

3 動物保育與研究 Animal Conservation and Research



穿山甲

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351種2,381隻（未計算昆蟲、部分魚類及農委會收容計畫動物）。本年度內保育繁殖計畫成果，累計達51種223隻動物個體，繁殖二趾樹獼、小貓熊、人猿、小爪水獺、弓角羚羊、伊蘭羚羊、東非劍羚、狐獾、臺灣野山羊、非洲野驢、查普曼斑馬、穿山甲、美洲山獅、臺灣梅花鹿、無尾熊、雙峰駱駝、大紅鶴、灰頸冠鶴、青鸞、黑天鵝、紅鸞、黑頸天鵝、黑頸冠鶴、綠絲冠僧帽鳥、葵花鳳頭鸚鵡、維多利亞冠鶴、澳洲冠鳩、褐林鴉、鴛鴦、鸚鵡、藍孔雀、藍冠鴿、中國鱷蜥、雙冠鱷蜥、金色箭毒蛙、黃帶箭毒蛙及鈷藍箭毒蛙等瀕臨絕種或珍貴稀有之野生動物。



小貓熊



鸚鵡



黑頸天鵝



尚未完全變態的金色箭毒蛙



狐獾



小爪水獺

◎飼育動物數量統計表

種類	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
106年底	97	761	107	713	114	584	27	273	6	50	351	2381

Animal Operation and Management

1. Animal Feeding Exhibition and Breeding

The zoo features mainly vertebrata and has 351 animal species (totally 2,381 animals, excluding insects, certain fish species and the rescued animals). Regarding the wildlife conservation and management plan of this year, the Zoo has successfully fostered 223 endangered or precious wildlife from 51 species, including Linnaeus's two-toed sloth (*Choloepus didactylus*), red panda (*Ailurus fulgens*), Bornean orangutan (*Pongo pygmaeus*), Asian small-clawed otter (*Aonyx cinerea*), addax (*Addax nasomaculatus*), common eland (*Taurotragus oryx*), East African oryx (*Oryx beisa*), meerkat (*Suricata suricatta*), Taiwan serow (*Capricornis swinhoei*), African wild ass (*Equus africanus somaliensis*), Chapman's zebra (*Equus*

quagga chapmani), Formosan pangolin (*Manis pentadactyla pentadactyla*), cougar (*Puma concolor*), Formosan sika (*Cervus nippon taiouanus*), koala (*Phascolarctos cinereus*), Bactrian camel (*Camelus bactrianus*), greater flamingo (*Phoenicopterus ruber*), grey crowned crane (*Balearica regulorum*), great argus (*Argusianus argus*), black swan (*Cygnus atratus*), scarlet ibis (*Eudocimus ruber*), black-necked swan (*Cygnus melancoryphus*), black crowned-crane (*Balearica pavonina*), green touraco (*Tauraco persa*), sulphur-crested cockatoo (*Cacatua galerita*), Victoria crowned-pigeon (*Goura victoria*), crested pigeon (*Ocyphaps lophotes*), brown wood owl (*Strix leptogrammica*), mandarin duck (*Aix galericulata*), emu (*Dromaius novaehollandiae*), Indian peafowl (*Pavo cristatus*), Western crowned-pigeon (*Goura Cristata*), Chinese crocodile lizard (*Shinisaurus crocodilurus*), plumed basilisk (*Basiliscus plumifrons*), golden poison frog (*Phyllobates terribilis*), yellow-banded poison frog (*Dendrobates leucomelas*) and dyeing poison frog (*Dendrobates tinctorius*).

◎Statistics of Animals

Category	Mammals		Birds		Reptiles		Amphibians		Fish		Total	
	Species	Numbers	Species	Numbers	Species	Numbers	Species	Numbers	Species	Numbers	Species	Numbers
End of 2017	97	761	107	713	114	584	27	273	6	50	351	2381



穿山甲醫療



澤巨蜥醫療



射紋陸龜醫療

2. 動物醫療保健及防疫

在動物醫療保健方面，除執行日常突發性之外傷及內科疾病治療外，依計畫進行動物的健康檢查及疾病監測預防等工作，並協助處理中央農政單位查緝沒入之保育類動物、國內民眾贈入及國內外動物園業間交換的動物檢疫工作，計61隻；另救傷動物113隻，協助地方政府照顧收容穿山甲、山羌、大赤鼩鼠、赤腹松鼠、鳳頭蒼鷹、臺灣藍鵲、領角鴉、松雀鷹、紫嘯鶇、眼鏡凱門鱷、斑龜、食蛇龜、鼬獾和白鼻心等動物，以及多次協助臺北市鳥會和桃園縣政府治療救傷之鳥類及其他哺乳動物。

年內購置牙科X光組、大動物直腸超音波、都卜勒血壓計、移動式手術燈、直腸鏡、血氧機、氧氣機、小動物保溫箱等儀器設備，用於動物醫療手術及臨床檢驗診斷、動物急救和住院照護與解剖記錄

等，得以針對立即性及潛在性的醫療問題進行治療，並透過影像



診斷及強化麻醉操作準確性，得以提升動物的手術操作安全性及動物疾病診斷準確率，增加動物醫療福利，並強化本園人工繁殖保育研究工作。

3. 保育類野生動物收容

本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。本年度協助支援保育類查緝案件鑑定物種10次21種，並持續協助各縣市政府相關單位所委託處理之野生動物救傷，與持續照養歷年所委託收容之各類動物，包含熊科動物、大型貓科動物、鳥類（鸚鵡）、靈長類動物、兩棲爬蟲動物，計95種1,121隻；另提供收容動物專業技術研習與教育觀摩活動等解說導覽服務，導覽參觀21個團體，共627人次，參訪與研習團體多為國內生物相關科系師生、地方保育主管機關、林務局、環境保護人員訓練所、農訓協會及來自大陸與全球的動物園等單位。

協助地方保育主管機關執行野生動物辨識、捕捉、保定等培訓課程，共2場次180人；執行動物環境改善包括靈長類、龜類以及鳥類籠舍維護及豐富化共29案；執行查緝收容之兩棲爬蟲類疱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，共1,307次；執行救傷及收容動物野放與追蹤研究，共12種446隻。

2. Animal Health Care and Epidemic Prevention

Regarding animal medical and healthcare services, the Zoo not only treats trauma resulting from incident and internal diseases, but also conduct animal health check and disease monitoring / prevention works according to the plan. It also assisted central agricultural agency in handling seized protected animals, and carried out quarantine for animals donated by nationals or exchanged between domestic and foreign zoos (61 animals in total); treated 113 animals; assisted local government in taking care of and sheltering Formosan pangolin (*Manis pentadactyla pentadactyla*), Formosan Reeves' muntjac (*Muntiacus reevesi micrurus*), Formosan giant flying squirrel (*Petaurista philippensis grandis*), red-bellied tree squirrel (*Callosciurus erythraeus taiwanensis*), Formosan crested goshawk (*Accipiter trivirgatus formosae*), Formosan magpie (*Urocissa caerulea*), collared scops owl (*Otus lettia*), besra (*Accipiter virgatus*), Formosan whistling thrush (*Myiophonus insularis*), spectacled caiman (*Caiman crocodilus*), Chinese stripe-necked turtle (*Mauremys sinensis*), Yellow-margined box turtle (*Cuora flavomarginata*), Formosan ferret-badger (*Melogale moschata subaurantiaca*) and Formosan masked palm civet (*Paguma larvata taiwana*); and, for a number of times, assisted Wild Bird Society of Taipei and Taoyuan County Government in treating birds and other mammals.

In this year, the Zoo purchased dental x-ray set, large an-

imal rectal ultrasound, Doppler sphygmomanometer, mobile surgical light unit, proctoscope, oximeter, oxygen generator, small animal incubator and other instruments and equipment for animal medical treatment, surgical operation, clinical investigation / assessment, first aid as well as hospitalization, healthcare and dissection records. These instruments / equipment enable the Zoo to treat immediate and potential medical problems, and to enhance the accuracy of image diagnosis and anesthesia operation for improving the safety of animal operations and disease diagnosis. All of these will enhance medical benefits for animals and intensify artificial breeding and conservation studies and works of Taipei Zoo.

