動物保育與研究

一、動物經營管理

1.動物飼養繁殖成果

全年飼養展示動物約 443 種， 3,159 隻（不含昆蟲）如附表一；繁殖動物37種113隻；為更新動物血緣與增加教育展示功能，引進鳥類 19 隻、哺乳類 69 隻、爬蟲 85 隻等動物。

2.動物醫療保健及防疫

(1)除日常突發性之外傷及內科疾病治療外，先後依計畫完成657隻動物的健康檢查、結核菌檢測、晶片註記及鳥類疫苗、牛科、鹿科、熊科、河馬之口蹄疫苗預防注射，並完成 1,335 隻次血液檢驗，共 2 萬 8,618 項；糞尿寄生蟲篩檢 1,626 次， 3,252 項；X 光檢驗 907 隻，共 2,838 張。

(2)除處理沒入保育動物、國內民眾贈入、園際間交換的動物檢疫工作外，協助地方政府照顧收容穿山甲、遊隼、臺灣獼猴及持續照養丹頂鶴。

(3)因禽流感疫情危機，年內持續暫停園內所有鳥禽移動，以及對外收受救傷鳥隻。

(4)為防範野鳥傳播禽流感病毒，鳥園水鳥池亦於年底進行圍網工程，預計 95 年 1 月完成。

3.營建與修繕

(1)動物隔離檢疫舍興建工程於93年10月開工，工程積極施作中，預定 95 年 4 月興建完成，將使動物防疫系統更為專業。

(2)鳥園重點改善工程，加強風災後鳥籠設施安全與生態展示效果，經變更設計與復工後，於 12 月完工，預計 95 年 7 月開幕。

(3)另河馬展示場於 12 月 27 日完成更新規劃，預計於 95 年發包施工，更新後將改善河馬展示品質。

(4)其他尚有保育區「中大型野生動物收容空間改善工程」於 10 月完工，亞洲象舍室內改善工程於 12 月 2 日竣工。

4.收容保育類野生動物

動物園野生動物收容中心專責收容保育主管機關查獲之「走私與違法獵捕、販售與展示」的保育類野生動物。全年共計支援查緝 16 次，協助鑑定 33 種 523 隻野生動物，其中收容查扣動物 6 種 296 隻；另協助收容臺北市等各縣市政府委託收容之動物累計達 33 種126隻。目前持續照養歷年所委託收容哺乳類及兩爬類動物，共計 106 種 1,210 隻。並以收容動物提供各級縣市政府與學校團體共 1,389 人參觀， 62 人次解說服務。

5.與學術界建教合作及推廣教育

於動物診療技術方面續與臺大、中興獸醫系保持密切合作關係，對園內死亡動物病因，建立完整檔案，供研究及教學用。計提供79次共194人次臺大學生進行病理實習；暑期實習生計 21 人；辦理野生動物疾病研討會 1 次、比較病理研討會 1 場，提昇國內相關單位保育救傷技術。

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3.1 Operation Management

3.1.1 Animal Breeding Achievement

In 2005, we have displayed 3,159 individuals, 443 species of animals(insects not included), bred 113 individuals of 37 species of animals. For genetic diversification purpose and educational display functions, we also introduced 19 individuals of birds, 69 individuals of mammals and 85 individuals of reptiles.

3.1.2 Animal Medical Treatment and Epidemic Control

(1)In addition to the treatment of accidental injury and illness, regular health examination, tuberculin test, and identification microchip registration for 657 individuals of different species of animals have been preformed in Taipei Zoo. The vaccination for birds has been completed, also the vaccination against for foot-and-mouth disease for Bovidae, Cervidae, Ursidae and hippopotamus. 1335 cases/28618 items of blood test, 1626 cases/3252 items of feces and urine test for parasites, 907 cases/2838 items of x-ray examinations have been performed.

(2)We provide quarantine service for animals obtained from confiscation, public bestowment, and international exchange. Besides, we also assist local governments with institutionalizing pangolins, peregrine falcons and Taiwanese macaque. Further more, we have been keeping on the performing of medical care for the Red-crowned Crane.

(3)Due to the epidemic situation of Avian Influenza, all relocation of birds within Taipei Zoo, as well as the treating and rescuing of wild birds from outside of the zoo are prohibited.

(4)In order to prevent the spreading of Avian Influenza from wild birds, the construction of putting fences around the ponds in the Bird World will be completed in January, 2006.

3.1.3 Construction and Renovation

(1)The construction of Animal Quarantine House begun in October 2005. The finish time has been decided to be April 2007. The new Quarantine House will provide us a more professional quarantine system.

(2)Priority renovation of Bird World: The safety of bird cages which were damaged after the typhoon and the ecology display result have been emphasized. After modifying the original design and the renovation of construction, the Bird World will be complete in December. It will be open in July, 2006.

(3)The renovation plan of the display area for Hippopotamus will be completed on December 27th. The construction will begin in year 2007. The exhibition quality of Hippopotamus will be improved after the renovation.

(4)The renovation of the shelters for large and middle-sized wild animals will be completed in October. The renovation of the indoor field for Asian Elephant will be completed on December 2nd.

3.1.4. Sanctuary for Endangered Wild Animals

The Rescue Centre in Taipei Zoo is designed to take care of the animals which are sequestrated by government organisations from illegal smuggling, hunting, selling, or displaying. We supported the investigation 16 times; helped identifying 523 individuals of wild animals out of 33 species. We helped institutionalizing 296 individuals of them. Besides, 126 individuals of 33 species of wild animals, which were entrusted by Taipei County and other cities, were also kept by the Rescue Centre. Currently,

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6.動物行為豐富化專案研發

(1)91 年成立「動物行為小組」，目前已完成或正在進行的有：大象、臺灣獼猴、松鼠猴、馬來猴、豬尾獼猴、狒狒、紅猴、藪貓、白頸狐猴、穿山甲、灰狼、棕熊等行為研究與環境豐富化。

