3 動物保育與研究

｜動物經營管理｜

1. 動物飼養展示與繁殖

園區飼養展示之動物以脊椎動物為主，共約330種2,351隻（未計算昆蟲、部分魚類及農業部收容計畫動物）。本年度內保育繁殖計畫成果，累計達32種210隻動物個體，成功繁殖穿山甲、石虎、小爪水獺、狐獴、馬來貘、南美小食蟻獸、雙峰駱駝、查普曼斑馬、伊蘭羚、環尾狐猴、黑腳企鵝、大紅鶴、紅鸚、維多利亞冠鴿、藍冠鴿、巴拉望孔雀雉、越南鸚、紅藍吸蜜鸚鵡、羅地島蛇頸龜及棘皮瘤尾守宮等物種。

■ 飼育動物數量統計表

種類 / 時間	哺乳類		鳥類		爬蟲類		兩棲類		魚類		總計	
	種數	隻數	種數	隻數	種數	隻數	種數	隻數	種數	隻數	**種數**	**隻數**
113年底	91	661	92	567	103	686	26	282	18	155	**330**	**2,351**

馬來貘「貘莉」與「貘克」的小寶寶「莉姆路」滿月了

羅地島蛇頸龜

小爪水獺全家福

3. Animal Conservation and Research

｜Animal Operation and Management｜

1. Animal Feeding, Exhibition and Breeding

The Zoo features mainly vertebrata and has 330 animal species (totally 2,351 animals, excluding insects, certain fish species and the rescued animals). Regarding the wildlife conservation and breeding plan of this year, the Zoo has successfully fostered 210 wildlife from 32 endangered or valuable species, including Chinese Pangolin (*Manis pentadactyla*), Leopard Cat (*Prionailurus bengalensis euptilurus*), Asian Small-clawed Otter (*Aonyx cinereus*), Meerkat (*Suricata suricatta*), Malay Tapir (*Tapirus indicus*), Southern Tamandua (*Tamandua tetradactyla*), Bactrian Camel (*Camelus bactrianus*), Chapman's Zebra (*Equus quagga chapmani*), Common Eland (*Taurotragus oryx*), Ring-tailed Lemur (*Lemur catta*), African Penguin (*Spheniscus demersus*), Greater Flamingo (*Phoenicopterus roseus*), Scarlet Ibis (*Eudocimus ruber*), Victoria Crowned Pigeon (*Goura victoria*), Western Crowned Pigeon (*Goura cristata*), Palawan Peacock-pheasan (*Polyplectron napoleonis*), Vietnam Pheasant (*Lophura edwardsi*), Red-and-blue Lory (*Eos histrio*), Roti Snake-necked Turtle (*Chelodina mccordi*) and Spiny Knob-tailed Gecko (*Nephrurus asper*).

小食蟻獸寶寶

穿山甲寶寶「梅寶」

越南鸚寶寶

■ Statistics of Animals

Category / Time	Mammals		Birds		Reptiles		Amphibians		Fish		Total	
	Species	Numbers	Species	Numbers	Species	Numbers	Species	Numbers	Species	Numbers	**Species**	**Numbers**
End of 2024	91	661	92	567	103	686	26	282	18	155	**330**	**2,351**

● 熱帶雨林區馬來虎展場更新

本園加入全球馬來虎域外保育計畫，協助維持該物種域外安全族群數量及遺傳多樣性，並串聯亞洲既有在地衛星族群，本園自法國菲林斯動物園引入馬來虎。因應本次引入，老虎展場場地調整於113年3月完成，新增遊客參觀面玻璃觀察櫥窗，一方面可減少動物暴露在遊客視線的壓力以提升動物福祉，也讓遊客透過玻璃觀察櫥窗窺視動物的一舉一動，模擬從雨林樹叢間觀察動物的情境。馬來虎於5月11日正式開展與遊客見面，7-8月並特別辦理馬來虎保母解說活動，透過教育解說讓遊客認識瀕危馬來虎野外所面臨的危機以及本園與國際動物園目前執行馬來虎的保育策略。

● Renovation of the Malay Tiger Exhibit in the Tropical Rainforest Area

The Zoo joined the global Malay Tiger (*Panthera tigris jacksoni*) *ex situ* conservation plan to help maintain a stable population size and preserve the species' genetic diversity, as well as to connect with existing satellite populations in Asia by importing Malay tigers from Feline Park (Le Parc des Félins) in France. In response to this introduction, the tiger exhibit was modified in March 2024, including the installation of new glass observation windows to minimize the animals' stress from visitor exposure and to enhance their welfare. Meanwhile, visitors can observe the tigers' behavior through the glass windows, simulating the experience of watching wildlife in a rainforest. The Malay Tiger Exhibit was officially opened on May 11, followed by a Malay Tiger Keeper's Talk event was held in July and August. Through these educational talks, visitors had the opportunity to learn about the threats faced by the endangered Malay Tiger, as well as Taipei Zoo's conservation strategies developed in collaboration with international zoos.

● 動物線上食譜及體態評分追蹤

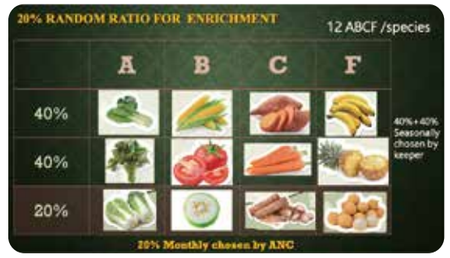
臺北動物園自111年1月起推動「蔬果十二宮格」食譜系統，依照蔬果產季替換食譜中的食材品項，除了讓食譜更具彈性外，也著實增加了全年的食材多樣性。在頻繁替換食材的需求下，為了提升營養中心與現場照養員的溝通效率，同時也讓食譜公開透明化，讓飼養員能夠彼此交流食譜，故開始啟用線上食譜功能，並於同年12月底將全園飼料加入線上食譜中，接著在112年10月進一步將肉品食譜陸續上線。此線上食譜系統在113年中讓營養中心更能即時掌握大部分動物食譜的全貌，做為必要時計算動物食譜的依據。

對於動物健康狀況及食譜調整追蹤，除了定期的健康檢查及體重紀錄外，「動物體態評分」（Body Condition Scoring, BCS）則是另一種常用且簡便方式。於113年1月開始，搭配線上食譜檢視，營養中心發起定期的動物體態評分，由營養中心管理員、營養師、現場飼養人員及獸醫共同參與每次的動物體態評分。截至113年11月底，針對45個物種，共計辦理20次體態評分，評分結果有12個物種因分數低於2.5分或高於4分而進行食譜調整及後續追蹤，其中包含部分老齡個體。未來將持續針對本園哺乳動物進行年度體態評分，評分結果將留存於營養中心，做為日後參考。

● Online Animal Diet Sheets and Body Condition Scoring Follow up

Since January 2022, Taipei Zoo has implemented the "12-Slot Fruit and Vegetable Diet System", which adjusts ingredients in the animal diets according to seasonal availability. This system not only increases flexibility in dietary planning but also enhances the diversity of food items throughout the year. In response to the frequent need for ingredient substitutions, an online diet sheet system was launched to improve communication efficiency between the Nutrition Center and animal keepers. The system also enhances transparency and facilitates diet sharing among keepers. By the end of December 2022, all zoo-wide feed items had been incorporated into the online platform, and starting in October 2023, meat-based diets were gradually uploaded.

The online diet sheet system enables the Nutrition Center to gain a more comprehensive and real-time understanding of most animal diets, serving as a basis for nutritional calculations when necessary within the past year. In addition to regular health checks and body weight monitoring, Body Condition Scoring (BCS) has been adopted as a common and straightforward method to assess animal health and track diet-related changes.



蔬果十二宮格系統

Beginning in January 2024, the Nutrition Center initiated regular BCS assessments in conjunction with online diet sheets reviews. Each assessment is jointly conducted by nutrition center administrators, nutritionists, animal keepers, and veterinarians.

As of the end of November 2024, a total of 20 BCS assessments have been conducted, covering 45 different species. Among them, 12 species—some including elderly individuals—underwent dietary adjustments and follow-up monitoring due to BCS results falling below 2.5 or exceeding 4. Annual BCS assessments for all mammalian species at the zoo will continue to be conducted, and the results will be archived by the Nutrition Center for future reference.

2. 動物醫療保健及防疫

在動物醫療保健方面，除了執行日常突發性的外傷及內科疾病治療外，計畫性的進行動物健康檢查、疾病監測與預防等工作，並協助處理中央農政單位救傷來源的保育類以及國內外動物園間交換的動物檢疫工作，計28隻，包括有小貓熊、耳廓狐、馬來虎、石虎等物種；另外處理救傷動物70隻，包括執行農業部林業及自然保育署（簡稱林保署）救傷計畫，穿山甲、白腰鵲鴝、臺灣獼猴、中國眼鏡蛇、家鴿、臺灣山羌、鼬獾、赤腹松鼠、小雨燕、白鼻心、白腹秧雞、食蛇龜、泰雅鈍頭蛇、臺灣藍鵲、斑龜、五色鳥、樹鵲、翠鳥、紅嘴黑鵯、臺灣野山羊（臺灣長鬃山羊）、嬰猴、東亞家蝠、白尾八哥（泰國八哥）、大頭蛇、臺灣葉鼻蝠、藍腹鷴等動物。協助其他機構動物診療工作，包括池上牧野動物醫療健檢、農業部生物多樣性研究所（簡稱生多所）烏石坑研究中心黑熊麻醉診療、花蓮遠雄海洋公園水獺齒科處置、農業部獸醫研究所臺灣獼猴診療、新竹市立動物園紅鶴醫療諮詢、南京紅杉動物園諮詢小爪水獺腎結石醫療、上野動物園諮詢大貓熊年老脊椎醫療、林業及自然保育署宜蘭分署擔任臺灣黑熊救傷應變演練課程講師、宜蘭動植物防疫所藍腹鷴協助醫療、新北市動保處猴類醫療、桃園動物保護處浣熊麻醉諮詢、壽山動物園諮詢偶蹄類動物醫療、桃園Xpark水族館企鵝相關醫療諮詢等。

年度內購置ADS麻醉機、肉眼病理拍照工作站、cytospin 細胞抹片離心機、麻醉槍、蛋白質電泳設備、血袋封口機、低溫離心機、軟式籠、電子式心音設備、防潮櫃、加溫墊、微量注射器、點滴加溫器、眼底鏡、眼壓計、電腦斷層安裝動物生理監視器、辦公室分離式冷氣、救護車專用推車以及醫療影像傳輸伺服器、工作站更新，用於園內展示、收容、檢疫或救傷動物的疾病診斷與治療、住院照護與臨床病理檢驗診斷檢體影像保存等工作，針對可見及潛在性的疾病問題進行診療，以早期診斷、早期治療，強化動物疾病診斷準確率，並且利用微創進行動物疾病診斷與手術操作，以減低術後照護時間，增加動物醫療福利。持續改善醫療與照護周邊設備與環境，提升醫療使用便利性，與工作環境安全，以提升動物醫療管理品質，確保人員職業安全。

