

# 環境教育與推廣

## Environmental Education and Promotion

### 多樣性的動物與生態展示管理

#### 1.主題特展

配合中國生肖年主題陸續推出「Happy『牛』Year—牛科動物標本展」、「『最牛動物園』—2009年牛科動物特展」，以及推出「藥用昆蟲特展」、「殺很大-臺灣外來種生物特展」等，計在園內展出8場次，另與臺灣博物館等單位合作共有3場次於園外場地展出。

##### ●「最牛動物園」—2009年牛科動物特展

(展期：98年4月30日~12月31日)

本特展展出牛的分類、分布、演化、食性、形態、構造、生殖和習性，以及牛與人的關係和動物園的牛科動物等單元，民眾除了可以直接觀察牛科動物的標本，了解頭骨和腳蹄等構造外，還可以透過有趣的遊戲，認識不同牛科動物的蹄印、猜猜看這是誰頭上的角。



##### ●藥用昆蟲特展

(展期：98年2月15日~6月30日)

一般對昆蟲的印象，是蚊蟲、蒼蠅、蟑螂、跳蚤等害蟲給人類帶來了疾病，但民眾卻很少瞭解牠們在醫藥的應用領域為人類戰勝疾病的特殊貢獻。例如昆蟲作為藥物治病，在中國已有2000多年的歷史，到目前為止，中醫的藥用昆蟲達300種之多，包括螞蟥、蜜蜂、蟑螂、蟬、斑蝥、螳螂、家蠶和蒼蠅等昆蟲。按營養學家的說法，昆蟲是21世紀的綠色食品，昆蟲含有十分豐富的營養物質，其中包括蛋白質、脂肪、碳水化合物、大量游離胺基酸、維生素、各種鹽類、鈣等，且極易被人體消化吸收。除了豐富的營養外，不少昆蟲還有獨特的保健作用，在研發經濟昆蟲食品上大有潛力。隨著科技的進步，昆蟲可「吃」的領域越來越寬泛，從食用昆蟲菜餚到昆蟲保健品，有朝一日，人類可能還會大吃昆蟲藥品。



### Diversification of Animals and Management of Eco Exhibits

#### 1.Themed Exhibitions

As tie-ins to the Chinese Zodiac Year, we launched eight exhibitions including “Happy Niu (Ox) Year –Exhibition of Bovidae Specimens”, All About Bovidae –Special Exhibit 2009, and “Special Exhibition of Medicinal Insects and Medical Applications” and “Special Exhibition of Exotic Species in Taiwan” in the Zoo; and held three exhibitions outside of the Zoo in cooperation with National Taiwan Museum.

##### ● All about Bovidae – Special Exhibit 2009

(from April 30, 2009 to December 31, 2009)

This exhibition showcased the classification, distribution, evolution, food habits, behaviors, morphology, structure, and habits, as well the relationship between bovid and man, and the members of this family inside the Taipei Zoo. Not only were the public able to observe bovid specimens directly and learned about their skulls and hooves, witty games also helped visitors to recognize the different hoof prints and the different pair of horns.



##### ● Special Exhibition of Medicinal Insects and Medical Applications

(from February 15, 2009 to June 30, 2009)

The stereotype impression we have about insects is that pests like mosquitoes, flies, cockroaches and fleas cause diseases to human, but we don't often see their medicinal properties and special contributions to help man overcome illnesses. For instance China has had more than 2,000 years of history effecting insects as medicinal treatments, and that there are more than 300 insects including ants, bees, cockroaches, cicadas, tiger beetles, praying mantis, silkworms, and flies currently in use in Chinese medicine practices. Insects are the green food of the 21<sup>st</sup> Century according to nutritionists. For insects contain rich nutrition easily digestible by the human body such as protein, fat, carbohydrates, and high quantities of free amino acids, vitamins, various salts





本特展從昆蟲在中國歷史上長期利用下所發展之醫學應用，談到在現代醫學上可發展之潛力，讓社會大眾對中國人之古老智慧及昆蟲資源的開發有進一步的認識。

#### ●殺很大—臺灣外來種生物特展

（展期：98年12月12日~99年12月31日）

近年來因為人口增加、運輸貿易的快速成長及交通的便利，世界各地的交流更加頻繁。這些人類活動增加了動、植物及微生物在世界各地的擴張。非本地的物種有些原本被引進作為農業利用或生物防治，但嗣後卻變成了害蟲。外來入侵種這個全球性的問題也日趨複雜和嚴重，不但造成農林漁牧的重大損失，甚至威脅人類的健康，是每個國家和個人無可逃避必須面對的問題。