(2)引進「漂流木」豐富展示場

持續善用河川漂流木資源，豐富並美化動物展示場，加強展示效果，同時利用漂流木豐富動物行為設施，提昇動物福利。年度內以漂流木佈置之展示場，除非洲區狐猴,紅猴,象龜,金剛猩猩，黑猩猩等外，主要以爬蟲館、昆蟲館、鳥園及收容中心等小型展示櫥窗為重點。

(3)動物訓練

90年獸醫室引進國外先進動物園的動物飼養管理及醫療防治模式，積極著手動物訓練工作的籌備與推展。92年起，開始討論動物訓練的發展，並從93年起設定推動動物訓練的目標，從 92 年約 24% 管理員參與，至 94 年已有44%的人員參與。進行訓練的動物則從 92 年的 10 種 29 隻增加至 94 年 30 種 115 隻，顯著提昇動物管理品質，包括：減少動物收放欄舍的人力與時間，降低動物管理人員風險，增加近距離動物觀察機會，較易獲得動物基本資料，增加健檢頻度與深度，減少動物風險及降低動物醫療成本等展現。

7.舉辦專業研討會及員工教育訓練

(1)9 、 10月協助臺灣動物園暨水族館協會與行政院農業委員會於本園舉辦「昆蟲飼養展示」研習會與「推動動物保護計畫」研習講座。

(2)配合爬蟲館「蜥事龜寶」-臺灣蜥蜴及淡水龜特展，於12月 18 日在演講廳舉辦「兩棲爬蟲飼養暨醫療管理研討會」共有11場次兩爬專業演講，傳授兩爬飼養管理的正確知識與飼養繁殖經驗交流，共同提升國內兩棲爬蟲飼養能力。

(3)員工教育訓練：

持續進行員工專業教育訓練，舉辦讀書報告等提升管理員榮譽感與動物管理技能。全年辦理 19 場次專題報告，計有 29 位動物管理員提出，與同仁分享。

(4)管理員現場即時解說服務

為提升現場工作同仁專業，推動動物保育教育資訊及提供遊客學習需求，推出無尾熊及企鵝等動物保母定時餵食解說活動。

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106 species and total of 1210 individuals of wild animals are kept in the Rescue Centre. It has been opened to some government and school organizations. 1389 people have visited the Rescue Centre until now with 62 narrators.

3.1.5. Cooperation with Academia and Promotion of Education

We keep close cooperative relationship with Department of Veterinary Medicine of NTU and National Chung Hsin Univeristy to encourage the exchange of medical treatment skills and insights. Records of each death and its causes are filed for the purpose of furthering research or teaching resources. We have provided pathology internship for 194 person-time of students from NTU for 79 times. Other achievements include 21 internships in summer, the Wildlife Disease Conference and the Comparing Pathology Conference.

3.1.6. Animal Behavior Enrichment Project Development

(1)“Animal behavioural team” has been established. Completed or on going animal behaviour and environment-enrichment related researches are: elephants, Formosan macaques, squirrel monkeys, crab-eating macaques, pig-tail macaques, baboons, red monkeys, servals, white-necked lemurs, pangolins, grey wolves, and brown bears.

(2)Environmental-enrichment by using driftwoods

Keep using the driftwoods for enriching the environment in the display fields. This can enhance the exhibition effects. We can also increase the animal welfare by using the driftwoods. Besides the lemur in the African Area, red monkeys, tortoises, gorilla and chimpanzees, most driftwood were put in the small-sized display windows in Amphibian and Reptile House, Insectarium, Bird World and the Rescue Centre.

(3)Animal Training

The animal hospital in Taipei Zoo introduced some new applications of animal feeding and medical treatments in 2004. Since 2005, animal hospital has started promoting the animal training. 24% of the keeper participated in the project in 2004. The participating rate has been increased to 44% by 2006. The number of the animals in training has been increased from 29 out of 10 species to 115 out of 30 species during the period between year 2004 to year 2006. Animal training has been improving the quality of animal management; for example: lower the cost of manpower and time, reduce the life risk for keepers. We can also observe animals in short distance; by doing this, it’s easier to obtain some basic information about animals. Besides, we can increase the frequency of heath care with more specific exams. It can lower the risk for animals and reduce the cost at the same time.

3.1.7. Professional Conferences and Staff Training

(1)Assisting Taiwan Zoo and Aquarium Association and Council of Agriculture in Executive Yuan with the the Insect Breeding and Display Seminar and Animal Protection Project Promotion Conference in September and October.

(2)Operate in coordination with the Special exhibition of Taiwan native lizards and freshwater turtles. Taipei Zoo will host Breeding and Medical Management of Amphibians and Reptiles Conference in the speech hall on December 18th. There will be 11 professional speeches about amphibians and reptiles. The topics of the speech will be related to the correct information about the breeding and managing of amphibians and reptiles and

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8.動物引進及交換

為更新動物血緣及豐富教育展示，陸續自國外引進動物或與國內相關單位進行動物交換成果有：

●完成引進及交換之個案：

(1)4月完成自日本引進環尾狐猴雌猴3隻；7月自美國引進紅頸袋鼠 2 對；8 月引進山獅 1 對。

(2)5 月贈送海軍總部綠頭鴨 3 隻

(3)12 月日本多摩動物園贈送小貓熊 1 對。

(4)9 月贈送莫斯科動物園菊池氏龜殼花 3 條及紅竹蛇1條；11月贈送莫斯科動物園黑手長臂猿雌猿 1 隻。

(5)6月以東非條紋羚與新竹動物園四不像交換；6月以黃斑巨蜥與頑皮動物世界交換紅頸袋鼠動物。另 8 月贈送新竹動物園長鬃山羊 1 對。

(6)6月本園伊蘭羚羊、直角羚羊及大灰袋鼠交換兆豐農場小黃牛及設備一批

(7)12 月贈送高雄壽山動物園紅額鬚猴雌猴 1 隻、雄性大灰袋鼠 2 隻、黑天鵝 2 隻及蘇卡達象龜 5 隻。

●進行中動物交換個案：

國內有六福村松鼠猴及林曳交換等4案進行中，國外有印尼 Safari 動物園與本園科摩多龍及黑猩猩交換等 13 案進行中。

《附表一》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	隻	種	隻	種	隻	種	隻	種	隻	種	隻
年初	128	1047	155	1276	109	572	28	191	17	99	437	3185
年底	129	1012	158	1239	127	604	28	168	17	95	459	3118

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experience exchange. This will be helpful to increasing the breeding ability in Taiwan.

