

狩護台灣「義」起來 Top Gun Taiwan

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一、旨趣 Purpose :

許多獵人受金錢的利誘，成為貪婪的盜獵者，造成稀有野生動物瀕臨滅絕的生態危機。近來環保意識抬頭，這些盜獵者在有心人士的輔導下，成為巡守員或是保育員，反而使槍桿子成為「狩護」自然生態的利器。本遊戲從夜市飛鏢與電玩射擊獲得靈感，讓學生在遊戲中認識需要保育的台灣原生物種、必須移除的外來入侵種。同時了解生態的危機，認識保育相關的法律。



Many hunters, tempted by money, become greedy poachers, leading to an ecological crisis where rare wildlife species face extinction. With the rise of environmental awareness, some of these poachers have transformed into patrol officers or conservationists, using their guns to protect the natural ecosystem. This game draws inspiration from dart game in night market and shooting game. It helps students recognize native species that need protection and invasive alien species that must be removed. At the same time, students can learn about ecological crises and conservation laws.

我們的想法：一方面用射擊移除外來種；另一方面用射擊來守護法律，兩者行為皆為正分。同時呼應引言，盜獵的獵人變成巡守員，用槍「狩護環境與法律」……當然也有些刻意安排，這樣玩家才會去看「秘訣」的內容，達到我們的目的……

Our Idea: On one hand, players use shooting removes invasive species; on the other hand, players use shooting protects laws, both actions earn positive points. This mirrors the opening story where poachers become patrol officers, using guns to protect the environment and laws..... Of course, there are some intentional setups in the game, so players will read the "Tips" content, fulfilling authors' goals.....

二、活動規劃 Activity Plan :

<遊戲方式說明 Game Instructions>

1.請掃描 Qrcode 進入遊戲，遊戲時間計時一分鐘。

Scan the QR code to enter the game, with a 1-minute time limit.



2.請將滑鼠瞄準符號移至動物或是字塊，按左鍵代表射擊。若射擊到「外來入侵種動物」，移除成功可得 10 分；誤射「原生種動物」會扣 10 分。用獵槍狩護「保育法律字塊」可加 10 分；射擊造成「生態危機字塊」則扣 10 分。

Player moves the mouse's arrow over animals or text blocks, and presses the left button to shoot. Successfully shooting invasive alien species earns 10 points, while shooting native species deducts 10 points. Shooting conservation law text blocks adds 10 points, while hitting ecological crisis text blocks deducts 10 points.

3.滿 300 分以上者即過關；滿 500 分以上有精美禮物。

Players passing 300 points qualify; those exceeding 500 points will receive a gift.

4.加入線上科學探究平台(CWISE)成功者，有精美禮物。

Players who successfully join the online science exploration platform (CWISE) will also receive a gift.



Website : <http://cwise.gise.ntnu.edu.tw/>

三、活動內容 Activity Content :

<學習目標 Learning Goals>

本活動結合聯合國永續發展目標 SDGs、台灣師大科學探究平台(CWISE)，呼應 108 課綱、雙語教育、生生用平板政策。從遊戲可以達成以下目標：

This course aligns with the United Nations Sustainable Development Goals (SDGs), integrates the National Taiwan Normal University's science exploration platform (CWISE), and supports Taiwan's 108 Curriculum Guidelines, bilingual education, and the "One Tablet per Student" policy. Through the game, students can achieve below aims:

1. 保育原生物種。Protect native species。
2. 移除外來入侵種。Remove invasive alien species。
3. 認識保育法律。Understand conservation laws。
4. 了解生態危機。Understand the ecological crisis。

本次活動內容結合之聯合國永續發展目標 SDGs 如下：

This course aligns with the United Nations Sustainable Development Goals (SDGs) as shown below.



<學習內容 Learning Content>

<外來入侵種動物 Invasive Alien Specie>



美洲牛蛙：從美國引進，叫聲如牛，所以稱之為「美洲牛蛙」。牠們有驚人的繁殖力，每次產卵 6000-40000 粒，壽命可達 16 年，一生可產卵達數十萬顆。加上蝌蚪體型巨大，會捕食其他小型蝌蚪，造成台灣本土蛙類極大的生存威脅。

American Bullfrog: Imported from the U.S., it is named for its bull-like call. These frogs have astonishing reproductive abilities, laying between 6,000 and 40,000 eggs at a time, and live up to 16 years. With such prolific reproduction and large tadpoles that prey on smaller species, they pose a significant threat to Taiwan's native frogs.