大貓熊「圓仔」門牙有斷裂進行根管治療的紀錄，此次影像檢查結果發現牠的牙根目前都仍正常

2024年1月16日（二）上午動物園邀請麻醉科、牙科與影像相關專家們組成醫療顧問團隊，為大貓熊「圓仔」進行健康檢查

2. Animal Health Care and Epidemic Prevention

Regarding animal medical and healthcare, the Zoo not only treated animals with accidental trauma and internal diseases, but also conducted routine animal health check and disease monitoring and prevention. Moreover, our veterinarians and technicians assisted the Central Agricultural Department in treating endangered species which were illegally transported, and quarantined animals exchanged between local zoos and zoos abroad (28 animals in total), including Red Panda (*Ailurus fulgens*), Fennec Fox (*Vulpes zerda*), Leopard Cat and so on. Our veterinarians also rescued and treated 70 animals, including those rescued through the implementation of the rescue plan of Forestry and Nature Conservation Agency (FNCA), Ministry of Agriculture, such as Chinese Pangolin, White-Rumped Shama (*Copsychus malabaricus*), Formosan Rock Macaque (*Macaca cyclopis*), Chinese Cobra (*Naja atra*), Rock Pigeon (*Columba livia*), Formosan Reeves's Muntjac (*Muntiacus reevesi micrurus*), Formosan Ferret-badger (*Melogale moschata subaurantiaca*), Red-bellied Tree Squirrel (*Callosciurus erythraeus thaiwanensis*), House Swift (*Apus nipalensis*), Formosan Masked Palm Civet (*Paguma larvata taivana*), White-breasted Waterhen (*Amaurornis phoenicurus*), Yellow-margined Box Turtle (*Cuora flavomarginata*), Atayal Slug-eating Snake (*Pareas atayal*), Taiwan Blue-magpie (*Urocissa caerulea*), Chinese Stripe-necked Turtle (*Mauremys sinensis*), Taiwan Barbet (*Psilopogon nuchalis*), Grey Treepie (*Dendrocitta formosae*), Common Kingfisher (*Alcedo atthis*), Himalayan Black Bulbul (*Hypsipetes leucocephalus*), Formosan Serow (*Capricornis swinhoei*), Senegal Bushbaby (*Galago senegalensis*), Japanese Pipistrelle (*Pipistrellus abramus*), Javan Myna (*Acridotheres javanicus*), Keelung Cat Snake (*Boiga kraepelini*), Formosan Leaf-nosed Bat (*Hipposideros armiger terasensis*), Swinhoe's Pheasant (*Lophura swinhoii*) etc. The Zoo also supported various organizations in diagnosis and treatment efforts for specific animal species. Examples include: Conducting health checkups for animals at Chinshang Pastoral Farm Resort; providing anesthesia and medical treatment for the Formosan Black Bear (*Ursus thibetanus formosanus*) at the Wushikeng Research Center of Taiwan Biodiversity Research Institute; performing dental treatment for otters at Farglory Ocean Park in Hualien; assisting the National Institute for Animal Health, Council of Agriculture in diagnosing the Formosan Rock Macaque; offering medical consultation for the Greater Flamingo at Hsinchu Zoo; providing consultation on kidney stone treatment for the Asian Small-clawed Otter at Hongshan Forest Zoo; advising Ueno Zoo on spinal treatment for elderly Giant Pandas; delivering lectures on Formosan Black Bear emergency response and injury rescue drills for the Yilan Branch of the Forestry and Nature Conservation Agency; assisting the Yilan County Animal and Plant Disease Control Center with medical care for the Swinhoe's Pheasant; supporting the New Taipei City Government Animal Protection and Health Inspection Office in primate medical care; providing anesthesia consultation for raccoons to the Taoyuan City Government Animal Protection Office; offering veterinary consultation for artiodactyl species at Shoushan Zoo; providing penguin-related medical consultation for Taoyuan Xpark.

小貓熊「未來」拍X光

3. 保育類野生動物收容

本園野生動物收容中心專責收容主管機關查獲走私與違法獵捕、販售與展示的保育類野生動物。本年度持續協助各縣市政府相關單位委託處理野生動物救傷，以及持續照養歷年所委託收容之各類動物，包含熊科動物、小型食肉目動物、鳥類、靈長類動物、兩棲爬蟲動物，計94種1,009隻；持續進行穿山甲和食蛇龜的異地野放追蹤。本年度協助臺北關、基隆關、臺北市動保處、新北市動保處、基隆市動物保護防疫所、南投縣政府等單位收容查緝沒入之動物共計17種120隻。

另提供收容動物專業技術研習與教育觀摩等解說導覽服務，導覽參觀8個團體場次，共295人次，參訪與研習團體包含國內生物相關科系師生、國際學生、地方保育主管機關、林保署、環境保護人員訓練所、國外動物園專家、政府動保單位和動植物防疫檢疫署等單位。同時，與國內大專院校生命科學系合作指導5位暑期實習生執行專題研究計畫。

食蛇龜

執行動物環境改善包括靈長類、龜類及鳥類籠舍維護及豐富化共26案；執行查緝收容之兩棲爬蟲類皰疹病毒及黴漿菌感染之流行病學、組織病理學、分子生物學、血液生化學等疾病篩檢研究，採集樣本數共35個，並完成分子生物篩檢實驗共765次；執行救傷醫療與協助野放共計26種67隻。113年持續與歐洲動物園暨水族館協會（EAZA）合作，參與物種保育計畫（EEP），提供收容體系內斑龜個體血樣，參與斑龜於亞洲的族群分化及遺傳研究，並將進行擬水龜屬物種保育調度；年內與義大利Zoo Delle Maitine及奧地利龜類保育中心合作，共交換出9種41隻保育龜類。

上圖：南越閉殼龜
中圖：布氏閉殼龜
下圖：平背閉殼龜

射紋陸龜

During the year, the Zoo acquired various medical and diagnostic equipment, including: ADS anesthesia machines; gross pathology imaging workstations; cytospin centrifuges for cell smear preparation; dart guns; protein electrophoresis equipment; blood bag sealers; refrigerated centrifuges; soft cages; electronic stethoscopes; dehumidifying cabinets; warming pads; microinjectors; IV fluid warmers; funduscopes; tonometers; animal physiological monitors for use with the CT scanner; split-type office air conditioners; stretcher trolleys for ambulance use and medical imaging transmission servers; and upgrading existing workstations. The equipment are used for diagnosis, treatment, and inpatient care and preserving specimens for clinical pathological inspection of the exhibition, sheltering, quarantining animals at the Zoo. Its aim is to facilitate early diagnosis and treatment of visible and potential diseases, thereby enhancing the accuracy of diagnosing animal diseases. Beside, minimally invasive surgery and the diagnosis of animal diseases can reduce post-surgery caregiving time while enhancing animals' medical welfare. The Zoo will continue to improve the convenience of medical and caregiving equipment and environment, thereby facilitating medical use and ensuring workplace safety. This effort aims to enhance the quality of animal medical management while ensuring the occupational safety of our personnel.

3. Protected Wildlife Rescue

The Zoo's Wildlife Rescue Center (WRC) is dedicated to shelter smuggled and illegally hunted, sold and exhibited endangered species that are seized by the Department of Wildlife Conservation. This year, the Zoo assisted county / city governments in wildlife rescue, and continued to care for animals taken in for shelter over the years. Including bears, small carnivores, birds, primates, amphibians and reptiles, with a total of 94 species consisting 1,009 individuals. Moreover, the WRC continued to track for translocation and rehabilitated wild animals of 2 species (Chinese Pangolin and Yellow-margined Box Turtle). This year, the Zoo also assisted Taipei Customs, Keelung Customs, Taipei City Animal Protection Office, New Taipei City Government Animal Protection and Health Inspection Office, Keelung City Government Animal Protection and Health Inspection Office, and Nantou County Government in sheltering and housing a total of 120 confiscated animals from 17 species.

Additionally, the Zoo provides workshops regarding skills for sheltering wildlife and educational tour services. This past year, the Zoo provided such training and educational tours to 295 people of 8 groups. The workshop opened for teachers, students and researchers in the biology or relevant department in Taiwan, foreign students, local conservation institutes, Forestry and Nature Conservation Agency (FNCA), Environmental Protection Personnel Training Institute, experts from zoos abroad, governmental animal protection institute and Bureau of Animal and Plant Health Inspection and Quarantine. Also, the zoo provided internship opportunities to colleague students, totaling of 5 student interns during summer vacation.

Implementing 26 projects to improve the living conditions of our animals include maintenance and enrichment of primates, turtles and bird cages. The staff also conducted research on epidemiology, histology, molecular biology and blood biochemistry of herpes virus and mycoplasma infection found in sheltered amphibians and reptiles. There were 35 samples collected totally, which were used to complete 765 times of molecular biological screening experiments. Furthermore, the staff helped to rescue, treat, and rehabilitate 26 species of wildlife consisting 67 individuals. In 2024, we continued our collaboration with the European Association of Zoos and Aquaria (EAZA) by participating in the EAZA *Ex situ* Programmes (EEPs). This involves providing blood samples of Chinese Stripe-necked Turtles sheltered at Taipei Zoo to contribute to the study of population differentiation and genetics of the Chinese Stripe-necked Turtle in Asia, as well as our future involvement in the conservation and management of *Mauremys* species. Moreover, we also collaborate with Zoo Delle Maitine and Turtle Island to exchange total of 9 species with 41 individuals.

4. 本土野生動物域內外保育合作

穿山甲保育

隨著保育意識的提升，整合保育策略逐漸受到重視，本園穿山甲保育工作強調連結域內、外保育，以提升物種保育成效。臺北市立動物園身為全球極少數能穩定照養並繁育中華穿山甲（Chinese Pangolin, *Manis pentadactyla*）的機構，近年來致力於維持域外族群並發展海外衛星族群，制定族群發展的管理計畫，拓展保育合作夥伴，從而分散物種存續風險。111年本園與布拉格動物園締結姊妹動物園，並在捷克建立衛星族群，113年順利再添一新生命；此成功案例讓歐洲動物園體系對穿山甲的保育逐漸加強重視，並在多方機構的共同努力下，113年於歐洲動物園暨水族館協會（EAZA）正式成立穿山甲瀕危物種計畫（Pangolin EAZA *ex situ* Programme）。

延續前幾年持續深耕的衛星族群發展計畫，本年度與奧地利維也納動物園達成共識並完成簽署MOU，協助該園建立穿山甲照養繁殖的軟、硬體設備；穩步向外拓展，與具有潛力的國際動物園合作共同發展中華穿山甲衛星族群。並與同樣在建立穿山甲域外族群的新加坡萬泰野生動物世界和越南Save Vietnam Wildlife有許多密切的專業交流，透過珍貴的深入交流及經驗吸取，深耕夥伴關係。

除了國際的穿山甲保育工作之外，國內的保育工作也持續戮力進行。本年度執行全臺灣救傷穿山甲的野放評估及野放後續追蹤整理，並發起救傷工作坊，集結全臺各救傷單位之經驗，建立全臺灣可共識使用的穿山甲野放評估標準、野放後續追蹤處置及相關作業流程，以努力提升救傷穿山甲回到野外的存活率。並且透過各單位發揮其優點相互合作，互相交流專業知識與經驗，即是整合保育（One Plan Approach Conservation, OPA）所期望的面向。這一次的救傷工作坊，顯示出跨單位合作的重要性，也是臺灣穿山甲保育史的一里程碑。

推廣教育方面，本園113年2月17日透過舉辦「世界穿山甲日」活動，邀請穿山甲保育員、獸醫、專家學者與社會大眾座談，並由國內外穿山甲保育專家群透過數位遠距互動，分享本園旅居布拉格動物園、萊比錫動物園的穿山甲生活，以及維也納動物園長期為南非白腹穿山甲在保育教育所做的努力。當天除了舞臺活動，尚有自導式踩點闖關活動，透過解說與遊戲引導民眾更認識穿山甲背景知識與困境，期許大眾繼續支持動物園保育工作與野生動物同行，一起翻轉野生動物瀕危趨勢。

穿山甲「生多」抱著寶寶

4. Cooperation in the *in situ* and *ex situ* Conservation of Native Wildlife

Chinese Pangolin Conservation

With growing awareness of animal conservation, integrated conservation strategies are receiving increased attention. Taipei Zoo's pangolin conservation efforts emphasize linking *in situ* and *ex situ* approaches to maximize conservation impact. Taipei Zoo is one of the few institutions in the world capable of caring for and successfully breeding the Chinese Pangolin (*Manis pentadactyla*). In recent years, the Zoo has been committed to maintaining an *ex situ* population, establishing overseas satellite populations, developing species management plans, and expanding its network of conservation partners to help reduce species survival risks. In 2022, the Zoo partnered with Prague Zoo to become sister zoos and successfully established a satellite population in Prague. This collaboration led to the successful birth of a pangolin in 2024. This achievement has strengthened the European zoo community's focus on pangolin conservation. With the joint efforts of many institutions, the European Association of Zoos and Aquaria (EAZA) officially launched the Pangolin EAZA *ex situ* Programme in 2024.

This year, continuing the satellite population development plan carried out in previous years, the Zoo reached a consensus with Vienna Zoo (Austria) and signed a Memorandum of Understanding (MOU) to assist in establishing pangolin care and breeding infrastructure and protocols. The Zoo has steadily expanded its collaboration with potential international partners to jointly develop Chinese pangolin satellite populations. Notable collaborations include close and professional exchanges with Mandai Wildlife Reserve (Singapore) and Save Vietnam Wildlife (Vietnam), both of which have also established *ex situ* pangolin populations. Through these valuable and in-depth exchanges and by learning from their experiences, the Zoo has fostered strong partnerships.

