Times Higher Education
Sustainability
Impact Ratings

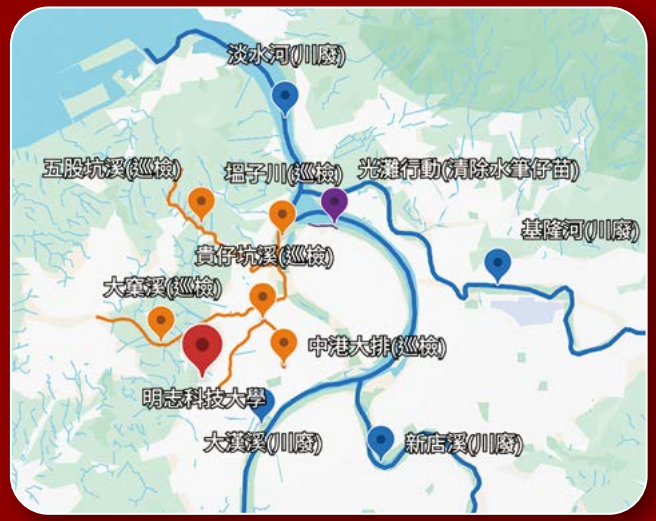
SDG 15

Life On Land

明志科技大學
MING CHI UNIVERSITY OF TECHNOLOGY

2024 Sustainability Report

4. Water Environment Patrol Team and Rapid River Waste Screening of MCUT Acting as Ecological Guardians and Solving Pollution Using Science and Technology



Blue markers (Rivers): Tamsui River (river waste), Keelung River (river waste), Xindian River (river waste): Dahan River (river waste).
Purple markers (Activities): Mudflat Action (removal of Kandelia obovata seedlings).
Red marker (Landmark): MCUT.
Orange markers (Inspection/Patrol Points): Wugukeng Creek, Guizikeng Creek, Dake Creek, Zhonggang Main Drainage, Wenzi River.

Scope of basins under water environment maintenance	Person-times engaged in 2024	Number of activities in 2024
Water patrolling and testing: 20.7km [1]	Water patrolling and testing: 400 person-times	Total number of times of water patrolling: 18
River waste treatment: 283.5km [2]	River waste treatment: 120 person-times	Total number of times of water patrolling: 80

Note 1: The total length of river segments covered by water patrols and water-quality monitoring includes: Wenzi River (塭子川); Dake Creek (大窠溪); Wugukeng Creek (五股坑溪) 13 km; Zhonggang Main Drainage (中港大排) 2.5 km; and Guizikeng Creek (貴子坑溪) 5.2 km — totaling 20.7 km.

Note 2: The river-waste watershed length is 283.5 km, according to the MCUT USR annual report.

MCUT is located in Taishan District, New Taipei City, near Xinzhuang, Wugu, and Linkou. The campus is bordered by Dakekeng River and Guizikeng Creek, which meet and then flow into the Tamsui River at the border of Wugu and Luzhou. As a result, this region has diverse forest formations, hydrological, and ecological resources. Since 2020, we established a local water environment patrol team responsible for basin patrolling and water quality testing. Starting in 2021, we began promoting local community engagement to enhance residents' awareness and concern for the environment, foster harmonious coexistence between people and nature, and pass on civic responsibility through generations. In 2022, while continuing water environment patrols, MCUT encouraged students to obtain drone pilot licenses by attending relevant exams. In 2023, we collaborated with the Tamsui River basin patrol team, Taishan District, and The Society of Wilderness, leveraging relevant coursework, to conduct rapid waste screening investigations in the river. Pollution hotspot information was reported to government agencies with hopes of improving waste cleanup and transportation efficiency with limited resources.

In 2024, our plan is to sustain water environment patrols, encourage students to document pollution and ecological resources through images, and enhance rapid screening investigations of waste in Tamsui River through further collaboration with water resource patrol teams across New Taipei City districts. We aim to help local partners focus on river waste issues and deepen cooperation with public and private sectors. In terms of environmental education, we will integrate courses and ecological exploration activities that empower students to work with local organizations or schools to develop action plans suited to local conditions — improving residents' and students' understanding and scientific awareness of the local environment. This approach aims to deepen the localization of river patrol efforts and create a positive feedback loop between residents and the environment.

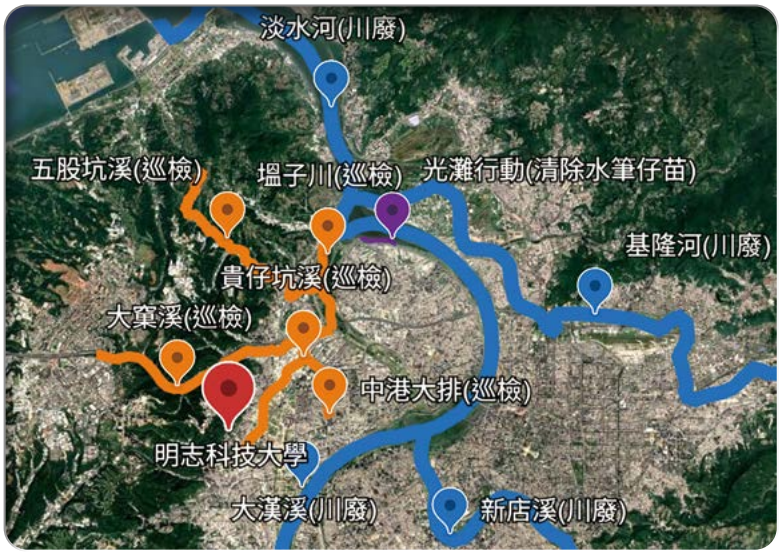
Since March 2024, nearly 100 volunteers from the Taishan Water Patrol team, The Society of Wilderness, the Department of Environmental Protection, New Taipei City Government, Water Environment Patrol Team, Shih Chien University, and Nanya Technology have participated in rapid waste screening investigations of the Tamsui River basin, culminating in a press conference in November. During summer vacation 2024, we continued promoting environmental education and partnerships with local middle and elementary schools, organizing activities and science camps for students to foster their sense of connection to the local environment.