(3)Staff Training:

We continually provide on-the-spot guidance service and staff training courses. We also hold seminars for staff. They can share their achievements and skills of animal management with each other. We hold 19 presentations during the year; and 29 keepers participated in the presentation. They provided their personal experiences and shared with their colleagues.

(4)Directly narration from the keepers

In order to raise the professional level of the animal keepers who work in the field and to promote animal conservation education information, also provide visitors some learning opportunities, we have provided visitors of the zoo with the keeper's narrations during feeding time in Koala House and Penguin House.

3.1.8.Introduction and Exchange of Animals

For genetic diversification and educational enrichment purposes, we have been introduced new animals from overseas or exchanged animals with some domestic organizations.

The achievements are:

● **Complete of introduction and exchange**

(1)Introduced 3 female ring-tailed lemurs from Japan in April. Introduced 2 pairs of red-necked wallabys from the United States. Introduced a pair of mountain lions.

(2)Present the Headquarters of the Navy with 3 mallards as gift.

(3)Received one pair of Lesser Panda from Japan Tama Zoo in December.

(4)Present Moscow Zoo with 3 Kikuchi's turtle-designed snakes and one red bamboo snake in June and one female agile gibbon.

(5)Exchange Pere David's deer for Nyala with Hsin Chu Zoo in June; Exchange red-necked wallabys for Yellow-spotted monitor with Wan-Pi World in June. Present Hsin Chu Zoo with a pair of Formosan serows in August.

(6)Exchange Cape Eland, Arabian Oryx and Eastern Gray Kangaroo for little ox and a set of equipment with Chao Feng Ranch & Resort in June.

(7)Present Kaohsiung Shou Shan Zoo with one female De Brazzzas Monkey , 2 male Eastern Gray Kangaroos, 2 Black Swans and 5 African Spurred Tortoises in December.

● **Animal Exchange Case in Progress**

Domestic:4 cases in progress which are exchanges of squirrel monkeys for Lynx with Leofoo Village Theme Park.

Overseas:13 cases in progress which are exchanges of Komodo Dragon for chimpanzee with Safari Zoo in Indonesia.

(Figure 1.) Animal Breeding Achievement

taxon / time	Mammals		Birds		Reptiles		Amphibians		Fish		Total	
	Species	Number	Species	Number	Species	Number	Species	Number	Species	Number	Species	Number
Begin of year	128	1047	155	1276	109	572	28	191	17	99	437	3185
End of year	129	1012	158	1239	127	604	28	168	17	95	459	3118

動物保育與研究

二、動物認養計畫

92年起正式推動動物認養計畫，提供公衆接近野生動物、獲取保育資訊、支持保育工作的機會，並結合民間力量致力動物保育。經過二年的經營與推廣，得到來自社會大衆更多的支持。

1.個人認養績效

個人認養累計達 4,244 人(動物褓母 1,278 人、動物寶貝 29 人)新增 1,307 人。為推廣野生動物保育的成果，傳遞本園最新活動訊息，以及經營管理策略、動物飼育經驗與動物園教育，每週發行動物園電子報、每季提供動物園雜誌，建構動物知識平臺，與動物認養人互動，並於民俗節日推出動物認養活動6次。此外，全年辦理「電影首映」、「動物園夜未眠」、「親親關渡」3 場次認養人專屬活動，感謝認養人對野生動物保育研究的支持，透過活動，分享動物保育歷程與成果。

2.團體認養績效

企業認養計 14 個單位支持動物認養，透過異業結合，獨創不同的保育行銷。萬泰銀行與本園共同發行首張動物認同卡，卡友持卡消費即提撥 0.525% 作為動物認養保育金外，並認養 18 種動物；臺灣大哥大認養建置兒童動物園區及昆蟲館的語音導覽系統；與中華電信認養合作河馬部落格；龍祥影業公司有關泰

《動物認養活動》

日　　期	活　　動　　名　　稱	合　辦　單　位
1/1	動物認養活動—「統一大會獅」	統一獅棒球隊
1/16 、 23	「大雨大雨一直下電影首映」認養人活動	
2/9 - 2/13	動物認養推廣活動 — 新春惜福福袋大放送	
2/14	動物認養推廣活動 — 情人節福袋好禮相送	
5/14	動物認養活動 —「蟲見光明」臺哥大家庭日	臺灣大哥大
6/4 、 5 、 11	動物認養推廣活動—平瓶安桉慶端午	
7/9	「動物園夜未眠」認養人活動	環球影業
8/6 - 7	動物認養推廣活動—愛的大聲公	
8/20 - 21	動物認養活動—「蝶蝶不休 舞動夏日」	利盟公司
9/17 、 24	「親親關渡」認養人活動	關渡自然公園管理處
9/17 - 18	動物認養推廣活動—阿砂力（To）中秋活動	
9/21 、 24	動物認養活動—「星星少年」記者會、電影特映會	龍祥影業公司
12/3	動物認養推廣活動—聖誕響叮噹．一鹿平安一路發	
12/4	動物認養活動—臺灣 LOTTE 無尾熊認養嘉年華會	臺灣樂天公司
12/10 - 11	動物認養活動—竹碳黑樂絲 Phyllotex 嘉年華會	紡織產業綜合研究所

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3.2 Animal adoption plan

The Animal Adoption Plan was introduced to the public in 2003. Taipei Zoo devotes to animal conservation by providing more people the chance to approach animals, gain more information about conservation, support working opportunities in conservation areas, and harness the public's collective influence. After two years of hard work, we have gained an increasing amount of support from the public.

3.2.1 Personal Adoption Achievement

There are 4,244 adoption sponsors in all including 1, 307 new participants. In order to promote the achievements of animal conservation and to provide the latest information, we release a weekly online newspaper and a periodical magazine. The contents not only include the event information but also management strategies of Taipei Zoo as well as some experience with animals and zoo education. By providing the public with such information, we expect them to have a better understanding of animals. We also host three annual events specially designed for the adoption sponsors. We devote the events to sharing about the history of animal conservation and our achievements with the adoption sponsors.

