見之丘的入口
4. 在櫟見之丘的範圍內

如果你不知道這些路徑在哪裡，請查看第45頁的地圖



記錄表單



03 9 大挑戰

挑戰 3

夜貓子

如果你想享受舒適的夜間散步和美麗星空，那你來對的地方了。這個挑戰很適合！你的目標是要記錄至少1個夜行動物的聲音或影像。

在這園區已知的夜行性物種有大赤鼯鼠、一些蛇、山羌、青蛙、貓頭鷹（如領角鴞、黃嘴角鴞、褐鷹鴞、領鵂鴞）、其他種鳥類（如麻鷺、灰腳秧雞）……等。

將你的觀察結果上傳到 iNaturalist，並確保你將觀察結果標記在正確的GPS位置。如果你無法辨認物種，請詢問我們或讓 iNaturalist 上優秀的辨認者為你完成這項工作！

提示：向上看，向下看！

挑戰 4

動物愛好者

你的任務是盡可能找到不同種類的野生動物，越多越好！你不覺得能夠在這看到這麼多種的野生動物很酷嗎？做一些有目標的事情，比如這個挑戰，是度過戶外時光的好方法。完成後，可以跟朋友和家人炫耀你的觀察結果。他們會很羨慕聽到你在這裡的充實經驗。通過觀察以下至少12種生物成為一名動物愛好者：鳥、蛇、蜥蜴、青蛙、蜘蛛、螃蟹、蝦、蝴蝶、蛾、蜜蜂、甲蟲、螞蟥或其他昆蟲、魚、松鼠、山羌、獼猴、老鼠、鼯鼠、食蟹螯、白鼻心、野豬、台灣山羊等。注意這只有見到的（而非聽到）物種。

將你的觀察結果上傳到 iNaturalist，並確保你將觀察結果標記在正確的GPS位置。如果你無法辨認物種，請詢問我們或讓 iNaturalist 上優秀的辨認者為你完成這項工作！

03 THE 9 CHALLENGES

挑戰 5

愛菇人

你知道台灣至少有幾千種不同的真菌嗎？而且有幾百種是常見的野菇！它們往往出現在潮濕的地方，尤其是雨後土壤或腐爛的林木上。竹湖山居有哪些野菇，我們其實不太了解，於是要靠我們自己去尋找！如果我們找到指標性真菌物種，那麼我們可以用這些資料來幫助評估棲地狀態。

LEVEL 1 好野菇

你的任務是找到菇類並拍照！簡單吧？嗯... 也許... 嘗試以不同角度多拍幾張，在iNaturalist上傳你的照片，不要忘記標記在正確的GPS位置，也不要擔心無法辨認物種，可以詢問我們或讓iNaturalist上優秀的辨認者來幫助你！

LEVEL 2 蕈找你的熱情

你的任務是尋找3種不同的菇類並拍下它們。是的，三種！這個挑戰代表你對菇類的熱情！嘗試以不同角度多拍幾張。順帶一提，你的觀察結果必須與Level 1的觀察目標不同。

挑戰 6

野獸狂人

目前在園區已經有至少12種哺乳動物被發現。憑藉一點點運氣、技巧、安靜和耐心，你或許會看到牠們在你面前出現（或發現牠們的遺體）。有些物種非常容易見到，如山羌和獼猴，事實上，牠們有點太多了。這實際上是我們正在努力解決（跟適應）的一個問題，我們已經沒輒了。在你的幫助下，我們可能會更了解我們的動物鄰居。例如，我們可以知道這些動物在哪裡活動，以及我們如何與牠們共存。

你只要知道每一次觀察都很重要，我們希望能夠從這些體驗中獲得一些有意義和有趣的收穫。你準備好成為野獸狂人了嗎？

LEVEL 1 放眼腳下

其實每天動物們都會留下牠們活動的痕跡，如果你知道如何尋找。你的任務是追查牠們的活動跡象，特別是以下三列：

03 THE 9 CHALLENGES



挑戰 6

哺乳狂熱

1. 山羌糞便
2. 獼猴糞便
3. 野豬痕跡（腳印、挖掘土坑或植物折損痕跡）

將你的觀察結果上傳到 iNaturalist，並確保你將觀察結果標記在正確的 GPS 位置。如果你無法辨認物種我們能夠提供協助，也可以對照第47頁的照片做參考，或讓 iNaturalist 上優秀的辨認者為你完成這項工作！

小提示：山羌的糞便看起來像很多咖啡豆，顏色很深，而獼猴的糞便是很軟的長條，有時呈螺旋狀，也有點像人類的糞便。有時野豬和獼猴的糞便看起來很相似。然而，野豬糞便的形狀更不規則。它們看起來像是粘在一起的更大的團塊，裡面有可見的植物纖維。

LEVEL 2 遠在天邊？近在眼前！


你的任務是在不同時間或地點拍攝兩隻山羌。這個有點棘手，因為牠們常常在你拍照之前就跑掉了。但不要傷心，就算你錯過了，還有很多機會等著你。牠們偏好在早晨或傍晚活動，為增加成功機會，請準備好手機。慢慢走、保持安靜、輕聲細語。你也可以在某處安靜的待一會兒，直到山羌出現。相信我，只要有耐心！最後一個提示，你也可以先錄影，再截圖最清楚的動物片段。

將你的所有觀察結果上傳到 iNaturalist，並確保你將觀察結果標記在正確的 GPS 位置。

LEVEL 3 樹上小精靈

你的任務是尋找兩隻松鼠並拍下牠們。園區內的赤腹松鼠，呈深棕色，蓬鬆的長尾巴。哎呀！你說這很難？或許吧 ...

有趣的是，很多時候你都是先聽見才看到牠們，而且牠們常常出現在傍晚或清晨。一個小提示，可以在下午時到森林裡或餐廳周圍的樹上找找看牠們。



03 THE 9 CHALLENGES

挑戰 6

哺乳狂熱

LEVEL 4 廣食性者

食蟹獾在台灣數量明顯變多。在園區內我們觀察到確實如此，你的任務是為食蟹獾拍張照！雖然說數量眾多，但要遇到牠，比起技巧，更需要的是一點運氣。我知道你在想“我究竟該從哪裡開始呢？”別擔心，我們在這裡待久了，可以告訴你在哪裡比較有機會可以看到牠們。

作為提示，慢慢走，保持安靜，並注意四周。我們常會發現他們穿越道路或從我們周遭跑進灌木叢中。牠們喜歡在早上和傍晚較涼爽的時候出現。你也可以嘗試先錄影片，然後在最清楚的片段截圖。



挑戰 7

昆蟲視界

世界上有許多不同種類的昆蟲。但全球的昆蟲多樣性正在急劇下降，為什麼呢？這是一個沉重的問題，殺蟲劑、汙染、棲息地破壞/劣化和氣候變化是很重要的原因。

假設世界上昆蟲消失了，我們的餐桌上就少了水果和蔬菜、也不會有充滿不同植被的繁榮棲地來孕育其他動物，所以，昆蟲很重要！當我們想到昆蟲時，常會想到蚊子、蟑螂和蜚人的蜂，將所有昆蟲歸類為煩人和噁心，但事實並非如此！讓牠們有機會被看到和欣賞牠們的美麗。若你不喜歡但不害怕昆蟲，這個挑戰可能會改變你對牠們的看法。

好了，故事說完了，大家可能都或多或少知道昆蟲的重要性。但我們想知道在竹湖山居有沒有恢復昆蟲多樣性的方法？

有一種幫助的方法就是完成這挑戰。是的，方法就是這麼簡單。你準備好進入昆蟲視界了嗎？

03 THE 9 CHALLENGES

挑戰 7

昆蟲視界

LEVEL 1 勤勞的觀察者

你的任務是找到五種不同的昆蟲。

將你的觀察結果上傳到 iNaturalist，並確保你將觀察結果標記在正確的 GPS 位置。如果你無法辨認物種，請詢問我們或讓 iNaturalist 上優秀的辨認者為你完成這項工作！

LEVEL 2 愛在空氣中

你能感受到愛嗎？你的任務是找到一對昆蟲，最好是在交配中、跳舞、互相依偎，或者只是在彼此陪伴。拍一拍牠們並上傳到 iNaturalist。

將你的觀察結果上傳到 iNaturalist，並確保你將觀察結果標記在正確的 GPS 位置。如果你無法辨認物種，請詢問我們或讓 iNaturalist 上優秀的辨認者為你完成這項工作！

LEVEL 3 蜜蜂你忙不忙？

你的任務是尋找蜜蜂（不是其他的蜂類）。我們想知道在哪裡能找到牠們，牠們的巢穴在哪裡以及牠們喜歡拜訪什麼花。據研究，蜜蜂的數量一直在減少，我們需要收集數據才能有更多了解。我們需要你的幫助！你能在3個不同的地點完成蜜蜂觀察嗎？

如果你發現牠在某種花或果實周圍飛舞，你需要拍到花或果實。

提示，你可以去滑索500米終點附近的大葉雀榕，或尋找開花植物來增加你的機會。事實上，牠們可能在你發現牠們前就飛過來找你喔！

LEVEL 4 昆蟲幼稚園

昆蟲寶寶，胖嘟嘟、扭來扭去、軟趴趴的小東西。

毛毛蟲、甲蟲幼蟲、蒼蠅幼蟲和其他在水中游泳的幼蟲。常常在樹葉下、葉子上、木頭裡、樹皮內、岩石下、腐爛的水果上、垃圾桶裡、森林地面上，甚至就在路上以及其他許多地方！你的任務是對幼蟲進行4次不同的觀察並將它們上傳到 iNaturalist。確認你將觀察結果標記在正確的 GPS 位置。如果你無法辨認物種，請詢問我們或讓 iNaturalist 上優秀的辨認者為你完成這項工作！



