

14 LIFE BELOW  
WATER



SDG 14 / TWSDG 14

保育及永續利用海洋生態系，  
以確保生物多樣性，並防止海洋環境劣化

### 評估水域遊憩計畫， 帶動在地觀光同時減少海洋衝擊

近年來國內海洋遊憩活動產業快速蓬發，花蓮縣政府為兼顧環境生態與經濟發展，希望提出合理海岸水域活動範圍，以供給並滿足業者、玩家及遊客的需求與期望，研訂海岸水域活動範圍空間規劃及管理策略。縣府委由東華大學審慎評估地理、天候、海象、水文等條件，共同考量遊憩及漁業資源捕撈之合理範圍，以及維持生態保護 / 育區及軍事用地不受干擾，藉由本計畫對花蓮縣奇萊鼻燈塔以南至花蓮溪出海口海岸水域遊憩活動實施調查，並依據調查的數據評估規劃合適花蓮縣發展的海岸水域遊憩範圍及安全管理方式。

### 實施海洋教育，學習與海洋共生的保育理念

海洋是孕育生命的起源，且臺灣海域孕育著豐富的鯨豚資源。幼兒教育學系於 2021 年 11 月 20 日，辦理全系師生戶外教學之海洋教育 - 友善賞鯨，藉由校外教學參觀，讓學生在觀察海洋生物與鯨豚生態時，將海洋教育內化到保育觀念中，課程中包含認識黑潮、花蓮港常見的海豚以及曾出現的大型鯨魚，當然還有鯨豚習性與海洋環境的介紹，讓平常鮮少接觸鯨豚的系上師生了解海洋保育的理念、認識海、親近海，進而可以更愛護海，希望大家都能當個負責任的遊客。

此外，為使境外生認識在地生態及群族文化，國際事務處持續辦理永續及生態文化旅遊，增加在地組織經濟收入，2021 年 3 月與黑潮海洋基金會合作辦理黑潮賞鯨活動，參加人數為 21 人。

## 成功研發全國第一台 AI 海上清潔機器人

花蓮港務分公司和能源科技中心等單位合作，研發全國第一台 AI 海上清潔機器人「水上 AIoT 海廢清除無人機」，透過 GPS 和太陽能，即可清除港口海面上油污與垃圾，減少使用人力，也肩負捍衛海洋資源的責任。「水上 AIoT 海廢清除無人機」可說是海上的掃地機器人，透過 5G 及 GPS 定位，運用 AIoT 智慧聯網技術，掃除海中油污，由於小巧便於攜帶，適合在各種情形下使用，更榮獲經濟部工業局「5G 通訊大賽」全國第 3 名企業最愛獎。之後預計持續規劃搭載太陽能輔助動力及能源管理技術，將可延長水域作業工作時程。

## 配合政府政策，自主發起淨灘行動

配合政府環保政策，校內各餐飲商家於店內禁止使用免洗碗、盤、筷、湯匙等一次性餐具，另為循序漸進推動校園無塑環境，提倡餐具重覆使用，試辦校園減塑活動，健全校內師生環保觀念及養成良好習慣，由行政體系率先試行開會便當採用非一次性使用之餐具（盒）。並為有效減少廢棄物及資源回收物清運量，執行校園垃圾不落地政策。

且為維護自然環境，追求永續發展的目標，東華大學學生成立許多關於環境保護的社團，致力以實際行動推動改變，時常發起保護環境的活動，其中不乏與水域保育相關的淨灘活動，2021 年樂鄰小太陽與崇德青年服務社於七星潭、太平洋公園舉辦 3 場淨灘活動。



◀ 崇德青年服務社進行淨灘活動，保護海洋生態



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### Conserve and Sustainably Use the Oceans, Seas, and Marine Resources for Biodiversity and Sustainable Development and Prevent Marine Deterioration

#### Water Recreation Projects to Activate Local Sightseeing and Mitigate Ocean Impact

In recent years, Taiwan's water recreation industry has been quite popular. To protect ecology and advance economic development, Hualien County Government demanded a reasonable water activity range that meets the needs and expectations of operators, water sports players, and tourists and outlined the boundary of coastal water activity and management strategy. Contracted by the Government, NDHU conducted water recreational area surveys along the coastal line from Cilaibi Lighthouse south to Hualien River outlet with discreet evaluation regarding geography, weather, sea state, and hydrology, considering the recreational and fishery activities, ecology protection/conservation, and keeping military bases and lands undisturbed. The survey data will be used to develop a coastal water recreational range and a management approach proper for the development of Hualien County.

#### Ocean Education to Raise Conservation Concept for Ocean Co-Existence

Ocean is the mother of life for all, most of all for the cetacean in Taiwan's sea area. On 20<sup>th</sup> November 2021, the Department of ECE organized a cetacean watching tour for all ECE members. The field trip allowed observation of ocean creatures and cetacean ecology, raising conservation awareness for ocean protection. Knowledge about the Kuroshio Current, regular dolphin visits around Hualien Port, and large whales were covered on the trip. Cetacean habits and the ocean environment were also introduced during the cruise, familiarizing ECE members that may have known little about cetacean with the notion of ocean conservation to give cetaceans a better living environment by being a responsible, ocean-loving, ocean-caring visitor.

Furthermore, to introduce international students to local ecology and group culture, the Sustainability and Ecological Culture Tour, organized by the Office of International Affairs, continued to contribute income to local organizations. In March 2021, the Kuroshio whale watching cohosted by Kuroshio Ocean Education Foundation was joined by 21 people.

## Taiwan First AI Sea Surface Robot Cleaner

The Port of Hualien, Taiwan International Ports Corporation, Ltd. and NDHU Energy Technology Center co-developed Taiwan's first AI sea surface robot cleaner, an AIoT sea surface robot vacuum that removes oil and garbage around the port's sea surface with the assistance of GPS and solar energy. The unmanned device saves manpower and conserves ocean resources. The AIoT sea surface robot vacuum can be seen as a robot cleaner on the sea, and with the help of 5G and GPS, it operates to collect discharged oil using AIoT. The compact design fits all the settings and won 3rd place in the Most Loved by Corporations in the IDB Mobile Heroes Competition. The device will feature a solar auxiliary power and energy management system to prolong operation while on the water surface.

## Non Single-Use Tableware and Beach Cleaning

As central policy stipulates, NDHU restricts single-use dishes, bowls, and cutlery in campus delis and cafes. In addition, to further advance a plastic-free campus, we promote repetitive use of tableware and have trial runs a plastic-free campus to raise habits and awareness of ecological protection. The administration units have begun test runs for non-single-use lunchbox container/cutlery for meals during meetings. We are also working to reduce wastes and recover resource removal volume by enhancing the no-garbage-on-the-ground policy.

To further maintain a healthy environment and pursue sustainable development goals, our students have taken initiative in eco-protective actions by organizing a number of clubs and frequent activities, including NDHU Little Sun and NDHUCQS's three beach cleanings in 2021 at Qixingtan Beach and Pacific Ocean Park.



◀ NDHUCQS's beach cleaning helps promote healthy ocean ecology