3.2.2 Commercial Adoption Achievement

There are 14 commercial adoption sponsrs in total. Working with businesses from different areas is one of the marketing strategies to promoting wildlife conservation. For example, the Happy Zoo Card is issued

Table of Animal Adoption Events

Date	Activities	Co-host
1/1	Uni-president Lion Baseball Team Adoption Event	Uni-president Lion Baseball Team
1/16 . 23	Animal Adopter Activity -「Raining Cats and Frogs Premiere」	
2/9-2/13	Animal Adoption Event - Chinese New Year Festival	
2/14	Animal Adoption Event - Valentines day Festival	
5/14	Animal Adoption Event -「Taiwan Mobile Company Family Day」	Taiwan Mobile Company
6/4 . 5 . 11	Animal Adoption Event - Dragon Boat Festival	
7/9	AnimalAdopter Activity -「Sleepless in Taipei Zoo」	Universal Studio
8/6-7	Animal Adoption Event - Speak out Love loudly	
8/20-21	Animal Adoption Event -「Butterfly Dancing Summe」	Lexmark Taiwan
9/17 、 24	AnimalAdopter Activity -「Guandu Adopters Festival」	
9/17-18	Animal Adoption Event - Mid-Autumn Festival	
9/21 、 24	Animal Adoption Event -「Shining Boy & Little Randy」 Press Conference 、 Premiere	Long Shong Compay
12/3	Animal Adoption Event - Christmas Event	
12/4	Animal Adoption Event -「Lotte Koala Adoption Festival」	Lotte Group
12/10-11	Animal Adoption Event - Phyllotex Festival	TTRI Taiwan Textile Research Institute - Testing Center

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國馴獸師的故事「星星少年」影片，讓遊客有了最『象』樣的教師節；SONY公司於企鵝館提供DVD攝影機免費借用服務，遊客透過鏡頭觀察企鵝生態，讓動物保育教育推廣輕鬆動起來；此外統一獅棒球隊認養獅子、德合科技公司認養長鬃山羊、臺灣樂天公司認養無尾熊、利盟宏碁認養大琉璃鳳蝶活動，均配合舉辦相關保育教育宣導活動；和泰興業公司贊助空調設備乙批，以作為穿山甲恆溫環境維持的使用！

3.認養新風貌

動物認養活動推出2年，為更符合社會大眾期望，修訂動物認養計畫，推出新的個人認養方式—「動物褓母」及「動物寶貝」，其中「動物寶貝」限12歲以下小朋友，希望保育教育理念往下紮根。此外，取消聯票金卡贈送之搭配，認養人只要憑認養紀念卡，一年內即可憑卡不限次數免費入園，並享有園內購物9折及參加認養人專屬活動等回饋。

4.年度認養計畫經費運用成果如下：

計畫項目	成　　果
動物福利	改善本園臺灣黑熊等15種物種之圈養環境設施
保育研究	桃園、三芝臺北赤蛙棲地保育
	亞洲象—泰國大象保育中心合作計畫
	綠島梅花鹿、臺灣狐蝠保育計畫
	關渡自然公園淡水埤塘濕地營造計畫
環境教育	舉辦本土兩棲爬蟲研討會；參與泰國大象管理與醫療研習等8項觀摩與研習

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by Taipei Zoo in conjunction with Cosmos Bank, and 0.523% of the amount consumed by card holders is transferred into a fund for animal conservation work. At the same time, consumers become adoption sponsors of 18 kinds of animals. To diversify zoo media, Taiwan Mobile Company has set up audio guide systems in the Children's Zoo and the Insectarium, a great improvement in the navigation system of Taipei Zoo. Additionally, we also work with Chungwa Telecom on a Hippopotamus Blog, and a movie produced by the Long Shong Company called "Shining Boy & Little Randy" deals with the elephant trainers in Thailand, which helps deliver an important lesson to visitors of Taipei Zoo. Finally, Sony has kindly provided Penguin House DVD video cameras. Now visitors are able to observe penguins through the cameras, facilitating conservation education promotion.

In addition to the above efforts by businesses, Uni-President Lion Baseball Team has adopted lions, Techcom Amusement Carrier has adopted Formosan Serows, Lotte Group has adopted koalas and Lexmark Acer has adopted Paris Peacock. All these companies also collaborate with Taipei Zoo on the promotion of conservation events. Finally, the air conditioner equipment sponsored by Ho Tai Development Co., Ltd has been used to maintain a constant temperature in the pangolin exhibition area.

3.2.3 The New Face of the Animal Adoption Plan

It has been two years since we introduced the Animal Adoption Plan to the public. It is very important for us to meet the supporters' expectations. As a result, we have modified the Animal Adoption Plan to include adoption options for adult and kid. The card for kid is designed for children under 12, in the hopes of introducing conservation ideas to a younger demographic. For convenience, the adoption sponsors do not need United Ticket Gold Card anymore and can simply use the adoption card, valid for a year, for unlimited visits to the zoo. All card holders are invited to adoption sponsor activities and receive 10% off in all zoo shops.

3.2.4 Achievements

Fields	Results
Animal Welfare	Improved habitat equipment for 15 kinds of animals including the Formosan black bear
Conservation and Research	Maintenance of the Taipei Grass Frog habitats in Taoyuan and Sanchih
	Collaboration plan with Thai Elephant Conservation Centre
	Conservation plans for the Formosan Sika Deer and Formosan Flying Fox in Greenland
	Construction plan for wetlands in Guandu Nature Park
Environmental Education	Hosted the "Native Amphibian & Reptile Conference"; participated in 8 seminars: Thailand Elephant Workshop,Breeding Management and Health Care...etc.