03 THE 9 CHALLENGES

挑戰 8

觀鳥者

在過去，這個山區周圍可聽到許多的鳥鳴聲。曾經鳥會也常常在這裡定期賞鳥類。但有一天，他們不來了，因為他們發現鳥類的數量正在逐漸減少。現在，由我們來監測哪些鳥住在這裡，哪些鳥會路過這裡進行遷徙。雖然這對你來說可能只是一項有趣的賞鳥活動，但你的觀察和記錄對我們來說是有用的數據。我們想知道哪些鳥相對更常見、少見和哪些正在遷徙；我們也想知道牠們喜歡在哪裡活動以及在哪裡築巢。進行這個挑戰將幫助我們一起解答這些問題。

LEVEL 1 拍鳥達人

在生態學中，鳥類是生態系統健康的可靠指標之一。因為我們可以很容易地聽到牠們的聲音！但是，對於此任務，你必須實際看到牠們。因此，你想成為一名鳥類攝影師並為 3 種不同的鳥類拍照嗎？

如果你無法辨認牠是什麼鳥，請使用這些應用程式來幫助你：BirdNET、eBird、Merlin，當然還有 iNaturalist。iNaturalist 上有鳥類專案，例如 "Taiwan Birds"，你可以依賴這些項目作為照片參考。你也可以瀏覽我們的網站，查看目前已知的鳥類有哪些。



BIRDNET APP



EBIRD APP



MERLIN APP



TAIWAN BIRDS

LEVEL 2 森林歌唱家

Level 1 的任務是要求你對 3 種不同的鳥進行觀察，但 level 2 的任務是對 3 種不同的鳥進行錄音記錄並辨認。是與拍照不同的挑戰，因為它需要確保你正在錄音的鳥叫在音檔中是清晰的，以便其他人聆聽。每個錄音必須至少 10 秒。有些鳥叫聲之間的時間隔很長，因此請確保你至少錄到 2 次同一隻鳥的叫聲或歌曲。BirdNET 應用程式和 Merlin 應用程式都可以幫助辨認聲音。你也可以使用這些應用程式直接錄音。

清晨到日出後幾個小時是鳥最喜歡唱歌的時候。為了避免在背景中出現噪音，錄音時不要說話，將你的錄音設備朝向聲音的來源。請記得標記正確的 GPS 位置。



03 THE 9 CHALLENGES

挑戰 8

觀鳥者

LEVEL 3 間諜

你的任務是發現森林底層偽裝躲藏的鳥類。目前這裡已知的有翠翼鳩、台灣竹雞、紅冠水雞（在水域區域）、深山竹雞和八色鳥。你可以在我們網頁的環境專區查看這些鳥類的圖片。

分享一些小技巧：如果你聽到地面上有一些動靜，尤其是在牠振翅的時候，那可能有一隻鳥。第二，這些鳥兒有不同的叫聲，所以執行任務時保持耳朵暢通，聽聽牠們的叫聲。切記！很可能你發現前牠們就被你嚇到飛走了。所以保持安靜慢慢走，再加上一點運氣，你才可能完成任務！拍一張地棲鳥的照片，然後上傳到iNaturalist。請記住為標記正確的GPS位置。如果你無法辨認物種，請詢問我們或讓iNaturalist上優秀的辨認者為你完成這項工作！

以下是這些鳥的聲音：

翠翼鳩



台灣竹雞



紅冠水雞



深山竹雞



八色鳥



LEVEL 4 鳥類學家

來做一些有趣的事，體驗看看如何調查鳥類。但這不是一件容易的事，因為你需要有一定程度辨認鳥類的能力。一般來說，你要做的就是沿著一條小路慢慢走，辨認出你看到的鳥並記錄牠們的數量。牠們可能棲息在樹上、灌木叢中，或者就在你周圍飛來飛去！

最好有至少2人進行，其中至少有1人對於辨認鳥類經驗豐富。你需要銳利的雙眼和專注的心、雙筒望遠鏡和一本鳥類圖鑑(有提供借閱)。出發前向工作人員拿記錄表單與確認30米參考距離，以防止主觀差異。我們也會示範步行速度並給予其他建議。進行這項調查的最佳時間是太陽升起前後到天氣變熱前，還有日落前的一小段時間。最後，若情況許可，我們也有機會陪同。



03 THE 9 CHALLENGES

挑戰 8

觀鳥者

LEVEL 4 鳥類學家

請掃描閱讀以下調查的步驟：



LEVEL 5 甜蜜的家

鳥巢的形狀、大小和位置各不相同。我們很少能看到牠築巢，所以找到鳥巢將是一個驚喜！根據自動相機影像和目擊資料，獼猴使鳥類成功孵化鳥蛋的任務變得艱難。牠們會獵食鳥蛋和幼鳥。如果我們找到鳥巢，那我們就可以監控或嘗試保護牠們。對於這個挑戰的最後一項任務，你需要前往森林觀察1個鳥巢或巢洞。小心，不要將鳥巢和蟻窩搞混了喔！

03 THE 9 CHALLENGES

挑戰 9

植物學家

在挑戰的過程中，你將學習如何成為一名業餘植物學家。環顧四周，你一定會看到滿滿的、深淺不一的森林綠。這裡有典型的低海拔常綠闊葉林，這些樹長滿了側枝，為動物提供許多不同種類食物來源。訓練你的眼睛來辨認植物的關鍵特徵，區別樹種。有些是可食用的，有些聞起來充滿特殊味道，有些則在生態系中扮演重要的角色。植物是神奇的，它們創造一個充滿氧氣的星球！它們是地球之肺。

LEVEL 1 嗅覺饗宴

春夏秋冬，各種鮮花盛開，花的香氣隨風飄散。當你走過，鼻間充滿淡淡的花香。無論在哪個季節，你都一定能找到五顏六色的開花植物。你的任務是去找到 4 種不同的花並拍照。同時，你也可以品聞花香。出於尊重，請勿攀折鮮花並輕拿輕放。如果你真的喜歡，可以撿起已經掉落的花。

將你的觀察結果上傳到 iNaturalist，並確保你將觀察結果標記在正確的 GPS 位置。如果你無法辨認物種，請詢問我們或讓 iNaturalist 上優秀的辨認者為你完成這項工作！

LEVEL 2 森林珠寶

植物會長出各種形狀和大小的種子。母樹的使命是為其後代提供足夠的營養令其順利成長。種子則依靠它的傳播機制帶它遠離母親，期望落在一個符合生長條件的地方。你的任務是四處走走、探索並找到 3 種不同的種子。但是，種植作物的種子不算在內（如芭樂、香蕉、柿子和柑橘類）。你可以在地上或剝開果實時找到種子。如果你找到殼斗科種子(橡實)，請不要把它摘下來！在 iNaturalist 上傳你的觀察結果，並確保你將觀察結果標記在正確的 GPS 位置。如果你無法辨認物種，請詢問我們或讓 iNaturalist 上優秀的辨認者為你完成這項工作！

03 THE 9 CHALLENGES

挑戰 9

植物學家

LEVEL 3 櫟見之丘大冒險

你的任務是在櫟見之丘走走，尋找特定的植物。你準備好參加冒險了嗎？以下是你必須找到並拍照的植物。確認你的圖片已經上傳到 iNaturalist。（請注意，列表中的殼斗科樹種會不定時更改，並發送通知。）

指南：進行植物觀察時，必須拍一些葉子的照片，葉子跟樹枝都要出現在照片裡，正面和背面都要。另外，可以拍攝植物的整體照片以顯示樹型特徵（儘管這不是必需的），也可以拍花和果實的照片，但請記住 iNaturalist 有限制每次觀察最多 4 張圖。建議先瀏覽 iNaturalist 的 JEP 專案中的圖片，了解如何拍攝植物照片。你必須尋找的物種是：

1. 金新木疆子 Golden Bolly Gums (*Neolitsea Sericea aurata*)
2. 食茱萸 Japanese Prickly Ash (*Zanthoxylum ailanthoides*)
3. 土肉桂 Indigenous cinnamon (*Cinnamomum osmophloem*)
4. 阿勃勒 Golden shower tree (*Cassia Fistula*)
5. 赤皮 Red Bark Oak (*Quercus gilva*)
6. 短柄枹櫟 / 思茅槠櫟 Short Stipes Oak (*Quercus serrata brevipetiolata*)
7. 小西氏石櫟 / 油葉柯 Konishii Tanoak (*Lithocarpus konishii*)
8. 捲斗櫟 Revolute Cupule Oak (*Quercus pachyloma*)
9. 短尾葉石櫟 Short-tailed Leaf Tanoak (*Lithocarpus harlandii*)
10. 青剛櫟 Ring-cupped Oak (*Quercus glauca*)
11. 子彈石櫟 Smooth-leaf Tanoak (*Lithocarpus glaber*)
12. 狹葉櫟 Alishan Oak (*Quercus stenophylloides*)
13. 森氏櫟 Morii Oak (*Quercus morii*)
14. 大葉石櫟 Kawakami Tanoak (*Lithocarpus kawakamii*)