In 2024, MCUT collaborated with teachers and students from Shih Chien University and the Water Environment Patrol Team of New Taipei City to carry out a larger-scale annual survey of Tamsui River. They found that the total waste in the basin decreased by 84,000 kg. If converted to 14 kg per bag, the waste density along the riverbank dropped from 156 bags per kilometer to 72.5 bags, a reduction of over 50%. The most significant improvement was observed in the main stem of Tamsui River. A review of the waste hotspots identified in 2023 showed that the public sector increased efforts to clean the riverbanks after 24 hotspots were announced. Additionally, The Society of Wilderness and MCUT took part in multiple creek-cleaning activities along the riverbanks of Shezidao and Luzhou, achieving a cleanup rate of 58.3% and reducing 14 hotspots. The goal of river cleanup was effectively advanced through the cooperation of the public and private sectors.

In 2024, new test items, including COD and total phosphorus, were added to the river water quality testing. Although more time was needed for the testing, the causes of pollution in each river could be identified more carefully. For example, green algae were often found in the water of the Zhonggang Main Drainage Trail and Honghui Plaza, which could be mistaken for a sign of eutrophication. However, high concentrations of total phosphorus were not detected. As for COD, the cause of the high COD levels in Dakekeng River still needs further investigation. This spot is located in the upper reaches of the river, and more attention should be paid to other discharge sources. In the future, we plan to identify the pollution sources for each river, determine whether pollution is caused by human activity or natural processes. This will allow the parameters to better indicate pollution sources. Currently, the rivers tested are mainly used for domestic water convergence, flood prevention, and drainage. If the parameters' concentrations are too high, it will be necessary to check for illegal discharges. To better protect important water resources, MCUT adheres to the spirits of diligence, simplicity and social contribution, continually engages in the water quality sampling and analysis for rivers in Taishan District, and releases the results on the Facebook fans club of "**Website of Water Environment Patrol Team of Taishan District, New Taipei City**", thereby joining hands with people in Taishan District to conserve the river ecology.

• Lo, Yi-Hsin, Graduate of the Art Program, Taishan Junior High School, New Taipei City

As the survey expanded to more tributaries in 2024, it was discovered that the left bank of Xindian River (near Yongfu Bridge and Fuhe Bridge) and Dakekeng River also became significant waste hotspots (24 new hotspots identified). The predominant waste type remained disposable plastic food packaging, which made up 60%, clearly indicating that environmental education will be crucial for reducing river waste pollution. To achieve this, MCUT, The Society of Wilderness, and Tamsui Community University collaborated to promote a canoeing program on the Tamsui River, aiming to foster local environmental education through water sports, environmental experiences, and education, helping participants understand the importance of reducing disposable household waste. Additionally, the first "Local Sustainable Environment Forum" was held at MCUT in September 2024. During this event, public sector representatives, NGOs, schools, and other key stakeholders along the Luzhou riverbanks exchanged ideas and collaborated on strategies to reduce waste hotspots in Luzhou.



For detailed information, please scan the QR Code as above

The documentary Listening to the Silent Wails of Rivers and Seas: A Rapid River Waste Screening Investigation was showcased at the 2024 Eighth Taipei Golden Eagle Microfilm Festival, where 94 organizations and 183 entries participated. This initiative helps raise public awareness and encourages engagement with sustainability issues while reinforcing the message of sustainable development. The documentary documents the 2023 Tamsui River Waste Rapid Screening Investigation Project, a collaborative effort by Ming Chi University of Technology, The Society of Wilderness, and Fubon Life Insurance. A dedicated team of faculty and students traveled by bicycle and on foot, exploring northern Taiwan's Dahan River, Xindian River, Keelung River, Tamsui River, and their estuaries. They covered a total of 283.5 kilometers and collected nearly 800,000 liters of waste. Through these data, the documentary emphasizes the serious ecological threats posed by river pollution. The university hopes that the impact of this sustainability-focused microfilm will inspire the public to reflect on and address river waste issues, while fostering greater environmental awareness and sustainable practices.