3. Protected Wildlife Rescue

The Zoo's Wildlife Rescue Center is dedicated to shelter smuggled and illegally hunted, sold and exhibited protected wildlife that are seized by the competent authority of animal conservation and protection. This year, the Zoo supported to identify 21 species of 10 investigation cases; assisted county / city government units in wildlife rescue; and continued to take care of all species of animals taken in by shelter over the years. The said animals include those of bears, tigers, birds (parrot), Primates, Amphibian and Reptile, totally 1,121 animals of 95 species. Besides, the Zoo provides workshops related to animal shelter skills and educational tour services. The said services were provided to 627 people of 21 groups, who are mostly from biology related department of domestic institutes, local competent authority of animal conservation and protection, Forestry Bureau, Environmental Professionals Training Institute, National Training Institute for Farmers' Organizations and zoos from the Mainland China and around the world.

The Zoo assisted local competent authority of animal conservation and protection in holding 5 wildlife identification, seizure and restraint trainings that served 230 people; executed improvement plan for animal environment, including the maintenance and enrichment of 24 animal houses; carried out epidemiological, histopathological, molecular biological and blood chemical studies on herpes virus and mycoplasma infections of seized and sheltered amphibious reptiles for 1,307 times; released and tracked 446 rescued and sheltered animals of 12 species.



人猿



草原犬鼠↑



羊駝↓

4. 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，繼去年引入西部大猩猩等歐洲瀕危物種保育計畫（EEP, European Endangered Species Programme）物種之後，今年引入安南葉龜和杜氏鈍口螈等歐洲瀕危物種保育計畫（EEP, European Endangered Species Programme）物種，持續參與相關保育計畫，並再度繁殖非洲野驢1隻；另國際交流的突破，也開啟未來加入格利威斑馬、侏儒河馬、網紋長頸鹿、馬來長吻鱷、蒙古野馬等保育合作計畫的可行性。

本年度計引進鳥類4種12隻、哺乳類7種12隻、爬蟲類2種17隻、兩棲3種9隻，並續與捷克布拉格動物園、法國巴黎動物園、奧地利維也納動物園、荷蘭猴山動物園、波蘭歐普勒動物園、新加坡動物園、日本圓山動物園、釧路市動物園、多摩動物園及澳洲庫倫賓野生動物收容中心等等洽談動物交流中，

重要成果如下：

- 自奧地利龜島交換入：安南葉龜16隻、杜氏鈍口螈5隻。
- 為更新血緣與宜蘭碧涵軒交換入青鸞1雌；交換出青鸞1雄。
- 新竹動物園暫置鳥類：臺灣藍鵲4隻、紅鸚3隻、綠蓑鴿4隻。
- 與新竹動物園合作繁殖借殖展移回：人猿1雄。
- 高雄壽山動物園交換入：羊駝2雄1雌。
- 屏東科技大學收容中心贈入：亞洲黑熊1雌。
- 與花蓮遠雄海洋公園借殖終止移入：小爪水獺1雌。
- 與六福村野生動物園借殖展出：長頸鹿1雄。
- 民眾贈入：亞洲黑熊1雄、海蟾蜍3隻、黃帶箭毒蛙1隻。
- 救傷及收容中心移入：穿山甲2雌、南美鱷蜥1雄。

另外，購入南美小食蟻獸1雌、黑尾草原犬鼠1對。

4. Introduction and Exchange of Animals

To maintain captive wildlife 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; after introduced Western gorilla (*Gorilla gorilla*) last year, the Zoo further introduced some EEP (European Endangered Species Programme) species, such as Vietnamese pond turtle (*Mauremys annamensis*) and Lake Patzcuaro salamander (*Ambystoma dumerilii*), continued to join relevant animal incubation and protection plans, and succeeded in breeding one African wild ass (*Equus africanus somaliensis*) this year again to enhance its contribution to wildlife conservation. Regarding international exchanges, it also opened the possibility of joining conservation and protection plans for Grevy's zebra (*Equus grevyi*), Pygmy hippopotamus (*Choeropsis liberiensis*), reticulated giraffe (*Giraffa reticulata*), tomistoma (*Tomistoma schlegelii*), and Przewalski's horse (*Equus przewalskii*) in the future.

The Zoo totally introduced 12 birds of 4 species, 12 mammals of 7 species, 17 reptiles of 2 species and 9 amphibians of 3 species this year; and continuously negotiate with Prague Zoo (Czech Republic), Parc Zoologique de Paris (France), Vienna Zoo (Austria), Apenheul Primate Park (Netherlands), Opole Zoo (Poland), Singapore Zoo (Singapore), Maruyama Zoo, Kushiro Zoo, Tama Zoological Park (Japan), and Currumbin Wildlife Sanctuary (Australia) for animal exchanges. The important results are as follows:

- Exchanged from Austria's Turtle Island : 16 Vietnamese pond turtles (*Mauremys annamensis*) and 5 Lake Patzcuaro salamanders (*Ambystoma mexicanum*).

- Exchanged with Bi-Han-Xuan of Yilan : 1 great argus (*Argusianus argus*) for updating the blood relation (gave away the male and received the female).
- Temporarily placed birds of Hsinchu Zoo : 4 Formosan magpies (*Urocissa caerulea*), 3 scarlet ibises (*Eudocimus ruber*) and 4 Nicobar pigeons (*Caloenas nicobarica*).
- Return of breeding loan from Hsinchu Zoo for breeding : 1 male Bornean orangutan (*Pongo pygmaeus*).
- Exchange from Kaohsiung Shoushan Zoo : 2 male and 1 female alpacas (*Vicugna pacos*).
- Transferred from Pingtung Rescue Center of National Pingtung University of Science and Technology (NPUST) : 1 female Asian black bear (*Ursus thibetanus*).
- Return of breeding loan from Hualien Farglory Ocean Park : 1 female Asian small-clawed otter (*Aonyx cinerea*).
- Breeding loan to Leofoo Village Theme Park : 1 male giraffe.
- Donated by citizens : 1 male Asian black bear (*Ursus thibetanus*), 3 cane toad (*Bufo marinus*), and 1 yellow-banded poison frog (*Dendrobates leucomelas*).
- Transferred from the Wildlife Rescue and Shelter Center : 2 Formosan pangolin (*Manis pentadactyla pentadactyla*) and 1 male South American tegu (*Tupinambis teguixin*).

Besides, the Zoo also purchased 1 small female southern tamandua (*Tamandua tetradactyla*) and a pair of black-tailed prairie dogs (*Cynomys ludovicianus*).



非洲野驢

5. 亞洲及臺灣地區重點物種域外族群整合

持續推動與國內外公私保育機構合作的亞洲及臺灣地區重點物種域外族群整合工作，重要進展如下：

■ 亞洲黑熊族群管理計畫

根據106年度之官方紀錄，臺灣地區目前圈養的亞洲黑熊個體有29隻。106年3月10日，金仕謙園長率同仁赴農委會特有生物研究保育中心，討論106年度之亞洲黑熊族群管理及協助收容民間飼養黑熊個體之調度計畫。本園於同年3月底收到屏東縣政府來函，請本園協助安置收容民眾合法登記持有之3隻黑熊，本園於4月18日召開專家會議，討論調度方案與期程規劃，確認由本園收容1雄1雌個體，由高雄壽山動物園收容另一隻公熊。

9月21日至22日，本園同仁會同壽山動物園和屏東收容中心人員赴屏東飼主家，進行黑熊調度運送，於9月22日順利將2隻黑熊從屏東運回臺北；由於此3隻黑熊原非保育合作計畫內的個體，將列為亞洲黑熊復育計畫的潛力個體。

■ 亞洲及臺灣地區婆羅洲人猿族群管理計畫

臺灣地區人猿現存35隻個體（20雄15雌），由本園、新竹動物園、壽山動物園、屏東收容中心及六福村動物園等5個單位收容照養。經分子遺傳檢測，確認所有個體皆為婆羅洲人猿（3個亞種及雜交種皆有）。未來將根據分析結果，整合六福村、新竹動物園及壽山動物園的個體進行保育繁殖計畫，除了讓有繁殖潛力之個體有機會繁殖後代，更會進一步嘗試保留moria亞種的繁殖群。針對亞洲地區之族群管理，將討論香港動植物公園31歲雌性個體「Merdeka」及3歲雄性個體「Wan Wan」是否調度至臺灣的議題，雖就全球或東南亞動物園暨水族館協會（SEAZA）角度切入，Wan Wan的基因重要性的位序並非最前面，但其來自歐洲的血緣對臺灣來說仍是增加基因多樣性的機會。



5. Ex Situ Population Integration of Focal Species in Asia and Taiwan Region

Important progress of Asian and Taiwan Region Focal Species *Ex Situ* Population Integration Work, which continues to propagate the cooperation of public and private institutions, is as follows:

■ Asian Black Bear (*Ursus thibetanus*) Population Management Plan

According to the 2017 official records, there are 29 Asian black bears in a captive situation in Taiwan. On March 10 of 2017, Director of Taipei Zoo Jason Shih-Chien Chin led staffs of the Zoo to Endemic Species Research Institute, Commission of Agriculture to discuss the 2017 Asian Black Bear Population Management Plan and plan for sheltering black bear in private captivity. The zoo received a letter from Pingtung County government at the end of March in 2017, requesting the Zoo to shelter three black bears legally possessed by citizens. The Zoo held an experts meeting on April 18 to discuss the dispatch plan and schedule. The Zoo agreed to shelter one male and one female black bear, and Kaohsiung Shoushan Zoo sheltered another male black bear.