生物多樣性是每個國家最重視的生物資源，但目前全球生物多樣性面臨的主要威脅有棲地被破壞、過度獵捕、化學污染、氣候變遷和外來種生物危害等，其中又

以龐大的人口壓力和經濟開發所造成的棲地破壞或改變最為嚴重，尤其對島嶼而言，外來種生物的入侵反而是當地生物多樣性面臨的最大威脅。

外來入侵種對於生物多樣性的威脅僅次於棲息地的喪失，牠們破壞全球、區域及本土生物多樣性的保育和永續使用，嚴重衝擊生態系所提供的財貨和服務。外來種可藉由捕食、競爭或傳染疾病等不同機制危害原生物種的生存，嚴重時甚至會改變或危及當地的生態體系。因為島嶼生態系對外來種的抵抗力特別差，所以外來種對生物多樣性的威脅在島嶼生態系更是嚴重。

「牛蛙」、「巴西龜」、「吳郭魚」、「大肚魚」、「福壽螺」、「非洲大蝸牛」和「美國螯蝦」，這些現在臺灣民眾耳熟能詳，喧賓奪主，「乞丐趕廟公」式的攻佔臺灣環境和媒體版面的動物其實都是外來種生物。外來種入侵臺灣最大的原因還是在人類。人類引進某種動物做為食用目的，或當作寵物飼養，當這些動物逃

and calcium. Aside from their rich nutrients, quite a few insects offer unique health-giving properties too. There is a tremendous potential doing research to develop economic entomology. Following technological advancements the range of “edible” insects has ballooned; from human food to health supplements, and someday humans just might be taking insect medication too.

This exhibition began from the long medicinal practices used throughout Chinese history to discuss the developmental potential in modern medicine, so that the general public may deepen their impressions about the ancient wisdom, and see the developmental potential of insect resources.

#### ●Exhibition of Exotic Species in Taiwan

（from December 12, 2009 to December 31, 2010）

In recent years, due to raising population, rapid trade growths, and convenient transportation modes, exchanges between countries worldwide have risen. Increasing human activities have facilitated the spread of plants, animals and microorganisms to all corners of the globe rapidly. Non-indigenous species, originally introduced to the locale for agricultural purposes or as biological control agents, have subsequently become pests. The invasion of exotic (alien) species is now a global issue with rising complications and seriousness, for these species cause huge losses in agriculture and may even harm human health. This matter has become a problem that all nations, plus each and every individual, must face and confront without exception.

Biodiversity is the most important bioresource valued by all nations globalwide. However in the modern day, efforts to sustain the diversity of life on Earth have been significantly hampered by the destructions of habitats, over hunting, chemical pollutions, climate changes and invading exotic species. Habitat destructions or alterations as results of overwhelming pressures from population growth and economic development are the worst of them all. Especially from an island perspective, invasive exotic species pose the greatest threats to the local biodiversity.

The severity of threats invasive alien species have on biodiversity is second only to habitat loss, for they damage the conservation and sustainability of indigenous biodiversity on global, regional and local levels, and adversely affect the goods and services afforded by the ecosystems. Exotic species can endanger native species through mechanisms such as predation, competition and by spreading invasive exotic diseases; and in worse cases alter or put indigenous ecosystems to risk. Since island ecosystems have the worst defenses against exotic species, the divergent threats these alien species pose on island ecosystems are the most serious.

The likes of “American Bullfrog”, “Red-eared Slider”, “Tilapia”, Mosquito Fish, “Apple Snail”, “East Africa Land Snail”, and “Red Swamp Crayfish”, each and everyone a species familiar to us and often dominate Taiwan’s natural environment uninvited as well as hugging the media attention, are in fact exotic species. The primary reason why exotic species invaded Taiwan is man. Humans



「殺很大—臺灣外來種生物特展」開幕活動



「殺很大—臺灣外來種生物特展」開幕活動





出或被不當丟棄到野外後，不僅造成農林漁牧的自然環境破壞和經濟損失，也會與本土生物競爭食物和棲地，讓本土物種無法生存，降低生物多樣性，甚至也會威脅人類的健康或生命安全，這是我們每個人必須審慎面對和正視的問題。本次「殺很大」特展有許多「殺傷力很大」的外來種生物，希望能透過展示及解說，讓民眾對這些危害臺灣生態的外來種生物更加認識及了解，並願意配合政府政策防堵或消滅外來物種，或通報保育或防疫相關單位處理。