Apart from our international pangolin conservation efforts, the Zoo also continues to advance conservation initiatives within Taiwan. This year, the Zoo has conducted a nationwide pangolin pre-released assessment of

穿山甲「梧愛」

rehabilitation pangolins and organized their post-released follow-up and care. The Zoo also initiated wildlife rescue workshops, bringing together rescue organizations from across the country to share experiences and establish standardized pangolin pre-released assessment criteria, post-released follow-up protocols, and related operating procedures. These standards are recognized and applicable nationwide to improve the survival rate of rehabilitated pangolins released back into the wild. Moreover, leveraging the strengths of various organizations through collaboration and exchanging professional knowledge and experience aligns with the principles of the One Plan Approach (OPA) to conservation. This rescue workshop demonstrated the critical importance of inter-organizational cooperation and represents a significant milestone in Taiwan's pangolin conservation history.

Regarding extension education, the Zoo organized the "World Pangolin Day" event on February 17, 2024, inviting pangolin keepers, veterinarians, experts, scholars and the general public to participate a seminar. Domestic and international pangolin conservation experts also joined via digital conferencing to share updates on the Zoo's pangolins currently residing at Prague Zoo and Zoo Leipzig, and to highlight Vienna Zoo's long-term efforts in conservation education for the Temminck's Ground Pangolin (*Smutsia temminckii*). The event featured not only stage activities but also a self-guided checkpoint game, which allowed participants to explore and learn about pangolin background knowledge and conservation challenges through interpretive displays and interactive games. It is our aspiration that the public will continue to support the Zoo's conservation efforts and join us in helping to reverse the trend of wildlife endangerment.

歐亞水獺保育

本園自103年執行新階段的歐亞水獺域內外保育整合行動，協助金門縣政府照養當年收容的三隻歐亞水獺幼獸，並藉由展示金門歐亞水獺的契機向民眾宣導本土野生動物的保育觀念。本年度本園除持續進行金門歐亞水獺圈養收容個體的照養展示、教育推廣外，亦進行保育繁殖配對的努力，截至本年底本園共圈養8隻歐亞水獺，分別由臺灣動物區及保育區人員負責照養。

在域內保育部分，本年度本園保育研究中心研究團隊接受金門縣政府委託，執行「金門歐亞水獺食性生態調查」研究工作。本年度共執行4次野外調查及樣本採集，收集494份歐亞水獺排遺樣本進行微衛星個體鑑識分析，並成功追蹤到58隻個體。水獺食性研究部則完成253件樣本的分析，記錄了29個食性物種，包括10種淡水魚、14種海水魚、2種甲殼類、1種兩棲類以及2種鳥類，增加對於金門野外歐亞水獺捕食生態學的瞭解。

歐亞水獺在陸域保育類野生動物名錄中已被列為瀕臨絕種風險等級，過去曾在臺灣本島分布的歐亞水獺，在1990年代後就再無出現紀錄，目前還保有野生歐亞水獺族群的區域，只剩大、小金門而已。受到土地快速開發建設、氣候異常、人為活動等干擾，導致自然棲地縮減、水道阻隔、汙染、路殺及遊蕩動物之威脅，生活在金門的歐亞水獺族群量也持續地縮減。為了翻轉歐亞水獺的瀕危趨勢，本園長期參與金門歐亞水獺保育工作，除了收容照養在野外失親需要特別照顧的水獺寶寶如「金萌」，也藉由繁殖配對計畫讓這些收容水獺們建立起域外衛星族群，並擔任起水獺保育教育的親善大使，縮短民眾對野生歐亞水獺的距離感。

歐亞水獺寶寶「金萌」在108年底透過林業及自然保育署的救傷收容計畫從金門來到本園，於112年7月誕下兩隻寶寶，113年5月將滿1歲的歐亞水獺兄弟離開媽媽「金萌」開始獨立生活，並從保育研究中心搬到臺灣動物區更大的戶外活動場，也擔任起水獺保育教育的親善大使與遊客見面。本園在113年5月29日世界水獺日（World Otter Day）規劃多樣活動，透過教育駐站、保母講古（Keeper's Talk）及趣味DIY，讓民眾更了解歐亞水獺與牠們正面臨的困境。

Eurasian Otter Conservation

Since 2014, the Zoo has performed *in situ* and *ex situ* conservation and integration action of the European Otters in a new stage. It has assisted the Kinmen County Government to care for three Eurasian otter cubs that were housed in the year, and used the opportunity of exhibiting Eurasian Otter to promote the conservation concept of native wildlife to the public. This year, the Zoo not only continued performing the care display and educational outreach of captive Eurasian Otter individuals in Kinmen, but also conducted conservation and breeding pairings. As of the end of this year, there are 8 Eurasian otters in captivity in the Zoo, which are taken care of by the Formosan Animal Area and the Conservation Area.

In the *in situ* conservation, the research team of the Conservation Research Center was commissioned by the Kinmen County Government to perform the research of "Dietary Ecology Survey of the Kinmen Eurasian Otter (*Lutra lutra*)". A total of 4 field surveys and sample collections were carried out this year. 494 samples of Eurasian Otter spraints were collected for microsatellite analysis, and 58 individuals were successfully identified and tracked. Meanwhile, the Otter Dietary Research Department completed the analysis of 253 samples, recording 29 dietary species, including 10 species of freshwater fish, 14 species of marine fish, 2 species of crustaceans, 1 amphibian species, and 2 bird species. This research helps enhance the public's understanding of the feeding ecology of wild Eurasian otters in Kinmen.

The Eurasian Otter has been categorized as an endangered species on the List of Protected Terrestrial Species. In the past, the Eurasian Otter was distributed across the main island of Taiwan; however, there have been no recorded sightings since the 1990s. Currently, only the main island of Kinmen and Little Kinmen preserve wild populations of the Eurasian Otter. Due to rapid land and infrastructure development, abnormal climate conditions, and human activities, the natural habitat of the Eurasian Otter has been reduced. Moreover, threats such as waterway barriers, pollution, roadkill, and roaming animals endanger their survival, leading to a decline in the Eurasian Otter population on Kinmen. To reverse the endangered trend of the Eurasian Otter, the Zoo has been involved in long-term conservation efforts. Apart from sheltering orphaned wild otter cubs that require special care, such as "Jinmeng", the Zoo also implements breeding and pairing programs to establish an *ex situ* satellite population. These otters serve as ambassadors for otter conservation education, helping to reduce the public's sense of distance from wild Eurasian otters.

「萌肉球」可愛瞬間

The Eurasian Otter cub "Jinmeng" was transferred from Kinmen to the Zoo at the end of 2019 through the Wildlife Rescue and Rehabilitation Program of the Forestry and Nature Conservation Agency. In July 2023, she gave birth to two cubs. In May 2024, as the young Eurasian otter brothers approached their first birthday, they became independent and were weaned from their mother. They were moved from the Animal Conservation Research Center to a larger outdoor enclosure in the Formosan Animal Area. There, they now serve as ambassadors for otter conservation education and engage with Zoo visitors. To celebrate World Otter Day on May 29, 2024, the Zoo organized a series of activities including educational stations, Keeper's Talk, and fun DIY workshops, aimed at helping the public better understand Eurasian Otter and the challenges they face in the wild.

石虎保育

本園自103年起協助特有生物研究保育中心（112年改制農業部生物多樣性研究所，簡稱生多所）收容救傷石虎個體並於本園臺灣動物區展示推動環境教育；107年與苗栗縣政府及國立屏東科技大學保育類野生動物收容中心合作，協助收容無法野放之石虎個體；109年配合特有生物保育中心石虎保育計畫，本園擔任域外繁殖研究單位，重新啟動石虎圈養繁殖。110年園內成功繁殖出3隻石虎，為82年至今再次成功圈養繁殖，其配對及繁殖過程都留下詳細的行為紀錄、幼獸行為發展紀錄及建立荷爾蒙監控流程。3隻新生個體其中2隻投入特有生物保育中心域內保育計畫，送至野生動物急救站進行野放前訓練，於111年3月順利野放，為本園首次石虎圈養繁殖個體進入野放系統，1隻留於園內作為石虎保育教育大使，行銷石虎生態環境保育。113年繁殖2隻並於113年7月送至生多所進行野放前訓練、協助收容2隻個體，並將在114年加入圈養繁殖計畫中；112年繁殖之個體分別於113年4月及5月在南投中寮及內茅埔野放，不幸的是野放個體分別在7月被犬殺及8月被毒殺，顯示野外原生棲地仍然危機四伏，亟需更強而有效的具體改善作為，以改善野外棲地的安全性。

臺北赤蛙保育

本園自84年起進行臺北赤蛙的野外調查，發現其族群數量急遽下降。多年來本園持續建立族群及棲地環境的長期監測資料，瞭解其棲地需求，並探討影響族群變動的因子及潛在威脅。這些資料將作為未來擬訂保護區管理策略的重要參考。

本園自102年起與新北市政府農業局合作，推動臺北赤蛙的復育計畫。113年本園在人工繁殖方面取得進展，成功培育出穩定的數量。

近年為重建臺北赤蛙野生族群，本園與農業部林保署、新北市政府農業局等單位共同合作，積極尋找較適合臺北赤蛙的野放地區，並進一步對選定地點的水域與陸域環境進行營造，將環境提升成適合臺北赤蛙的棲地。113年分別於北部三芝區、石門區挑選適合的野放地點再引入2,000隻臺北赤蛙幼蛙，期望能建立穩定的族群，讓臺北赤蛙能恢復原有的自然族群樣貌。

在教育推廣方面，113年本園將臺北赤蛙納入「行動動物園」計畫，作為到校推廣的主題，設計相關的環境教育與科普教材。此外，本園首次以官方身份參與「拯救瀕危青蛙日」（Save the Frogs Day）活動，並以臺北赤蛙作為與國際接軌的保育標的物種。

Leopard Cat Conservation

Since 2014, the Zoo has assisted the Endemic Species Research Institute (ESRI; was restructured to Taiwan Biodiversity Research Institute, TBRI) in sheltering injured Leopard Cats and promoted environmental education in Formosan Animal Area. In 2018, the Zoo cooperated with the Miaoli County Government and Pingtung Rescue Center of National Pingtung University of Science and Technology to shelter Leopard Cats that cannot be reintroduced into the wild. In 2020, in coordination with ESRI's Leopard Cat Conservation Program, the Zoo served as an *ex situ* breeding research unit and reactivated captive breeding of Leopard Cats. In 2021, succeeded in captive breeding of 3 Leopard Cats as the first time after 1993, the Zoo has not only recorded the pairing and breeding details and cubs' behavioral development, but also established a hormone monitoring process. Among these three cubs, two of them joined ESRI's *in situ* conservation program and were sent to the Wildlife Sanctuary and Rescue Center for rewilding training. These two cubs were successfully rewilded in March 2022, marking the Zoo's first successful instance of propagated Leopard Cats entering the rewilding system. As for another cub, it remains at the Zoo as the Ambassador of Leopard Cat Conservation Education to promote the conservation of Leopard Cat ecology and the environment. In 2024, two leopard cats were bred and gifted to TBRI in July for pre-release training. The Zoo also assisted in sheltering two more individuals and will includ them in the captive breeding program in 2024. The cubs bred in 2023 were released into the wild in Zhongliao and Neimaopu, Nantou, in April and May, respectively. Unfortunately, one was killed by stray dogs in July, and the other was poisoned in August. These incidents highlight the ongoing dangers in their natural habitats and the urgent need for targeted, effective habitat improvements to enhance the safety and survival prospects of reintroduced individuals.

Conservation of Taipei Frog

The Zoo initiated field surveys on the Taipei Frog (*Hylarana taipehensis*) in 1995 and discovered a sharp decline in the species' population. In recent years, the Zoo has continuously collected long-term monitoring data on both the species and its habitat to better understand its habitat requirements, as well as to analyze factors influencing population fluctuations and potential threats. This data will serve as an important reference for developing protected area management strategies.

The Zoo began cooperating with the New Taipei City Agriculture Bureau in 2013 to promote a restoration program for the Taipei Frog. In 2024, the Zoo made progress in captive breeding and successfully reared a stable population.