From September 21 to September 22, staffs of the Zoo, Shoushan Zoo and Pingtung Rescue Center went to the breeder's house in Pingtung to transport black bears. On September 22, 2 black bears were transported from Pingtung to Taipei successfully. As these black bears are entities outside the cooperative animal conservation plan, they will be listed as potential entities in Asian Black Bear Population Management Plan.

■ Bornean orangutan (*Pongo pygmaeus*) Population Management Plan of Asia and Taiwan

In Taiwan, there are currently 35 orangutans (20 male and 15 female), which are sheltered and taken care by the Zoo, Hsinchu Zoo, Shoushan Zoo, Pingtung Rescue Center and Leofoo Village Theme Park. Molecular genetic test results indicated that all of these entities are Bornean orangutans (including 3 subspecies and hybrids). Together with the orangutans of Leofoo Village Theme Park, Hsinchu Zoo and Shoushan Zoo, the Zoo will implement a population management plan based on the analysis results. The purposes are to enable orangutans with breeding potential to breed and to further conserve subspecies of moria. Regarding the management of orangutan population in Asia, whether to send the 31-year-old "Merdeka" (female) and three-year-old "Wan Wan" (male) of Hong Kong Zoological and Botanical Gardens will be discussed. Although, from the global perspectives or perspectives of South East Asian Zoos and Aquariums Association (SEAZA), Wan Wan's gene importance is not the highest, yet Taiwan considers Wan Wan as an opportunity of increasing genetic diversity as its' bloodline from Europe.



■ 黑猩猩族群管理計畫

本園自102年起，便針對臺灣地區現存的24隻黑猩猩，依據親緣關係計算的MK值進行配對，目前適合繁殖年齡之第一世代個體已成功繁殖，下一階段將啟動20歲第二世代的繁殖計畫。國際族群管理調度的部分，與日本圓山動物園密切洽談交換計畫，嘗試和日本動物園暨水族館協會討論族群管理計畫的長期合作，透過適當規劃的個體調度，協助雙方維持基因多樣性。

■ 馬達加斯加狐猴族群管理計畫

本園於2014年加入馬達加斯加動植物相保育群 (Madagascar Fauna and Flora Group, MFG)，並於同年開始派員參加MFG年會，開啟和馬達加斯加的在地連結，推動保育研究、域外族群照養、醫療和族群管理的資訊交流與合作，並認識相關領域的研究人員和代表。2017年MFG年會於馬達加斯加Toamasina舉辦，本園亦派員參加，將第一手馬達加斯加生態保育和環境現況等議題與資訊帶回臺灣，為臺灣第一次有保育機構派員赴當地參訪，實屬難得。

本園和日本上野動物園為友好動物園，上野動物園亦同為MFG成員之一（其與美國的杜克狐猴中心 (Duke Lemur Center) 合作，為亞洲地區唯一成功建立指猴 (Aye-Aye) 繁殖群的動物園），為拓展亞洲地區指猴族群管理計畫，雙方進行合作。106年9月上

野動物園提供該園的指猴食譜與照養手冊

供本園參考，同年10

月派員來臺，查看

指猴飼養的設備與

空間規劃，並和本

園同仁分享指猴照養經驗。該園107年將調度指

猴至臺灣。



■ Common chimpanzee (*Pan troglodytes*) Population Management Plan

Since 2013, the Zoo has paired the country's last 24 chimpanzees according to the MK value calculated based on the blood relationship. At the moment, the first generation that was ideal for breeding already succeeded in doing so. The next stage is to launch the 20-year-old second-generation breeding plan. Regarding the management of international chimpanzee population, the Zoo has been continuously negotiated with Japan's Maruyama Zoo to exchange animals; attempted to discuss a long-term partnership with Japanese Association of Zoos and Aquariums (JAZA) in regard to the Chimpanzee population management plan. The Zoo plans to, through appropriate plans, assist both parties in maintaining genetic diversity.

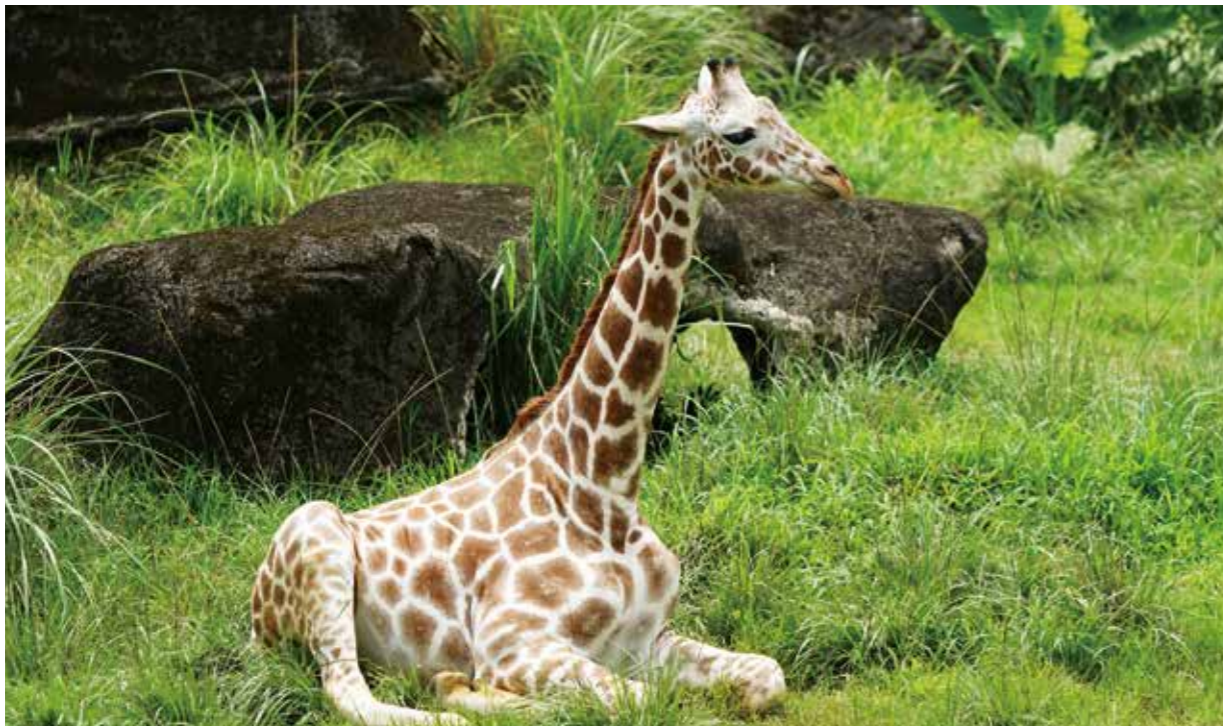
■ Lemur Population Management Plan

Taipei Zoo joined Madagascar Fauna and Flora Group (MFG) in 2014 and to open its connection with Madagascar, started to dispatch staffs to join the MFG annual meeting in the same year. The annual meeting enables the Zoo not only

to know researchers and representatives in the field, but also to promote animal conservation research; exchanges on *ex-situ* conservation, medical and population management information; and cooperation projects. The Zoo also dispatched staffs to join the 2017 MFG Annual Meeting held in Toamasina, Madagascar. It was the first time that a Taiwanese animal conservation institution dispatched personnel to bring back the first-hand Madagascar ecological conservation and environmental information and debate subjects back to Taiwan.

Taipei Zoo and Ueno Zoo (Japan) were amicable. As a MGF member that has been cooperating with the Duke Lemur Center in the U.S.A., Ueno Zoo is the only Zoo succeeded in establishing the aye-aye (*Daubentonia madagascariensis*) breeding group in Asia. To further develop the Asian Aye-Aye Population Management Plan, Ueno Zoo cooperated with Taipei Zoo. In September of 2017, Ueno Zoo provided its aye-aye recipe and keepers manual to the Zoo for its reference. In October of the same year, it dispatched personnel to Taiwan not only to check the the aye-aye feeding facilities and space planning, but also to share staffs of the Zoo their experiences of taking care of aye-ayes. Ueno Zoo will send the aye-ayes to Taiwan in 2018.