03 THE 9 CHALLENGES

挑戰 9

植物學家

LEVEL 4 櫟見之丘的可食植物

如果你參加我們的導覽，你會了解不同植物種類的用途與故事。有的用作加工原料，有的具有藥用，有的可以食用。你能在櫟見之丘找到 5 種不同的食用植物嗎？

列表中的食用植物部位是花、葉、果或樹皮。櫟見之丘可食用的植物不多。四處走走，探索，仔細觀察，如果你不確定，可以掃描樹上的標籤。完成後，你可以告訴你的朋友和家人新學到的可食用的植物。不要忘記將你的觀察結果上傳到 iNaturalist 上並定位正確的 GPS 位置。

1. 食茱萸 Japanese Prickly Ash (*Zanthoxylum ailanthoides*)
2. 香葉萬壽菊 Lemmon's Marigold (*Crotalaria spectabilis*)
3. 土肉桂 Indigenous Cinnamon (*Cinnamomum osmophloeum*)
4. 小葉桑 Paper Mulberry (*Morus australis*)
5. 大葉雀榕 (*Ficus caulocarpa*)
6. 澀葉榕 Rough-leaved Fig (*Ficus irisana*)
7. 菲律賓榕 (*Ficus ampelos*)
8. 茄冬 Bishop Wood (*Bischofia javonica*)

LEVEL 5 探索竹湖山居

向任何方向走，了解園區植物的多樣性。有些是人工種植，有些是台灣原生或特有的植物，有些是人為引進的，有些是農作物。到任務結束時，你肯定會記住至少 4 種新植物，你可以跟朋友和家人炫耀你認識的新植物！

你的任務是尋找下面列表所有植物。有些很常見，而有些則需要好好搜尋才能找到。樂趣在於尋找和對照你是否正確找到植物的過程！請記住將你的觀察結果上傳到 iNaturalist 上，並確認為每個觀察結果標記正確的 GPS 位置。

03 THE 9 CHALLENGES

挑戰 9

植物學家

1. 九芎 Taiwan Crepe Myrtle (*Lagerstroemia subcostata*)
2. 黃連木 Chinese Pistache (*Pistacia chinensis*)
3. 月橘 Orange Jasmine (*Murraya paniculata*)
4. 台灣櫟木 Taiwan Zelkova (*Zelkova Serrata*)
5. 無患子 Chinese Soapberry (*Sapindus mukorossi*)
6. 桂花 Sweet Osmanthus (*Osmanthus fragrans*)
7. 青剛櫟 Ring-cupped Oak (*Quercus glauca*)
8. 台灣欒樹 Flamegold Rain Tree (*Koelreuteria henryi*)

LEVEL 6 信心挑戰

如果你完成了以上的任務，可以測試一下你的辨認能力！這更像是一個小測驗而不是任務。

你準備好接受挑戰了嗎？我們會提供 10 張一些常見或標誌性植物的圖片，其中許多你可能已經觀察過。如果你能正確辨認至少 8 個，你就通過了！沒有人喜歡測試，但這是鞏固記憶的最佳方式之一。測試幫助我們減少遺忘，尤其是在壓力和需要時測試更能幫助我們不會忘記！來找我們參加這個測驗吧。

04 任務回報

有幾個動作需要完成才能確保你成功達成一個level或挑戰。首先，你必須填寫完成表單並將回覆截圖給我們看（親自或通過社群媒體），還有你在 iNaturalist 上傳的觀察結果的截圖。如果你已經完成了 "山羌調查員" 或 "鳥類學家" 的挑戰，你仍然需要填寫完成表單。

此外，如果你完成 "野生動物攝影師" 的挑戰（已經上傳在我們的環境專區網頁），請回報及截圖讓我們確認。

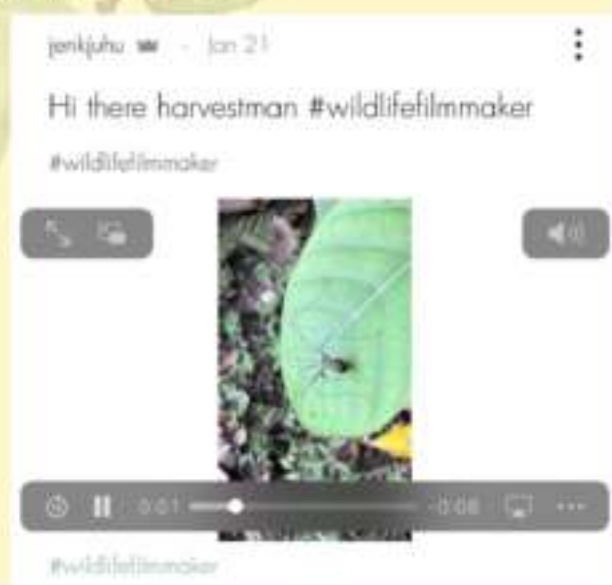
填寫完成表單：



截圖例子：



截圖例子：



截圖例子：



05 獎勵

取決於你完成的等級和挑戰。我們精心設計了各種通關和隨機獎勵。我們評估等級或挑戰的難度或花費時間，作為獎勵大小的判斷依據。如果你完成所有挑戰，則會獲得限量版禮物！對於後來的挑戰者來說，你會是令人佩服的通關達人。

所有獎勵均為竹湖山居生態園區內手工製品或農產品。裝飾品和手工藝品由我們製作，我們希望每一份獎勵都是特別的並且對你有意義。它們因愛而生，與竹湖山居生態園區的生物多樣性息息相關。

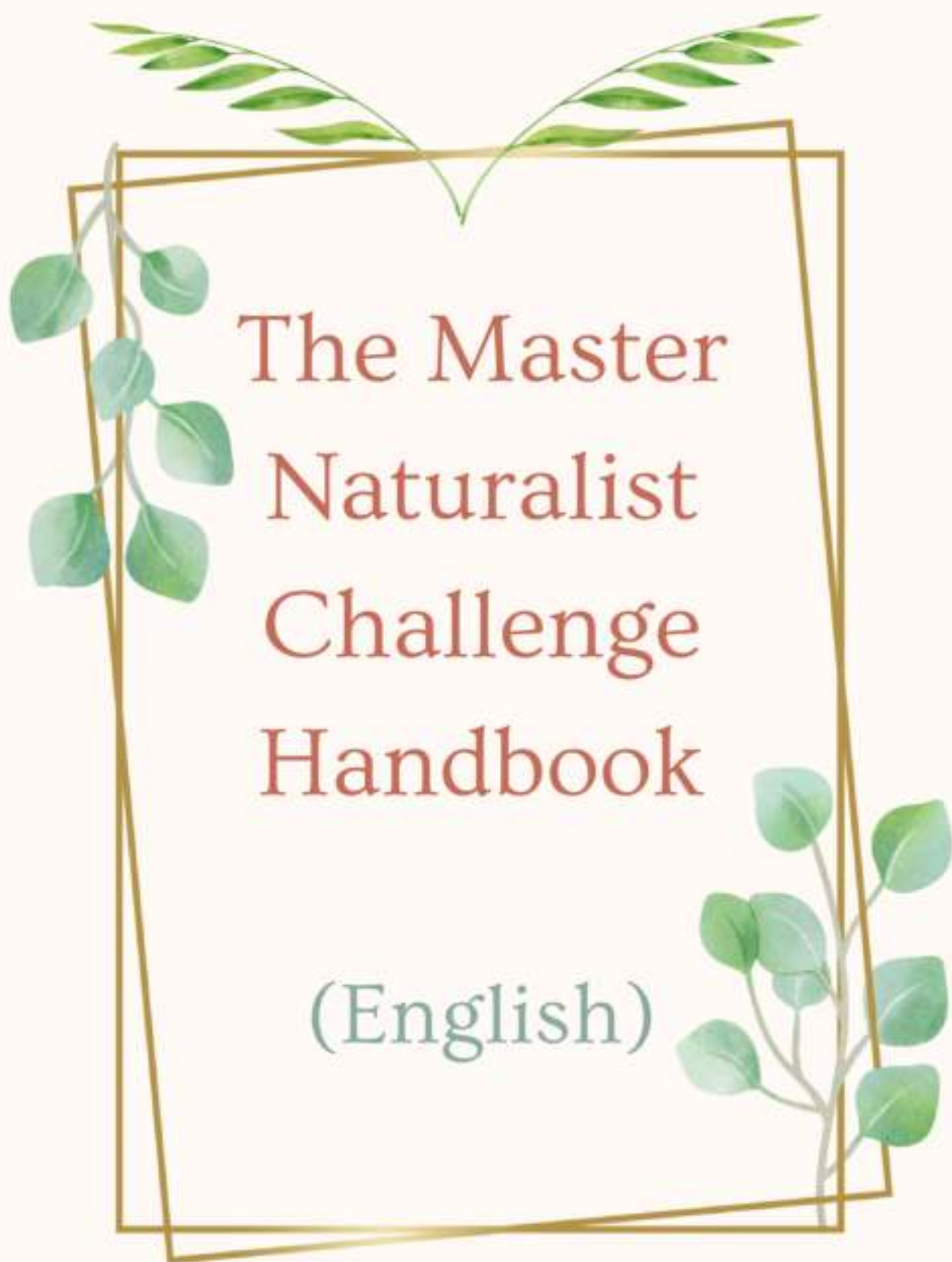


結言：

參與這些活動對你和我們都有許多積極的成果。以下是我們認為最大的收穫：

- 以了解當地生物多樣性和在過程中做為參與者為共同目標，創建一個由不同背景組成的社群網絡
- 協助解決環境問題，例如評估生態系統健康和尋找生態中的指標物種
- 我們的數據可用於環境管理，以實現土地利用目標並改善棲息地
- 為所有人創造學習體驗






竹湖山居櫟見之丘生態園區
JUHU ECOLOGICAL PARK

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01

ABOUT THE MASTER NATURALIST CHALLENGE (MNC)



Juhu Ecological Park is situated on a lowland foothill with an elevation ranging from 110 to 380 m. The landscape seen now was very different than 30 to 60 years ago. The area was mainly used for agriculture, such as citronella plantations, rice patties, beetle nut plantations, and cattle browsing. Farmers abandoned their farming practices because of better working opportunities. As a result, forests grew back and wildlife animals returned. We want to understand why nature is the way it is now and assess the ecological health of the area. With both local ecological knowledge and preliminary surveys, we are gathering as much knowledge as we can about the environment so that we can develop ways to live in harmony with nature. For example, we want to find key indicator species that represent an ecosystem, improve ecological states, and restore habitats. We desire to share the knowledge we obtain for entertaining and educational purposes. As a result, the Master Naturalist Challenge (MNC) is one of the first activities created, an activity for anyone to get engaged in an immersive exploration with the local biodiversity around Juhu Ecological Park.