In recent years, to help rebuild wild populations of the Taipei Frog, the Zoo has collaborated with the Forestry and Nature Conservation Agency, the New Taipei City Agriculture Bureau, and other organizations. The goal is to identify suitable sites for wild release and to further restore and enhance the aquatic and terrestrial environments at these sites, transforming them into ideal habitats for the Taipei Frog. In 2024, the Zoo selected appropriate release sites in Sanchih District and Shimen District, and released 2,000 juvenile Taipei Frogs, with the hope of establishing a stable population and restoring the species' original natural population structure.

Regarding extension education, in 2024, the Zoo included Taipei Frog into its "Action Zoo" plan as a key theme for school outreach, and developed corresponding environmental education materials and science-based teaching resources. Besides, the Zoo officially participated in the "Save the Frogs Day" event and adopted the Taipei Frog as a conservation target species aligned with international standards.

魚池琴蛙（原豎琴蛙）保育

魚池琴蛙為114年新發表的臺灣特有種的蛙類，114年以前皆稱豎琴蛙。豎琴蛙（*Nidirana okinavana*）只分布在日本八重山群島的石垣島、西表島以及臺灣南投縣魚池鄉的蓮華池及日月潭，114年發表的研究指出，根據分子生物學、型態和鳴聲差異，臺灣的豎琴蛙應該與琉球族群區分為不同物種，因此新命名為魚池琴蛙（*Nidirana shyhhuangi*）。

魚池琴蛙目前只分布在南投縣魚池鄉2個地點，是臺灣分布最狹隘，族群數量最小的兩棲類，113年被評為國家極度瀕危物種。為進行魚池琴蛙保育工作，本園與農業部林保署、農業部生多所和農業部林業試驗所蓮華池研究中心等單位共同合作，從野外收集即將乾涸的魚池琴蛙蝌蚪，進行移地復育，本園從111年收容2批魚池琴蛙蝌蚪開始進行人工飼養，在112年5月成功繁殖，這是魚池琴蛙首次人工繁殖案例，截至113年12月，已經有超過1,200隻小蛙變態上岸，成功建立了域外備援族群。未來預計在南投縣魚池鄉找到合適棲地進行野放，希望這種極度瀕危的蛙類能擴大野外分布和族群數量。

推廣教育方面，本園於113年4月28日「拯救青蛙日」（Save the Frogs Day）當天，首次在兩棲爬蟲動物館的臺灣兩棲動物展區展出魚池琴蛙的復育成果。這次展出讓民眾能近距離觀察這種珍貴稀有的保育類野生動物，並聆聽其如撥弄琴弦般的鳴叫聲，瞭解相關保育行動，期望有助於提升公眾對魚池琴蛙的認識與保育意識。


魚池琴蛙坐在苔癬上


魚池琴蛙的泥窩和蝌蚪們

赤腹游蛇保育

赤腹游蛇因棲地消失及農藥汙染等因素，導致族群岌岌可危，農業部林保署於113年4月2日提升赤腹游蛇保育等級，由原本珍貴稀有改列為瀕臨絕種保育類野生動物。

因桃園龍潭工業區開發導致當地赤腹游蛇棲地遭受破壞，本園於112年8月接受農業部林保署新竹分署委託進行緊急收容，截至113年底共收容28條赤腹游蛇，兩年分別繁殖11條和31條小蛇，未來預計在新竹分署找到合適棲地後進行野放，期望赤腹游蛇能持續在野外安然生存。

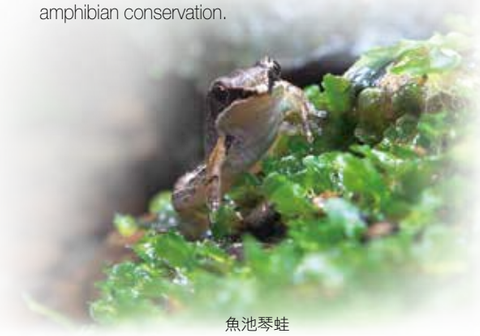

赤腹游蛇

Conservation of Yuchi Music Frog (originally known as Kampira Falls Frog)

Yuchi Music Frog (*Nidirana shyhhuangi*) was discribed as a new frog species endemic to Taiwan in 2025 and was previously classified as the Kampira Falls Frog (*Nidirana okinavana*). The Kampira Falls Frog is distributed only in Ishigaki and Iriomote Islands in Japan's Yaeyama Islands, as well as the Lotus Pond and Sun Moon Lake in Yuchi Township, Nantou County. The research published in 2025 pointed out that, based on differences in molecular biology, morphology and vocalization, Kampira Falls Frog in Taiwan should be different from the species in Ryukyu and was therefore renamed Yuchi Music Frog.

Yuchi Music Frog is currently found in only two locations in Yuchi Township, Nantou County, making it the amphibian species with the smallest population size in Taiwan. In 2024, it was classified as a National Critically Endangered Species. To conserve Yuchi Music Frog, the Zoo collaborated with the Forestry and Nature Conservation Agency, the Taiwan Biodiversity Research Institute, and the Lienhuachih Research Center. Tadpoles were collected from the wild and transferred for restoration purposes. In 2022, the Zoo sheltered two batches of Yuchi Music Frog for captive rearing and achieved the first successful case of captive breeding in May 2023. As of December 2024, over 1,200 froglets had successfully undergone metamorphosis and moved onto land, establishing a viable *ex situ* backup population. In the future, the goal is to identify a suitable wild habitat for reintroduction, with the hope that this critically endangered species can expand its wild distribution and increase its population size.

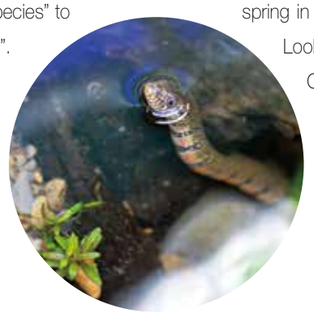
Regarding extension education, the Zoo organized Save the Frogs Day on April 28, 2024, and for the first time, showcased the restoration achievements of Yuchi Music Frog in the Taiwan Amphibian Exhibit of the Amphibian and Reptile House. This exhibition allowed the general public to observe this rare and valuable protected species up close, hear its musical, call-like vocalizations, and learn about related conservation efforts. It is hoped that this event will help improve public knowledge of Yuchi Music Frog and raise their awareness about amphibian conservation.


魚池琴蛙

Conservation of Red-bellied Annulate Keelback

Due to habitat loss and pesticide pollution, the Red-bellied Annulate Keelback (*Trimerodytes annularis*) is now critically threatened. On April 2, 2024, the Forestry and Nature Conservation Agency upgraded its conservation status from "Rare and Valuable Species" to "Nationally Critically Endangered Species".

Since the habitat of the Red-bellied Annulate Keelback was damaged by the development of the Longtan Industrial Park in Taoyuan, the Zoo agreed to an emergency sheltering request from the Hsinchu Management Office of the Forestry and Nature Conservation Agency, in August 2023. By the end of 2024, the Zoo had sheltered a total of 28 Red-bellied Annulate Keelbacks, and successfully bred 11 offspring in one year and 31 in the following year. Looking ahead, the Hsinchu Management Office plans to identify a suitable habitat for their reintroduction into the wild, hoping that the Red-bellied Annulate Keelback can continue to thrive in its natural environment.


赤腹游蛇

｜研究與出版｜

1. 與學術界建教合作及推廣教育

在動物診療技術方面，持續與國立臺灣大學等獸醫學院（系所）保持密切建教合作關係，對死亡動物的病因建立完整檔案，以強化臨床醫療、疾病診斷與病理學上的交流及連結，提升動物醫療品質，亦提供學生病理實習及老師教學研究。邀請學者專家來園指導、交流，包括臺大醫學院麻醉學科、臺大牙醫專業學院專家黃啟祥、林俊彬等醫師協助大貓熊麻醉醫療、臺灣大學蘇璧伶教授協助人猿懷孕超音波檢查影像紀錄、動物眼科專家林中天教授協助進行耳廓狐眼科處理、中興大學陳以盈助理教授協助建立非洲獅埋設動脈壓測定、動物骨科專家林建良醫師協助穿山甲雙側後肢複雜性骨折復位、動物齒科專家蔡依津獸醫師協助動物牙科處理、獸醫影像學胡國誠獸醫師協助動物電腦斷層影像判讀與討論等，並委託國立屏東科技大學獸醫系進行野生動物傳染病原分子監測計畫研究（112-113年），執行針對園區食肉目動物病毒性疾病進行盛行率的調查研究。除與獸醫界的合作外，亦透過與人醫及牙醫的專業交流與合作，加速提升野生動物的診療技術。並自112年起，持續與海昌生化科技股份有限公司於膠原蛋白醫材使用方面進行合作，相互交流。

與其他相關機構建教合作及教育推廣，提供國內其他單位野生動物獸醫師與國內外獸醫系大學生等實習包括：在學期間實習為期4個月實習課程學生2名、暑期實習9名、短期實習21名，共計32名，其中包含8名來自加拿大、美國、澳洲、瑞士以及香港等的國際學生。提供學校機構針對野生動物醫療、生物學、生態學等觀摩學習或職業探索，包括臺灣大學袁孝維老師探索臺灣通識課程、臺北市立大學運研所等。此外，協助臺灣大學獸醫專業學院動物園與野生動物疾病學講授6堂課程；亦協助辦理共4梯次之動物醫生體驗營，透過實際野生動物醫療操作，引導對獸醫職系有興趣的高中（職）學生親身體驗獸醫工作內容。

2. 辦理專業工作坊、研討會

- **辦理保育醫學病理研討會**：6月7日邀請臺灣大學獸醫專業學院分子暨比較病理生物學研究所病理獸醫師團隊以及學術界臨床獸醫師，與本園動物醫療與照護同仁，共同就前一年度之動物醫療紀錄與死亡統計進行回顧與分析。會中針對相關病因、醫療作為及照護管理進行深入討論與意見交流，促進臨床與學術間之經驗分享，以精進未來動物醫療與飼養管理模式。本次研討會共計49人參與。

保育醫學病理研討會

｜Research and Publications｜

1. Academic Cooperation and Educational Outreach

Regarding to animal medical care, the Zoo has maintained a close relationship with School of Veterinary Medicine of National Taiwan University and established complete profiles of the pathology examination of each dead animal to strengthen the communication and connection of clinical medicine, disease diagnosis and pathology, thereby improving the quality of animal medical treatment. In the meantime, we also provide students with physiological internships and teachers with teaching research opportunities. We have invited scholars and experts to the Zoo to provide technical guidance. For example, Dr. Chi-Hsiang Huang and Dr. Chun-Pin Lin from the Departments of Anesthesiology and Dentistry at National Taiwan University Hospital provided expert support in the anesthesia management of Giant Panda (*Ailuropoda melanoleuca*); Professor Bi-Ling Su from NTU assisted in recording ultrasound images of orangutans during pregnancy; ophthalmology expert Professor Chung-Tien Lin provided care for the eye condition of Fennec Fox; Associate Professor I-Ying Chen, from National Chung Hsing University helped establish a method for invasive arterial pressure monitoring in African Lion (*Panthera leo*); Dr. Chien-Liang Lin, Specialist in Small Animal Orthopedic Surgery assisted in the realignment of complex bilateral hind limb fractures in a pangolin; veterinary dentistry specialist Yi-Chin Tsai helped with animal dental care; and veterinarian Guo-Cheng Hu assisted in interpreting animal CT scan images. We also entrusted the Department of Veterinary Medicine of National Pingtung University of Science and Technology (NPUST) to implement the “Molecular Surveillance Program of Infectious Disease Pathogen in Wildlife”, to investigate the prevalence rate of viral diseases in the Zoo’s carnivorous animals. In addition to our close network with various veterinary medicine associations, we have collaborated with human doctors and dentists to facilitate and enhance diagnostic techniques and treatment for wildlife; and collaboration with Horien Biochemical Technology Co., Ltd. for exchange regarding the use of medical collagen materials.

The Zoo continued to cooperate with other organizations for industry cooperation and educational outreach. The number of interns offered to wildlife veterinarians in other units, as well as domestic and foreign veterinarian students, includes: 2 student interns for a 4-month internship during the semester; 9 student interns during summer vacation; and 21 short-term interns, totaling 32 people. Among them, 8 are international students from the United States, Canada, Australia, Swizz, and Hong Kong. The Zoo also collaborated with educational institutions to offer opportunities for wildlife veterinary care, biology, and ecology-related observational learning or career exploration. Examples include the general education course “Exploring Taiwan” offered by Professor Hsiao-Wei Yuan from NTU; and collaboration with the Institute of Sports Science, University of Taipei. In addition, the Zoo assisted the School of Veterinary Medicine, National Taiwan University in delivering six lectures on “Zoo and Wild Animal Diseases”; and helped organize four sessions of a veterinary experience camp. These camps were designed for senior high school students (including vocational school students) interested in veterinary medicine, allowing them to personally experience the work of veterinarians through hands-on wildlife medical procedures.