■ 臺灣地區長頸鹿族群管理計畫

臺灣有典藏長頸鹿的單位為本園、六福村動物園及頑皮世界動物園，截至106年度之族群數量為8隻（3雄5雌）。為維繫長頸鹿族群，本園曾於102年運送1隻年輕雄長頸鹿至頑皮世界，待其長大成熟後與該園雌性個體配對，但後來頑皮世界雌性個體過世，目前該單位僅飼養一隻雄性長頸鹿。

105年本園嘗試運送成年雄性長頸鹿至六福村與該園3隻雌性個體配對，未成功；經多次場勘與協調討論，106年5月17日成功運送一隻年輕雄性長頸鹿至六福村；目前該個體已適應環境且和雌性同伴互動良好，待性成熟後，便有機會進行繁殖。

臺灣目前僅有3個單位具有合適飼養長頸鹿的空間，且現存的所有雄性長頸鹿皆為來自本園同一家族後代，因此，未來除了積極爭取自國外引進新血緣，在國內亦須拓展和新單位的合作，方有機會維繫並發展臺灣地區的長頸鹿族群管理計畫。

■ 池上區動物族群管理計畫

本園於民國91年與台灣糖業公司簽約，於其所屬之臺東池上牧野度假村開闢保育繁殖第二園區，以

改善管理動物族群負載量，並增進東部地區學童與居民接觸野生動物保育教育的機會。目前位於池上區之動物有斑哥羚羊、弓角羚羊、伊蘭羚羊、侏儒河馬、查普曼斑馬、蒙古野馬、鸚鵡，共計7種31隻個體。池上區之腹地廣大且環境自然，該區所飼養之草食獸弓角羚羊、斑哥羚羊和伊蘭羚羊，近乎每年皆有繁殖，但成功存活率低。

有鑑於與臺糖公司的合約於107年2月6日到期，且本園近年來草食獸繁殖興盛，亟需血緣交換與個體疏散，106年4月及11月，兩度派員赴臺東查看該區動物狀況、飼養環境，並協助健檢醫療，評估族群管理動物調度方案。

106年10月6日，金仕謙園長率員赴臺南臺糖尖山埤渡假村與臺糖公司休憩事業部會面，針對107年度合約到期後之合作計畫與合約進行討論。基於動物福利和族群管理考量，本園將於107年度啟動族群管理調度計畫，將部分物種優先帶回臺北或疏散至其他單位的搬運計畫；106年12月底，臺糖公司副總經理率員來到本園，針對池上區進行合作案討論；雙方針對人員培訓、展場改善與合約議題達成初步共識，預計107年度第一季簽署新合約，並啟動下一阶段計畫。

■ Giraffe Population Management Plan of Taiwan

In Taiwan, only Taipei Zoo, Leofoo Village Theme Park and Wanpi World Safari Zoo have giraffe. Until 2017, there are totally 8 giraffes (3 male and 5 female giraffes). To keep the giraffe community here in Taiwan, the Zoo ever sent a young male giraffe to Wanpi World Safari in 2013, and let it to breed with the Safari's female giraffe. However, this female giraffe passed away and there is only one male giraffe in Wanpi World Safari.

In 2016, the Zoo attempted to transport a male giraffe to Leofoo Village Theme Park and let it breed with the Park's three female giraffes. After a number of field surveys and a series of discussions and negotiations, the Zoo succeeded in transporting a young male giraffe to the Village on May 17, 2017. At the moment, the giraffe already got with the environment and had a good interaction with the Park's female giraffes. After the giraffe becomes sexually matured, there will be an opportunity for the giraffes to breed.

At the moment, only three zoos have the room for breeding giraffe and all of existing male giraffes come from the same family of Taipei Zoo. Therefore, apart from striving for obtaining new giraffes from overseas to expand the bloodline of giraffes, the Zoo shall further cooperate with other domestic institutions or units, in order to maintain and develop the Giraffe Population Management Plan.

■ Chihshang Animal Population Management Plan

To reduce its loading of managing animals and provides students and residents of Eastern Taiwan an opportunity of knowing about wildlife conservation, the Zoo signed an agreement with Taiwan Sugar Corporation (TSC) in 2002 to open the second animal conservation and breeding park in TSC's Chihshang Pastoral Farm Resort in Taitung. At the moment, there are 31 animals of 7 species, including bongo (*Tragelaphus eurycerus*), addax (*Addax nasomaculatus*), common eland

(*Taurotragus oryx*), pygmy hippopotamus (*Choeropsis liberiensis*), Chapman's zebra (*Equus quagga chapmani*), Przewalski's horse (*Equus przewalskii*) and emu (*Dromaius novaehollandiae*), in Chihshang. Featuring a natural environment, the site is enormous and all plant-eating animals such as addax, bongo and common eland breed almost every year, but with a rather low survival rate.

As the said agreement expires on February 6 of 2018, and the Zoo has been quite successful in breeding lots of plant-eating animals, the Zoo needs to exchange animals for genetic diversity and evacuate some of them from the park desperately. In April and November of 2017, the Zoo dispatched staffs to Taitung to check the the status of animals and breeding environment of the Park; to provide the Park health check and medical assistance; and to evaluate the Chihshang Animal Population Management Plan.

On October 6 of 2017, Director of Taipei Zoo Jason Shih-Chien Chin led staffs of the Zoo to TSC's Jianshanpi Jiangnan Resort and leisure recreation business unit in Tainan, to discuss the cooperation project and agreement after the agreement expiry in 2018. Under the consideration of animals' welfare and the population management project, the Zoo will launch the Animal Population Management Plan in 2018. It will take some of the species back to Taipei or transport some of them to other units. At the end of December of 2017, TSC's vice president led staffs to the Zoo to discuss the Chihshang cooperation project. Both parties reached an initial agreement on the staff training, exhibition venue and agreement subjects. It is estimated that a new contract will be signed and launch the next stage of the project in the first quarter of 2018.



伊蘭羚羊



侏儒河馬

6. 本土域內外保育推展—臺北赤蛙保育計畫

本園投注於本土珍稀兩棲類的域內與域外保育已10餘年，「臺北赤蛙」保育為重點推動工作之一。基於臺北赤蛙族群保育的急迫性與復育的重要意義，臺北市政府與新北市政府雙方自104年起特將「臺北赤蛙復育與棲地營造計畫」納入「雙北合作平臺」中「環境資源組」子項議題，由本園與新北市政府農業局共同合作，透過雙方綿密的合作與資源的整合，更有效地朝向臺北赤蛙復育的目標發展。

在雙北合作平臺架構下的臺北赤蛙域內外保育分工，新北市政府農業局著力於臺北赤蛙棲地復育與棲地營造，本園則發展臺北赤蛙圈養繁殖技術，雙方均有突破性發展與初步成果。

本園於104年突破繁殖刺激因子之關鍵，105年起透過與國際合作學習，在園內架設兩棲類獨立圈養空間，加強圈養族群飼養操作技術精進；106年以確認臺北赤蛙標準圈養繁殖條件與操作為重點，共12對產卵27批，平均孵化率提升至81.2%，後續將持續針對孵化成功之蝌蚪，提高其變態率與育成率，另外也將在園區所營造之棲地，進行幼蛙半野放試驗工作，其能透過科學性試驗與評估，研擬出臺北赤蛙族群再引入之域外保育工作。域內工作，106年度除透過雙北合作平臺，持續與新北市政府進行原棲地族群監測與合適棲地營造與復原外，更透過夥伴團隊聯繫與訓練，以及公民科學家之養成與培訓，建構聯繫網絡，共同進行全臺灣之臺北赤蛙分布現況與臺北赤蛙共域物種與植群等系統調查工作。並透過保育教育，以及環境教育等，持續辦理包括

「Save The Frogs Day 拯救瀕危青蛙日」、「臺北赤蛙營」等臺北赤蛙教育活動與在地教育活動。未來將持續繁殖研究，建立圈養核心族群與疾病篩檢技術，朝向域外保種與後續再引入原棲地等域內保育工作發展，期能重新建立野外臺北赤蛙族群，以落實域內保育及域外保育之實踐。



6. In and Ex Situ Conservation Expansion in Local -Taipei Grass Frog (*Hylarana taipehensis*) Conservation Plan

The Zoo has contributed to *in* and *ex situ* protection and conservation of native amphibians for over ten years, and Taipei grass frog (*Hylarana taipehensis*) is one of the primary targets. Due to the urgency of protecting and conserving Taipei Grass Frog, and the importance of repopulating this species, Taipei City Government and New Taipei City Government included the "Taipei Grass Frog Repopulation and Habitat Creation Plan" in the "Environment Resource Team" of the "Cooperating Platform of Taipei City and New Taipei City" in 2015. That is, through the cooperation and resource integration of Taipei Zoo and Agriculture Department of New Taipei City, local governments are heading towards the target of repopulating Taipei Grass Frog even more efficiently.