The MNC consists of 9 varying challenges, which are considered as observational goals, i.e., missions. Each challenge has its own theme about a particular group of animals or a specific topic. There are challenges related to birds, mammals, insects, mushrooms, plants, and more. It was designed to include all the varying biodiversity seen in the park while considering seasonal changes. Some of the challenges are better done during a certain season or time of day. But no matter when you visit, there will always be activities to choose from. Some challenges are short missions to complete, whereas other challenges are missions with multiple levels that differ by the amount of time and effort that needs to be spent, your outdoor skills, and luck. These challenges can be done alone or in small groups.

Another reason this challenge was created is to motivate people to participate in citizen science during their visit. It's also a practice in learning how to observe nature. It's an opportunity to slow down and rejuvenate our body and souls. No matter what, there is always room for a bit of fun, intention, and learning. So are you ready for some outdoor exploration and participation in science?

02 GETTING STARTED

Download the iNaturalist App

To participate, you have to have an iNaturalist account and download its app on your phone. This app is available on both android and apple store.

Download the iNaturalist App



Join Our Projects

After the download, you have to log in or sign up. When you sign up, a confirmation link will be sent to your e-mail. Once you're settled and have logged in on the app, you'll see my projects at the bottom right of the screen. First, you need to join the projects we created. Type "Juhu Ecological Park (竹湖山居)" and "Oak Hill, Taiwan 殼斗科", separately, in the search bar and join the projects.

In these projects, you will see all the observations members have made. You can explore what has been found, where, and by who. This is a great way to learn about your environment and of local biodiversity. Tap the explore button on the bottom left and zoom to the location of interest to see where observations have been made in any part of the world! Try to get familiar if you are a new member and most importantly, have fun. This is an app for nature enthusiasts who find joy in wanting to know what kind of plants and wildlife can be seen around them.

How to Make an Observation

Observing nature requires patience and an eye for noticing details and tiny movements. What do you hear? What can you smell? Open up all your senses to receive the environment around you. Immersing oneself in nature with a goal in mind puts you fully in the present moment. The most important thing is to walk slowly and be as silent as possible in order to successfully observe something. Keep your camera or phone ready at hand at all times.

Some tips and suggestions:

The app only allows a maximum of 4 images per observation. Choose the best photos. Make sure your images are as clear and as zoomed as possible. If you observe an animal, try to take pictures at different angles. If the animal is moving too fast, then you may take a video and screenshot the clearest clip. If you observe a plant, make sure to take pictures of the front and back side of the leaves with at least one to a few branches included. If the plant has flowers and/or fruit, take a picture of it too! Meanwhile, you can touch the leaves and feel its texture. Smell the plant. It is the plant's method of identifying itself to you. Inviting you to inhale its signature aroma into your lungs.

To get a feel of what the photos can look like, there are already a bunch of pictures in the JEP project you can first see. If observations have not been identified or confirmed by other members, the observation remains as "Casual Grade". We hope to get our observations to "Research Grade", which means others have confirmed the identification of the observation.

02 GETTING STARTED

How to Upload an Observation

To upload, tap "Observe" in the bottom center and then choose among the options. Fill out details and type in the species if you can identify it. If you can't, you can let the app make the best guess for you or leave it blank and someone might make a suggestion for you. Next, pin the location of your observation. Zoom into the place where you made your observation and save. Try to be as precise as possible. If there is internet connection, the app can directly take you to where you are already, and it is quite precise. By the way, your upload should automatically be included in the project if you pinned your observation at the right location. Tap "Share" to upload your observation.

Pinning the correct location helps us find distribution patterns and seasonal changes of a species. It's a responsibility we put on you and we trust you can do it.

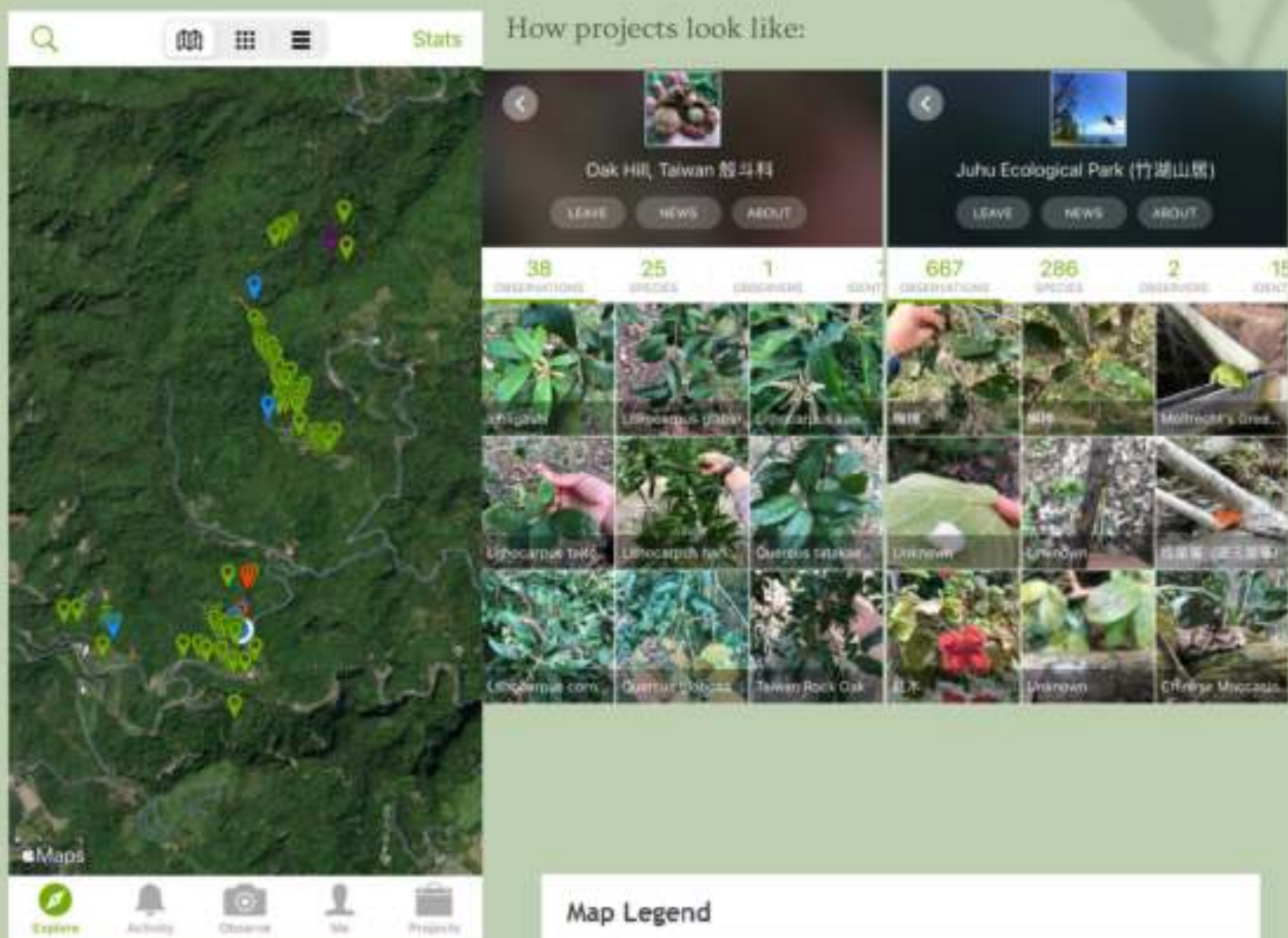
Suggestions:

If you're an amateur wildlife lover, you are very encouraged to add extra features in your observations in the note section, such as sex, age (juvenile or adult), and observed behavior (foraging, eating, resting, competing, perching, stationary, or dead).

Note that there is generally good Wi-Fi service and connection around for you to upload your observations wherever you are. In areas where you can't get good internet, it's advised to make your observations first and then upload once you have a connection to the internet. However, you have to remember where you made your observations.