• 2024 8th Taipei Golden Eagle Micro Movie Festival — Bronze Award

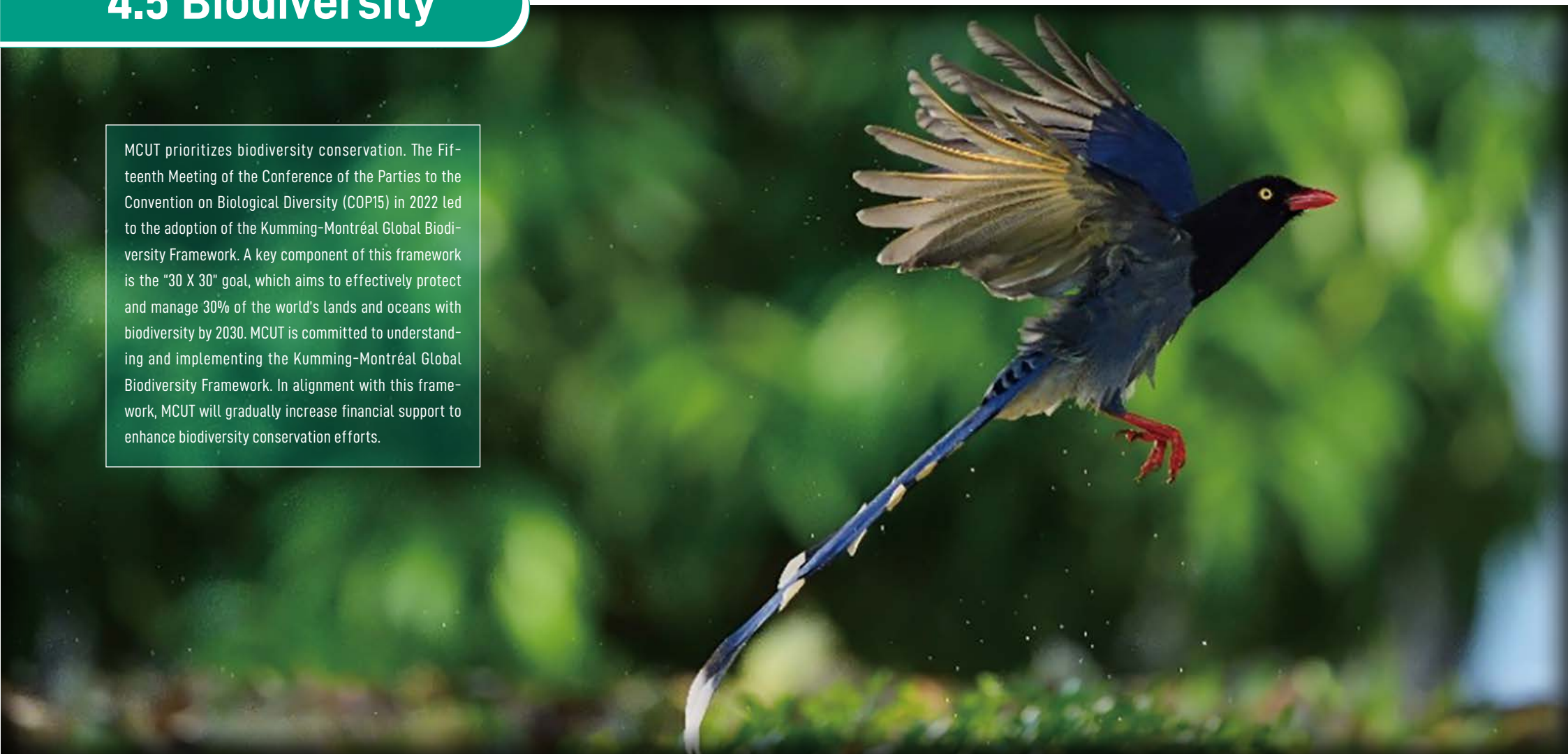
Saving the Birds: Volunteers Clear Mangroves from Wetlands

An important wetland along the Luzhou section (designated nationally) of the Tamsui River embankment recently revealed a large mudflat due to river dredging efforts. This exposed habitat has attracted many waterbirds, including dunlins, black-faced spoonbills, and teal ducks. To protect this vital ecosystem, Ming Chi University of Technology (MCUT) partnered with the Wild Bird Society of Taipei, The Society of Wilderness, the Tenth River Management Branch of the Water Resources Agency (MOEA), the Rover Scout Interest Group, the Environmental Protection Bureau of New Taipei City Government, and the High Riverbank Construction Management Office. In September 2024, these organizations launched the "Open Mudflat Action," during which 60 volunteers worked to preserve and restore the mudflat habitat. The effort included removing invasive mangroves and uprooting hundreds of Kandelia seedlings, as well as collecting nearly 250 kilograms of trash from the site.

MCUT's Action-Oriented Office mobilized almost 30 faculty members and students for the project. Lecturer Chih-Lin Chen, who led the team, emphasized, "Participating in environmental action is vital for students — not only does it offer hands-on experience in conservation, but it also deepens their understanding of the Tamsui River ecosystem and the current state of our environment." Chen also mentioned that MCUT will continue monitoring the Luzhou mudflat area and, through its University Social Responsibility (USR) program, will provide ongoing support to promote long-term wetland conservation.

Material Topics	Value Chain			SDG Response	Impact Materiality		Operation Materiality
					Positive	Negative	
USR Practice		MCUT	Downstream	8 DECENT WORK AND ECONOMIC GROWTH; 10 REDUCED INEQUALITIES; 12 RESPONSIBLE CONSUMPTION AND PRODUCTION	Medium	Medium	Low
Biodiversity	Upstream	MCUT	Downstream	8 DECENT WORK AND ECONOMIC GROWTH; 15 LIFE ON LAND; 14 LIFE BELOW WATER	Low	Low	Low
Hazardous Substance Management		MCUT	Downstream	3 GOOD HEALTH AND WELL-BEING; 15 LIFE ON LAND	Medium	High	Low