Under the framework of the Taipei City and New Taipei City Cooperating Platform, the two governments have divided the Taipei grass frog *in* and *ex situ* protection and conservation works: Agricultural Department of New Taipei City government targets on the rehabilitation and creation of this species' habitat, whereas Taipei Zoo focuses on developing breeding technology. Both parties made a breakthrough development and preliminary results.

The Zoo found the key reproduction-stimulating factors in 2015. Starting from 2016, it has, through international cooperation and learning activities, established an independent captive space for amphibians in the Zoo to enhance relevant feeding operations and techniques. In 2017, the Zoo fo-

cused on standardizing captive and breeding conditions and operations of Taipei grass frog. It totally hatched 27 batches of eggs from 12 pairs, successfully enhanced the hatching rate to 81.2%. In the future, it will continue to enhance the metamorphosis and breeding rates of hatched tadpoles and, within the habitat created inside the Zoo, carried out a trial reintroduction project on baby frogs. It is our expectation that, through scientific tests and evaluations, we will be able to reintroduce Taipei grass frogs to areas outside the zoo and enhance our *ex-situ* animal conservation works. Regarding *in-situ* works, we have continued to monitor endemic species, create ideal habitats and restore the old habitats with New Taipei City Government through the Taipei-New Taipei City cooperation platform in 2017. Furthermore, with the contacts and trainings of our partners and teams as well as the cultivation and trainings of citizen scientists, we have constructed a systematic investigation network to share information on the current distribution and sympatric species of Taipei grass frogs and vegetation of where they live in Taiwan. Taipei grass frog related and regional educational activities, such as "Save The Frogs Day" and "Taipei Grass Frog Camp", also continued through the implementation of animal conservation and environmental education. In the future, the Zoo will continue its breeding research, establish core captive species and enhance its disease screening technology for the purpose of *ex-situ* conservation and following reintroduction works. It is the Zoo's expectation to establish communities of Taipei grass frog in the field for realizing *ex-situ* and *in-situ* conservation works.

7. 展示場更新暨開展

河馬展示

河馬展示更新工程自104年9月開工，106年8月完工，於106年10月21日以「河馬浴場Hippo Palace」為名重新開放展示。

新場館的動物使用面積較舊的增加將近一倍，各項管理設施以符合動物習性和顧及操作人員安全設計，河馬個體之管理調度也更加便利。

案內更新河馬的場地配置，並營造沉浸式樓地展示景觀。相較於過往只能從上方遠距觀看露出水面的河馬，新展示場提供一個可以讓遊客透過玻璃近距離感受非洲經典物種的魄力，同時提供河馬與遊客互動的可能性，讓觀賞河馬可以獲得全新的震撼體驗，透過大型玻璃觀賞的方式也不會有任何身高限制，吸引更多遊客駐足流連於「河馬浴場」。為了營造遊客在欣賞河馬時的沉浸式體驗，遊客面也呈現具有非洲特色的土樓、非洲雕塑與畫作，使遊客猶如身處非洲一般，沉浸當地傳統文化氛圍之中。

以往解決河馬往水裡排泄而汙染水質的方法就只有換水一途，但此舉使河馬的用水量達2000噸/每月；在新設水處理系統的運作下，可將展場水中的排泄物或草渣濾除後再重新注回水池，達到節約用水的目標。



柯文哲市長與曾燦金教育局長贈送青牧草等食材給河馬代表



河馬教室上課囉！柯文哲市長擔任班長回答與河馬相關的問題



河馬爸爸菲忠：「市長好！歡迎參觀我的新家！」



柯文哲市長等貴賓為河馬浴場揭幕！



河馬與遊客

7. Renewal and Launching of Exhibition Sites

Exhibition of Hippopotamus

The Hippopotamus Exhibition renovation construction started in September of 2015, and completed in August of 2017. On October 21 of 2017, the exhibition re-opened with the name of the "Hippo Palace".

The new animals' area has almost doubled than before. Besides, all types of management facilities were designed based on animals' habits need, keepers' safety and facilitation of the management and dispatch of hippopotamus.

The Zoo changed the site configuration of hippopotamus and created an immersive habitat to show the landscape. Comparing with before, where hippopotamus can only be watched from above, the new exhibition site enables visitors to watch this strong and classic African species from a close distance and interact with the hippopotamus through the glass. Not only will it provide visitors a brand new experience, but also there will be more visitors in the "Hippo Palace" because there is no more restriction on the height of visitors. To create such immersive experience, the Zoo also designed the exhibition site with Africa's unique soil buildings, sculptures and paintings, making the visitors be immersed in an atmosphere of traditional African culture.

The only way to prevent water pollution caused by hippopotamus' feces in the past was to change the water. However, this will consume about 2,000 tons of water for the site of hippopotamus exhibition hall each month. The new water disposal system can filter the feces or grass residue, and then transport the water back to the pool to save water consumption.



■ 狐獴展示

於兒童動物區新設置狐獴展示場，以模擬狐獴原棲地「非洲莽原」生態意象為設計重點，輔以假蟻塚、漂流木等，提供狐獴可呈現制高點望遠行為特色的設施環境，四周以透明玻璃為展示區隔，塑造無視覺障礙、貼近動物的參觀環境，於106年2月開始展示，展示效果極佳，深受遊客喜愛，成為新熱門參觀焦點。



■ Exhibition of Meerkats

A new meerkat exhibition hall is established in Children's Zoo. This "African savanna" simulated site is designed with the elements of meerkats' original habitat and decorated with fake ant heaps and drifting woods, so that Meerkats can stand high to look afar. Instead of bricks and cements, glass is used at the site to create a barrier-free vision and an opportunity for visitor to look at the Meerkats from a close distance. After its launch in February of 2017, this site is loved by visitors and has therefore become a popular site in the zoo.



8. 展演動物相關法令修法推動

本園為台灣動物園暨水族館協會 (TAZA) 一員，TAZA與相關動保團體及中央主管機關一同推動修正動保法母法條文及修正「展演動物業設置與管理辦法」，期能落實動物福利，彌補現行動保法展演動物業規範之不足。

9. 與學術界建教合作及推廣教育

續與臺灣大學等獸醫學院在動物診療技術方面，保持密切建教合作關係，並舉辦臺北市立動物園保育醫學病理研討會，進行前一年度死亡病例研討，增進臨床醫療與病理交流與連結，提升動物醫療品質。年內多位學者專家來園指導，邀請臺灣大學牙醫學院洪致遠老師教學並示範「動物補牙技術」，以及中興大學林以樂演講「大動物麻醉技術」專題等。除與獸醫界的合作外，亦透過與人醫的專業交流與合作，以及積極運用中醫於野生動物醫療，加速提升野生動物的診療技術。

另與其他相關機構建教合作及教育推廣，或提供國內獸醫師及國內外獸醫系大學生前來實習，包括：1月澳洲獸醫系實習生1名、國內獸醫系實習生4名；2月國內獸醫系實習生2名；3月國內獸醫系實習生2名；6月法國獸醫實習生1名；7月馬來西亞UPM大學獸醫實習生共2名；9月國內獸醫系實習生1名；11月澳洲獸醫系實習生1名；12月澳洲獸醫系實習生2名、美國實習生1名。提供國內各大學獸醫學、生物學、觀光遊憩管理等相關科系學生，進行整學期實習或為期1-2個月的寒暑期實習。如：臺北市立大學7位社會暨公共事務學系學生來園進行「市政管理與為民服務」機關實習課程（實習期間3-6月），7-8月實習生及候鳥計畫實習學生計70人，提供學生野生動物醫療、生物學、生態學等觀摩學習。協助各單位辦理之演講及課程有：6月協助農業科技研究院辦理動物管制人員訓練進階班課程。



8. Promotion of Animal Exhibition and Performance relevant Regulations

The Zoo is a member of Taiwan Association of Zoos and Aquariums (TAZA). TAZA, relevant animal conservation groups and the central competent authority have been promoted to make amendments to the mother law of "Animal Protection Act" and "Regulations Governing the Animal Exhibition and Performance Industry" together, with an expectation of bringing animals more benefits and making the said laws and regulations more complete.