02 GETTING STARTED



Observations made shown on a satellite map

Scan here to read the full details on how to get started on iNaturalist:



Map Legend

QUALITY GRADE	TAXONOMIC GROUPS
<ul style="list-style-type: none"> 📍 Research Grade 📍 Needs ID, Casual 	<ul style="list-style-type: none"> Amphibians, Birds, Ray-Finned Fishes, Mammals, Reptiles, Other Animals Mollusks, Arachnids, Insects Plants Fungi Chromista Protozoans Unknown
GEOPRIVACY	
<ul style="list-style-type: none"> 📍 Open 📍 Obscured 	

02 GETTING STARTED

Filling Forms

There are two main required forms to fill in the MNC. The first is a form to sign up as a member and let us know some background information about you. We use this information to better manage the data collected from your observations. We will not contact you unless necessary.

The second form is a form you have to fill whenever you complete a level or a challenge. This lets us know what you did and helps us better manage members' activity history.

Other forms (or recording sheets) are required to fill while doing a challenge, such as "The Recorder" (online-based) and "The Ornithologist" (paper-based).

Sign up to Become a
Member



Going Solo or as a Group

You can participate in any of the challenges alone or as a group. If you are a group, each new member of the group has to sign up and become a member. Then, you may decide whether to make your observations as a whole or separately. This means that if you work together as a group, then you share 1 set of observation(s). If you decide to go as a group but decide to work individually, then every member's observation will be different. This is up to you. If you are working together, then you only need to fill the completion form once. If any member of your group is working separately, then each member has to fill the completion form. When you complete a level or challenge, rewards will also vary. As a group sharing one set of observation(s), you mutually share the reward. Working separately will grant each individual a reward. For example, there is a group of 5 people who head out together and 3 of them want to work together while 2 of them want to work separately. The first three people choose a representative to fill the completion form and they share the reward. The other two who decide to work separately will each fill the completion form and receive two separate rewards. Read Section 5 (on page 43) for more about the types of rewards given.



03 THE 9 CHALLENGES

Sign up on our
website



Chal. 1 THE WILDLIFE FILM MAKER

Catch wildlife in action! Create a video between 10 to 20 seconds long and post it on our website. You will find "Create a Post" under the Forum page. Make sure to post your video content in the "Wildlife" category and hashtag, #wildlifefilmmaker, in the textbox. (First, you have to sign up and log in on our website. You will see these options as you are creating the post.)

Tips: Try to be silent and make sure the lighting and focus are good. If you try to explain what you are observing in your video (whether in the post or in the video), then that would be awesome!

Chal. 2 THE RECORDER

You are here to count how many muntjacs you encounter today. Why choose this challenge? Well, we have observed a drastic increase in muntjac populations. We want to know how often they are observed and if these occurrences change over time. We hope this can help inform management strategies in the future. And also, they are not hard to find and you will surely find it exciting to encounter them!

This survey uses a modified method called the walked count method. We are trying to gather data to estimate the relative abundance of muntjacs in different areas and to further understand ecological questions we have in mind that relate to muntjacs. Are you up for the challenge? This requires you to be silent, move slowly but at a steady pace, and have a good eye. If you aren't confident doing it alone, ask one of our trained members to accompany you if they can.

Open the document to read the steps on how to do the survey. Keep the online form open during the survey as you will be required to record your observations as you walk along a path. (Please note that you are still required to fill the completion form as well.)

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Chal. 2

THE RECORDER



Read the steps on how
to do the survey



Use this form when
doing the survey

The 4 Path Options:

1. From the restaurant to the open grass field (pond) (~700 m)
2. From the restaurant to the 500 m landing point (~ 1700 m)
3. From the zipline starting point to the entrance of Oak Hill (~ 670 m)
4. Within the vicinity of Oak Hill (~1000 m)

Take a look at our map at page 45 to know the routes of these paths.



03 THE 9 CHALLENGES

Chal. 3

THE NIGHT OWL

You're in the right place if you want to take a nice night walk and stargaze. Why not also take the opportunity and do this challenge? Record the sound or take a picture of at least 1 nocturnal animal. Known nocturnal species in this area are the giant flying squirrel, some snakes, muntjacs, frogs, owls (such as the Collared Scops Owl, the Mountain Scops Owl, the Brown Boobook, and the Collared Owlet), two other bird species (herons, Slaty-legged crane), and others.

Tips: Look up and look down!

Upload your observation(s) to iNaturalist and make sure you pin the correct GPS location(s). If you can't identify the species, ask one of us or count on great identifiers on iNaturalist to do the job for us! As a bonus you may even upload a video to our Forum page to get an extra reward!

Chal. 4

THE AMATEUR NATURALIST

You're on a mission to find as many varying kinds of wildlife from as many taxonomic groups as possible. The more the merrier! Wouldn't it be so cool to say that you saw a diversity of wildlife during your visit? Doing something engaging with a purpose like this challenge is a great way to spend your time outdoors. At the end of it, show off your observations to friends and family. They would be happy to hear how much you've seen and learned about our friendly inhabitants.

Become an amateur naturalist by observing at least 12 animal species from the following broad taxonomic groups: birds, snakes, lizards, frogs, spiders, crabs, shrimps, butterflies, moths, bees, beetles, ants, and all other insects, fish, squirrels, muntjacs, macaques, mice, shrews, mongooses, civets, wild boars, Taiwan serows, etc. Note that this is exclusive to species seen and not heard.

Upload all your observations to iNaturalist and make sure you pin the right GPS location(s). If you can't identify the species, ask us or count on great identifiers on iNaturalist to do the job for us!

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Chal. 5

THE MUSHROOM LOVER

Did you know there are at least thousands of different fungi species in Taiwan, of which several hundred are common? They tend to appear in wet areas, especially after the rain, such as on the soil, on bark, or on decomposed logs. We actually don't know much about what kind of mushrooms are found in Juhu Village, so it is up to us to find them! If we find indicator fungi species, then we can use this information to help us assess habitat states.

LEVEL 1 "FUNGIS AND FUN GALS"

Your mission is to find fungi and take a picture of it! Easy right? Hmm... maybe... Try to take several images at different angles. Upload your image(s) on iNaturalist. Don't forget to pin the right GPS location and don't worry about not being able to identify the species. We can count on great identifiers on iNaturalist to help us out!

LEVEL 2 "THERE'S SO MUSH-ROOM IN MY HEART"

Your mission is to find and take pictures of 5 different fungi species. Yes, three! This challenge shows just how much you are enthusiastic about fungi! And by the way, your observations have to be different from level one's observations. Upload the images to iNaturalist and count on great identifiers to help us out! Hmm... fungiliscious!

Chal. 6

MAMMAL MANIAC

Presently, there are at least 12 mammals known to be found here. With a little bit of luck, skills, silence, and patience, you may see them running off (or deceased) in your presence. Some are more abundant than others, like muntjacs and macaques. A little bit too abundant, in matter of fact. Long story short, this is actually a problem we are trying to address and we can't do it alone. With your help, we may know a bit more about our mammal neighbors. For example, we can know where these mammals are active and how we can co-exist with them.

Just know that every observation counts and we want you to feel like you got something meaningful and fun out of this experience. Are you ready to become a mammal mania?

LEVEL 1 "KEEP YOUR EYES ON THE FLOOR"

Everyday mammals leave their traces around if you know how to look. Your mission is to find signs of their activity, specifically:

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Chal. 6

MAMMAL MANIAC

1. Muntjac faeces
2. Macaque faeces
3. Boar signs (either footprints, digging signs, or signs of plant damage)

You can increase your chances by being on dirt roads or near trees, such as around the path to the zipline starting point, around the starting point, or in Oak Hill. Upload all your observations to iNaturalist and make sure you pin the right GPS location(s). If you aren't sure if what you saw is correct, come find us after and we can verify your observations. Take a look at page 47 to see photo samples of various faeces.

Tips: Muntjac faeces look like small droppings in very dark color, whereas macaque faeces are soft, sometimes coil-shaped or long. Sometimes wild boar and macaque faeces can look similar. However, wild boar faeces are more irregular in shape. They can look like larger clumps stuck together with visible plant fiber in it.

LEVEL 2 "MY SWEET DEER"

Your mission is to take pictures of two muntjacs at different times or locations. This one is a little tricky, because they may run away before you even get a chance to take the photo. However, have no fear. There are plenty of opportunities to try again if you miss. We assure you. They tend to be more active in the early mornings and late afternoons to evenings. To increase your chances of success, have your phone ready at hand with you always. Walk slow and do not talk. Whisper if you must. You may also try being stationary in one place for a while until a muntjac comes out. It really works! How patient can you be? Last tip, you may take a video first, screenshot the clearest clip, and then crop the photo.

Remember to upload all your observations to iNaturalist and make sure you pin the right GPS location(s).

LEVEL 3 "THE CLIMBERS"

Your mission is to take pictures of two squirrel individuals and upload them to iNaturalist. The species is called Pallas's squirrel. It is dark brown with a fluffy tail. Ouf! That's hard you say? Well, maybe...

Fun fact is that you can hear them before you see them, and they tend to appear in the late afternoon or early mornings. As a tip, increase your chances by being under the forest or around the restaurant in the late afternoon! Look for them on the trees.

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Chal. 6

MAMMAL MANIAC

LEVEL 5 "THE GENERALISTS"

There is a growing trend that mongooses are becoming more abundant in Taiwan. In this area, it's really true. Your mission is to take a photo of a mongoose! Even though they are abundant, it requires a little bit more luck than skill to encounter one. I know what you're thinking, "Where on earth do I start?" Worry not, we spend a lot of time here and we can tell you where you can likely spot them.