## 2. 多樣性植物展示

大貓熊「團團」和「圓圓」初來臺開展即適逢本年度農曆新年，本園以動物造型綠雕及寓意吉祥的植材等佈置「團圓飯」主題景緻，象徵動物們熱情的邀約大家一

起與「團團」和「圓圓」共度新年歡樂時光，呼應全國遊客對大貓熊「團團」和「圓圓」來臺的期盼與喜悅。

## 3. 園區植物生態環境管理

年內進行園內出現外來歸化種植物的分布調查，並與87年的調查紀錄比對，調查小花蔓澤蘭等入侵種及一些在園內可能成為潛在入侵種的空間分佈，作為未來監測的基礎，提供生物多樣性經營外來種管理之參考。（動物園外來種植物時間動態及空間分佈調查研究）

園內有計畫性清除的外來入侵種植物，目前僅有小花蔓澤蘭一種，自96年起即開始執行，用刀或剪進行人工切蔓，於每年9~12月進行，本年度更在系統性調查基礎上，結合志工人力進行大面積計畫性防治管理。



introduce certain animals as food or pets, but when these animals either escape or abandon to the wild, they destroy natural environment and cause economic losses, compete with endemic species for food and habitats and render survival for the endemic impossible, reduce biodiversity, and even put human health and safety at risk. These are issues every one of us must face. This Exhibition of Exotic Species in Taiwan contained many "lethal and deadly" exotic species, we hoped that through display and explanation the public could be more mindful of these alien species, and therefore increase willingness to cooperate with governmental policies to assist preventing or eradicating these species, as well as notifying conservation or disease prevention agencies for proper handling.

## 2. Exhibition of Diverse Plants

The opening of the Giant Panda Exhibit coincided with the lunar Chinese New Year in 2009. We therefore trimmed plants and greeneries into animal-shape designs based on the auspicious theme of "Tuan Yuan Meal" (reunion meal), symbolizing the warm invitation animals sent to the public to spend New Year's Festival with "Tuan Tuan" and "Yuan

Yuan", as a token response to the anticipation and joy our nationals felt for their arrival.

## 3. Management of Ecological Environment of the Plants inside the Zoo

The Zoo conducted a distribution study on naturalized plants inside the Zoo during the year, and compared the findings to the research data back in 1998. The purpose was to exam the spatial distributions of invasive alien species such as the "mile-a-minute weed" (*Mikania micrantha*) and other potentially invasive plants on the Zoo compound, and use the data for monitoring basis as well as biodiversity references for the management of exotic species in the future.

The Zoo systematically eradicates invasive alien species. Currently only one species exists – the mile-a-minute weed. Our plant removal project, implemented since 2007, calls for using clippers or cutters to trim the vines by hand every September to December. This year we added volunteer forces to engage in a large-scale preventive management in accordance to our systematic research basis.



志工協助清除小花蔓澤蘭

## 建構環教園區

### 1. 節水節能環教園區

在節水節能教育推廣方面，持續辦理遊客參觀本園「節水節能設施及雨／中水利用」導覽解說。

持續推動節水計畫方面，包括：兩爬館水池池水回收利用，以利用該館水池水生植物、睡蓮、臺灣萍蓬草等池水過濾及淨化，每日約省5噸自來水補給水；雨林區水池池水回收利用，經池水過濾及淨化，每日約省4噸自來水補給水。同時擴充雨（中）水池及中水逐級利用系統，全園每月回收可用水超過12,000噸，提供景觀澆灌、水生植物、公廁等用水，以取代自來水量。

在節約能源方面，其中企鵝館逃生指示燈由10W改為1W LED燈，每月可節省企鵝館用電量1,000度以上；昆蟲館及教育中心逃生指示燈由10W改為1W LED燈，每月可節省昆蟲館及教育中心用電量各500度以上；在全園展示櫥窗燈50W改為8W LED燈計畫，已先行更換教育中心櫥窗，其餘將逐館汰舊換新以為節能。

### 2. 自製動物糞便堆肥，資源回收再利用

回收全園大型草食獸糞便，全年自製生產使用116.8噸堆肥，施用於園區灌、喬木植物，改善園區土壤，減少化肥使用量。

### 3. 持續辦理垃圾分類及資源回收

全園共設100個資源回收桶及組合式塑膠回收袋組，加強宣導垃圾分類，計資源回收81,244公斤。

### 4. 推動無菸環境理念，邁向「無菸動物園」

在「菸害防治法」尚未強制實施將本園納為禁菸環境之前，本園已致力持續推動園區禁菸措施多年，並逐年減少吸菸區之設置，於98年1月1日起本園主動實施全面禁菸，臺北市政府衛生局依菸害防治法於7月11日正式公告本園為全面禁菸場所；本園仍持續以不定時廣播宣導園區禁菸措施，製作禁菸告示及罰款文宣於園區適當地點張貼宣導，現場同仁及志工勸導遊客就地熄菸，營造良好參觀環境及休憩品質。