白尾八哥：原產於東南亞。在當地因人類過度捕捉，以致瀕臨絕種。然而台灣引進之後，本地沒有天敵，食物來源除了穀物、昆蟲、小型爬蟲動物外，對於台灣的原生種的幼鳥、小型鳥，也會直接攻擊捕食，甚至未孵化的鳥蛋也不放過。其族群數量暴增，造成台灣生態浩劫。

Common Myna: Native to Southeast Asia, over-hunting in its homeland has led to its near extinction. In Taiwan, without natural predators, they feed on grains, insects, small reptiles, and aggressively prey on native birds' fledgelings and eggs, leading to severe ecological disruption.



吳郭魚：原產於非洲，由吳振輝和郭啟彰兩人自新加坡引入台灣繁殖。吳郭魚有很強的領域性，有些會用口孵來保護幼魚，加上繁殖能力強，常攻擊其他小型魚類，而成為全台灣中低海拔最多的外來魚種。

Tilapia: Native to Africa, Tilapia was imported to Taiwan by Wu Zhenhui and Guo Qizhang from Singapore. Known for their territorial nature and strong reproductive abilities, they attack smaller fish species and are now the most abundant invasive fish species in Taiwan's low-altitude waters.

沙氏變色蜥蜴: 原產於中美洲島嶼地區。雄蜥的橘紅色喉囊會一收一放，是牠在示威與求偶可見到的招牌動作。由於體型小、動作快、善於躲藏，性成熟僅需一年，且一年多產等特性，加上捕食台灣原生動物並競爭資源，大大降低台灣生態的穩定。



Brown Anole: Originating from Central America, these lizards have a distinct orange-red dewlap when they proclaim sovereignty and mate rituals. Due to their small size, quick movements, and early maturity, they reproduce rapidly and compete with native species for resources, destabilizing Taiwan's ecosystem.

紅耳龜: 原產於北美，其明顯特徵是眼後有一對紅色斑塊。生長快、繁衍力強，會大量捕食小型魚、貝、蛙類的卵、蝌蚪甚至其他本地龜類，造成台灣原生龜類的莫大危機。



Red-Eared Turtle: Native to North America, this turtle is recognizable by the red patches behind its eyes. They grow quickly and have strong reproductive abilities. They prey on small fish, shellfish, frogs, and even native turtles, so they create a crisis for Taiwan's indigenous turtles.

福壽螺: 原產於南美洲，由於繁殖能力強，一年可繁殖兩代，卵孵化後二個月又可以進行交配產卵。每隻雌螺一年的產卵塊數可達 20~30 個，每個卵塊的卵粒數 10 粒至 300 餘粒，因此在防治上是一大難題。由於福壽螺好食植物的幼嫩部位，水稻、菱角、蓮、空心菜等均遭其害。此外，與本土螺類競爭資源，嚴重影響生態環境。



Golden Apple Snail: Originating from South America, this snail reproduces quickly. They lay 20-30 egg masses per year, with each mass containing between 10 and 300 eggs. These snails cause significant damage to plants like rice, lotus, and water spinach. They compete with native snail species for resources and severely impact the local ecological environment.

<原生種動物 Native Species>

翡翠樹蛙: 台灣的特有種，屬於保育類。有黃色的過眼線，像是一隻帶著金框眼鏡的樹蛙，十分可愛。名列國際自然保護聯盟瀕危物種紅色名錄。



Emerald Green Tree Frog: An endemic species to Taiwan, this protected frog is notable for the yellow stripe through its eyes, so it looks like wearing a pair of gold-rimmed glasses. It is listed on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species.



帝雉：是台灣特有的鳥類，分布於中、高海拔山區。名列國際自然保護聯盟瀕危物種紅色名錄。

Swinhoe's Pheasant: A bird species endemic to Taiwan. People can find them in mid to high-altitude mountain regions. They are also listed on the IUCN Red List of Threatened Species.



櫻花鉤吻鮭：棲息於七家灣溪的亞熱帶陸封型鮭魚，為冰河子遺生物。

Formosan Landlocked Salmon: A relict species from the Ice Age, this subtropical landlocked salmon inhabits the Qijiawan River.