9. School-Enterprise Cooperation with Academia and Promoting Education

The Zoo has maintained a close relationship with School of Veterinary Medicine of National Taiwan University for practical and educational cooperation. It also held "Taipei Zoo Animal Conservation Medicine and Pathology Symposium" to discuss deaths of the previous year; enhance clinical, medical and pathological exchanges and connections; and increase

the quality of animal medicine and treatment. A number of scholars and experts also visited the Zoo share with us their experiences and expertise. For example, Professor Chi-Yuan Hong from School of Dentistry, National Taiwan University was invited to teach and demonstrate "animal tooth filling techniques"; Lin Yi-Le from National Chung Hsing University was invited to deliver a lecture on "big animal anesthesia techniques". Apart from cooperating with medical and veterinary circles, the Zoo succeeded in speeding up and enhancing wildlife treatment techniques not only through professional exchange and cooperation, but also by applying Chinese medicine in wildlife medical treatment.

The Zoo also cooperated with other institutions practically and educationally, such as providing internships for veterinarians and students of domestic and foreign schools of veterinary. Examples are: One intern from an Australian veterinary school and 4 interns from domestic veterinary schools in January; two interns from domestic veterinary schools in February; two interns from domestic veterinary schools in March; one intern from a French veterinary school in June; 2 interns from school of veterinary, UPM, Malaysia in July; one intern from domestic veterinary school in September; 1 intern from



106年保育醫學病理研討會

10. 辦理專業工作坊、研討會

- 4月27日辦理106年保育醫學病理研討會，園內外共計69人參加。
- 6月29日主辦野生動物牙科技術工作坊，邀請洪志遠博士主講指導，共計25名學員參與。
- 邀請香港海洋公園資深訓練師吳乃江先生來臺指導動物訓練計畫應用及訓練方法，10月2日於本園辦理「2017動物訓練工作坊」，室內講座及現場觀摩課程分別約147人及60人參與，國內TAZA夥伴如遠雄海洋公園、新竹動物園等共7個單位亦派員參與。另外，9月30日至10月8日期間，吳乃江先生至各單位，與保育員針對各類物種訓練做交流。
- 10月11-12日辦理「2017野生動物麻醉及繁殖工作坊」，以精進獸醫專業技術本職學能及交流，本次課程內容重點為臺灣野山羊及穿山甲之麻醉及電激採精技術，園內外獸醫及人工繁殖學者計有30名學員參與。



2017野生動物麻醉及繁殖工作坊



an Australian veterinary schools in November; two interns from Australian veterinary schools and 1 intern from a veterinary school of the United States in December. Besides, the Zoo also provides veterinary, biology and tourism students of domestic university not only semester-based internship, but also one to two months of internship during winter or winter vacation. For example, seven students of Department of Social and Public Affairs, University of Taipei had the "City Management and Services" agency internship from March to June, and 70 interns from the summer vacation internship program (July to August) and migratory bird internship program. Besides, the Zoo also provides students wildlife medical, biological and ecological observation and learning opportunities, and assists different units in holding lectures and classes. For example, it assisted Agricultural Technology Research Institute in holding the "Advanced Animal Control Personnel Training Program" in June.

10. Hold the Professional Workshop and Symposium

- Held the "2017 Animal Conservation Medicine and Pathology Symposium" on April 27. A total of 69 people nationwide participated in this event.

- Held the "Wildlife Dentistry Workshop" on June 29; Professor Chi-Yuan Hong was invited to deliver a speech with practical demonstrations. This event was participated by 25 members.
- Invited the senior trainer of Hong Kong Ocean Park Nai Kwong Ng (Paul) to provide technical guidance on animal training plans, applications and training methods. Held "2017 Animal Training Workshop" at the Zoo on October 2. The indoor lecture and site observation session were participated by 147 and 60 people respectively. Seven of the Zoo's TAZA partners, such as Farglory Ocean Park and Hsinchu Zoo, dispatched personnel to join this event. Besides, from September 30 to October 8, Mr. Nai Kwong Ng (Paul) visited all units to exchange his experiences of and ideas towards trainings of all types of species with zoo keepers.
- On October 11 and 12, the two-day "2017 Wildlife Anesthesia and Breeding Workshop" was taken place to enhance participants' veterinary techniques and exchange their experiences and ideas with the others. The highlight of this year's class is the anesthesia and electroejaculation techniques for Taiwan serow (*Capricornis swinhoei*) and Formosan pangolin (*Manis pentadactyla pentadactyla*). In overall, 30 nationwide veterinarians and scholars from the field of artificial breeding have participated in this event.



106年保育醫學病理研討會

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。

本年於臺北辦理「2017年國際螢火蟲年會」、「展演動物福祉評估工作坊」、「2017整合保育暨穿山甲族群存續分析(PHVA)國際研討會」等國際會議及相關專業工作坊，邀集國內外的專家學者與會，進行國際專業交流，積極發展國內與國際間的保育合作，擴大保育互動網絡與合作機制，形成更緊密的保育夥伴關係，以利跨國推動專業事務，並為本土野生動物域內保育開拓新契機。

此外，指派人員出國進行國際合作與交流，參與各國國際組織的運作、深化與他國動物園的交流，以建立焦點物種的合作聯絡網絡、搭建與其他動物園的長期合作橋梁及對話，並藉此經驗分享、學習及促進物種交流，今年推展重點有：持續推動巨猿類展示、保育繁殖及照護等專業，派員赴歐洲參觀巨猿類展示管理、參與歐洲動物園暨水族館協會之巨猿類

分類專家群會議(2017 Great Ape TAG Meeting)，直接參與物種討論及學習統整族群管理相關溝通工作，並派員參與東南亞動物園暨水族館協會之物種管理委員會工作會議(2017 SEAZA Species Management Committee Working Meeting)；參與動物園動物福祉研討會及協助農委會赴美國參訪動物福祉相關單位，望能獲取經驗與長處做為改善臺灣動物福祉與展演動物管理之借鏡；派員至日本旭山動物園、円山動物園學習，期使園區發展更為生動活潑，並建立合作聯繫管道及討論物種合作繁殖調度計畫等；受邀與泰國動物保育組織(Zoological Park Organization of Thailand, ZPO)等，共同舉辦穿山甲保育工作坊，協助東南亞地區穿山甲保育與救傷收容的動物園或相關組織，同時也對於提升本園穿山甲照護及醫療技術發展有所幫助，並建立東南亞穿山甲合作聯絡網絡；本年度指派出席國際會議及研討會計12梯次32人次；指派參與之觀摩與交流計3梯次10人次。

透過保育合作協定、合作備忘錄等之簽署，與各界建立長期研究合作關係，如：本園與日本釧路市教育委員會簽訂「毯藻出借合作備忘錄」。



穿山甲保育國際研討會

International Cooperation and Exchanges

The group of people whom the Zoo hired in 1986 when moved to the current address are successively retired in recent years. In this critical 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.

This year, the Zoo held a number of international seminars and workshops in Taipei, including the "2017 International Firefly Symposium", "Ehibited Animal Welfare Workshop", and "2017 International Conference on One Plan Approach Conservation Planning and Formosan Pangolin PHVA Workshop". Domestic and foreign experts and scholars were invited to join these events for exchanging professional ideas. Regarding animal conservation and protection works, the Zoo has been proactively developing its partnership with domestic and international conservation institutions, and expanding the network of cooperation. Such tighter partnership enables the Zoo to promote its professional knowledge to the international community. This will create new opportunities for local professionals in the conservation field.

Besides, the Zoo dispatched personnel to overseas for international cooperation and exchange. For example, participating in international organizations' operations, enhancing the partnership with zoos of other countries. The purposes are to establish a cooperation network for target species, build long-term partnership and conversations with other zoos, share experiences with the others, and expand and facilitate the exchange on knowledge of different species. The highlights of this year are: continued to promote exhibitions, conservation, breeding and caring of great apes; dispatched staffs to Europe to visit the exhibition and management of great apes; participated in 2017 Great Ape TAG Meeting of European Association of Zoos and Aquaria (EAZA); directly joined species discussions and negotiations related to the management of animal community; dispatched staffs to join

the 2017 SEAZA Species Management Committee Working Meeting; participated in Zoo Animal Welfare Symposium and assisted Commission of Agriculture in visiting animal welfare relevant units in the United States with an expectation of acquiring their experiences and strengths to improve animal welfare and animal exhibition and performance management measures in Taiwan; dispatched staffs to Asahiyama Zoo (Japan) and Maruyama Zoo (Japan) to enhance their know-how. It is the Zoo's expectation that they will apply their learnings to make the Zoo even more vivid and that the Zoo will establish cooperation and contact channels, and implement species cooperation, breeding and dispatch plans. The Zoo was also invited to hold pangolin conservation workshop with Zoological Park Organization of Thailand (ZPO). The objectives of this workshop are to assist zoos in South-East Asia and relevant organizations to conserve, rescue, treat and shelter pangolins; enhance Taipei Zoo's skills in taking care pangolins and development in relevant technology and skills; establish a South-East Asian cooperation and communication network for pangolins. This year, the Zoo dispatched 32 staffs to join 12 sessions of international meetings and seminars, and dispatched 10 staffs to join 3 sessions of observation and exchange tours.