As a tip, walk slow, be silent, and look at the ground. We usually spot them crossing the roads or running away from us and into the bushes. They tend to be active in the mornings and late afternoons. You can also increase your chances by staying in one place for a while and waiting for something in the bushes to move. You may also try taking a video first, pause on the clearest clip, and then screenshotting it.

Chal. 7

THE STUDIOUS INSECTOR

There are so many different kinds of insects in the world. Global insect diversity is strikingly decreasing. What is causing this? Well, that is a loaded question. In sum, pesticides, habitat destruction, and climate change play big factors in this loss.

Without insects, we won't have the fruits and vegetables on our dinner plate. Without insects, we won't have a thriving habitat full of different vegetation to support other animals. Yeah, insects are THAT important! When we think of insects, we often think of mosquitos, cockroaches, and stinging wasps and categorize all insects as a nuisance and disgusting. But that isn't true! This challenge may help you develop an appreciation for them if you don't already.

Okay, enough with the problem. We all probably more or less know how important insects are. We want to hear what the solution is. What can we do right here and now in Juhu? One way to help is by completing this challenge. Yes, it is just that simple. Are you ready to be an insector?

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Chal. 7

THE STUDIOUS INSECTOR

LEVEL 1 "THE DILIGENT OBSERVER"

Your mission is to find five different insect species. Upload all your observations to iNaturalist and make sure you pin the right GPS location(s). If you can't identify the species, ask us or count on great identifiers on iNaturalist to do the job for us!

LEVEL 2 "THE LOVERS"

Can you feel the love in the air? Your mission is to find insects in pairs, preferably mating, dancing, nuzzled together, or just in each other's company. Take an image of them and upload it to iNaturalist. Remember to pin the right GPS location(s). If you can't identify the species, ask us or count on great identifiers on iNaturalist to do the job for us!

LEVEL 3 "NOT SO BUSY, BEE!"

You're on a mission to hunt for honey bee species. We want to know where it is likely to find them, where their nests are, and what flowers they visit. It has been reported that honey bees have been decreasing in number and we need preliminary data in order to get some insights about this. We need your help! Can you make 3 honey bee observations at different locations? You also can take a picture of the flowering or fruiting plant if you found it roaming around the plant.

As a tip, you can increase your chances by visiting the large Ficus tree near the 500 m zipline landing point or by finding flowering plants. From experience, they may end up finding you before you finding them!

LEVEL 4 "LARVAE HEAVEN"

Baby insects. Fat, squirmy, squishy things. What could they be? Caterpillars, beetle larvae, fly larvae, and other larvae swimming in pools of water. Where else? Under leaves, on a leaf, on a plant, inside wood, on barks, under rocks, on rotting fruit, in garbage bins, on the forest floor or even on the road, and many other places! Your task is to make 4 different observations of larvae and upload them to iNaturalist. Remember to pin the right GPS location(s). If you can't identify the species, ask us or count on great identifiers on iNaturalist to do the job for us!



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Chal. 8

THE BIRDER

Once upon a time you could hear so many birds around this mountain area. Bird societies used to regularly survey birds here. One day, they stopped, because they noticed bird counts were gradually decreasing. Now, it is up to us to monitor which birds are our local friends and which birds still migrate through. While this is just a fun activity for you, your observations and/or recordings are useful data for us. We want to know which birds are relatively more common, less common, and migratory. We want to know where they tend to be active and where they nest. Joining this challenge will help us answer these questions.

LEVEL 1 "BIRDASTIC!"

In ecology, birds are one of the reliable indicators for ecosystem health. Why? Because we can easily hear them, of course! However, for this mission, you have to actually see them. Therefore, are you up to be a bird photographer and take pictures of 3 different bird species? If you can't identify what bird it is, use these apps to help you: BirdNET, eBird, Merlin, and of course, iNaturalist. There are bird projects on iNaturalist, such as "Taiwan Birds", that you can rely on for photo references. You may also browse through our website to see what birds are presently known to be found here.



BIRDNET APP



EBIRD APP



MERLIN APP

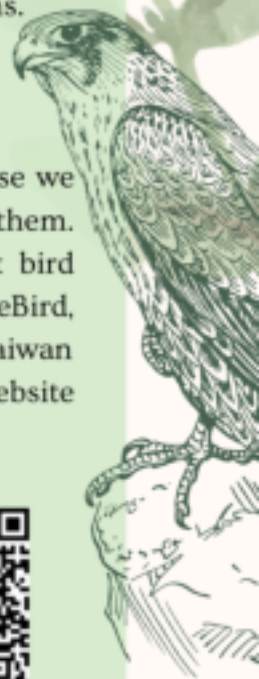


TAIWAN BIRDS

LEVEL 2 "THE BIRD TUNER"

Level 1's task asked you to make 3 different observations of birds, but for this level, your task is to make 3 different recordings of birds and identify them. It's a different kind of challenge than taking pictures, because it requires you to make sure that the bird you are recording is the dominant sound recorded so that other listeners can know. Each recording has to be at least 10 seconds long. Some birds calls have long intervals in between so make sure you record at least 2 repetition of calls or songs. Both the BirdNET app and Merlin app can help with sound identification. You can use those apps to directly record the sound.

Bird sounds can be most heard during dawn until the first few hours of sunrise. As a tip, avoid multi-species sounds and noise in the background. Don't speak while recording. Point your recording device towards direction the sound is coming from. Upload your recording on iNaturalist and make sure you pin the correct GPS location(s).



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Chal. 8

THE BIRDER

LEVEL 3 "THE SPY"

Your mission is to attune your eyes to camouflaging ground-dwelling birds. The only ground-dwelling birds presently know here are the Emerald Dove, Bamboo Partridge, Common Moorhen (in aquatic areas), Taiwan Partridge, and the Fairy Pitta (although an understory bird rather than strictly ground-dwelling). You may visit our website to find pictures of these birds.

Is that even possible, you say? Well, here are some tips. If you hear some movement on the ground, it may be possible that it is a bird, especially if it is a flocking sound. Second, these birds have distinct calls so it is best to first listen to their calls and keep your ears opened while you're on the mission. It is very likely that the only times you encounter them are when they get startled by you and fly away. So stay quiet and walk slow, and with a little bit of luck and randomness, you may very well encounter one! Take a photo of one of these ground-dwelling birds and upload it on iNaturalist. If you can't identify the species, ask us or count on great identifiers on iNaturalist to do the job for us!

Here is what these bird sound like:



EMERALD DOVE



TAIWAN BAMBOO PARTRIDGE



COMMON MOORHEN



TAIWAN PARTRIDGE



FAIRY PITTA



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Chal. 8

THE BIRDER

LEVEL 4 "THE ORNITHOLOGIST"

This is your chance to do something really interesting. Be a surveyor for a day and experience what it is like. This is no easy task and requires some level of bird identification skills. In general, what you have to do is slowly walk along a path in one direction, identify the birds you see, and count their numbers. They can be perching on a tree, in a bush, or flying around you! Look at the map on page 44 to refer to which path options you can take.

Come find us to get a briefing and a recording sheet to write down your observations. This is the only challenge where you need to write down data. It can be exciting, because you may observe many birds in one outing! The experience can also further consolidate your bird identification skills.

Read the full details on how to do the survey to become an amateur ornithologist:

The three path options to take are (page 45):

Path 1: From the restaurant to the second river crossing

Path 2: From the restaurant to the 500 m landing point

Path 5: From the 500 m landing point to the Ficus caulocarpa (Stem-fruited Fig) large tree within the forest



LEVEL 5 "HOME SWEET HOME"

Birds make nests in different shapes, sizes, and locations. We rarely see them around here so finding some would be a jewel! It is known from the evidence we have that macaques make it nearly impossible for birds to successfully brood their eggs. They predate all sorts of eggs they can find. If we find some nests then we can monitor them and try to protect them.

For this last and challenging mission, your task is to head to where trees are or go to the forest and make 1 observation of a nest. Look for holes in trees that look like it may host nests. As a tip, don't get confused with ant nests. They may look similar at a quick glance, but they are very different.



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THE BOTANIST

Through the experiences provided in this challenge, you will learn how to become an amateur botanist. Look around in any direction and you will definitely see green. All different shades of forest green. The forests you see here are typical of lowland broad-leaf evergreen forests. These trees grow many branches and provide food to many different kinds of animals. Train your eye to identify key characteristics of plants that differentiate one species from another. Some are edible, some smell divine, and some are important species in the ecosystem. Plants are amazing and without them we wouldn't even have a livable planet! They are the lungs of the Earth.

LEVEL 1 "HEAVENLY SMELL"

At different times of the year, flowers bloom and their scent are taken up by the wind. Your nose will fill up with the aromas of certain flowers as you walk by. No matter what season it is in, you are sure to find blooming, colorful flowers. Your mission is to find 4 different flowers and take pictures of them. While you do, make sure you smell them. And out of respect, do not pick the flowers and handle them gently. If you do pick flowers, pick them up from the ones that have already fallen.

LEVEL 2 "A PLANT'S BABY"

Plants make babies in all shapes and sizes. The job of the mother is to provide sufficient nutrients for its progeny to successfully grow. The job of the seed is to count on its dispersal mechanism to take it some distance away from its mother in hopes that it lands in a spot that perfectly meets the conditions it requires. Your mission is to walk around, explore, and find 3 different seeds. However, seeds of crops we grow do not count (such as guavas, bananas, persimmons, and oranges). You can find seeds on the floor or inside the fruits of the plants you find. If you find an oak seed, please don't pluck it down! Upload your observations on iNaturalist. If you can't identify the species, ask us or count on great identifiers on iNaturalist to do the job for us!