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臺灣黑熊環境豐富化計畫

根據英國動物行為學家Sherperdson的定義：「環境豐富化乃操作圈養環境中的一些關鍵元素，藉以改善圈養動物的行動，使牠們更類似野外的正常同類。」環境中的關鍵元素能迎合動物行為的需求，即可提升圈養動物的生活品質。

臺灣黑熊屬雜食性，透過靈敏的嗅覺，表現爬樹及游泳的本領，擴大採食的範圍。在野外，除了春夏採食漿果、植物嫩芽，秋冬採食高熱量的殼斗科果實，有時也會捕捉一些野味，補充蛋白質來源。

經由對其自然習性的瞭解，我們在臺灣區展示場的水池中放了數條吳郭魚，觀察發現在本園成長的公獸「小熊」會趕魚到角落處，揮動熊掌，大力拍擊水面，叼起震昏的魚兒，大啖美食。管理員將食物掛在展場中的榕樹上，引誘牠取食，「小熊」也會墊腳站立於漂流木，手爪撥動樹鬚，取食榕樹上的食物；搆不到藏在高處的食物，就爬到樹上，大快朵頤，還不忘在枝葉中搜尋玩樂。此外，「小熊」也會捕捉野味，定時出現在展場邊緣覓食的黃頭鷺和夜鷺，偶爾不留神，即遭熊掌毒手。

殼斗科果實例如栗子，外覆硬皮，黑熊咬開硬殼後，只吃內部種仁；對於本園提供的蔬果，則是嘴和爪並用，剝開橘子皮、柚子皮、玉米外皮，甚至剝開椰子殼，可以想像黑熊的力量有多大。

在每日的餵食中，管理員也會刻意的將食物藏匿在展示場四處，讓黑熊發揮嗅覺的功力，在展示場中搜尋、翻找，一如野外覓食行為。

由於臺灣黑熊的展場於開園時設計建置，為符合生態展示及動物福利的時代潮流，本園已著手進行展場全面的綠化改善，並融入環境豐富化的理念，利用臺灣原生植物，營造季節時令變化，呈現自然之美，也提供符合野生環境的果實採食，展現環境教育的新境界。

臺北赤蛙保育計畫

臺北赤蛙(*Rana taipeihensis*)為一小型赤蛙科蛙類，體長約為2.5至3.5公分，棲息於平地農田或草澤等淡水溼地。近年來溼地大量消失，水源受到污染，使得本種數量急遽下降，僅剩下部份零星地點尚有少量族群；本園近年來推動臺北赤蛙計畫以保育與復育臺北赤蛙棲息地為主，先進行臺北赤蛙棲地需求調查，對現有出現臺北赤蛙族群的棲地進行監測，並與當地保育團體或地主交流，進行棲地保育與改善工作，同時將評估其他復育地點，考慮進行臺北赤蛙的移地保育工作。

● 94 年度工作重點：

1.三芝與楊梅地區臺北赤蛙數量變化

今年持續追蹤三芝與楊梅地區的臺北赤蛙族群數量，讓本園能更有效掌握其生活週期與族群分布，如此累積多年資料後，將提供本園對臺北赤蛙進行更有效率的保育措施。

2.三芝臺北赤蛙棲地改善

2002 年與梯田地主積極協調並獲允諾，停止使用化學藥劑及殺蟲劑，改用有機的藥品來種植蓮花；2005 年 5 月進行梯

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Environment Enrichment Plan for the Formosan Black Bear

Sherperdson defines environmental enrichment as "the manipulation of key elements of the captive environment to achieve changes in behaviour that more closely resemble that of a healthy wild conspecific." Key factors in environment can satisfy the requirements to natural animal behaviour and improve the living quality of captive animals as well.

Formosan Black Bears are omnivorous animals. In the wild, they feed on berries and browse during spring and summer. During autumn and winter however, their food sources become high calorie Fagaceae fruits and small prey animals. Due to their eclectic diet, Formosan Black Bears have an excellent olfactory sense: they know where they can find food, even if it means swimming and climbing to get it.

Tilapia fish was placed in the Formosan Animal Area pool and Taipei Zoo observed the bears' reactions. Observations showed that the bears would first chase the fish to a corner and then stun them by flopping on the water's surface. The zoo also hung some food on trees to attract the bears' attention. Initially, some of the bears stood on driftwood, grabbed the branches, and shook the food into their mouths. Despite their strength however, they still could not reach the food hidden in higher places until they decided to climb the trees. Encouragingly, the bears did not forget to play after eating. Observations also indicated that the bears are still capable of catching their own prey: cattle egrets and black-crowned night herons were caught by the bears while resting in the display area.

All Fagaceae fruits, such as chestnuts, have hard and solid husks. Formosan Black Bears usually bite the husks to open the nuts and then eat the meat inside. They use both teeth and claws to peel oranges, pommelos, corn, and coconuts.

Conservation Plan of the Taipei Grass Frog

The Taipei Grass Frog (*Rana taipeihensis*) is a small-sized Ranidae species of an average body length of 2.5 cm to 3.5 cm. It was once distributed throughout low-altitude wetlands like farmlands and grassy marshes; however, the wetlands have been disappearing rapidly in recent years and water pollution has become increasingly severe. As a result, the Taipei Grass Frog has become an endangered species. In order to prevent this problem from worsening, we have been working on the Taipei Grass Frog Plan for several years.

The primary purpose of the Taipei Grass Frog Plan is the maintenance and restoration of habitat. We investigated habitat characteristics and ecological requirements, and afterwards began monitoring work in the area. We also negotiated with local conservation organizations or landholders. In addition to habitat maintenance, we evaluated many sites for possible population transfer

1.Population Change of the Taipei Grass Frog in SanChih and YangMei Areas

We will continue tracking the populations of the Taipei Grass Frog in SanChih and YangMei this year. In doing so, we obtain more detailed information about the life cycle and distribution of Taipei Grass Frogs. The information obtained in these few years could be helpful for making some more efficient adjustments to our plan.

2.The Restoration of the Habitats in SanChih.