Taipei Zoo has established a long-term research partnership with all circles by signing animal conservation and protection agreement, and Memorandum of Understanding (MOU). The Zoo signed the "MOU of Marimo (moss ball)" with Kushiro Education Committee (Japan).



與日本釧路市教育委員會簽訂「毯藻出借合作備忘錄」



1. 參加國際性會議

月份	會議名稱	參與人數
3	赴荷蘭、德國參加2017歐洲動物園暨水族館協會巨猿類分類專家群會議並至鄰近國家洽談物種族群管理合作	1
5	赴美國參加2017年第四屆動物園動物福祉研討會	1
5	赴菲律賓參加2017東南亞動物園暨水族館協會族群管理委員會工作會議	2
7	赴馬達加斯加參加2017馬達加斯加動植物保育群 (MFG) 年會	2
8	赴泰國辦理亞洲穿山甲救傷收容與照養工作坊	6
9	赴荷蘭、德國、丹麥等地，參加2017年歐洲動物園暨水族館協會 (EAZA) 年會及參訪鄰近動物園	2
9	赴美國參加2017美國動物園獸醫學會 (AAZV) 年會	2
10	赴德國柏林參加2017年保育規劃專家群 (CPSG) 年會及世界動物園暨水族館協會 (WAZA) 第72屆年會聯合年會	2
10	赴馬來西亞參加亞洲保育醫學會會議	2
11	赴中國大陸參加2017年大貓熊繁育技術委員會年會	2
11	赴菲律賓參加2017東南亞動物園暨水族館協會 (SEAZA) 年會	5
11	赴澳門參加第5屆海峽兩岸暨香港、澳門大熊貓保育教育研討會	5

2. 觀摩與交流

◎106年度外派參與之觀摩與交流一覽表

月份	名稱	參與人數
4	赴日本執行動物與遊客-日本動物園取經計畫	5
8	協助行政院農委會赴美國參訪動物福利相關單位	1
9	赴中國大陸推動大貓熊族群管理暨飼養醫療研究合作計畫	4



1. Participation in International Conferences

Month	Conference Name	No. of Participants
3	Went to the Netherlands and Germany to join in the 2017 Great Ape TAG Meeting of EAZA to discuss species management and cooperation projects.	1
5	Joined in the 2017 Zoo Animal Welfare Symposium (4 th).	1
5	Went to the Philippines to join the 2017 SEAZA Species Management Committee working meeting.	2
7	Went to Madagascar to join the 2017 Annual Conference of Madagascar Fauna and Flora Group (MFG).	2
8	Went to Thailand to hold Asian Pangolin Rescue, Shelter and Caring Workshop.	6
9	Went to the Netherlands, Germany and Denmark to join in 2017 Annual Conference of European Association of Zoos and Aquaria (EAZA) and visit nearby zoos.	2
9	Went to the United States to join in 2017 American Association of Zoo Veterinarians (AAZV) Annual Conference.	2
10	Went to Berlin (German) to join in the 2017 Conservation Planning Specialist Group (CPSG) Annual Conference and the 72 th Annual Conference of World Association of Zoos and Aquariums (WAZA).	2
10	Went to Malaysia to join the Asian Society of Conservation Medicine (ASCM) Annual Meeting.	2
11	Went to Mainland China to join the 2017 Annual Conference of Chinese Committee of Breeding Techniques for Giant Pandas.	2
11	Went to the Philippines to join the Annual Conference of 2017 SEAZA.	5
11	Went to Macau to join the 5 th Cross-Strait Giant Panda Conservation and Education Symposium.	5

2. Observation and Exchanges

◎List of Observations and Exchanges in 2017 that Dispatched Personnel Attended

Month	Name	No. of Participants
4	Went to Japan to implement the "Animals and Visitors – The Study Tour of Japanese Zoos"	5
8	Assisted Commission of Agriculture, Executive Yuan to visit animal welfare relevant units in the United States.	1
9	Went to Mainland China to promote giant panda management, feeding and medical cooperation projects.	4

3. 辦理國際會議及專業研討會

■ 2017年國際螢火蟲年會

4月24-26日於臺北市立動物園特展館國際會議廳辦理2017年國際螢火蟲年會，此係該年會首度於臺灣舉辦，由大安森林公園之友基金會與臺北市政府工務局公園路燈管理處、臺北市立動物園等單位共同主辦。年會共有來自全球各地（包括臺灣）22國，總計有353人報名與會參加，其中包括美國、英國、日本等知名的螢火蟲專家學者，在3天的會議期間，除邀請5位國際知名研究螢火蟲專家進行專題演講外，另共計匯集了近年來世界各國包括臺灣在內的有關螢火蟲生物學研究、保育成果、生態旅遊等共39篇專業論文口頭報告及23篇海報，並在會議期間分享相關經驗及宣傳臺北保育螢火蟲之成果。會議前後並安排了相關活動以擴大會議辦理之行銷效能。會議前4月22-23日，在臺北市立動物園大門廣場辦理「螢光市集」活動，廣邀螢火蟲相關單位

（螢火蟲復育單位、螢火蟲生態產業單位、螢火蟲研究單位等）參與螢光市集，並藉由市集宣傳此國際盛事。會後於4月27-28日辦理阿里山生態旅遊，由阿里山管理處、生態旅遊協會共同合作，帶領菲律賓、馬來西亞、印尼、印度、越南、泰國等將近十餘國東南亞重要國家貴賓，透過深度的體會與介紹，以螢火蟲為主題，體驗或欣賞其中的野生動植物景象，並且了解臺灣的生態特色。

■ 2017第6屆亞洲動物園教育者暨第33屆科學教育年會聯合國際研討會

11月9-12日本園金仕謙園長等共15人前往屏東大學，辦理並參與「2017第6屆亞洲動物園教育者暨第33屆科學教育年會聯合國際研討會」，此次會議為屏東大學與國立海洋生物博物館及本園共同主辦，主題為「與科普共舞」，內容有工作坊、會議活動、會後參訪等，本園共發表5篇報告，共約80位與會人員參與。



2017年國際螢火蟲年會

3. Holding of International Conferences and Professional Seminars

■ 2017 International Firefly Symposium

2017 International Firefly Symposium was held in the International Conference Hall, Special Exhibition House, Taipei Zoo from April 24 to 26, the 2017. For its first time being held in Taiwan, this symposium was co-organized by Friends of Daan Forest Park Foundation; Parks and Street Lights Office, Public Works Department, Taipei City Government; and Taipei Zoo. 353 people from 22 countries participated the symposium, including renowned firefly experts and scholars from the United States, the United Kingdom and Japan. During this three-day symposium, not only were 5 international renowned firefly experts invited to deliver a speech, but also 39 oral presentations and 23 posters of recent biological, conservation and ecotourism researches were published by worldwide firefly experts. Apart from these experts' sharing of their professional experiences, the organizers also promoted Taipei City's firefly conservation efforts and results, and arranged relevant activities before and after the symposium to enhance the marketing efficiency of this event: Before the meeting on April 22 and 23, the "Firefly Conservation Market" was taken place

at the gate of Taipei Zoo to promote the incoming International Firefly Symposium. Firefly relevant units (including firefly rehabilitation, ecological, and research units) all participated in this event. After the meeting, the organizers also held Alishan ecotour on April 27 and 28 together with Alishan National Scenic Area Administration and Taiwan Ecotourism Association. This in-depth firefly tour enabled important guests from over ten south-east Asian countries, including the Philippines, Malaysia, Indonesia, India, Vietnam and Thailand, to experience or relish the wildlife endemic to and ecology of Taiwan.

■ 2017 The 6th AZEC & 33rd ASET Joint International Conference

From November 9 to 12, Director of Taipei Zoo Jason Shih-Chien Chin and other 14 staffs went to National Pingtung University to participate in "2017 The 6th AZEC & 33rd ASET Joint International Conference". Organized by National Pingtung University, National Museum of Marine Biology and Aquarium and Taipei Zoo, this conference is designed with various workshops, meetings and post-meeting visits based on the theme of "Dancing with Popular Science Education". Taipei Zoo totally published 5 reports in AZEC and about 80 people attended this joint conference.