2. Organizing Professional Workshops and Seminars

- **Conservation Medicine Pathology Conference:** On June 7, the Zoo hosted a pathology conference and invited a team of veterinary pathologists from the Graduate Institute of Molecular and Comparative Pathobiology at National Taiwan University’s School of Veterinary Medicine, along with clinical veterinarians from academia and the Zoo’s own animal health and



2024動物行為豐富化及Keeper's Talk工作坊

- **辦理2024動物行為豐富化及Keeper's Talk工作坊**：為向民眾推廣動物行為豐富化在現代動物園的重要性，同時精進同仁行為豐富化相關知識、實作技能及解說技巧，本園於113年9月12日至13日假高雄壽山動物園辦理工作坊。由資深且專業的動物行為豐富化講師及解說教育專家一起帶領工作坊，以壽山動物園狐獴、沼林袋鼠、陸龜、長鼻浣熊及黑熊活動場環境為目標，透過保育員們的集體構思與創意，為動物們製作了相當有趣且豐富動物行為的道具。本次亦邀請環境教育解說專業教師指導，以「有意義的解說TIU模式」帶領與會者按部就班建構「保母講古」解說架構與主題核心，讓教育推廣工作更有效且具吸引力，將動物園保育工作的價值，透過第一手保育員經歷來傳達訊息，擴大動物園的影響力。參與本工作坊成員包含本園同仁及台灣動物園暨水族館協會（TAZA）會員，共計50人參與。
- **辦理2024動物行為豐富化物件設計競賽**：競賽提供一個讓台灣動物園暨水族館協會各單位保育員交流各自行為豐富化物件製作及實施成果的平台，本園同仁提出3件作品參賽，分別為馬來熊舔食器、臺灣獼猴卵石行豐及小貓熊旋轉位食器。其中馬來熊組獲得到第3名。與會同仁觀摩眾多參賽作品及各種動物行為觀察方法，對本園動物行為豐富化的精進有所助益。



2024動物行為豐富化物件設計競賽

care staff. Together, they reviewed and analyzed animal medical records and mortality statistics from the previous year. The conference also featured in-depth discussions on disease causes, medical practices, and care management strategies. This event fostered valuable experience sharing between clinical professionals and academic experts, helping to improve future approaches to animal medical care and feeding management. A total of 49 participants attended the seminar.

- **The 2024 Animal Behavioral Enrichment and Keeper's Talk Workshop:** To promote the importance of animal behavioral enrichment in modern zoos and enhance staff knowledge, practical skills, and interpretive abilities, the Zoo organized a workshop at Kaohsiung Shoushan Zoo from September 12 to 13, 2024. Led jointly by senior enrichment specialists and interpretive education experts, the workshop focused on improving the enclosures and enrichment activities for meerkats, Red-legged Pademelon (*Thylogale stigmatica*), Tortoise, South American Coati (*Nasua nasua*), and Black Bear at Shoushan Zoo. Through collaborative brainstorming and creativity, keepers designed fun and engaging enrichment tools to support the animals' natural behaviors. This year, the Zoo also invited environmental education experts to introduce the "Meaningful Interpretation – TIU Model", guiding participants in developing the "Keeper's Talk" framework and thematic content to make their educational outreach more effective and appealing. These efforts help communicate the value of zoo conservation work through firsthand experiences from keepers, expanding the Zoo's impact on public understanding and support. Participants included staff from the Zoo and members of the Taiwan Association of Zoological Park and Aquariums (TAZA), with a total of 50 attendees.
- **Organized the 2024 Animal Enrichment Object Design Competition:** This competition provided a platform for keepers from members of the TAZA to exchange ideas on the design and implementation of animal enrichment objects. Taipei Zoo submitted three entries: a licking feeder for the Sun Bear (*Helarctos malayanus*), a pebble enrichment activity for the Formosan Rock Macaque, and a rotating feeder for the Red Panda. Among these, the Sun Bear team received the Bronze Award. Through participating in the event, Zoo staff also had the opportunity to observe other entries and animal behavior monitoring methods, which provided valuable insights for improving future enrichment practices at the Zoo.
- **Organized the Second International Exhibited Animal Welfare Conference:** In collaboration with TAZA, the Zoo organized the Second International Exhibited Animal Welfare Conference from July 26 to 27, 2024, under the theme "The Importance of Welfare in Reproduction and Population Management". The conference aimed to deepen discussions on reproductive management in zoos and aquariums and the significant impact of population structure on animal welfare. The event was held in the lecture halls of the International Conference Hall at the Zoo's Xinguang Special Exhibit House and the Education Center Lecture Hall.

The conference featured a variety of themed lectures and small-scale workshops. A total of 78 participants attended, most of whom were exhibited animal industry professionals and practitioners in the fields of animal protection and conservation. For the lectures, the Zoo invited four international scholars and industry experts to speak on topics including "The Importance of Welfare in Reproduction and Population Management", "Welfare Considerations in Promoting Breeding of Captive Species", "Ethical and Welfare Issues in the Management of Surplus Animals" and "Welfare Risks Hidden in the Zoo Animal Transportation Process". These sessions provided participants with up-to-date international perspectives and practical operational experiences.

Moreover, the Exhibited Animal Advisory Group shared domestic experiences and policy frameworks through sessions themed on "Animal Transportation Responsibilities and Regulations", "Animal Identifica-

● **辦理第二屆「展演動物福利國際研討會」**：本園與台灣動物園暨水族館協會合作，於113年7月26日至27日舉辦第二屆「展演動物福利國際研討會」，主題為「繁殖與族群於動物福利中的意義」，以加強探討動物園與水族館中繁殖管理與族群結構對動物福祉的實質影響。於本園新光特展館國際會議廳及教育中心演講廳辦理。

研討會包括主題演講、小型工作坊，共78人次參與，參與者多為展演業者、動物保護及保育領域之實務工作者。演講部分邀請四位國際學者與業界專家，講授「繁殖行為與動物福利之關聯」、「促進圈養物種繁殖時的福利考量」、「過剩動物管理的倫理與福祉議題」，以及「動物園運輸流程中潛藏的福利風險」等主題，提供最新的國際視角與操作經驗。

此外，展演輔導小組亦針對「動物運輸責任與法規」、「動物辨識與流向追蹤」、「繁殖配對科學化規劃（PMx應用）」與「不同展示形式面臨之福利挑戰」等四大主題分享國內經驗與政策脈絡。

研討會同步辦理兩場工作坊，分別聚焦「靈長類」與「籠養鳥類」之繁殖與族群管理中的福祉挑戰。本次研討成果不僅促進實務經驗交流，更為未來國內相關政策與制度建構提供重要參考。

3. 受委託研究及委外研究

113年度本園持續執行農業部林保署委辦之「臺北市立動物園保育類野生動物急救站與收容中心營運計畫」，協助北部包含新北、臺北、宜蘭3縣市野生臺灣獼猴相關技術服務工作，包括晶片植入、結紮與疾病檢測。

除林保署相關委辦計畫外，本園尚有接受環境部及金門縣政府委辦計畫；前者為本園配合113年環境部補（捐）助計畫主題為「瀕危動物事件簿，足跡偵探調查中！」，其中包含了「ZOO偵『碳』訓練班－增能課程」、「瀕危動物偵『碳』社－教師培力研習營」、「瀕危動物事件簿，足跡偵探調查中! －樂齡體驗營」以及「Line互動主題QA及抽獎活動」等活動，以推廣永續發展為本，回應SDGs目標，並且結合中央政策「2050淨零排放計畫」，再搭配上國際自然保育聯盟(IUCN)發起的「翻轉物種瀕危趨勢行動（Reverse the Red）」，共計辦理11場活動，參與人數1,393人，本計畫成果獲得環境部頒發績優殊榮。後者為執行「金門歐亞水獺食性生態調查」研究調查工作。

展演動物福利國際研討會-大鳥籠繁殖與族群管理工作坊

第二屆「展演動物福利國際研討會」

委外研究部分，113年本園有兩項委託外部學術單位執行之專業研究，「野生動物傳染病原分子監測計畫」及「珍稀保育類物種精液保存精進計畫」均為112-113年連續計畫。前案委託國立屏東科技大學獸醫系林昭男教授執行，藉由動物健康檢查時進行採樣、篩檢，以瞭解食肉目動物感染犬重要傳染性疾病，包括犬小病毒、犬瘟熱及犬冠狀病等，在園內小型食肉目野生動物感染的概況，以杜絕疾病可能的潛在風險，防止疫病擴散。後案則為委託國立臺灣大學獸醫專業學院蔡沛學教授執行，藉由動物訓練取得健康黑猩猩及人猿等珍稀物種精液，進行精液成份分析及冷凍保存方式試驗，完成較難進行冷凍之人猿精液冷凍標準操作流程，讓珍稀物種之精子等遺傳物質保存較佳的品質。

tion and Movement Tracking", "Scientific Planning of Breeding Pairing (Application of PMx)", and "Welfare Challenges Faced by Different Exhibition Formats".

The conference also simultaneously hosted two workshops focusing on the breeding and population management of "primates" and "Aviary birds", which are two groups that pose particular challenges to animal welfare. The research and case studies presented not only encouraged the exchange of practical knowledge and experience, but also served as valuable references for shaping future domestic policies and regulatory frameworks.

3. Commissioned Research and Outsourced Research

In 2024, Taipei Zoo continued the implementation of "The Operation Project for Wildlife Sanctuary and Rescue Center in Taipei Zoo" entrusted by the FNCA. This project aimed to support technical services related to wild Formosan Rock Macaques in northern Taiwan (i.e., New Taipei City, Taipei and Yilan), including microchip implementation, sterilization and disease screening.

Alongside projects commissioned by the FNCA, the Zoo also accepted projects from the Ministry of Environment and Kinmen County Government. The former included the Ministry of Environment's 2024 Subsidy (Donation) Plan themed on "Endangered Animal Case Files – Footprints Under Investigation!". This initiative encompassed activities such as the "Zoo Detective (Carbon Emissions Reduction) Training – Capacity-Building Program", "Endangered Animal Detective (Carbon Emissions Reduction) - Teacher Empowerment Workshop", "Endangered Animal Case Files – Footprints Under Investigation! - Elderly Experience Camp" and "LINE Interactive Themed Q&A and Prize Draw Activity" aimed at promoting sustainable development and supporting SDGs targets. Aligned with the central government's "2050 Net-zero Emission Plan" and the "Reverse the Red" initiative by IUCN, 11 sessions involving 1,393 participants were conducted under this plan. It received an outstanding award from the Ministry of Environment. Regarding the latter, it involved a research investigation titled "Survey on the Dietary Behavior and Ecology of Eurasian Otter in Kinmen".

Regarding outsourced research, the Zoo commissioned two professional projects in 2024: the "Wildlife Infectious Disease Pathogen Molecular Surveillance Program" and the "Rare and Valuable Species Sperm Preservation and Improvement Plan", both of which are continuous projects spanning 2023 and 2024. The former is being conducted by Professor Chao-Nan Lin from the Department of Veterinary Medicine at National Pingtung University of Science and Technology. The goals are to investigate the prevalence of major infectious diseases (e.g., canine parvovirus, canine distemper, and canine coronavirus) through sampling when animal health checks are conducted on small carnivores within the zoo to mitigate disease risks and prevent epidemics. The latter project was commissioned to Professor Tsai Pei-Shiue from the College of Veterinary Medicine, National Taiwan University. This project involved obtaining sperm from healthy rare and valuable species such as chimpanzees (*Pan troglodytes*) and other apes (*Hominoidea*) through animal training. The sperm samples were analyzed for their composition and refrigerated preservation methods. The team successfully developed a standard operating procedure for freezing ape sperm, which is typically difficult to cryopreserve, thus improving the quality of genetic material preservation for these endangered species.