## 教育推廣活動

### 1. 深耕園區內常態教育推廣活動

園區研習活動計有臺北市163所國小29,804位四年級學生來園參觀教學；辦理教師研習營5梯次240人參加；團體預約解說服務，計有39團33,108人次接受導

覽解說。並持續辦理假日駐站主題解說、管理員定時解說服務及解說牌雙語化。

為增進民眾對本土動物的認識、強化保育自然生態的觀念，新增以「動物爸爸Jason YA! 暢遊園區談保



動物爸爸 Jason YA! 暢遊園區談保育



## Establishment of Environmental Education Area

### 1. Water Conservation and Energy Saving Environmental Education Area

Pertinent to the promotion of water conservation and energy saving education, guided tours to visit the Zoo's "water and energy saving facilities and rain/used water utilization areas" are on going.

The continual water conservation and energy saving projects include: the recollected pool water from the Amphibian and Reptile House was filtered and purified by the aquatic pond, lotus pond, and the yellow water lily pond, facilitated a saving of roughly 5 tons of public water supply a day. The water reused from the Asian Tropical Rainforest Area after filtration and purification by fountain water allowed a saving of about 4 tons of public water supply a day. We expanded the rainwater (reclaimed water) catchment systems and the reclaimed water grading system too. The Zoo recycled more than 12,000 tons of reusable water each month for the use of landscape irrigation, aquatic plants and public restrooms, instead of public water supply.

In terms with energy saving, Penguin House switched from using 10W light bulbs in emergency exits to 1W LEDs, for a saving of at least 1,000 kilowatt-hours of electricity each month. Both Insectarium and the Education Center made same switch-over, and respectively saved no less than 500 kilowatt-hours of electricity each month too. The project to change all the display lights inside the Zoo from 50W to 8W LEDs has finished the switch-over at the Education Center, the remaining are on-going to improve energy efficiency.

### 2. Self-Produce Animal-Excrement Compost, Recycling for Reuse

The Zoo recycled excrements of large herbivores and produced 116.8 tons of compost for the whole year, for use on shrubs and trees and to improve the soil quality, so as to reduce the volume of chemical fertilizer used necessary.

### 3. Continuing with Trash Separation and Resource Recycling

There were a total of 100 recycling bins and composite plastic recycling bag units throughout the Zoo, and as we strongly encouraged trash separation, a total of 81,244 kg of waste was recycled.

### 4. Promoting No-Smoking Environmental Concept to Create a "Smoke-Free Taipei Zoo"

Long before the Tobacco Hazards Prevention Act came into effect and banned smoking in all public facilities, Taipei Zoo had spared no efforts promoting No Smoking in public areas by asking people to refrain from smoking and gradually reduced our smoking areas year-on-year. The Zoo proactively prohibited smoking entirely beginning January 1, 2009, even before the official promulgation by the Department of Health on July 11<sup>th</sup>. We continue to broadcast announcements at random about our smoking ban measures, produce No Smoking signs and Smoking-Fine notices for posting at suitable locations, and our staff and volunteers also encourage visitors to extinguish their cigarettes on site, so as to create a premium visiting environment and recreational quality.

## Educational Promotion Activities

### 1. Enhancing and Promoting Zoo's Regular Educational Visits

A total of 29,804 fourth grade students from 163 primary schools in Taipei City participated in the educational zoo visits. 240 persons attended the teacher's learning camps organized for five sessions. The Zoo also continued to carry out holiday stationary guides, scheduled keeper's explanation services, and put out bilingual introduction boards.

To deepen the public's understandings for indigenous



動物爸爸 Jason YA! 暢遊園區談保育

育」為號召的教育推廣解說活動，自4月19日起每個月第三個星期天上午，由園長親自領軍，結合動物管理員和解說志工的專業，推出臺灣鄉土動物區的解說導覽活動。

首次邀請臺北啟明學校學童來園，舉辦「我的野生動物麻吉」視障生參觀活動，藉由動物及標本觸摸感受、嗅覺大考驗與解說等體驗活動，充分發揮動物園教學功能，讓視障生親自感受及體驗，激發其對大自然的體認。

## 2. 推展園內外主題教育活動

配合各節日及特定主題，規劃多項教育活動、主題特展及研習系列活動。另繼95、96年夏季辦理「ICE動物園」系列活動之後，97年起結合國際保育年主題，辦理「動物夏夏叫」系列活動。