In 2002, we contacted the landlords of terraced fields and advised them to use organic fertilizer instead of chemicals and insecticide.. In May 2005 we checked in with the landlords to find that our suggestions made the water lily

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田棲地的改善工程。將下方四個梯田濬深，改種植本土水生植物，營造與原本蓮花田不同的棲地環境，增加棲地多樣性，期望提高臺北赤蛙的族群數量。

除了繼續維護改善梯田棲地外，也將梯田做適度隔離，減少外來人士所帶來的干擾。往後與媒體合作推廣保育的同時，將灌輸民眾正確的觀察及對待野生動物的方式，避免棲地或物種受到更大的破壞。

3.溼地推廣教育

本園於2004年出版關於溼地保育的書籍「溼地　詩地」，並獲行政院優良圖書獎，內容以本園溼地生態園區為主軸，同時介紹多種溼地物種及濕地保育觀念。今年印製第三版600本，以贈送教學人員或學校為主，作為推廣溼地教育的優良書面教材。

亞洲象—泰國大象保育中心合作計畫

亞洲象之域內保育工作於東南亞地區稍具成效規模者首推泰國，亞洲象在泰國境內與人類共處，協助人類爭戰、伐木已有數千年歷史。在 20 世紀初期，泰國圈養的大象約有10萬頭， 1989年泰國政府禁止砍伐林木， 70% 的工作象失業沒有工作。過去的 20 年，圈養大象頭數每年以 3.5% 的速度快速銳減，目前圈養的大象約有 3500-4000 頭左右。另外由於山林的開發與農事的擴張，野生大象族群亦受到相當的威脅，即便在國家公園大象保護區的周圍亦經常有野生大象入侵農作的衝突發生。

泰國大象保育中心為泰國半官方的組織，主要工作為收容、照顧泰國境內無主、失業的大象；部分大象予以訓練為表演之用，發展遊憩協助籌募財源；部分年老受傷大象給予安養就醫；部分大象進行野放研究。

本園目前有2隻24歲亞洲母象，為提升飼養管理技術、進行人工繁殖的可行性評估。本年度亞洲象保育計畫與泰國大象保育中心進行交流合作，並提供本園募集之亞洲象保育基金，協助亞洲象之域內保育工作。

經由與泰國大象保育中心進行大象飼養管理、醫療技術的學術交流活動，提供泰國大象保育中心研究經費，進行亞洲象人工採精、精液分析及人工授精研究，以利本園亞洲象人工繁殖計畫之評估。另計畫與泰國大象保育中心合作，推動及規劃辦理以大象保育為主軸的生態旅遊，藉由組團參訪遊憩的方式，前往大象的棲習地直接推展大象保育教育活動，藉以傳播保育生態、歷史及民俗文化等訊息，並認識人類活動對敏感生態環境的影響。並由親近動物，認識動物生態的過程中，讓大家得到感動，並激發大家關懷我們的自然生態，學習對生命的尊重，共同珍惜我們的自然資源，期以增加大象保育成效。

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paddy fields a different habitat and also increased habitat diversity. After all these changes, we expect to see a population increase of Taipei Grass Frogs in this area.

Other than the maintenance of the terraced field habitat, potential disturbances from visitors were also prohibited. If we have the opportunity to work with the press in the future, we will present the correct methods to observing and treating wild animals to the public.

3.Wetland Promotion Education

“溼地 詩地”, published by Taipei Zoo in 2004, is a book about wetland conservation and ecology, and introduces our Wetland Ecological Park. 600 copies of the third edition was published this year. We have presented many schools and researchers with this book, as we believe that it could be a good tool for promoting wetland conser

Asian Elephant Conversation Plan with Thai Elephant Conservation Center

Thailand has been working on in-situ conservation of Asian Elephants for a long period of timd and they have made remarkable achievements. In ancient Thailand, elephants worked with humans in the military and lumber industries. Elephants have played an important role in the history in Thailand for thousands of years. At the beginning of the 20th century, the population of captive Asian Elephants was 1,000,000. In 1989, the Thai government began to inhibit the lumber industry; as a result, 70% of working elephants lost their jobs. During the past 20 years, the population of captive elephants has decreased by 3.5% of the population every year. The total number of captive elephants is around 3500-4000. Furthermore, wild elephants are threatened by the development of forests and expansion of agriculture. Incidents of wild elephants breaking into crops happen often, even around national parks’ conservation areas.

Thai Elephant Conservation Center is a semi-official organization located in Chiang Mai. It aims to provide medical care and shelter for abandoned elephants in Thailand. Some of the elephants are trained for acrobatic purposes in order to raise funds. Some older or injured individuals are treated with medical care. The rest of the elephants aid in research or are released back into the wild.

Taipei Zoo is home to two 24 year old Asian Elephants. Due to the development of Asian Elephant breeding in Taipei Zoo, we will devote future efforts to improving skills in breeding and management and evaluating the possibility of artificial breeding.

Taipei Zoo participated in conservation efforts with Thai Elephant Conservation Center and donated raised money to assist in the conservation of Asian Elephants. The research includes artificial semen collections, semen quality analysis, semen preservation skills, rescue of Asian Elephants, and in-situ conservation education. Furthermore, we will be working with Thai Elephant Conservation Center on the organization of trips to the conservation center. The main theme of the trip is elephant conservation and the purpose of the trip is to attract more animal adoption sponsors. The participants will be going in groups; they will go to the habitats of the elephants and spend a few days there. Through this program, we can directly promote educational activities and also enhance efficiency rates of elephant conservation. We hope that all o the participants will be impressed upon approaching the animals and understanding the ecological circumstances of the animal. Hopefully, they will promote this experience to the public and pique consideration for natural ecology. By learning to respect other lives, we learn to treasure our natural resources as well.