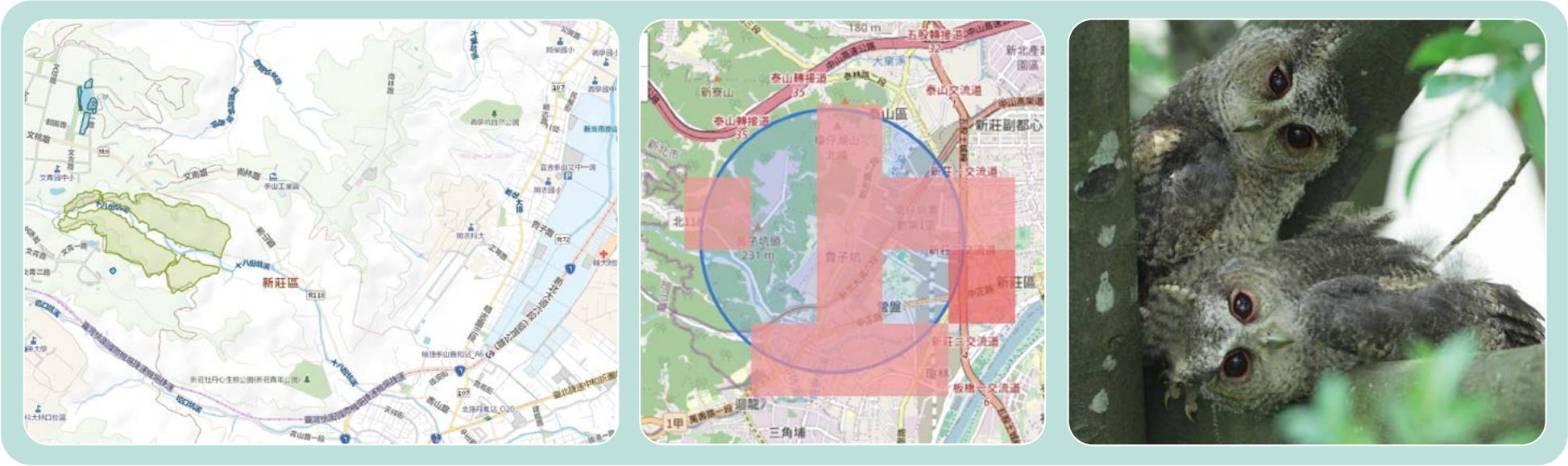
4.5 Biodiversity



MCUT prioritizes biodiversity conservation. The Fifteenth Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP15) in 2022 led to the adoption of the Kumming-Montréal Global Biodiversity Framework. A key component of this framework is the "30 X 30" goal, which aims to effectively protect and manage 30% of the world's lands and oceans with biodiversity by 2030. MCUT is committed to understanding and implementing the Kumming-Montréal Global Biodiversity Framework. In alignment with this framework, MCUT will gradually increase financial support to enhance biodiversity conservation efforts.

Inventory of Biodiversity Hotspots around the Campus

MCUT is located at the foothills of Guizi Village in the Taishan District of New Taipei City, covering an area of 0.62 km^2. It has conducted an inventory of biodiversity hotspots within its operational scope using the LEAP (Locate, Evaluate, Assess, Prepare) method to identify natural risks. Additionally, MCUT has adopted the Species Emergence Record Query established by the Taiwan Biodiversity Information Alliance (TBIA) to investigate the emergence records of conservation species around the campus. Initially, the survey was conducted based on relevant data from the Biological Investigation Database established by the Forestry and Nature Conservation Agency, MOA. MCUT is 1.75 km and 2.88 km away from the Xinzhuang Water Conservation Forest (green part), the nearest shelter forest, and Taoyuan's Reservoir and Canal Wetland (blue part), a national wetland, respectively. As a university research organization, MCUT does not impose any direct impact on the biodiversity of these two locations. We will continuously monitor our potential impact on the biodiversity hotspots in these areas and establish relevant management strategies to address biodiversity, thus contributing to the campus's ecological richness.



• Investigation results of the Biological Investigation Database. The record on Spilornis cheela has been obtained from the special issue of Foothills · Ecology-Natural Ecological Resources of Taishan.

Additionally, according to relevant data from the "Species Emergence Record Query" established by the Taiwan Biodiversity Information Alliance (TBIA), there were records of the emergence of seven conservation species within a 2 km radius around MCUT (latitude/longitude: 121.42239725449349, 25.041228287119147) in 2024. These species are Zhangixalus taipeianu, Acridotheres cristatellus, Milvus migrans, Otus lettia, Urocissa caerulea, Lanius cristatus, and Spilornis cheela. Among them, a total of 42 bird species, including Spilornis cheela, Otus lettia, and Urocissa caerulea, were active on campus and were recorded in the special issue of Foothills · **Ecology-Natural Ecological Resources of Taishan**. MCUT will continue to track records on the emergence of conservation species around the campus and will plan and formulate relevant policies to sustain biodiversity.

Blue Magpie Family and Crested Goshawk

According to relevant tracking surveys, a flock of Taiwan Blue Magpies and a mature female Crested Goshawk have been competing for core habitats on campus. This competition arises from the area's native mixed planting forest structure and the availability of living food sources, creating an ecological environment with similar attributes that support both species. At the beginning of 2024, the members of the Taiwan Blue Magpie family worked cooperatively with strong combat skills and successfully reclaimed this area. In April, they built nests in the tree canopy near the edges of the branches of alstonia scholaris and successfully passed through the breeding season. Furthermore, they raised seven new members, with some of them remaining within the original family.

• Results of TBIA Species Emergence Record Query. Records on Otus lettia and Urocissa caerulea have been obtained from the special issue of Foothills · Ecology-Natural Ecological Resources of Taishan.