｜國際合作與交流｜

本園於民國75年遷園前後所擴充的大批人力，近年已陸續面臨退休、世代更替的時刻，在此關鍵年代，本園在國際交流與專業精進上，積極培植園內新一代的核心人力，並集中較多資源投注於保育重要性較高的物種，期能更深入接軌國際專業、參與全球及在地物種保育工作，深化保育貢獻及影響力。

因空間資源有限，單一動物園的獨立運作，無法有效維持族群基因多樣性並避免近親繁殖，且在符合動物福祉之前提下，多數物種無法典藏大量的族群。因此，動物園間連結組成協會，透過彼此合作進行族群管理，維持域外族群具有健康的基因多樣性與年齡結構，即為動物園（水族館）的域外族群管理和域內再引入保育工作的重要基礎。

本園長期積極參與多個國際保育組織，在過去十年裡，已陸續通過歐洲動物園暨水族館協會（EAZA）、東南亞動物園暨水族館協會（Southeast Asian Zoos and Aquariums Association, SEAZA）等區域動物園暨水族館協會的認證，並在各該區域協會框架下，建立臺北動物園專業的能見度與人脈網絡，也能就動物族群管理、照養、醫療、保育、動物福祉和永續等面向，與區域協會所轄會員機構進行專業交流及合作，維持本園專業在國際保育界之能見度與人脈網絡。

為了精進動物經營管理專業，並尋求更多國際物種族群管理合作計畫可能，本園於112年9月提出加入北美動物園暨水族館協會（Association of Zoos and Aquariums, AZA）會員之書面申請，歷經AZA於113年1月8日至12日指派4位審查委員來臺實地審查，復於113年3月由園長帶隊，親自出席於美國田納西州曼菲斯舉辦的聽證會，聽證會結論認為本園設施及政策仍有需加強的地方，將保留5年申請認證資格，待改善並達AZA認證標準後，免繳納申請費用即可重新提出申請。因此本園預擬以2年為期完成改善計畫及重新提送申請，並自113年6月起加入AZA建議之認證會員指導計畫（PTM），將主要針對園內硬體設施、動物照養及福利政策進行改善，並定期與AZA指導員（導師）視訊會議討論改善進度，目標為115年再次提出認證申請。

AZA展示面審查

兩棲類保育繁殖計畫獲AZA委員讚賞

｜International Cooperation and Exchanges｜

The group of people whom the Zoo hired in 1986 when moving to the current address are successively retired in recent years. In this moment, the Zoo therefore trained some key figures in the new generation to enhance international exchange and become even more professional. The Zoo also invests more resources in species that are relatively more important with an expectation of connecting to the world, participating in global and local species conservation works, making more contributions in animal conservation and protection, and becoming even more influential.

With the limited space, an independent zoo cannot effectively maintain the diversity of the group genes and avoid inbreeding. In the premise of animal welfare, a zoo cannot keep many of the same species. Therefore, zoos build up a network and associations. Through the collaboration to maintain the group, keeping the *ex situ* conservation with health gene diversity and age structure. This is the significant foundation for the *ex situ* conservation and *in situ* re-introduction conservation.

The Zoo has long been proactive in participating in numerous international conservation organizations. In the past decade, the Zoo has obtained accreditation from regional zoo and aquarium associations like the European Association of Zoos and Aquaria (EAZA) and the Southeast Asian Zoos and Aquariums Association (SEAZA). Through these associations, the Zoo has not only expanded our professional visibility and network of contacts but also fostered professional exchanges and collaboration with member organizations. This partnership covers a wide range of areas, including animal population management, care, medical care, conservation, animal welfare, and sustainability initiatives.

To improve animal management expertise and pursue more international species population management and cooperation plans, the Zoo submitted a paper application to the Association of Zoos and Aquariums (AZA) in September 2023. AZA then designated a review committee of four members to conduct a inspection in Taiwan between January 9 and 12, 2024. Later, in March 2024, the Director of Taipei Zoo led a team to attend a hearing organized in Memphis, Tennessee, USA. The hearing concluded that the Zoo's facilities and policies still require improvement. As a result, the Zoo's eligibility to apply for accreditation will be retained for five years. Once the necessary improvements are made and AZA's accreditation standards are met, the Zoo may reapply without paying the application fee. To that end, the Zoo plans to complete its improvement plan within two years and resubmit the application. In June 2024, the Zoo joined AZA's Pathway Toward Membership (PTM) program, as recommended by the organization. Through this program, the Zoo is working to enhance our infrastructure, animal care practices, and welfare policies. Regular online meetings are held with an AZA instructor (mentor) to monitor progress and provide guidance, with the goal of resubmitting the accreditation application by 2026.

AZA和各組室主管對談

東南亞動物園暨水族館協會（SEAZA）為亞洲地區野生動物管理及保育合作的重要平臺，除東南亞地區國家外，並有日本、澳洲及歐美等多國動物園參與該協會，對本園推動國際事務有極大助益。本園於2019年起擔任常務理事，並自2021年起擔任物種保育及動物福祉委員會委員，積極推動亞洲地區相關物種保育研究、福祉管理等工作。

東南亞動物園暨水族館協會物種管理委員會（SEAZA Species Management Committee, SSMC）自2015年成立後，每年中旬透過工作會議討論族群管理發展工作，今年泰國 Zoological Park Organization of Thailand（ZPOT）主辦，實際出席成員來自臺灣、新加坡、泰國、緬甸、印尼、越南及日本共7國代表總計15人參加，本園由委員會成員蔡昀陵研究助理與動物組吳立信組長出席，討論因應世界動物園暨水族館協會族群管理發展框架之下動物輸出入手冊撰寫摘要項目、報告臺灣物種管理現況、討論2024年SEAZA會議中的相關族群管理工作坊主題，會後至Khao Kheow Open Zoo進行第一次的偶蹄類物種專家群（Taxon Advisory Group, TAG）會議，該TAG是於2022年新成立之物種專家群，於2024年確認其物種典藏評估與規劃（ICAP），會中決議由本園吳立信組長擔任偶蹄類TAG的成員、蔡昀陵研究助理擔任斑哥條紋羚與黑猩猩管理協調計畫協調人。

● 食肉目分類諮詢小組（Carnivore TAG）

113年10月27日於本園舉辦113年第一次食肉目分類諮詢小組會議，主席為新加坡動物園Anard Kumar，與副主席Ade Kurniawan進行（ICAP）工作坊討論，初步討論物種狀況及優先順位，將現有物種分為4級管理，並確認每個層級的管理物種。預計未來將徵求物種管理計畫的協調人及血統書管理者。

SEAZA動物福祉委員會（Animal Welfare and Ethics Committee, AWEC）目前共有8位經AWEC認證及24位國際認證之動物福利評鑑委員分布在東南亞會員組織間，所有的委員在過去兩年皆有接受線上的動物福利審查訓練，為了更新會員組織間的動物福利專業知識及技能，SEAZA及ZPOT於2024年共同於清邁夜間動物園舉辦「動物福利審查訓練工作坊」，邀請總數43名分別來自8個國家的動物園組織會員參與本次訓練。本園由彭仁隆助理研究員、蔡昀陵研究助理代表參加，並取得動物福利審查認證證書。

歐洲動物園暨水族館物種專家群聯合主席會議（EAZA Joint TAG）每兩年舉辦一次，為歐洲與其他各洲動物園暨水族館協會專業交流的例行盛會，本年度由英國蘇格蘭皇家動物學會（Royal Zoological Society of Scotland, RZSS）在愛丁堡舉辦。本園由謝欣怡輔導員與張廖年鴻助理研究員代表前往，共有來自歐、美、紐澳、亞洲等地區共230位與會者參與。4天的正式議程包含8場專題演講、40場分類諮詢專家群（TAG）報告、1場工作坊，有助於獲取各物種管理的最新資訊以及增進本園參與國際間的物種保育計畫。物種專家群聯合主席會議會後，緊接著參加在愛丁堡由國際自然保育聯盟（IUCN）舉辦之人猿全球



2024歐洲動物園暨水族館物種專家群聯合主席會議

South East Asian Zoos and Aquariums Association (SEAZA) is an important platform for the collaboration of wildlife management and conservation in Asia. Apart from southeast Asian countries, zoos from Japan, Australia and other European and American countries also joined SEAZA, which greatly benefits our Zoo in promoting international affairs. Since 2019, the Zoo has been serving as the Executive Director of SEAZA. In 2021, the Zoo became a member of the Species Conservation and Animal Welfare Committee and has been active in promoting Asian species conservation research and welfare management works.

Since its establishment in 2015, the SEAZA Species Management Committee (SSMC) has held an annual mid-year working meeting to discuss the progress and development of population management. In 2024, the meeting was hosted by the Zoological Park Organization of Thailand (ZPOT), with attendees from Taiwan, Singapore, Thailand, Myanmar, Indonesia, Vietnam, and Japan – 15 representatives in total from 7 countries. Taipei Zoo appointed Research Assistant Tsai Yun-Ling, an SSMC committee member, and Animal Section Chief Wu Li-Hsin to attend the meeting. Discussions focused on drafting summary guidelines for animal import/export manuals in response to the World Association of Zoos and Aquariums (WAZA) population management framework, reporting on the current status of species management in Taiwan, and proposing topics for population management workshops at the 2024 SEAZA conference. Following the meeting, participants also attended the first Taxon Advisory Group (TAG) meeting at Khao Kheow Open Zoo. TAG, a species advisory body established in 2022, had its Integrated Collection Assessment and Planning (ICAP) framework officially confirmed in 2024. During this meeting, it was confirmed that Chief Li-Hsin Wu was appointed as a TAG member for ungulates, and Research Assistant Yun-Ling Tsai as the coordinator for Bongo (*Tragelaphus eurycerus*) and Common Chimpanzee management programs.

● Carnivore Taxon Advisory Group (Carnivore TAG):

The first Carnivore Taxon Advisory Group (TAG) meeting in 2024 was held on October 27 at the Zoo. The meeting was chaired by Anard Kumar from Singapore Zoo, with Ade Kurniawan serving as vice chair. Together, they led discussions on ICAP, focusing on the preliminary assessment of species status and prioritization. Existing species were classified into four management levels, and the species assigned to each level were confirmed. In the future, coordinators for species management programs and studbook keepers will be recruited.

As of now, the SEAZA Animal Welfare and Ethics Committee (AWEC) includes 8 AWEC-certified and 24 internationally certified animal welfare assessors distributed among member organizations across Southeast Asia. Over the past two years, all committee members have completed online animal welfare assessment training and, to further strengthen the professional knowledge and skills of member organizations in animal welfare, SEAZA and ZPOT co-organized the “Animal Welfare Review Training Workshop” at Chiang Mai Night Safari in 2024. A total of 43 participants from zoo organizations in 8 countries attended the training. Taipei Zoo dispatched Associate Researcher Shwan Peng and Research Assistant Yun-Ling Tsai, both of whom participated in the workshop and received official certification as animal welfare assessors.