2008年年底在義大利羅馬召開的「養護野生動物移棲物種公約」締約國大會宣佈2009年為金剛猩猩年，保護大猩猩及其棲息地的全球行動正式拉開序幕。世界動物園和水族館協會也在大猩猩年（2009）開展一系列活動。本年本園參與國際「金剛猩猩保育年」，積極與國外洽談園內金剛猩猩「寶寶」徵婚事宜，以強化該野生個體在全球圈養族群的關鍵角色，並加強與有圈養金剛猩猩動物園間合作，也積極為兩隻雄性金剛猩猩「寶寶」和「黑皮」布置豐富化的展示環境，並辦理金剛猩猩相關保育教育活動及「2009夏夏叫—金剛猩猩好麻吉」系列活動，期以透過動態活動的參與，讓遊客學習動物知識，並建立珍惜大自然、動物保育觀念。



### ●「2009夏夏叫—金剛猩猩好麻吉」

金剛猩猩生活在非洲的熱帶和亞熱帶森林，因人類使用的生活用品許多來自金剛猩猩的棲息地，例如：胡椒、咖啡和藥品等，為了生產這些農業、醫療等用品，棲息地被開墾為農地，造成金剛猩猩的棲息環境減少及零碎化，影響金剛猩猩族群的生存繁衍。

本系列活動以金剛猩猩和靈長類動物為主角，期望透過教育活動讓更多人知道，我們生活中的許多東西都來自於雨林，但是因為人類過度的利用，而造成了如雨林砍伐、石油危機、水資源不足…等，所以當我們在取用自然界所供應的東西時，應選擇對大自然沒有傷害的取用方式，才能避免人類不必要的紛爭以及保有生生不息的自然資源。

臺北市市長郝龍斌為鼓勵民眾到動物園參觀，一起參與金剛保育的教育行動，也特別指示7、8月入園門票優惠配合措施。



animals and to strengthen their awareness for eco-conservation, we launched a new educational activity titled "Jason Ya! Tour the Zoo and Talk about Conservation" effective April 19. On the morning of the third Sunday every month, the zoo director personally leads a guided tour around the Formosan Animal Area armed with professional animal keepers and docent volunteers.

For the first time students from the Taipei School for the Visually Impaired were invited to the Zoo to experience the "My Animal Buddy" activity, an event designed to inspire awareness for nature by inviting them to touch animals and related specimens, have fun doing olfactory exercises and take a hearing tour; so as to maximize the Zoo's capacity as an educational medium.

## 2. Promoting Themed Educational Activities both Inside and Outside of the Zoo

Educational activities, themed exhibits and seminars were designed to collaborate with major holidays and specific themes. In addition to the "ICE ZOO-Love for Taipei Zoo" summer series held in 2006 and 2007, the Zoo launched a series starting 2008 titled "Animal Summer" as a tie-in to the annual international conservation theme.

The Convention on the Conservation of Migratory Species of Wild Animals convened at the end of 2008 in Rome, Italy, declared 2009 as the Year of the Gorilla and unveiled an official global action to protect this species and its habitats. The World Association of Zoos and Aquariums and the Annual Meeting of the Conservation Breeding Specialist Group also began a series of activities in the Year of the Gorilla (2009) as well. The Taipei Zoo too, was an active participant on the international front, and vigorously discussed about finding a mate for our resident

gorilla Bao Bao, so as to strengthen this individual's importance amongst the captive population worldwide. We strengthened our cooperation with other zoos home to captive gorillas, and enriched the exhibit environments for our two males "Bao Bao" and "Happy", organized gorilla related conservation and educational activities as well as the "Animals' Summer 2009 – My Gorilla Buddies" series, all in the hope for visitors to learn more animal facts, and build up their knowledge about cherish nature and animal conservation, through dynamic interactions.

### ● Animal Summer 2009 – My Gorilla Buddies

Gorillas inhabit the tropical and subtropical rainforests in Africa. However due to the many articles human use for daily life such as pepper, coffee, and medicine, originate from their habitats, the production of these agricultural and medicinal items have turned gorilla's natural habitats into farm lands, causing their natural range to diminish and broken up. The survival of the gorilla population is at stake as the result.

This series of activities spotlights on gorillas and primates. We aspire that education could enlighten people that many things we use in life come from the rainforest. Excess human activities have caused deforestation, oil crises and insufficient water resource, etc... so when we take from nature, we must do so in a way that's not harmful to the natural environment, so as to prevent undue havocs from happening and thus sustain an endless supply of natural resources.