明志科技大學

大學社會責任實踐計畫

113年度執行成果年報

教育部大學社會責任實踐計畫

University Social Responsibility Projects

3 淡水河流域環境紀錄暨環境教育計畫

計畫主持人 陳志霖 教務處 課務組組長

6 CLEAN WATER AND SANITATION

一、問題意識與計畫目標

明志科技大學位於新北市泰山區鄰近新莊、五股及林口，有大窠溪及貴仔坑溪環繞匯流後從五股、蘆洲交界注入淡水河，林相及水文生態資源多樣；自109年起成立在地水環境巡守隊，擔負流域巡守及水質檢測，從110年起開始推動在地社群鏈結，共同提升在地居民對環境的感知及關注，促進人們與環境間的和諧共生並代代相傳的現代公民的責任。111年延續既有的水環境巡守任務並推動學生考取空拍機證照，112年則前進至淡水河流域，結合課程及泰山區巡守隊與荒野保護協會共同推動淡水河垃圾快篩調查並將熱點提供給公部門，以期在公部門有限資源下提升垃圾清運效能。

113年計畫將延續既有的水環境巡守任務、持續推動學生記錄流域環境中的汙染、生態資源等影像紀錄；進一步結合新北市各區水資源巡守隊，推動2024淡水河溯源川廢快篩調查，協助在地夥伴關注河川廢棄物議題，深化公私部門協力。針對環境教育的推動，113年將持續結合校內課程及環境探索活動進行學生培力後，再藉由學生與在地團體或各級學校進行合作，規劃適合在地場域的環境教育及STEM教育的行動方案，提升淡水河流域周邊民眾及學生對在地環境的知能及科普種籽，深化水環境巡守在地化、鍵結居民與在地環境間的正循環。

二、計畫執行重點

本計畫整合通識選修「環境與生活」及「經典教育與社會實踐」課程、與泰山水巡守隊、荒野保護協會、新北市政府環境保護局、新北市水環境巡守隊、實踐大學及南亞科技等近100位志工，於113年3-9月進行淡水河溯源川廢快篩調查，並於11月進行調查結果發布記者會。113年暑假期間，持續推動環境教育與在地中小學合作，合作規劃並辦理學生環境教育活動及科普教育營隊，提升大泰山地區中小學學生對在地環境的感知能力及科普種籽。

與在荒野保護協會、新莊社區大學、淡水社區大學及在地社團合作辦理本校學生培力活動，包含在地環境探索、空拍機專業操作證考照訓練、淡水河獨木舟體驗。持續進行河段水質檢測紀錄，培訓本校學生作為泰山區水環境巡守隊種子成員，建置貴仔坑溪、大窠溪及淡水河流域的影像資料。與在地中小學合作辦理環境教育及STEM教育活動，提升大泰山地區學生對在地環境的感知能力及主動學習的態度。針對2023淡水河川廢調查熱點，進行成因分析並推動公部門與地方民眾及NGO團體對話，辦理在地環境論壇以公私協力方式謀求廢棄物熱點降載的契機。

三、計畫成果亮點

113年由明志科技大學與實踐大學師生、新北市水環境巡守隊共同執行淡水河年檢擴大調查，發現流域內垃圾總量減少84,000公升，以每袋14公升垃圾換算，河岸段垃圾密度從平均每公里156袋降至72.5袋，減幅超過50%，其中又以淡水河主幹整治成效最為顯著，同步檢視112年公布垃圾熱點改善情況，在112年熱點（24個）公佈後，公部門強化河岸垃圾清理，荒野保護協會與明志科技大學於社子島與蘆洲河岸辦理多場次淨溪活動，發現清理比率高達 58.3%（減少14個熱點）值得肯定，潔流目標透過公私協力有效推進。

隨今年調查深入更多支流，新增發現新店溪左岸(近永福橋與福和橋)與大窠溪亦為民眾棄置垃圾熱點（新增24個熱點），主要類型仍為一次性飲食塑膠垃圾佔六成，足見環境教育將成為改善川廢汙染關鍵。為此，我們與荒野保護協會及淡水社區大學合作推動淡水河獨木舟活動，結合水域運動、環境體驗及環境教育發展出在地環境教育行動，讓參與民眾能瞭解一次性生活垃圾減量的重要性。此外，首屆在地永續環境論壇已於113年9月19日於明志科技大學召開，集合公部門、NGO團隊、學校等蘆堤灘地的重要利害關係人，針對蘆堤垃圾熱點降載進行意見交流及對話。