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三、國際合作與交流

2004年本園主辦「保育繁殖專家群」(CBSG)暨「世界動物園暨水族館協會」(WAZA)聯合年會，達成保育國際發聲與建構城市外交多重目標，塑造臺灣保育新風貌。 2005年本園國際交流推展重點：協助提升東南亞動物園醫療技術與知識及推動動物園保育教育工作；為引進大貓熊工作準備，觀摩以大貓熊保育繁殖與研究的知名動物園，確立本園飼養大貓熊的目的與經營方向；加強與國際接軌業務，與波蘭弗洛茨瓦斯Wroclaw動物園簽訂合作協定。

1.參加國際性會議

(1)2月24－28日動物組及獸醫室派員參加泰國曼谷亞洲象人工繁殖及健康管理研習會，深入瞭解大象人工繁殖技術的臨床操作，以評估本園亞洲象是否適合進行人工繁殖。

(2)4月29日至5月6日參加於澳洲舉辦之東南亞動物園協會及澳洲動物園暨水族館協會共同年會，發表兒童動物園展示概念、非洲區生態展示、**本園動物糞尿類固醇內分泌素檢測研究**等論文，交流分享保育管理議題。

(3) 9月27日至10月10日園長率相關人員前往美國出席參加「保育繁殖專家群CBSG年會」及「世界動物園暨水族館協會WAZA第60屆年會」。透過參與國際間及區域內的專業組織，強化與世界知名動物園或機構的互動，暢通動物交換、研究合作、資訊蒐集、人員訓練與技術交流的管道，從而落實野生動物保育教育工作。

(4)10月派員前往泰國曼谷參加第一屆亞洲野生動物醫學研討會，會中提出兩篇報告，與亞洲地區野生動物醫療獸醫師交換心得經驗及資訊，並把亞洲的動物園及野生動物醫療資訊傳到全世界，促進保育醫療的國際合作，協助區域推動動物園保育教育工作。

(5)10月派員參加於美國舉辦的動物園獸醫師學會年會，並前往華盛頓國家動物園學習大貓熊醫療管理，以作為園內大貓熊引進工作之準備。

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3.3 International Cooperation and interaction

In 2004, Taipei Zoo hosted the annual meeting of CBSG and the annual conference of WAZA. The purpose of these events was to achieve international agreement on conservation and to strengthen diplomatic relationships between cities, which in turn can create a new view towards wildlife conservation in Taiwan. In 2005, Taipei Zoo emphasized the following points on international exchange promotions: (1) improve the medical care and information of zoos in Southeastern Asia, (2) promote the conservation education of Taipei Zoo, (3) prepare for the arrival of the Giant Panda, (4) observe the zoos known for breeding and research of the giant panda, (5) confirm the purpose and management points of breeding the giant panda in Taipei Zoo, and (6) establish a collaborated agreement with Wroclaw Zoo in Poland.

3.3.1 International Conference

(1)From February 24th to February 28th, our Animal and Veterinary division sent staff to the International Elephant Workshop on breeding management and health care in order to better understand the artificial breeding of elephants. By doing this we can evaluate if Taipei Zoo is suitable for elephant breeding.

(2)From April 29th to May 6th, we attended the "2nd SEAZA & ARAZPA Joint Meeting" in Australia. The topics of our conference presentations were the Children's Zoo, the African animal area, and conservation of the Formosan black bear. We also shared our experience in animal management with all of the zoo workers from other countries.

(3)From September 27th to October 10th, we attended the annual meeting of CBSG and the annual conference of WAZA in the United States, led by the director of Taipei Zoo. By participating in international or local professional events, we can further the connection with other famous zoos and organizations. The education of wildlife conservation can be put into practice by the exchange of animals between countries, collaborating on research, collecting information, training staff, and sharing skills.

(4)We attended the First Scientific Meeting of Asian Zoo and Wildlife Medicine in Bangkok, Thailand in October 2005. Two presentations took place at the conference. We exchanged experiences and information with the wildlife vetinarians from Asia. We also presented information about zoos and wildlife medical care in Asia. Through this, we encouraged medical cooperation between countries. The conservation education of the zoo was promoted as well.

(5)We attended the Annual Conference of Zoo Veterinarian Association in the United States in October. Due to preparations for the arrival of the giant panda, some staff was sent to the National Zoo in Washington D.C. to learn about the medical care and management of the giant panda.

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2.觀摩與交流

(1)3月26-28日廣州香江野生動物園為提高中國南方動物園展區設計、動物展覽、動物管理、飼料等方面研究水平，特於廣州召開「中國南方動物園研討會」SOUTH CHINA ZOO CONFERENCE，由園長、動物組組長、動物組助理研究員及研究助理與會。

(2)7月與波蘭弗洛茨瓦斯(Wroclaw)動物園園長古克溫斯基(Antoni Gucwinskiu)於華沙簽定合作協定，由我國駐波蘭代表、波蘭國會友臺小組主席見證，以動物保育成果，展現臺北市現代城市風華，並協助進行國民外交。弗洛茨瓦斯動物園致贈本園一對屬於保育類的歐亞水獺，作為雙方在野生動物保育、教育經驗與技術交流的開端。我國與波蘭本次以動物保育交流開啓雙方的合作關係，未來應可從保育擴大至各方面的交流。

(3)8、10月參與國際哺乳動物學研討會與東南亞動物園協會舉辦之獸醫訓練課程委員會議。

(4)配合園內大貓熊引進準備，陸續派員分赴中國大陸地區與美國動物園參訪並參與「貓熊飼養管理實務訓練」。

- ●園長等應臺北市動物園之友協會邀請，於9月初前往大陸臥龍貓熊保育區、北京動物園參觀訪問。
- ●動物組相關人員前往美國國家動物園及聖地牙哥動物園參訪「貓熊飼養管理實務訓練」。

(5)10月29日－11月03日本園亞洲象保育計畫與泰國大象保育中心交流合作，相關人員至泰國大象保育中心進行動物保育基金捐款，為本園亞洲象的永續發展，提升飼養管理技術，評估人工繁殖的可行性、引進小象以延續教育展示及協助亞洲象之域內保育工作等。

(6)10月16－19日動物組及獸醫室派員赴馬來西亞Negara動物園參加SEAZA動物園及野生動物獸醫訓練課程籌備會議，提升東南亞動物園獸醫師醫療技術與相關知識。

(7) 與澳洲庫倫賓野生動物保護區合作「無尾熊管理人員交流計畫」，本園派2位無尾熊管理人員赴澳受訓。庫倫賓野生動物保護區派1名資深管理員來園參與無尾熊管理相關工作，並協助加強桉樹管理及動物展示效果。

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3.3.2 Inspections and communications

(1)From March 26th to March 28th, "XiangJiang Safari Zoo" hosted the workshop for the purpose of improving display area layouts, animal display, animal management, and diet formulas. The Taipei Zoo group was led by the director.