Taipei Mayor Hau Lung-bin decreed special admission fees for months July and August as a measure to encourage the public to come to the Zoo and join the educational actions about gorilla conservation.





#### ●兒童「自然探索科學體驗營」

自然觀察與野外科學記錄是從事生態學與生物多樣性研究工作的基本技能。而在自然與生活科技領域中，培養學童具有進行自然的探索與科學記錄的能力，是環境教育重要的一環。

本體驗營中，設計具有知能探索與問題解決核心的活動，以環境中常見的昆蟲與植物為素材，帶領兒童進入自然科學領域。

活動內容有：以昆蟲為基礎，探索與大自然之間的關聯性，介紹自然環境中的生物及與環境間的相互依存關係；利用具有隱蔽性昆蟲，訓練學童找出躲在環境中的昆蟲，及分辨每一種昆蟲的差別；植物採集與標本製作。

體驗營活動於本園園區、新竹(香山茄苳國小)、花蓮(卓溪古風國小、卓樂國小、玉里鎮圖書館、高寮國小)、臺東縣(成功和平國小)辦理，計有384位偏遠地區、原住民、新移民、低收入學童及癌症病童參與。

#### ●「蝴蝶與昆蟲產業探索之旅」兒童研習營

在本研習營中，讓學童透過體驗及觀摩的過程，依照科學方法探討與論證，學習昆蟲產業發展所需之科學技術與原理，藉此喚起興趣、刺激思考，激發其以科學方法解決問題的能力。

課程內容涵蓋了認識蝴蝶及蝴蝶的一生、認識蝴蝶的棲地及植物、如何經營蝴蝶牧場、蝴蝶牧場的功能及保育價值、昆蟲體驗及生態大考驗。

本研習主要針對低收入、偏遠地區、身心障礙等弱勢兒童辦理，讓偏遠地區與弱勢學童也能有機會藉由體驗營培養對於科學的技能及態度。

研習營於南投埔里的蝴蝶牧場舉辦，計146位臺中榮總兒癌基金會病童及原住民兒童參加；又在八卦山昆蟲生態休閒農場舉辦，計62位新移民及低收入學童參加。

#### ●「綠色思考—減碳解說培訓班」

藉由大地反撲—環境危機、生態學、地球系統科學、動物園裡的節能屋、動物園裡的水之旅(雨、中水利用教學觀摩)、從價值澄清角度談節能減碳、臺灣水資源…等課程內容，培訓減碳解說人員，計3梯次120人次參與。

#### ●「綠色思考—減碳解說教案(活動)設計徵件」

藉由本徵件活動徵集優秀具創意的教學活動模組，透過分享增進節能減碳教案發展，及鼓勵教師善用動物園環境教育資源，計投件26件，獲獎者8件。

#### ●Children's Nature Exploration Science Camp

Field observation and scientific note keeping are the basic skills for doing ecological and biodiversity researches, which is why students learning how to do explorations and keep science records are an important part in environmental education.

This camp was an activity designed to core on knowledge exploration and problem-solving solutions, based on insects and plants commonly found in the environment, so as to lead children enter the realm of natural science.

Activity contents included: explore the correlation existing in nature by using insects as a base; introduction to interdependence relationship between the organisms in natural environments and their surroundings; use insects excel in camouflage to train students on how to find insects hiding in the surroundings; know the difference between each type of insects; and how to collect plants and to make specimens.

Camp activities were organized at the Taipei Zoo, Hsinchu City's Jia-Dong Primary School, Hualien's GuFeng Primary School, ZhuoLe Primary School, YuLi Library, and GaoLiao Primary School, as well as Taitung County's ChengGong HoPing Primary School. A total of 384 students either from remote areas, aboriginal and new immigrant backgrounds, low income families, and suffering from cancer, attended the activities.

#### ●“Journey to Explore Butterfly and Insect Industries” Children's Camp

This camp was designed for students to explore, prove theories using scientific methods, and to learn about the scientific technologies and principles required in the development of insect industry, through personal experience and observation. The aim of doing so was to bolster their interest, stimulate their thinking, and to inspire their ability to solve problems using scientific methods

Class contents included meet the butterflies, the life of a butterfly, introduction to butterfly habitats and plants, how to operate a butterfly farm, the function and conservational value of butterfly farms, insect experience, and eco-challenge.

This camp was organized specifically for minority children including those from low income families, remote regions, and suffering from

physical or mental disabilities. The purpose was for those students to have the opportunity to cultivate scientific skills and attitudes through experience.