The European Association of Zoos and Aquaria (EAZA) Joint TAG, held every two years, is a major event for professional exchange among zoos and aquariums in Europe and beyond. This year, it was hosted by the Royal Zoological Society of Scotland (RZSS) in Edinburgh. Taipei Zoo sent Coordinator Hsin-Yi Hsieh and Assistant Researcher Nian-Hong Jang-Liao to attend the event, which welcomed 230 participants from Europe, the United States, New Zealand, Australia, and Asia. The four-day agenda included eight keynote talks, 40 Taxon Advisory Group (TAG) report sessions, and one workshop. These sessions allowed the Zoo to gain up-to-date insights into species management practices and further strengthen its involvement in international conservation programs. Following the TAG Chairs' meetings, the Zoo also took part in the Orangutan Global Population

族群管理工作坊（Orang-utan Global Population Management Workshop），召集26位來自不同國家的人猿域內外族群保育工作者齊聚一堂，分享最新域外族群現況、物種分類研究發展以及進行未來保育政策規劃策略之討論；另外，會議主持人（維斯康辛人猿遺傳實驗室主持人）Graham L. Banes博士也與本園洽談臺灣的人猿圈養族群遺傳多樣性研究合作相關事宜。

保育計畫專家群（CPSG）為國際自然保育聯盟（IUCN）物種存續委員會（SSC）轄下最大的專家群組織，世界動物園暨水族館協會（WAZA）則是領導全球動物園與水族館界專業發展的世界性組織，對本園發展專業、推動國際保育事務影響至深。本園曹先紹副研究員自2021年起續獲選WAZA理事，本年度由曹先紹副研究員、彭仁隆助理研究員代表出席於澳洲雪梨塔龍加動物園舉行的CPSG/WAZA聯合年會。

本次年會，保育規劃專家群（CPSG）聚焦「整合保育計畫」，推動結合域內與域外保育策略的創新方法。來自16個國家的64位與會專家，透過演講和工作坊深入探討如何擴大全球保育規劃專業人員的培力訓練、科學數據應用及全球協作的重要性。重申了基於科學的協作方式對於生物多樣性保育的重要性，也從瀕危脊椎動物為主的保育規劃，擴展到對無脊椎動物及植物保育的關注；原本針對單一物種的保育工具，則朝多物種的群聚保育工具邁進；在活體動植物之外，亦持續導入運用冷凍方舟的保育思維。

會議期間的一大亮點是對達成WAZA 2023動物福祉目標的地區及國家動物園協會的認可。例如，東南亞動物園暨水族館協會（SEAZA）、巴西動物園暨水族館協會（AZAB）及日本動物園暨水族館協會（JAZA）因建立動物福祉評估機制而受到表彰，這些成就得益於全球動物慈善組織Wild Welfare的專業支持。

在持續獲取野生動物獸醫領域新知提升動物保育與醫療水準目標下，本年度由兩名同仁參加於加拿大安大略省多倫多市舉辦之美國動物園獸醫協會年會（AAZV），本年會議與歐洲動物園獸醫協會（European Association of Zoo and Wildlife Veterinarians, EAZWV）合併議程交流，規模相當盛大、參與人數眾多。會前同仁參與「進

2024 CPSG & WAZA聯合年會

Management Workshop, organized by the International Union for Conservation of Nature (IUCN). This workshop brought together 26 *in situ* and *ex situ* orangutan conservation professionals from various countries to share updates on *ex situ* population status, taxonomy research developments, and to discuss future conservation policy, planning, and strategies. Moreover, Dr. Graham L. Banes, the host of the workshop and a key researcher at the Wisconsin National Primate Research Center, met with Taipei Zoo representatives to discuss potential collaboration on genetic diversity research for the captive orangutan population in Taiwan.

The Conservation Planning Specialist Group (CPSG) is the largest specialist group under International Union for Conservation of Nature (IUCN) Species Survival Commission (SSC). On the other hand, the World Association of Zoos and Aquariums (WAZA) is a global organization that leads in the professional development of the global zoo and aquarium community, greatly influencing our park's professional development and our contributions to international conservation efforts. Associate Research Officer of the Zoo Eric Tsao has been consecutively elected as the Director of WAZA since 2021. In the year, the Zoo dispatched Associate Research Officer of the Zoo Hsien-Shao Tsao (Eric Tsao) and Associate Researcher Shwan Peng attend the CPSG/WAZA Joint Annual Conference.

During this joint annual conference, CPSG focused on the One Plan Approach (OPA), which promotes an innovative model that integrates *in situ* and *ex situ* conservation strategies. A total of 64 experts from 16 countries participated in lectures and workshops, engaging in in-depth discussions on how to expand capacity-building training, apply scientific data, and strengthen global collaboration among conservation planning professionals. Moreover, the conference reaffirmed the importance of scientific coordination in biodiversity and conservation efforts. The scope of conservation planning, which traditionally focused on endangered vertebrates, has now expanded to include invertebrates and plant species. Conservation tools that once targeted individual species are evolving toward multi-species planning and integrated strategies. Moreover, beyond living animals and plants, the concept of the "Frozen Ark" – preserving genetic material through cryobanking – has been increasingly adopted in conservation thinking.

One of the highlights of the conference was the recognition of regional and national zoo associations that achieved the WAZA 2023 Animal Welfare Goal. For example, SEAZA, Brazilian Association of Zoos and Aquariums (AZAB), and Japanese Association of Zoos and Aquariums (JAZA) were commended for establishing animal welfare evaluation mechanisms; and these accomplishments made possible with the professional support of the global animal welfare organization Wild Welfare.

Oriented towards continuously acquiring new knowledge in wildlife veterinary medicine and enhancing animal conservation and medical standards, the Zoo dispatched two employees to attend the American Association of Zoo Veterinarians (AAZV) Annual Conference held in Toronto, Ontario, Canada. This year's conference was held jointly with the European Association of Zoo and Wildlife Veterinarians (EAZWV), making it a large-scale event with broad participation. Prior to the main conference, our staff also took part in the “Advanced Anesthesia Techniques Workshop”, which included in-depth discussions on drug use (e.g., alpha-2 agonists, opioids) and respiratory monitoring, providing practical clinical skills. Besides, the Zoo also published a poster “To Understand Endoparasite Burdens in Chinese Pangolins (*Manis pentadactyla*) in the Wild Population”, which drew significant attention from professionals interested in pangolin parasitology. This trip also provided an opportunity for our representative to exchange knowledge with several senior veterinarians. For example, Dr. Priya Bapodra-Villaverde, a senior veterinarian from Columbus Zoo, who had previously offered valuable advice and shared her experience when the Zoo's Asian elephant (*Elephas maximus*) suffered from a serious foot condition; Dr. Carsten Grøndahl, head veterinarian at Copenhagen Zoo and an expert in wildlife anesthesia; and Dr. Sherley Llizo, a senior veterinarian listed as an official

階麻醉技術工作坊」，課程深入探討alpha-2致效劑、鴉片類藥物及呼吸監測，提供實用的臨床技能。另外本園發表一篇海報（To Understand Endoparasite Burdens in Chinese Pangolins（*Manis pentadactyla*）in the Wild Population），吸引許多專業人士關注穿山甲寄生蟲議題。此行也與多位舊識或有業務往來的獸醫進行交流，例如曾經在本園亞洲象出現嚴重腳疾給予建議與交流的哥倫布動物園資深獸醫Dr. Priya Bapodra-Villaverde；專精野生動物麻醉的哥本哈根動物園的主任獸醫Dr. Carsten Grøndahl；被列在AZA入會審查獸醫委員名單中的資深獸醫Dr. Sherley Llizo等，對於日後獸醫專業上的交流有相當大的助益。

在國際動物園教育者協會（IZE）中，本園以IZE東亞及東南亞區域代表身分參與，每雙月出席理事會議（線上會議），連繫區域夥伴關係為主要工作目標。藉國際會議參與及參與理事會志願服務工作，鞏固本園在國際動物園團隊內的專業地位及增加國際能見度，以利未來推動各動物園教育者之合作。

1. 113年參加國際性會議

月份	會議名稱	本園參與人數
3	赴美國參加臺北市立動物園申請AZA認證聽證會及2024 AZA年中會議	4
4	赴泰國參加2024東南亞動物園暨水族館協會物種管理委員會年中工作會議	2
4	赴泰國參加清邁動物福利工作坊	2
5	赴英國參加2024歐洲動物園暨水族館物種專家群聯合主席會議暨鄰近動物園參訪	2
9	赴美國參加2024動物園獸醫師協會（AAZV）年會	2
9	赴蒙古參加2024亞洲保育醫學會（ASCM） 年會	2
10	赴德國參加2024歐洲動物園暨水族館協會年會	3
10	赴澳洲參加2024保育規劃專家群CPSG及世界動物園暨水族館協會WAZA第79屆聯合年會	2

赴蒙古參加2024亞洲保育醫學會（ASCM） 年會

reviewer on the AZA accreditation veterinary committee. These exchanges were highly beneficial in enhancing the Zoo's veterinary expertise and international collaboration.

At the International Zoo Educators Association (IZE), the Zoo serves as the regional representative for East and Southeast Asia. It participates in the bi-monthly board meetings (online meeting) and is primarily responsible for maintaining connections with regional partners. Through active involvement in international meetings and volunteer services for the board, the Zoo has successfully strengthened its professional standing within the global zoo education community and enhanced its international visibility. These efforts lay a solid foundation for promoting future collaboration among zoo educators.

1. Participation in International Conferences

Month	Conference Name	No. of Participants from Taipei Zoo
3	Participated in Taipei Zoo's AZA Accreditation Hearing and 2024 AZA Mid-Year Meeting in the U.S.	4
4	Participated in the 2024 SEAZA Species Management Committee Mid-Year Meeting in Thailand.	2
4	Attended the Animal Welfare Auditor Training in Chiang Mai, Thailand.	2
5	Attended the 2024 EAZA Joint Taxon Advisory Group (Joint TAG) Chairs Meeting in the U.K. and visited nearby zoos	2
9	Attended the 2024 AAZV Annual Conference in the U.S.	2
9	Attended the 2024 Asian Society of Conservation Medicine (ASCM) Conference in Mongolia	2
10	Attended the EAZA Annual Conference in Germany	3
10	Attended the 2024 CPSG Annual Meeting and the 79th WAZA Annual Conference in Australia	2

赴美國參加2024動物園獸醫師協會（AAZV）年會

2. 辦理國際會議及專業研討會

● 主辦2024東南亞動物園暨水族館協會（SEAZA）第32屆年會

本園先行於7月辦理SEAZA Board Meeting年中會，定調年會會議主題為「Gathering for Rewilding」，確認辦理年會之相關細節等。

年會於113年10月23至27日召開，整體與會人數約30國307人，議程包含3場會前工作坊、5場會中工作坊、1場會後工作坊；以及7場專題演講、55篇口頭分享、58篇海報發表。以國際間與國內物種保育、動物營養與健康、動物福祉等專業工作的政策、計畫及實踐為題，舉辦專題演講，同時與會者聚焦於動物照養、動物營養和健康、物種族群管理、動物福祉與行為豐富化、保育及研究、教育與行銷等主題進行發表，工作坊辦理亦使各地動物園的研究人員、保育員、教育推廣人員相互交流，成果豐碩。

其中，2024年10月23至26日首度於本園舉辦東南亞動物園暨水族館協會保育教育工作坊—創意引導應用多元跨際方式發展動物園保育教育方案（Creative Facilitation - Applying Multi disciplinary approaches to zoo education programmes）。東南亞動物園暨水族館協會教育委員會甫於2023年重新改組為以保育教育為目標功能之保育教育委員會。於2024年由時任委員會主席本園吳倩菊研究助理與副主席新加坡動物園Haniman Boniran共同舉辦SEAZA年中保育教育工作坊，透過設計動物園參訪計畫活動，從瞭解受眾需求、盤點既有資源及設計參訪學習，內涵包括參觀前準備暖身、現場活動設計及參訪後反思和回饋、總結等框架，以分組方式運用臺北市立動物園環境與來自東南亞各國教育者代表，練習與分享設計教學方案，工作坊參與者來自東南亞及東亞等多國，參與者約35人。

10月24日會議開幕特別邀請臺北市原住民族合唱團演出

臺北市政府副秘書長俞振華致詞，林保署保育管理組組長羅尤娟及臺北市政府教育局湯志民局長等相關部會夥伴也蒞臨大會


東南亞動物園暨水族館協會主席Wen-Haur Cheng代表協會歡迎與會者

臺北市立動物園園長（時為代理）朱孝芬致詞

2024年SEAZA會議累計逾300位、來自30個國家的與會者創歷史新高，期待帶動臺灣動物園及水族館在國際的能見度，以及推進國際動物園間保育研究、動物福祉、教育推廣等專業的交流與發展

2. Holding of International Conferences and Professional Seminars

● Organized the 32nd SEAZA Conference in 2024

The Zoo hosted the SEAZA Mid-Year Board Meeting in early July first and then finalized the theme for the upcoming annual conference: “Gathering for Rewilding”. The Zoo also confirmed the arrangements and logistics for organizing the event.

The SEAZA Conference was held from October 23 to 27, 2024, with 307 participants from around 30 countries. The agenda included three pre-conference workshops, 5 in-conference workshops, 1 post-conference workshop, 7 keynote speeches, 55 oral presentations, and 58 poster presentations. During the event, the Zoo hosted keynote sessions focusing on international and domestic species conservation, animal nutrition and health, animal welfare, and related policies, programs, and practices. Participants also engaged in discussions on animal care, nutrition and health, species management, welfare and behavioral enrichment, conservation and research, as well as education and marketing. The workshops facilitated valuable exchanges among researchers, keepers, and educators from zoos across the region, resulting in fruitful outcomes.