-113 年 -
觀音山環境與生態教育年報

明志科技大學

新北市立泰山國民中學
食農綠金進行式

新北市泰山區泰山國中童軍團團長 賀楚彎 撰稿

壹、行前課程：

一、水產養殖科概述：

水產養殖科是指通過人工方式在特定環境中飼養和繁殖水生生物的科學。其目標是提高水產品的產量和質量，並對社會做出貢獻。

二、養殖過程：

水產養殖過程包括養殖場選址、養殖技術、飼料和藥物的使用等。選擇合適的養殖場地點和技術是成功養殖的關鍵。

三、養殖環境：

養殖環境對水產品的生長至關重要。水質、溫度、養殖密度和溶氧等因素都會影響養殖效果。

四、挑選和收購：

選擇優質的養殖產品需要考慮多方面因素，包括產品的質量和價值評估。

五、安全與衛生：

確保養殖產品的安全和衛生是養殖過程中的重要環節。防止疾病的措施和管理方法至關重要。

六、挑戰與展望：

水產養殖科面臨環境壓力、疾病控制和技術進步等挑戰。未來，水產養殖科將朝著更加可持續和環保的方向發展。

七、水產養殖科的學校和未來進路：

許多學校提供水產養殖科的相關課程，學生可以選擇進一步深造或進入相關行業工作。

貳、主活動課程：

一、仁和鮑魚養殖場的環境介紹：

仁和鮑魚養殖場注重使用生態友好的飼養方法，避免對環境造成負面影響，並採用可持續的養殖技術。

二、潮間帶的生態介紹：

潮間帶是海洋與陸地交界的生態系統，對環境和生物多樣性具有重要意義。

三、鮑魚養殖方式解說：

鮑魚養殖需要特定的技術和環境管理，養殖場採用循環水系統和減少污染排放的方法。

四、海藻餵食體驗：

參與者可以親自體驗海藻餵食，了解再生資源和環保原料的使用。

五、接觸九孔、海膽、寄居蟹：

參與者有機會與多種海洋生物互動，增進對海洋生態的了解。

叁、配合 SDGs 指標：

一、第 12 指標__負責任的消費與生產：

強調使用生態友好的養殖方法，避免對環境造成負面影響，並提倡可持續的養殖技術。

二、第 13 指標__氣候行動：

介紹如何使用再生資源和環保原料，並強調養殖場對可持續發展的承諾。

三、第 14 指標__保育海洋生態：

介紹環保技術，如循環水系統、降低污染排放、支持生物多樣性等，以保護和恢復海洋生態。

四、第 15 指標__保護陸域生態：

強調潮間帶生態的重要性，並介紹養殖場對保育這些生態系統的承諾。

肆、反思與回饋：

連續兩年，感激衛生組長李以新老師推薦，讓童軍團有機會帶領學生參加水產養殖科考察活動，對童軍團來說是非常有意義的經歷。活動中，團員們深入瞭解了水產養殖科的概念、飼養過程以及飼養環境的重要性，還前往仁和鮑魚養殖場進行了實地考察，親身體驗了鮑魚的飼養、收穫和美食烹飪過程。

在參觀仁和鮑魚養殖場時，同學們深受啟發。該養殖場注重使用生態友好的飼養方法，避免對環境造成負面影響。業者採用可持續的養殖技術，如迴圈水系統和減少污染排放，以支援生物多樣性和海洋生態的保護。這種環保意識讓大眾對養殖業的可持續發展承諾印象深刻。

在活動中，大家還學習了潮間帶的生態系統，強調了保護海洋生態和陸域生態的重要性。這使學生更能意識到人類的責任，要積極採取行動保護和恢復這些珍貴的生態系統。除了增長知識，還能感受到學生們的熱情和參與度。同學們積極參與海藻飼養和與海洋生物的互動，對水產養殖科產生了濃厚的興趣。通過這次活動，不僅學到了知識，還培養了對環境保護的意識和責任感。

通過反思和學生們的回饋，意識到這次活動對學生的影響是深遠的。學生們通過實地考察和參與互動體驗，不僅增加了對水產養殖業的瞭解 (例如：九孔與鮑魚的不同)，還加深了他們對可持續發展和環境保護的認識。他們對活動的評價和回饋都非常積極，表示希望能有更多這樣的實踐機會。

帶隊老師 - 賀楚彎團長，也表示對於學生的表現感到非常滿足和驕傲。這兩次的活動不僅讓學生們學到了知識，還激發了他們對科學研究和環境保護的興趣。相信這些經歷將對他們未來的學習和生活產生積極的影響。同時，團長也意識到自己在教學過程中應更加注重實踐與理論的結合，為學生提供更多實踐機會。

結論，食農綠金進行式的計畫，提供學生實地體驗的機會，相信學生們不僅在學科知識上有所收穫，更加深了對環境保護的認識和責任感。希望將來能有更多這樣的活動，為學生們提供更多實踐和體驗的機會，激發他們對科學和可持續發展的興趣。

氣候與自然共好__山川海守護行動

南亞科技股份有限公司 陳乙萱 撰稿

自然資源的利用與變遷，影響著生態系統穩定、企業經營與當地社區的福祉，南亞科技於 2024 年實踐管理自然風險，並正式發佈第一本「氣候暨自然與財務揭露報告書」，將保護生物多樣性、減緩自然風險納入企業策略，確保業務發展與自然共生。我們深知，企業的永續成長不僅依賴資源利用效率，更需要與共享同一片自然資源的社區共同努力，保護我們的環境。

基於這樣的理念，南亞科技發起了一系列生態保育行動，透過員工自發性的參與，攜手供應商、非營利組織、地方政府及當地學校，共同發起系列活動，期能增加公司對於自然生態議題的保護意識。