(2)The Collaboration Agreement was established between Wroclaw Zoo in Warsaw in June. The agreement was signed by the director of Wroclaw Zoo, Antoni Gucwinskiu, and witnessed by the Director-General of the Economic Division, Taipei Economic and Cultural Office in Poland, and the Chairman of Polish-Taiwan Friendship Group. The purposes of the agreement were to show the attractions of modern Taipei and to encourage diplomatic relations. Wroclaw Zoo will present Taipei Zoo with a pair of Eurasian river otters. It is to be the beginning of an exchange between the countries in wildlife conservation, educational experiences, and skill. Now that exchange between Poland and Taiwan has taken place several times, the relationship can be broadened in the future.

(3)Participation in the committee of Veterinary Training course, which was held by International Mammalogy Conference and SEAZA, in August and October.

(4)Due to preparation work for the export of the giant panda, several people were sent to China and the United States to participate in the training of the breeding and management of giant panda.

- The Director of Taipei Zoo was invited by the Association of Friends of Taipei Zoo to visit the Wolong Breeding Centre and Beijing Zoo.
- The staff of Animal division visited Smithsonian National Zoological Park and San Diego Zoo for "Training Of Panda Breeding And Management"

(5)From October 29th to November 3rd, Taipei Zoo collaborated with Thai Elephant Conservation Centre on the Asian Elephant Conservation Plan. Correlative staff was sent to the conservation centre in Thailand to work on funding and donations for wildlife conservation. The purposes of the plan are to improve breeding and management skills of Asian elephants, to evaluate the possibility of artificial breeding, to introduce baby elephants for education functions, and to aid in conservation work in the area.

(6)From October 16th to October 19th, staff was sent by the Animal and Veterinary division to the Preparatory Meeting for the SEAZA Wildlife Veterinary Training Course in Malaysia's Negara Zoo for the purpose of amassing an index of related information in medical skills for the zoos in Southeast Asia.

(7)Worked together with Currumbin Wildlife Sanctuary on the koala's keeper exchanging program. Two keepers from the Koala House were sent to Australia for the training program. Currumbin Wildlife Sanctuary also sent one senior keeper to Taipei Zoo to assist in the management of koalas and Eucalyptus tree and to improve the effects of the exhibit on koalas.

動物保育與研究

四、研究發展計畫

《九十四年度》市府自行研究計畫

編號	計畫名稱	計畫期程	計畫單位
一	臺北市立動物園野生哺乳動物及兩棲爬蟲類資源調查（二～二）	93/01-94/12	動物組

《九十四年度》農委會委託計畫

編號	計畫名稱	計畫期程	計畫單位
一	臺北市立動物園野生動物急救與收容中心營運計畫	94/01-12	動物組、獸醫室
二	野生動物保定及操作影像光碟製作暨沒收象牙保存管理	94/01-12	獸醫室
三	台灣穿山甲保育研究計畫	94/01-12	動物組
四	建立北區野生動物產製品形態鑑定實驗室（九）	94/01-12	動物組
五	臺灣地區龜殼花遺傳多樣性研究	94/01-12	動物組
六	溼地保育夥伴關係建立計畫	94/01-12	動物組
七	建立臺灣野生動物遺傳物質冷凍儲存備份庫	93/06-94/12	動物組
八	臺灣野生動物冷凍遺傳物質典藏中心之建置—兩棲爬行動物（B）	94/01-12	動物組
九	中大型野生動物收容空間及教育解說設施擴充計畫	94/01-12	動物組
十	臺北市立動物園動物保護解說教育及寵物訓練計畫	93/10-94/06	推廣組

《九十四年度》自行研究與委託計畫

編號	計畫名稱	計畫期程	計畫單位
一	臺北市立動物園區樹籍資源調查	94/01-12	環境組
二	臺北赤蛙（桃園三芝）保育計畫	94/01-12	動物組
三	綠島梅花鹿、臺灣狐蝠保育計畫	94/01-12	動物組
四	泰國大象保育中心合作計畫	94/01-12	獸醫室
五	關渡自然公園淡水埤塘濕地營造計畫	94/01-12	推廣組

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3.4 Research Development Projects

Table of projects authorized by Taipei City Government, 2005

No.	Projects	Duration	Research Department
1	The survey of wild mammals, Amphibians and Reptiles in Taipei Zoo.	93/01-94/12	Animal Division

Table of projects authorized by Council of Agriculture, 2005.

No.	Projects	Duration	Research Department
1	The operation plan for Wildlife Sanctuary and Rescue Center in Taipei Zoo.	94/01-12	Animal & Veterinary Division
2	Wildlife restraint, animal video production and contraband ivory preservation management.	94/01-12	Veterinary Division
3	Conservation research of Formosan pangolins (Manis pentadactyla)	94/01-12	Animal Division
4	Project of species identification labs for wildlife products in northern Taiwan.	94/01-12	Animal Division
5	Studies on genetics of pointed-scaled pitviper trimeresurus mucrosquamatus in Taiwan.	94/01-12	Animal Division
6	Conservation and education of freshwater wetlands.	94/01-12	Animal Division
7	Genebank construction of Taiwan native wildlife.	93/06-94/12	Animal Division
8	Construction plan for Taiwan wildlife frozen specimen collection center - Amphibians	94/01-12	Animal Division
9	Enclosure expansion for medium-to-large animals and plan for education facility expansion.	94/01-12	Animal Division
10	Animal protection narrative education and pet training.	93/10-94/06	Education Division

Table of Personal Projects in Taipei Zoo, 2005.

No.	Projects	Duration	Research Department
1	The Survery of Trees in Taipei Zoo.	94/01-12	Environment Division
2	Taipei Grass Frog Conservation Plan in Taoyuan and SanChih	94/01-12	Animal Division
3	Conservation Plan of the Formosan Sika Deer and Formosan Flying Fox in Greenisland.	94/01-12	Animal Division
4	Collaboration plan with Thai Elephant Conservation Center	94/01-12	Veterinary Division
5	Construction plan for wetlands in Guandu Nature Park.	94/01-12	Education Division