Among the events, the SEAZA Conservation Education Workshop – “Creative Facilitation: Applying Multidisciplinary Approaches to Zoo Education Programmes” – was held for the first time at Taipei Zoo from October 23 to 26, 2024. The SEAZA Education Committee, restructured in 2023, is now dedicated to conservation education. In 2024, then-Chair of the Committee, Taipei Zoo’s Assistant Researcher Chien-Chu Wu, and Vice Chair Haniman Boniran from Singapore Zoo co-organized the SEAZA Mid-Year Conservation Education Workshop. Through the design of zoo visit plans and activities, participants learned to identify audience needs, assess available resources, and develop educational programs and learning experiences. The workshop followed a structured framework that included pre-visit warm-up activities, on-site activity design, and post-visit reflection, feedback, and summarization. The grouping method incorporated the environment of Taipei Zoo and the participation of educators from various Southeast Asian countries, allowing them to practice and share lesson plan designs. A total of approximately 35 participants attended, representing various countries from Southeast and East Asia.


大會針對動物照養、動物營養和健康、物種族群管理、動物福祉與行為豐富化、保育及研究、教育與行銷等主題進行工作坊與發表

● 臺北里山川永續論壇

為響應「2024年臺北里山川公共藝術計畫」，113年10月23日由本園與國立政治大學，於政大達賢圖書館共同主辦「臺北里山川永續論壇」。會中邀請政大詹志禹副校長、指南宮高超文主委、臺北市錫瑠環境綠化基金會楊平世董事長、臺北市政府游適銘副秘書長等15位嘉賓參與論壇會議，自生態、藝術文化、宗教、社會責任、產官協力等面向共同討論、讓三貓地區三生一體（生態、生產、生活）與地方永續發展行動理念轉變為實際行動力量展現。現場約100人次參與，本園張明雄副研究員及臺大生態所（本園委託三貓生態踏查執行團隊）李承恩老師均參加與談。

論壇分為兩個議題研討。第一場主題為「放眼國際／生態環境共榮」，從社會責任、生態調查、河相復育與活動推廣的角度暢談。第二場主題為「立足三貓／生活藝術共融」，從宗教信仰、藝術文化、產官協力與在地產業等面向進行交流。

越南鸛–公（上圖）、母（下圖）

3. 動物引進及交換

為更新動物血緣與豐富教育展示效益，持續與國內外重要動物園或照養機構進行動物繁殖合作、交換或互贈；除直接與個別重點動物園的動物交流合作外，持續推動參與全球瀕危物種保育組織及計畫，以提升對於野生動物保育之貢獻度。國際交流的突破開啟了本園加入國際物種保育計畫之路，現已加入非洲野驢、西部低地大猩猩、越南鸛、馬來虎、小貓熊、馬來貘等保育合作計畫，還有未來加入格利威斑馬、花豹、獵狐狼等保育合作計畫的可行性。

本年度引進哺乳類6種10隻、兩棲爬蟲類3種29隻、魚類1種10隻，共計引入10種49隻，並續與新加坡萬態保育集團、法國菲林斯動物園、荷蘭猴山動物園、捷克布拉格動物園、澳洲庫倫賓動物園、奧地利龜類保育中心、義大利Zoo Delle Maitine、美國休士頓動物園及日本多摩動物公園、日本東山動物園、日本円山動物園等洽談動物交流中，重要成果如下：

● Taipei Satoyama Sustainability Forum

The Zoo co-hosted the Taipei Satoyama Sustainability Forum with National Chengchi University (NCCU) on October 23, 2024, at the Da-Hsiang Library of NCCU. The forum invited 15 distinguished guests, including Vice President of NCCU Chih-Yu Chan, Chair of Zhinan Temple Chao-Wen Kao, Chairman of the His Liu Environmental Greening Foundation Ping-Shih Yang, and Deputy Secretary-General of the Taipei City Government Shih-Ming Yu. Forum discussion focused on various perspectives – ecology, art and culture, religion, social responsibility, and industry-government collaboration – aiming to translate the Sanmao region's sustainable goal of "ecology, production, and living harmoniously" and the ideas of local sustainable development into concrete, actionable outcomes. The event drew approximately 100 participants. Dr. Ming-Hsung Chang, Associate Researcher from the Zoo, and Professor Cheng-En Lee from the NTU Institute of Ecology - who leads the Sanmao ecological survey team commissioned by the Zoo - were also invited as speakers.

The forum discussions centered around two main themes: The first theme, "Global Perspectives: Co-Prosperity of the Ecological Environment", focused on topics such as social responsibility, ecological surveys, the restoration of river morphology, and the promotion of related activities; The second theme, "Rooted in Sanmao: Integration of Life and Art", encouraged participants to exchange ideas from the perspectives of religious belief, art and culture, industry-government collaboration, and local industries.

此次馬來貘「貘豆」前往日本，跳脫了單純園與園的交流，是在日本動物園暨水族館協會JAZA框架下召開臺日討論決議

3. Introduction and Exchange of Animals

To maintain captive animal genetic diversity and enriching educational exhibitions, the Zoo continued to cooperate with important domestic and foreign zoos or animal institutions to breed or exchange animals. Apart from directly cooperating and exchanging with important zoos, the Zoo continued to promote and participate in global endangered species conservation plans. The breakthrough in international exchange has activated the Zoo's efforts to participate in global species conservation programs. To date, the Zoo has joined collaborative conservation initiatives for the Somali Wild Ass (*Equus africanus somaliensis*), Western Lowland Gorilla (*Gorilla gorilla gorilla*), Edwards's Pheasant, Malay Tiger, Red Panda, and Malay Tapir. The Zoo also plans to join future collaboration projects for Grévy's Zebra (*Equus grevyi*), Leopard (*Panthera pardus*), Okapi (*Okapia johnstoni*), and others.

The Zoo introduced 10 mammals from 6 species, 29 reptiles from 3 species, and 10 fish from 1 species, totaling 49 animals of 10 species in this year. The Zoo also continued to negotiate with Mandai Wildlife Group (Singapore), Feline Park (France), Apenheul Primate Park (Netherlands), Prague Zoological Garden (Czech Republic), Currumbin Wildlife Sanctuary (Australia), Turtle Island, Graz (Austria), Zoo Delle Maitine (Italy), Houston Zoo (the U.S.), Tama Zoological Park (Japan), Higashiyama Zoo and Botanical Garden (Japan) and Sapporo Maruyama Zoo (Japan) for animal exchanges. The important results are as follows:

- Received two female Malay Tigers from Feline Park, France on a breeding loan.
- Received one male Pygmy Hippopotamus (*Choeropsis liberiensis*) from Singapore Zoo through an exchange.
- Sent one male Malay Tapir to Higashiyama Zoo and Botanical Gardens, Japan as a part of an exchange.

自法國菲林斯動物園借殖入馬來虎2雌–「Shima」（上）、「Sherikin」（下）

- 自法國菲林斯動物園借殖入馬來虎2雌。
- 自新加坡動物園交換入侏儒河馬1雄。
- 與日本東山動植物園交換出馬來貘1雄。
- 與義大利Zoo Delle Maitine及奧地利龜類保育中心Turtle Island三方共同合作，共交換出IUCN極度瀕危（CR）的緬甸星龜、射紋陸龜、南越閉殼龜、布氏閉殼龜；瀕危（EN）的食蛇龜、平背閉殼龜、太陽龜；以及緬甸緣板鱉、棕稜背龜，共計9種、41隻龜類。
- 與日本多摩動物公園借殖出小貓熊1雄。
- 自新北市動物保護處救傷收容入穿山甲2雌。
- 自桃園縣政府動保處贈入北美浣熊1雄。
- 自農業部生多所贈入石虎1雌及穿山甲1雌、豎琴蛙（魚池琴蛙）10隻；依保育繁殖合作備忘錄歸還出石虎1對。
- 自綠世界生態農場交換入黑手長臂猿1雄；交換出水豚2雄。
- 民眾贈入細皮瘤尾守宮4隻。
- 救傷收容入石虎1雄、天使魚10隻、赤腹游蛇10雄5雌。

4. 其他國際交流

- 巨型草食獸麻醉工作坊講師Michelle Miller及Peter Buss來訪，協助象、長頸鹿、犀牛、駱駝等動物重要疫病討論。
- 德國柏林動物園Dr. Florian Sicks及Christian Kern來園訪視獸醫室及救傷中心。
- 奧地利維也納動物園區長Weissenbacher Anton與保育員Gerald Schachermayer 2人來園實習穿山甲照養及討論合作計畫，並進行演講，題目為《維也納動物園的保育行動及科學計畫 Conservation activities and scientific programs at Vienna Zoo》。
- 越南野生動物救援組織派員來園實習並交流穿山甲照養管理技術。
- 日本高知縣議員參訪臺灣動物區。
- 日本高知縣立野市動物園園長本田祐介先生來園參訪。
- 日本旭山動物園保育員來園參訪。
- 日本多摩動物園保育員來園參訪。
- 韓國首爾動物園白犀牛保育員來園參訪，交流白犀牛繁殖議題。
- 香港海洋公園資深動物訓練師吳乃江先生受本園邀請來園，於本園11月6日至14日辦理之動物訓練課程中現場指導。

- Collaborated with Zoo Delle Maitine (Italy) and Turtle Island (Austria) to exchange a total of 41 turtles from 9 species, including Critically Endangered (CR) species such as the Burmese Star Tortoise (*Geochelone platynota*), Radiated Tortoise (*Astrochelys radiata*), Southern Vietnamese Box Turtle (*Cuora picturata*), and Bourret's Box Turtle (*Cuora bourreti*); Endangered (EN) species such as the Yellow-margined Box Turtle (*Cuora flavomarginata*), Keeled Box Turtle (Cuora mouhotii), and Spiny Turtle (*Heosemys spinosa*); as well as the Burmese Flapshell Turtle (*Lissemys scutata*) and Brown Roofed Turtle (*Pangshura smithii*).
- Sent one male Red Panda to Tama Zoological Park, on a breeding loan.
- Received two rescued / injured female pangolins from New Taipei City Government Animal Protection and Health Inspection Office, all of which were rescued and sheltered.
- Received one male North American Raccoon (*Procyon lotor*) from the Taoyuan County Government Animal Protection Office as a gift.
- Received one female Leopard Cat, one female Pangolin, and 10 Yuchi Music Frogs from FNCA as gifts; and returned one pair of Leopard Cats in accordance with the conservation and breeding Memorandurm of Understanding, MOU.
- Received one male Agile Gibbon (*Hylobates agilis*) from Green World Ecological Farm through an exchange; and sent two male Capybara (*Hydrochoerus hydrochaeris*) through an exchange.
- Received four Three-lined Knob-tailed Geckos (*Nephrurus levis*) from citizens as a gift.
- Received one male Leopard Cat, 10 Angelfishes (*Pterophyllum* spp.), 10 male and 5 female Red-bellied Annulate Keelbacks, all of which were rescued and sheltered.

4. Other International Exchanges

- Dr. Michelle Miller and Dr. Peter Buss, instructors of the Large Herbivores Anesthesia Workshop, visited the Zoo and provided expert consultation on major disease issues in animals such as elephants, giraffes, rhinoceroses, and camels.
- Dr. Florian Sicks and Christian Kern from Berlin Zoological Garden, Germany, visited the Veterinary Medical Center and Quarantine and Rescue Center of the Zoo.
- District Manager Anton Weissenbacher and Keeper Gerald Schachermayer from Vienna Zoo, Austria, visited the Zoo to participate in hands-on training on pangolin care, discuss collaboration plans, and deliver a speech titled "Conservation Activities and Scientific Programs at Vienna Zoo".
- Save Vietnam's Wildlife (SVW) sent personnel to the Zoo for an internship and exchange program focused on pangolin care and management skills.
- A member of the Kochi Prefectural Assembly, Japan, visited the Formosan Animal Area.
- Mr. Yusuke Honda, Director of Noichi Zoological Park of Kochi Prefecture, Japan, visited the Zoo.
- Keepers from Asahiyama Zoo, Japan, visited the Zoo.
- Keepers from Tama Zoological Park, Japan, visited the Zoo.
- A white rhino keeper from Seoul Zoo, South Korea, visited the Zoo to exchange knowledge on white rhino breeding.
- Mr. Richard Ng, Senior Animal Trainer at Ocean Park Hong Kong, was invited by the Zoo to provide on-site guidance during our animal training course held from November 6 to 14.

IUCN極度瀕危（CR）的緬甸星龜