石虎：生活在低海拔山區或丘陵地。隨著人類社會的發展與淺山的開發，台灣石虎數量大幅減少，並在 2008 年被列為第一級的瀕臨絕種保育類動物。

Formosan Leopard Cat: Inhabiting low-altitude mountains and hills, this species has seen a sharp population decline due to human development, and was listed as endangered species level one.



綠蠵龜：全世界現存海龜有七種，在近一、兩百年，因人為獵捕、漁業混獲、船隻撞擊、海洋垃圾、產卵棲地開發、環境汙染和傳染病威脅等而數量減少。目前所有海龜物種皆受華盛頓公約保護。

Green Sea Turtle: One of seven sea turtle species worldwide, its population has declined over the last century due to human activities, including hunting, bycatch, vessel strikes, and environmental pollution. All sea turtle species are protected under the Convention on International Trade in Endangered Species (CITES).



台灣黑熊：台灣唯一原產的熊類。由於自然環境過度開發及各種人為干擾，數量急遽減少，被列為瀕臨絕種的保育類動物。

Formosan Black Bear: It is the only one native bear species in Taiwan. It has faced rapid population decline due to habitat destruction and human interference. It is listed as an endangered species level one.

<保育法律字塊 Conservation Law Text Blocks>

國家公園法：國家特有的自然風景、野生動植物及史蹟，依法公告劃定區域保護。目前我國設有 9 座國家公園、1 座國家自然公園。

National Park Act: Protected areas are designated for their unique natural landscapes, wildlife, and historic sites. There are nine national parks and one national natural park in Taiwan.

野生動物保育法：立法目的為保育野生動物，維護物種多樣性，與自然生態之平衡。

Wildlife Conservation Act: Established to conserve wildlife, maintain biodiversity, and ensure ecological balance.

華盛頓公約：又稱為瀕臨絕種野生動植物國際貿易公約，旨在避免國際貿易對瀕危野生動植物的生存造成威脅。

CITES: Also known as the Washington Convention, this treaty aims to protect endangered species from the threats posed by international trade.

文化資產保存法：保存及活用文化資產，充實國民精神生活，發揚多元文化而立之法。

Cultural Heritage Preservation Act: Enacted to preserve and promote cultural heritage, enhancing national spirit and fostering cultural diversity.

拉姆薩公約：是為了保護濕地而簽署的全球性政府間保護公約。

Ramsar Convention: A global treaty for the protection of wetlands.

<生態危機字塊 HIPPO>

棲地破壞 (Habitat destruction)：人類開發造成棲地喪失、棲地破碎化或透過排放汙染物，讓棲地不適合生物生存，進而使生態系消失或物種滅絕。

Habitat Destruction: Human activities such as development cause habitat loss, fragmentation, and pollution, making environments unsuitable for life and leading to ecosystem collapse and species extinction.

外來種引進(Invasive species)：人類之力移動到自然無法分布區域的物種叫「外來種」。大部分的外來種會因水土不服而無法建立穩定族群，但某些外來種可能因為缺乏天敵或資源競爭，在新的地方大量繁殖擴散，並透過捕食、競爭資源或基因汙染影響當地的原生生物，這樣的外來種我們稱為「外來入侵種」。

Invasive Species: Species moved by human actions to areas outside their natural range. While most invasive species fail to establish populations, some thrive due to a lack of natural predators and competition, displacing native species through predation, competition, or hybridization.

污染(Pollution): 污染物可直接或間接導致生物死亡，或是降低生物的繁殖能力，導致物種滅絕。

Pollution: Pollution directly or indirectly causes death or reduces reproductive capacity in species, even leads to extinction.

人口過多(Population): 過多的人口加速了棲地的開發、增加外來入侵種侵入的機會，產生更多的汙染，也加速消耗地球上的生物資源。

Population: Human overpopulation accelerates habitat destruction, increases opportunities for invasive species to spread, generates more pollution, and depletes natural resources.

過度開發 (Overexploitation): 當人類對生物利用的速率，超越生物自我可更新的速率，長期就會導致該生物族群減少，最終滅絕。

Overexploitation: When the rate of resource utilization exceeds the ability of species to regenerate, populations will decline, and finally lead to extinction.

四、感謝合作夥伴 Acknowledgments:

課程設計：大義國中王維邦老師、龍華國中洪毓秀老師、七賢國中楊智安老師、楠梓國中林燕伶老師。感謝台灣師大 CWISE 團隊與九雛影像工作室技術指導。