2017整合保育暨穿山甲族群與棲地存續分析 (PHVA) 國際研討會

12月3-8日主辦「2017整合保育暨穿山甲族群與棲地存續分析 (PHVA) 國際研討會」及會前工作會議，透過邀請國際自然保育聯盟專家群 (IUCN/SSC) 指導進行，主題從族群管理提升至整合保育，並廣邀國內外單位參與。與林務局、特有生物研究保育中心等國內單位，共同針對臺灣地區穿山甲族群分析結果發展保育策略；另同時與亞洲地區友好動物園機構，以及來自6個國家的救傷保育中心代表，建立區域性整合保育管理的基礎。議程內容包含介紹 IUCN 保育工具、救傷中心經驗分享、穿山甲族群存續分析工作坊、臺灣地區穿山甲保育策略。透過邀請 IUCN 穿山甲專家群主席及亞洲穿山甲保育相關人士與會，期望藉由穿山甲 PHVA 的示範，亦協助有相似迫切需求的東南亞地區推動相關規劃，將整合保育的模式帶動延伸至其他物種。來自國際自然保育聯盟專家群專家、美國、英國、紐西蘭、中國大陸、尼泊爾、日本、越南、馬來西亞、印度、泰國、新加坡、香港、臺灣等國內外專家學者，共計 13 國 175 位與會。



2017 整合保育暨穿山甲族群與棲地存續分析 (PHVA) 國際研討會
INTERNATIONAL CONFERENCE ON ONE PLAN APPROACH CONSERVATION PLANNING
AND FORMOSAN PANGOLIN PHVA WORKSHOP
DECEMBER 4-8, 2017
TAIPEI ZOO, TAIPEI, TAIWAN



2017 International Conference on One Plan Approach Conservation Planning and Formosan Pangolin PHVA Workshop

"2017 International Conference on One Plan Approach Conservation Planning and Formosan Pangolin PHVA Workshop" and pre-conference work meeting were held from December 3 to 8 under the guidance of IUCN Species Survival Commission (IUCN/SSC). Not only has the conference upgraded its theme from species management to one plan approach for conservation, but also nationwide and foreign units were invited to participate in this event. The Zoo has drawn up conservation strategy based on the analysis results of Formosan pangolin endemic to Taiwan with Forestry Bureau and Endemic Species Research Institute; built the foundation of regional one plan conservation and management approach with other Asian animal-friendly zoos and representative of

animal rescue and conservation centers of other 6 countries. The conference agenda includes an introduction of IUCN conservation tools, experience sharing of rescue center, Population viability analysis workshop for Formosan pangolin and Taiwan's Formosan pangolin conservation strategy. It is the Zoo's expectation to, by inviting the the IUCN Formosan pangolin chairman and Formosan pangolin conservation experts from Asia, the PHVA demonstration of Formosan pangolin will assist South-East Asia, which has similar and urgent needs, to promote relevant plans. This will help to promote and extend the one plan approach strategy to other species. In total, there were 175 experts from 13 countries joined this conference, including those of IUCN and the United States, the United Kingdom, New Zealand, China, Nepal, Japan, Vietnam, Malaysia, India, Thailand, Singapore, Hong Kong and Taiwan.





■ 展演動物福祉評估工作坊

12月9日「展演動物福祉評估工作坊」在本園新光特展館國際會議廳舉行，由本園及台灣動物園暨水族館協會共同主辦，農業委員會畜牧處為指導單位，並廣邀國內動物園暨水族館等展演業者，以及動保團體共同研討圈養野生動物之福祉評估方法。活動以演講結合小組討論的工作坊型式進行，邀請到紐西蘭、英國及澳洲三位國外熟悉動物福祉評估的專家與多位國內學者，以及農委會主管機關，提供「展演動物福祉」在發展、建立、挑戰與政府管理上等不同面向進行分享及探討。上午專題演講共計約200多人參與。下午，分小組討論進行，提供學員挑選自己有興趣的議題，每個議題由2-3位主持人帶領討論，藉由彼此的意見表達與腦力激盪可更深入的融合及吸收。

4. 其他專業交流

- 大貓熊中國保護研究中心黃炎處長來園指導大貓熊之繁殖、飼養管理與醫療。
- 日本大牟田市動物園伴和幸Kazuyuki Ban飼育技師，蒞園發表「大牟田市動物園的嘗試-動物訓練及環境豐富化」專題演講。

- 辦理動物園合作交流教育訓練，日本天王寺動物園派員蒞園觀摩見習，也發表專題演講。

(1) 講者：日本天王寺動物園的飼育主任Hiroyuki Nakayama、飼育員 Noe Nakashima、獸醫Shoichi Ochi，講題：「日本天王寺動物園草食獸、食肉目及靈長類的動物管理與醫療」。

(2) 講者：荷蘭Apenheul primate park保育員Arun Idoe和Sjaak van den Nieuwenhuis，講題：「巨猿類照養經驗」。

- 英國Howletts動物園Brian Hammer (Deputy Section Head)，蒞園發表「英國Howletts動物園經驗分享」。

- 日本神戶那須動物園左藤園長、旭山動物園坂東園長、上野動物園、天王寺動物園、常盤動物園、京都大學綜合博物館、美國聖地牙哥動物園、馬來西亞檳城蝴蝶園、中國大陸南京動物園、威海市劉公島國家森林公園動物園、福州動物園等諸多貴賓分別蒞園參訪。

- 福州動物園動物管理科3名員工來園交流，並於臺灣區、非洲區、雨林區、調配室及分子生物實驗室等館區實習。

■ Exhibited Animal Welfare Workshop

Co-organized by Taipei Zoo and Taiwan Aquarium and Zoological Park Association (TAZA), and instructed by Department of Animal Industry of Council of Agriculture, the "Exhibited Animal Welfare Workshop" was held in the International Conference Room of Hsinking Special Exhibition House of the Zoo on December 9. Players from domestic zoo and aquarium exhibition and performance industries, and animal conservation groups were invited to discuss the methods of assessing captive wildlife's welfare. This event was carried out in forms of team-based workshop. Three foreign experts (New Zealand, the United Kingdom, and Australia) who are familiar with animal welfare assessment, a number of domestic scholars, and Council of Agriculture were invited to join this event. The participants were invited to share their experiences and discuss issues in regard to the development and establishment of "exhibited animal welfare", confronted challenges, and government's management policies. About 200 people participated in the lecture in the morning. In the afternoon, a number of team-based discussions were carried out and participants could select the topics in which they are interested to join. Each topic was hosted by 2 to 3 experts for further discussions. This has enabled participants to better understand and learn from the discussion by expressing their opinions and debating the topic with the others.

4. Other Professional Exchanges

- The Director of China Conservation and Research Center for Giant Panda Huang Yen visited Taipei Zoo to provide his experiences on breeding, feeding, managing and treating giant panda.

- The keeper of Omutashi Zoo (Japan) Kazuyuki Ban visited the Zoo and delivered a speech on "Attempts of Omutashi Zoo - Animal Training and Enriching the Environment".

- Organized zoo cooperation, exchange and educational trainings. Tennoji Zoo dispatched personnel to visit Taipei Zoo for an observation tour and to deliver a speech.

(1) Lecturer : Curator of Tennoji Zoo Hiroyuki Nakayama, keeper Noe Nakashima, and veterinarian Shoichi Ochi; the topic was "Animal Management and Medical Treatment of Tennoji Zoo - Herbivorous, Carnivores and Primates".

(2) Lecturer : keeper of Apenheul Primate Park (the Netherlands) Arun Idoe and Sjaak van den Nieuwenhuis; the topic was "The experiences of taking care of Giant Apes".

- Deputy Section Head of Howletts Zoo (the United Kingdom) Brian Hammer visited the Zoo and delivered a speech on "An Experience Sharing of Howletts Zoo (the United Kingdom)".

- The director of Kobe Animal Kingdom (Japan) Sato, director of Asahiyama Zoo Gen Bandō, and other guests from Ueno Zoo, Tennoji Zoo, Tokiwa Zoo, The Kyoto University Museum, San Diego Zoo (the United States), Penang Butterfly Farm, Nanjing Zoo (China), Weihai Liugongdao National Forest Park and Zoo, Fuzhou Zoo have visited Taipei Zoo respectively.

- Three staffs of Animal Management Division of Fuzhou Zoo visited Taipei Zoo, and had an internship in the Formosan Animal Area, African Animal Area, Asian Tropical Rainforests Area, dispatch room and molecular biology laboratory.