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THE BOTANIST

LEVEL 3 "EXPLORING OAK HILL"

Your mission is to walk around Oak Hill with the purpose of finding specific trees and plants. Are you up for an oakventure? Below is the list of trees you must find and take pictures of. Make sure you upload these pictures on iNaturalist and pin the correct GPS location(s). (Note that oak species in the list will change from time to time. We will let you know when the list changes.)

Guide: To make a plant observation, you have to take a picture of some leaves with some branches on both the front and backside of the leaves. Then, you can take a more zoomed out picture of the plant or tree to display its general shape (though that is not compulsory). You can also take pictures of flowers and fruits, if any, though remember iNaturalist only allows a maximum of 4 images per observation. Browse through the uploads in the JEP project to get a feel of how the photos of plants were taken and get the general feel of it.

1. Golden Bolly Gums (*Neolitsea Sericea aurata*) 金新木疆子
2. Japanese Prickly Ash (*Zanthoxylum ailanthoides*) 食茱萸
3. Indigenous cinnamon (*Cinnamomum osmophloem*) 土肉桂
4. Golden shower tree (*Cassia Fistula*) 阿勃勒
5. Red Bark Oak (*Quercus gilva*) 赤皮
6. Short Stipes Oak (*Quercus serrata brevipetiolata*) 短柄枹櫟 / 思茅櫟
7. Konishii Tanoak (*Lithocarpus konishii*) 小西氏石櫟 / 油葉柯
8. Revolute Cupule Oak (*Quercus pachyloma*) 捲斗櫟
9. Short-tailed Leaf Tanoak (*Lithocarpus harlandii*) 短尾葉石櫟
10. Ring-cupped Oak (*Quercus glauca*) 青剛櫟
11. Smooth-leaf Tanoak (*Lithocarpus glaber*) 子彈石櫟
12. Alishan Oak (*Quercus stenophylloides*) 狹葉櫟
13. Morii Oak (*Quercus morii*) 森氏櫟
14. Kawakami Tanoak (*Lithocarpus kawakamii*) 大葉石櫟

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Chal. 9

THE BOTANIST

LEVEL 4 'THE EDIBLE PLANTS OF OAK HILL'

If you take one of our walking tours, you would learn all about the traditional uses of different plant species. Some are used as material, some are medicinal, and some are edible. Can you find 5 different edible plants in Oak Hill?

Edible plant parts of the list are either the flowers, leaves, fruit, or bark. There are not many edible plants in Oak Hill. Walk around, explore, look carefully, and scan some labels if you are uncertain. After this, you can tell your friends and families all about the interesting plants you learned that can be eaten. Don't forget to upload your observations at the correct GPS location on iNaturalist.

1. Japanese Prickly Ash (*Zanthoxylum ailanthoides*) 食茱萸
2. Lemmon's Marigold (*Crotalaria spectabilis*) 香葉萬壽菊
3. Indigenous Cinnamon (*Cinnamomum osmophloeum*) 土肉桂
4. Paper Mulberry (*Morus australis*) 小葉桑
5. *Ficus caulocarpa* 大葉雀榕
6. Rough-leaved Fig (*Ficus irisana*) 澀葉榕澀
7. *Ficus ampelos* 菲律賓榕
8. Bishop Wood (*Bischofia javonica*) 茄冬

LEVEL 5 'EXPLORING JUHU ECOLOGICAL PARK'

Walk in any direction and be introduced to the diversity of plant species in the area. Some are planted, some are native or endemic plants of Taiwan, some are introduced, and some are crops. By the end of the mission, you are surely to remember at least 4 new plant species. Show off the new plants you have identified to your friends and family!

Your mission is to find all the plant species from the list below. Some are very common, while some need some good exploring to find. The joy is in the process of finding and reading about the plants you find and scan!

03 THE 9 CHALLENGES

Chal. 9

THE BOTANIST

1. Taiwan Crepe Myrtle (*Lagerstroemia subcostata*) 九芎
2. Chinese Pistache (*Pistacia chinensis*) 黃連木
3. Orange Jasmine (*Murraya paniculata*) 月橘
4. Taiwan Zelkova (*Zelkova Serrata*) 台灣欒木
5. Chinese Soapberry (*Sapindus mukorossi*) 無患子
6. Sweet Osmanthus (*Osmanthus fragrans*) 桂花
7. Ring-cupped Oak (*Quercus glauca*) 青剛櫟
8. Flamegold Rain Tree (*Koelreuteria henryi*) 台灣欒樹

LEVEL 6 "GAINING CONFIDENCE"

If you have completed the missions of the lower levels, you should be able to test your identification skills out. This level is more like a pop quiz than a mission. Are you up for the challenge? We will provide you 10 pictures of some common or iconic plant species, many of which you may have already made observations of. If you can correctly identify at least 8 of the 10 species, you pass!

No one likes tests, but tests are one of the best ways to consolidate the memory you want to keep. Tests (or applying the information learned) help us less likely to forget things! Come find us to take this quiz.

04 COMPLETING A LEVEL OR CHALLENGE

There are a few things to do to make sure you successfully completed a level or a challenge. First, you have to fill the completion form and screenshot the response to show us (either in person or through social media). Second, you also have to show us a screenshot of your uploaded observations on iNaturalist. If you completed "The Recorder" or "The Ornithologist" challenge, please make sure that you fill in the completion form as well.

If you had to upload any media not via iNaturalist, such as for "The Wildlife Film-maker" challenge, please let us know and show us the post in the Forum page to confirm.

Fill the form:



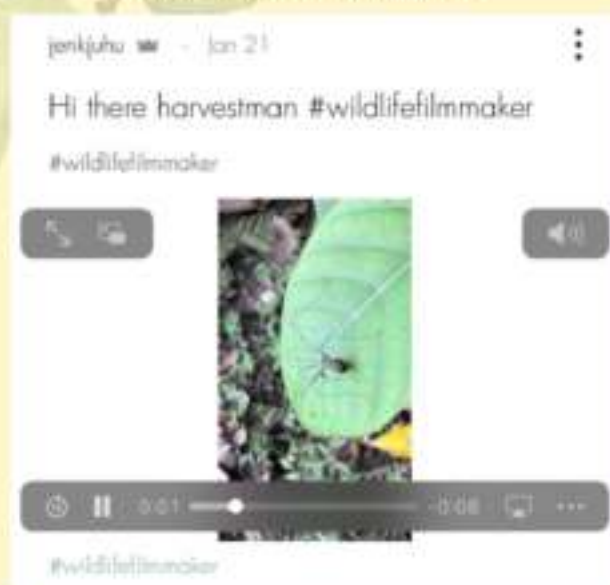
Screenshot example:



Screenshot example:



Screenshot example:



05 REWARDS

Rewards are determined by the level and challenge you have completed. We have already designed what kind of rewards to give and made room for random surprises in between. A bigger reward is given the harder or longer we estimate it takes to complete a level or challenge. If you complete all challenges, you receive a limited-edition gift from us! You will also be recognized and revered as a master naturalist for all those who will come after you.

All rewards are hand-made or produced here in Juhu Ecological Park. The art and crafts are made by us and we want each reward to be special and hold meaning for you. It is made by love and relates to biodiversity.



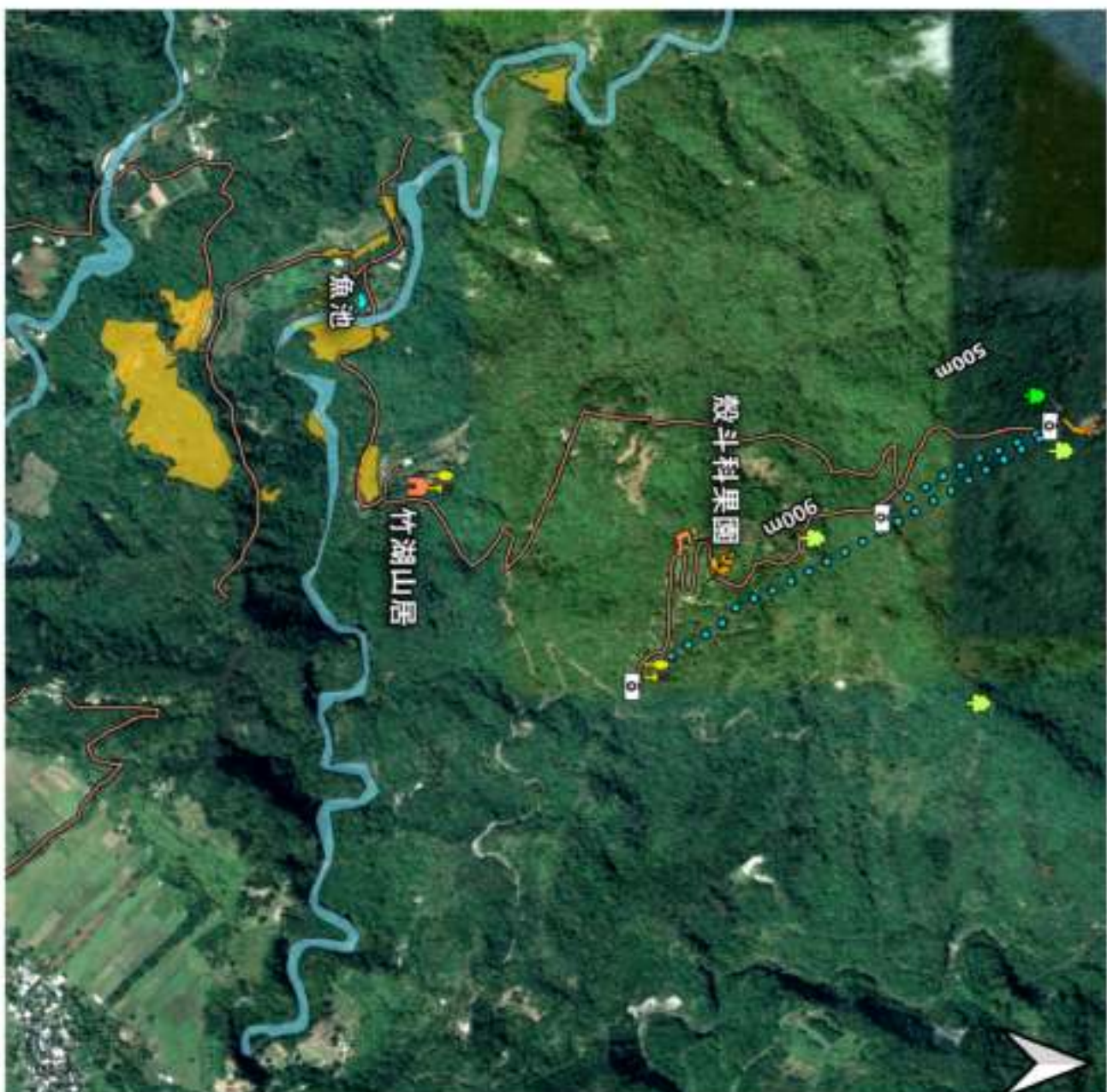
Final words:

There are numerous, positive outcomes from engaging in these activities. Below are what we think are the most valuable outcomes:

- It creates a community of diverse people with a common goal of understanding local biodiversity and playing a meaningful role in the scientific process
- It helps address environmental problems, such as identifying indicator species for assessing ecosystem health and states
- Our data can be applied in managing land practices to meet land-use goals and improve habitats
- It is a learning experience for all



O6 MAPS 尋寶地圖



竹湖山居

Juhu Ecological Park

Landmarks:

-  竹湖山居 Juhu Ecological Park
-  殼斗科果園 Oak Hill
-  平台 Viewing Platform
-  盪鞦韆 Swing
-  大樹 Large Tree
-  爬樹體驗點 Tree-climbing Site
-  三索橋 Rope Bridge
-  滑索 Zipline
-  餐點 Dining
-  溪 Stream
-  香蕉園 Banana Plantation
-  魚池 Pond
-  路道 Road

Google_map












O6 MAPS 尋寶地圖

竹湖山居 Juhu Ecological Park (Survey Map)



Legend Items:

- 大樹 Large Tree 
- 步道 Path 1 
- 步道 Path 1 (birds-only) 
- 步道 Path 2 
- 步道 Path 3 
- 步道 Path 4 
- 步道 Path 5 (birds-only) 
- 竹湖山居 Juhu Ecological Park 
- 香蕉園 Banana Plantation 

Google_map



07 IMAGES 參考圖片

PHOTOS OF DIFFERENT FAECES

哺乳動物的糞便



WILD BOAR (CHUNKS CLUMPED TOGETHER)
野豬 (大坨連續的糞團)



MUNTJACS (ROUND TO OVAL-SHAPED DROPPINGS)
山羌 (很多的深色的咖啡豆形)



MACAQUES (COIL-SHAPED OR LONG)
獼猴 (長條或螺旋便便)



07 IMAGES 參考圖片

OTHER IMAGES



A BIRD NEST (LIKELY BLACK BULBUL)
鳥巢 (紅嘴黑鵲)



BORED HOLE BY A TAIWAN BARBET
五色鳥的鳥巢窩



TINY (UNKNOWN) MUSHROOMS ON WOOD 微小的香菇在樹幹上



ANT NEST ON A TREE
螞蟻窩



MONGOOSE FOOTPRINT (BOTTOM)
食蟹獾的足跡

07 IMAGES 參考圖片

OTHER IMAGES



MUNTJAC FOOTPRINT
山美的足跡



MUNTJAC ENCOUNTERS 山美



DELIAS PASITHOE AND A
BUMBLEBEE POLLINATING A
CITRUS TREE
報喜斑粉蝶與熊蜂受粉柑橘屬



SEROW FAECES
山羊糞便 (比山美的大一點)

08 QR CODES 列表



Download iNaturalist
on your phone
用手機下載iNaturalist



Getting started on
iNaturalist (full details)
如何在iNaturalist開始



Become a member form
(for first timers)
當會員的表單



Completion form
(when a level or challenge is
completed)
完成表單



The Recorder Form
(for muntjacs)
山羌調查員的記錄表單



The Recorder Survey
Method
山羌調查員的記錄方法



The Ornithologist Survey
Method
鳥類學家的記錄方法

08 QR CODES 列表



Juhu Ecological Park
iNaturalist Project (專案)



Oak Hill, Taiwan, 殼斗科
iNaturalist Project (專案)

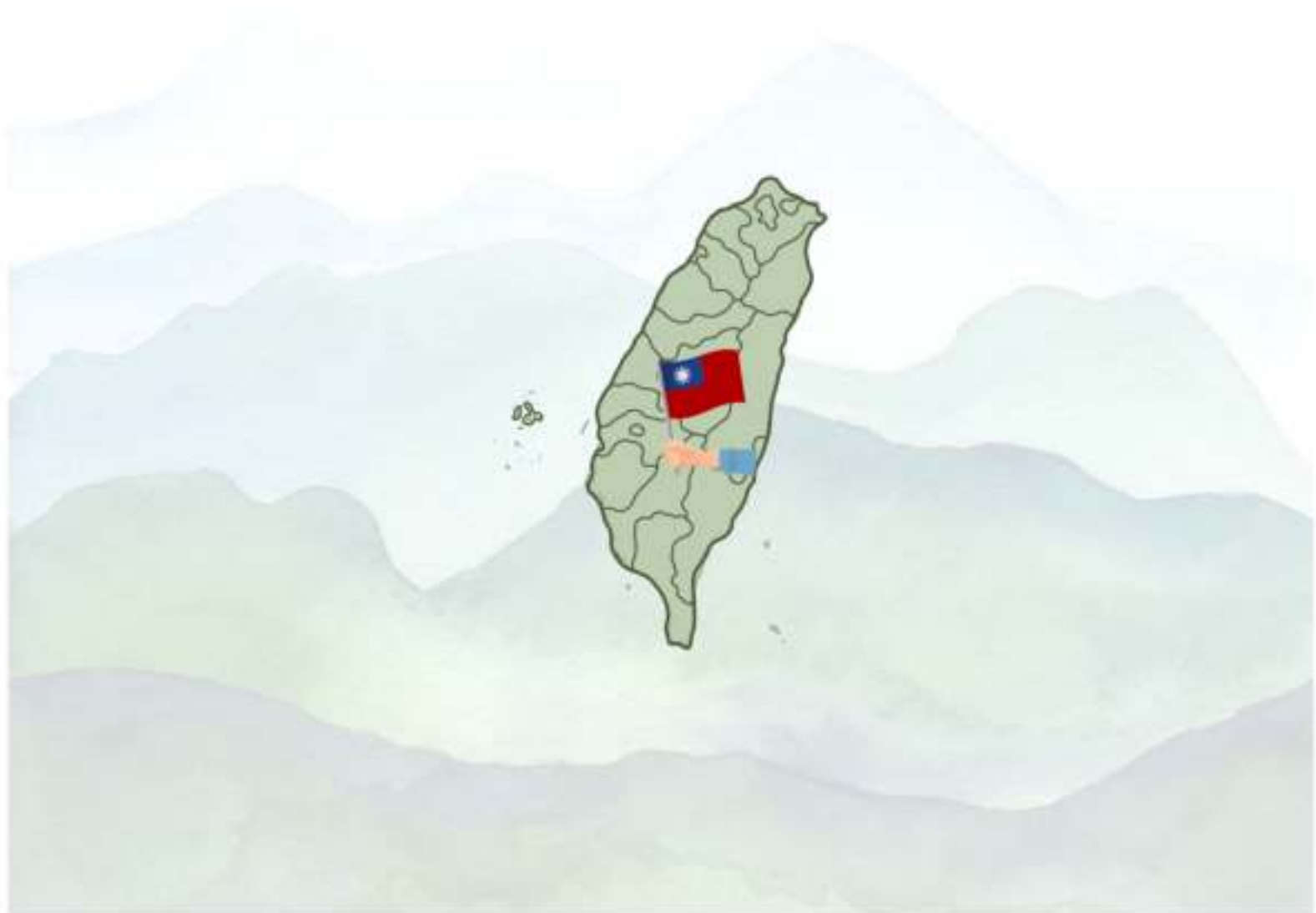


Our main website
(主要網頁-雙語)
www.juhu.com.tw



Our environment-exclusive website
(環境專區網頁-雙語)
www.juhuecologicalpark.com







竹湖山居 
JUHU ECOLOGICAL PARK

CONTACT US
08-9832383

jenk.juhu@gmail.com

www.juhuecologicalpark.com

www.juhu.com.tw

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