一、世界綠行動：環保從日常做起

1. 植樹節：南亞科技與桃園市政府合作，員工親手種植原生樹種，推廣森林保育理念。

2. 紀錄一餐垃圾量活動：鼓勵員工記錄並反思日常垃圾產出，以實際行動減少浪費。

3.**Eco** 智多星：舉辦環境知識競賽，透過互動學習了解資源回收與垃圾減量知識。

4. 物種大調查：號召員工藉由 **iNaturalist** 公民科學平台記錄公司周邊生物，提升生態保育意識。

二、生物多樣性保護：守護自然環境

1. 環保淨山：號召員工及眷屬清除山林垃圾，維持登山步道的整潔。

2. 五股溼地復育：與荒野保護協會合作，移除世界百大入侵種——小花蔓澤蘭，維護濕地生態。

3. 川廢調查：參與大窠溪環境監測，記錄河川廢棄物種類，為政策制定提供數據支持。

4. 淨灘行動：在金山中角灣舉辦低碳減塑淨灘活動，減少海洋廢棄物，守護海岸環境。

三、環境倡議與教育：提升環保意識

1. 海廢環保講座「龜心塑不見」：邀請講師分享海洋垃圾對生態的影響，強化員工對海洋保育的認識。

2. 川廢調查講座：與明志科技大學合作，講解河川污染成因，培養公民科學家精神。

3. 志工環保生態日：與台灣蝴蝶保育學會合作，藉由認識蝶類生態，讓員工與眷屬了解生物多樣性的重要性。

四、員工愛鏈結提案：企業與社會共好

1. 淨海活動：潛水社社員基於對於海洋的熱愛，於日常社員潛水活動外，自 **2023** 年起連續兩年參與「淨海合作社」相關的淨海洋垃圾活動，將潛水愛好與海洋環保結合，為地球盡心力。

2. 鯨豚協會動物救援志工：邀集公司內部對環保議題特別關注之志工們參與鯨豚協會動物救援志工培訓課程。藉由課程更加認識海洋生態及環境基礎教育，更進一步學習照護野生動物擱淺時所需之技能，以解決值勤志工人力之不足。

3. 環保大使志力淨灘：攜手台灣環保協會，清除海岸垃圾，促進親子環保教育。

五、結語

南亞科技透過多元環保行動，展現企業對環境永續的承諾。從員工參與到社會倡議，南亞科技將持續深化影響力，並藉由 **TNFD** 的框架，將自然相關風險納入企業決策，確保企業在成長的同時，也能守護我們賴以生存的地球，共同打造更永續的未來。

塭仔底溼地生態公園環境體驗

新莊社區大學 謝堂樹 撰稿

一、園區簡介

塭仔底溼地生態公園位處副都心，重劃時規劃命名為公兒二，清代及日據時期這裡屬於舊塭，與新北產業園區的新塭比鄰，附近有昌平國小、昌平派出所，樂活館等。公園面積 1.6 公頃，設置了親子遊戲區、涼亭、滯洪池約 0.4 公頃，無障礙步道，提供給身障者使用，是一處環境友善空間。公園內有新北市水利局中港大排分隊暨新莊溼地服務隊長期協助維護工作，進行邊坡土石流改善，護樹，設置昆蟲屋等及實施導覽解說活動，因此生態豐富，經調查植物有 300 種以上，鳥類 36 種，蝶類 20 幾種，可以說是新莊的綠寶石。其中滯洪池與中港大排連通，可以當作大排洪患時的滯洪空間。塭子底溼地生態公園可謂兼具防洪、基地保水、地下儲水、生態、環保與教育的好場所。

二、園區體驗活動說明

體驗活動可以區分白天或晚上進行：首先叮嚀同學注意安全，活動時間請依活動規則及說明進行，園區有高低落差、階梯及溼滑地

區需留心注意，以免發生危險。若在晚間進行時，須配合使用手電筒，協助看清道路與周圍環境，但為確保大家的安全，請別照射他人的眼睛，以免造成視覺的傷害。接下來說明今日實施的流程，最後請大家在活動進行中，能敞開心扉多觀察多思考，並善用五感及心感體驗，記錄沿途中所看到的、聽到的、聞到的、感覺到的及用心感受到的。為觀察昆蟲，各組先發兩個昆蟲盒，演示如何捕捉及安全說明，叮嚀活動途中尋找昆蟲放入盒內，帶回一起紀錄與討論。

三、體驗活動項目實施方式

園區內可進行多項活動體驗，許多活動已在園區內實施過，我們也積極再開發創新各種可能實施的活動，限於篇幅無法一一羅列，本篇以初次到本公園體驗的中學生及大學生做３～４小時的活動設計，並採環繞公園一圈方式進行體驗，活動項目如下逐一說明：

1. 植物親子相認：

子葉 vs 母樹，分四組或五組，拿著葉子尋找樹木認親並照相存證，同時介紹如何以葉序來分辨各種植物，如茄苳的葉序為三出複葉，楓香為單葉對生，樹紫藤為一回羽狀複葉等。

2. 特色行道樹體驗：

如光蠟樹、台灣櫸木、台灣欒樹與苦楝樹等，各有不同的特色與環境

對應，茲簡介如下：

（1）光蠟樹為木犀科常綠半落葉喬木，木材具有油蠟色澤，材質堅韌優良，類似雞油，但顏色較白，所以被為「白雞油」。葉對生，為一回奇數羽狀複葉，秋天葉片會轉黃。花黃白色，圓錐花序明顯。果為長線形的翅果掛在樹上隨風飄曳，令人賞心悅目，成熟飄落時形成旋轉翻動，另有一番景象，這也是它的傳播方式。樹姿優美，適合作為庭園樹、行道樹，木材良好適合作為家具材料。光蠟樹的樹液受到獨角仙與金龜子喜愛的食物。