The camp was held on a butterfly compound in Puli, Nantou. A total of 146 children, both from Childhood Cancer Foundation of Taichung Veterans General Hospital and aboriginal background, attended the camp. Another session was held at the Insect Ecological and Recreational Farm in Bagua Mountain, where 62 new immigrant and low-income students were in attendance.

#### ●Green Thinking -- Carbon Emission Reduction Training Program

Course contents including Earth fighting back – Environment in Crisis, ecology, Earth system science, Taipei Zoo's Energy-Saving House, a Trip to Water (education and observation of rain/used water utilization), talk about energy-saving and carbon reduction from value clarification angle, Taiwan's water resources, etc., were used to train guides about carbon emission reduction. A total 120 attendees took part in three separate training sessions.

#### ●Green Thinking -- Carbon Emission Reduction Lesson Plan (Activity) Design Entries

Educational models amassed through this Design Entries activity were used to advance the progress of Energy Saving Carbon Emission Reduction Project and to encourage teachers to use the Zoo's educational resources on the Zoo's compound wisely. A total of 26 entries were submitted, and 8 were winning works.



## 出版與新聞

1.持續編製動物園雜誌(季刊)、年報及學報等連續性出版品：年內出版了《小尖的綠島世界》、《來了!便知道》、《動物起床號一聲聲入耳》、《野性再現—臺灣保育動物與域外保育行動》等文宣出版品。

### ●《小尖的綠島世界》

本書透過綠島的特有亞種-綠島長尾麝鼩「小尖」在島上探險的歷程與見聞，帶領讀者認識綠島豐富且獨特的動物生態。書中所繪圖畫呈現的每種動物之造型真實與趣味兼顧，藉由繪本風格，使讀者能清楚認識這些獨特的野生動物。

### ●《來了!便知道...》

為圖文並茂的童書繪本，內容全是與動物糞便有關的知識。而俏皮的書名、充滿童趣的插畫、淺白易懂的文字、全本中英對照加註注音、還有精巧的貼紙配合闖關遊戲，使刻板的糞便知識化身為兒童最佳讀本。

### ●《野性再現—

#### 臺灣保育動物與域外保育行動》

彙編了國內長年耕耘於域外保育工作專家學者研究成果，同時亦為國人完整且有系統地介紹了相關的保育成果與保育策略，為域外保育工作史留下完整的記錄。涵括臺灣的保育行動案例有：海洋生態系的珊瑚與鯨豚、溪流生態系的櫻花鉤吻鮭、草原生態系的



環頸雉與梅花鹿、森林生態系的臺灣黑熊與黃裳鳳蝶等，最後以臺北赤蛙的復育敘明域內、域外保育合作的重要性及效益。

2.透過媒體通路向外推廣動物園保育及教育訊息，全年發佈新聞162則。加強網際網路資訊服務，即時更新臺北動物園全球資訊網內容，全年首頁訪客人次達1,898,158人次；配合臺北市政府機關網整合，本園機關網英文網於98年9月23日上線啟用。



新歌發表記者會



以行動做保育團圓圓電子錢—合作金庫動物認養記者會

## Publications and News

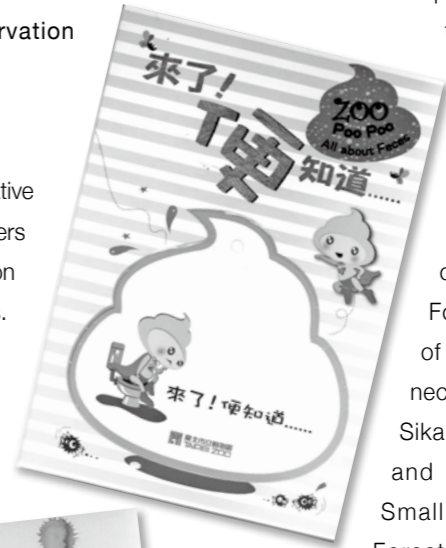
1.Taipei Zoo continued to publish zoo magazines, annual reports and academic journals. We published the following: "Pointy's Green Island", "Zoo Poo Poo-All about Feces", "Wake-Up Call from Taipei Animals - Hear Every Sound", and "Back to the Wild - Taiwan's Protected Animals and Ex-Situ Conservation Actions".

### ●"Pointy's Green Island"

Pointy is a Tada's Shrew, a subspecies native only to Green Island. This book takes readers to see the rich and unique animal ecology on the Green Island through Pointy's adventures. Animal illustrations inside are realistic and witty, making it easy for readers to identify these extraordinary wild animals.

### ●"Zoo Poo Poo-All about Feces"

This children's picture book is all about animal poops. The cute title, interesting illustrations, easy to understand text (Chinese with pinyin and English), stickers together with an entertaining game, transform boring feces knowledge into an ideal reading material for children.



### ●"Back to the Wild - Taiwan's Protected Animals and Ex-Situ Conservation Actions"

This compilation of research works from local conservation specialists dedicated to ex-situ conservation, contains a complete and systematic introduction to conservational successes and related strategies, and a full documentation of ex-situ conservation history. Conservation case studies include: Corals and Cetaceans of the Marine Ecosystem, Formosan Land-locked Salmon of the Stream Ecosystem, Ring-necked Pheasants and Formosan Sika of the Grassland Ecosystem, and Formosan Black Bears and Small Birdwing Butterflies of the Forest Ecosystem. The book also includes the importance and efficacy of in-situ and ex-situ conservation cooperation using the rehabilitation of the Taipei Frog as an example.

2.The Zoo uses the media as a channel for promotion putting forward conservation and education messages. For the year 2009 Taipei Zoo issued 162 press releases, strengthened web services and updated all the web contents in real time. The home page numbered 1,898,158 visitors for the year. Moreover, in conjunction to the network integration of Taipei City Government Organizations, the Zoo's English website came online on September 23, 2009.



臺灣黑熊保育宣導暨小小黑熊命名記者會





■ 臺北市立動物園96~98年度新聞發佈一覽表

單位：則

年度	新聞發佈數	媒體刊登數
96年	130	1,345
97年	124	2,323
98年	162	2,333

■ 98年度圖書館館藏數量統計表

項次	中文圖書	西文圖書	日文圖書	總計
數量(冊)	7,647	4,729	526	12,902

■ 98年度圖書館館藏借閱人數與冊數統計表

借閱人數	借閱冊數
1,117	3,443

創新教育行銷

保育行動的落實與推動有賴多方位的行銷與保育教育的普及，為能有效擴大保育宣導介面，提供廣大民眾保育教育服務，利用聲音媒介的特性，本園推出從策劃到後製都由動物園同仁一手包辦的「臺北動物起床號」廣播節目。

節目內容以「動物鮮事」與「保育行動」為主，自98年2月7日起，每週六上午8點在臺北廣播電台FM93.1播出（收音機直接收聽範圍：臺北市、臺北縣、桃園市，亦可以網路線上收聽）。

節目以動物園工作人員及保育專家學者之間的對話，遠比平面媒體更能生動地介紹動物的特性與生態，也更能讓大家了解動物園正努力參與生物多樣性保育與教育工作；經由野生動物的圈養管理經驗的介紹，讓大家知道動物之習性與生活需求，亦進一步了解動物園在野生動物保育與教育所扮演的角色。

另外本園於98年12月將節目內容製成有聲書《動物起床號一聲聲入耳》，彈性擴展服務時段與對象，強化教育行銷效能。



■ Numbers of Press Releases for Years 2007~2009

Unit: piece of news

Year	Number of Press Releases	Number of Media Reports
2007	130	1,345
2008	124	2,323
2009	162	2,333

■ 2009 Library Statistics

Item	Chinese Books	Western Books	Japanese Books	Total
Numbers	7,647	4,729	526	12,902

■ 2009 Numbers of Borrowing Statistics of Library Collection

Number of Borrowers	Number of Borrowed Books
1,117	3,443

Innovative Educational Marketing

The implementation of conservation actions required diverse marketing and accessible education, ones that not only effectively expand the reach of conservation, also provide the public with knowledge and services pertinent to this subject. The radio program “Wake-Up Call from “Taipei Animals”, a show produced singlehandedly by the Zoo staff from strategy to post-production, takes advantage of the features and attributes of audio media to reach the listeners.



The program, coring on “animal anecdotes” and “conservation actions”, airs every Saturday morning at 8 AM on Taipei radio station FM93.1 beginning February 7, 2009. The broadcasting range covers Taipei City, Taipei County and Taoyuan City. One may also tune-in the program online as well.

This program uses animated conversations between zoo workers and conservation specialists, to introduce different animal characteristics and ways of life, in depths print media could never achieve. The contents also help the listeners to find out about the diverse conservation and educational tasks the Zoo is currently involved in. Through topics such as wildlife in captivity and animal care the public can learn about animal behaviors and their living needs, so as to further their impressions about the role Taipei Zoo plays on wildlife conservation and education.

The Zoo turned the above program contents into audiobook in December 2009. “Wake-Up Call from Taipei Animals – Hear Every Sound” offers flexible services to anyone who wants to listen, so as to strengthen the efficacy of educational marketing.