（2）對照台灣櫸木材質顏色偏黃紅褐，與被稱為白雞油的光蠟樹，有所區隔，我採用照片讓學員做辨認，增加印象。

（3）台灣欒樹落葉大喬木，屬於無患子科植物。它具有二回羽狀複葉，小葉卵形先端尖，有鋸齒緣。春夏時從萌芽到展葉，秋季時開黃色花，頂生圓椎花序。果實為蒴果，由粉紅色的三瓣片合成，成熟時轉為褐色，共具四種顏色，觀賞期整年，所以有四色樹之稱；因葉形又像苦楝故又稱「苦楝舅」；開花時黃色的圓錐花簇密生樹頂，搖晃時就像金雨灑落，因此又被稱為「台灣金雨樹」。台灣欒樹常會有紅色的紅姬緣椿象滿布於樹枝上，而空中往往可見成群燕子盤旋捕食椿象，形成完整的食物鏈；也可能會有荔枝椿象危害，過度時需要做一點防治。台灣欒樹為台灣特有樹種且又被英國皇家協會選為世界十大名木之一，樹姿優美，花色多變化，是造園景、行道的優良樹種。

（4）苦楝是楝科植物，落葉喬木，一到秋冬變黃落葉，像枯死的樣子，相應民間傳說的故事：話說明朝開國皇帝朱元璋，在逃避元兵追殺四處流竄時，在一棵苦楝樹下睡覺，因正值寒冬枝果飄零，苦楝子打到他時直罵：「你這個壞心眼的東西，你會爛心死過年的呀！」沒想到咒罵的話語全應驗了，因此每當新舊歲交替之際，苦楝樹就全株呈現枯死的樣子，這種凋零枯萎的場景，令人有不安的感受。苦楝是本土種植物，不畏潮風鹹土，

生長快速，喜高溫，可防風、抗旱，常作為行道樹、造園植物，或海邊造林的樹種。材質優良可作家俱，種子可以當「風鈴子」，的藥品，治療蟲積、疝痛。根莖樹皮果實皆具毒性，誤食則嘔吐、腹痛、暈眩或抽搐，甚至麻痺而死，但量用得好可供藥用。木材味苦，故稱為苦楝，適合作家具、箱櫃等，春天開花，花具香味，可供觀賞。

3. 滯洪池邊坡與開闊草坪比較：

比較兩邊的地物、植物、其他生物與設施，檢視其對防污、降溫、碳匯等方面的作用，判斷哪一邊較具有生態環境的特色？

4. 邊坡土石流與導水溝、護坡、護樹、昆蟲屋等介紹：

（1）邊坡土石一直流失，造成步道泥濘，如何解決？（2）除草時連樹幹一起剝皮，造成樹木死亡，如何解決？（3）缺乏生態，如何營造？（4）觀察昆蟲屋製作的方式，可以看到什麼生物居住在裡頭？並探討為什麼要設置昆蟲屋？

5. 聞氣味：

聞一聞公園內咖啡樹、柑橘類、魚腥草等植物的味道，並把聞到的味道和感受記錄下來。

6. 聲音地圖：

聽一分鐘後將所聽到的聲音紀錄下來並說說心中的感受。

7. 觀察鳥類：

晚上可以看到什麼鳥類居住在這裡呢？紀錄與討論。

8. 昆蟲觀察：

將沿路活動時看到的昆蟲以昆蟲盒捕捉，做水棲生物調查時一併紀錄與討論。討論完後居於對生命的關懷與珍惜，原地釋放，並感謝牠們願意讓我們做觀察。

9. 水棲昆蟲調查：

水中有什麼生物呢？牠豐富嗎？以調查到的水棲生物來檢驗一下這裏的水質是否良好？

10. 最後請同學針對今晚的活動進行提問，並請各組做心得回饋與分享。

四、結語

透過園區的巡禮與體驗，探索公園到底是誰的家？人類或其他生物？如何營造－個有生態的家（公園），珍惜保護這些生物，提供生物有個棲身之處，應是規劃經營維護的重點。若能依上述提出的方向做，公園才能提供人類友善的環境、淨化的空氣與水質及寧靜的場域，成為良好的休憩空間，並可作為在地環境教育的場所。

2024 明志科技大學台灣藍鵲生態概記

生態攝影工作者 賴茂聰 撰稿

前幾年以來，一群新興的台灣藍鵲家族與一隻熟齡的雌性鳳頭蒼鷹爭奪核心棲地在校內 **B** 區推移，究因於區內的原生混合植栽的林相以及活體食物源等既供應其類同屬性高的生態環境。

今年年初，台灣藍鵲的家族成員分工合作以強悍的戰鬥力再度攻佔了這區，於四月間築巢在植栽黑板樹林靠近邊緣的樹上層之枝葉中，安穩地渡過繁殖期，並而育成 **7** 個新成員，且其中的部分留在原生家族內。

2024/10/13 10:42am/ 在 **B** 區內獵獲鼠類飛至 **B-3** 停棲正準備進食

2024/05/12 01:45pm/ 啣取儲藏在 **B** 區地面（石縫裡）的鳥類殘骸飛至 **B-2** 枝頭進食

2024/05/19 11:39am/ 位在 **B-1** 巢裡孵化約略 **10** 天的雛鳥回應歸來親鳥張嘴等待餵食

2024/05/24 01:16pm/ 餵食後親鳥催促或等待啣住雛鳥排泄的囊便飛離至遠處投棄

2024/05/25 09:57am/ 親鳥清理巢內時雛鳥移位不慎踩空跌掛在巢緣經幾番振翅引體向上才攀回巢內

2024/10/14 08:12am/ 沉浸在淺水中鼓動清洗之後飛上枝頭

2024/10/17 09:20am/ 捕食溝渠中的蛙類

2024/10/14 08:42am/ 飛至住宅區短暫停留宣示領域之後飛回 **A** 區

2024/10/17 09:09am/ 在林間嬉戲