

探訪 彩虹國度

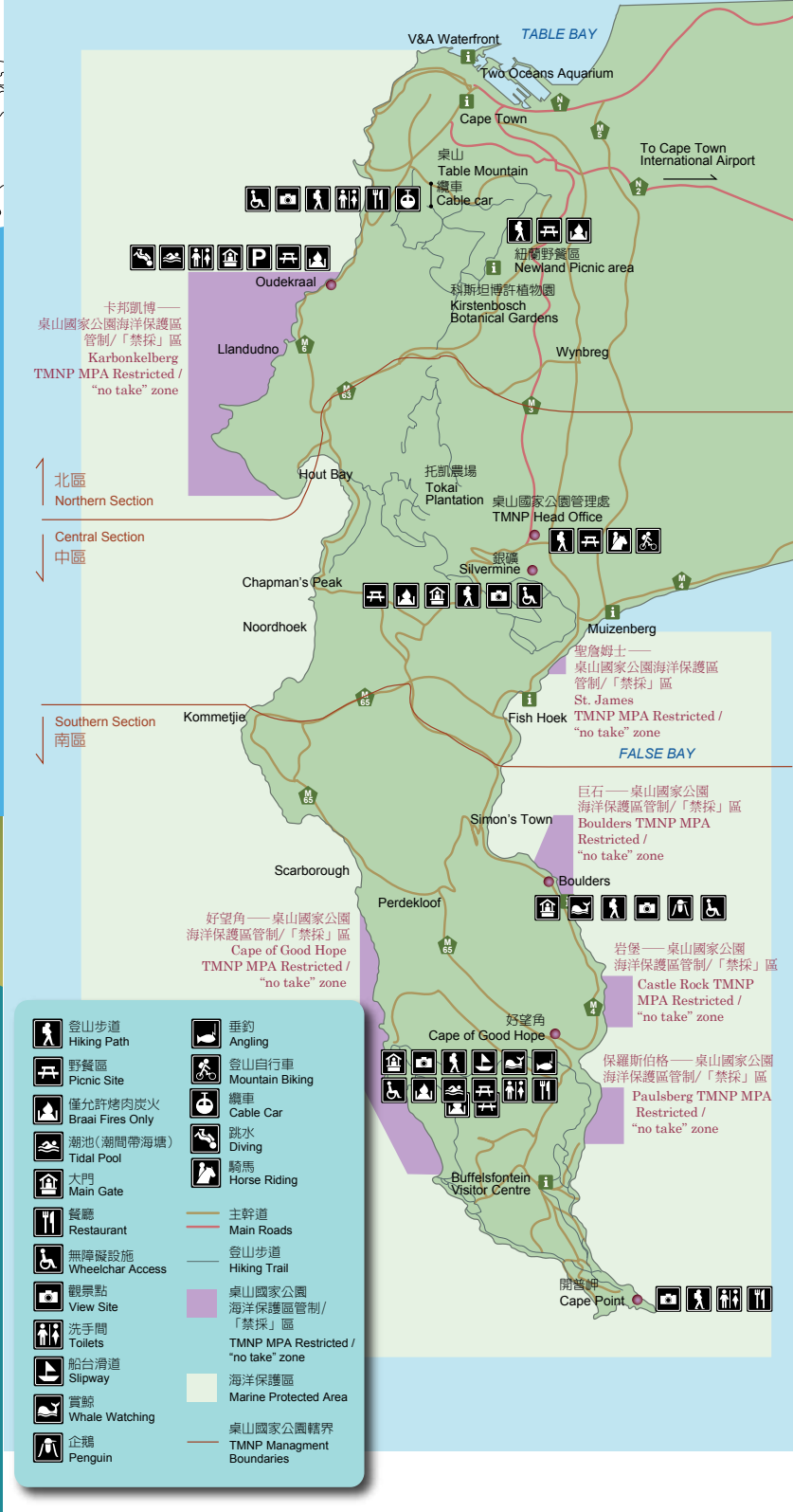
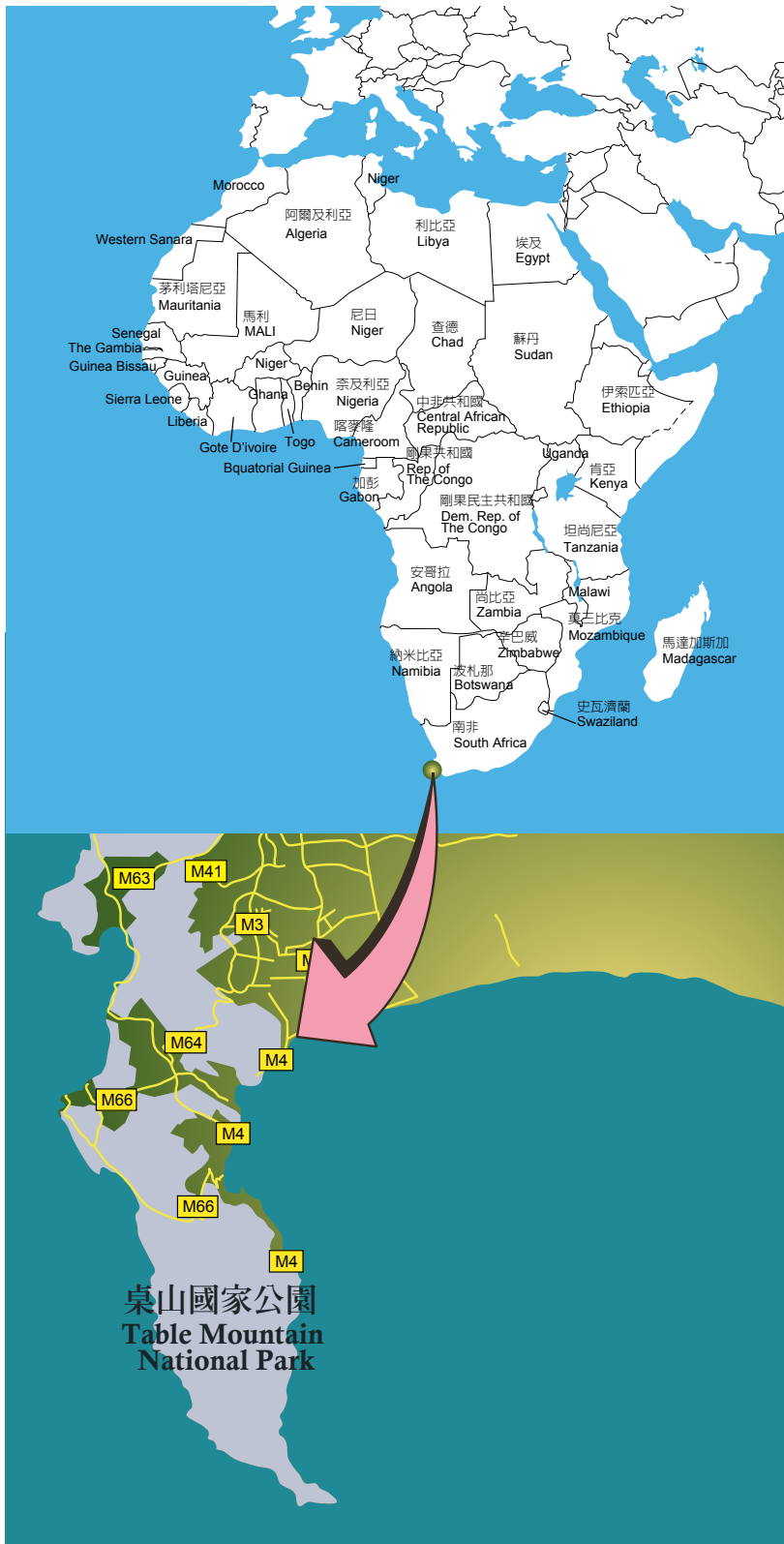
南非開普敦市見習之旅

A Visit to the Rainbow Nation
Learning from Cape Town in South Africa

撰文 & 圖片提供 Text & Photo Provided by/ 陳家鴻 Chia-hong Chen
翻譯 Translator/ 胡家璇 Donna Hu



從桌山山頂可嘗試以垂降方式下山。
A climber may try rappelling down from the top of Table Mountain.



2007年，南非開普敦市議長 Mr. Dirk Smit 來臺訪問，對於臺灣環境保護的績效留下深刻的印象，遂於隔年提出兩國交流計畫的草案。2010年10月，開普敦市積極派員至陽明山與墾丁國家公園進行6週的研習。

2011年8月，雪霸國家公園管理處陳家鴻技士與海洋國家公園王俊堯技士懷著重大的託付與戒慎的心情，前

In 2007, an exchange program on environmental protection was proposed by Cape Town city speaker Mr. Dirk Smit. In October 2010, representatives from Cape Town first paid a 6-week visit to Yangmingshan National Park and Kenting National Park. This August, Technical Specialists Mr. Chia-hong Chen from Shei-Pa National Park and Mr. Jun-yao Wang from Marine National Park humbly accepted the daunting task to learn from South Africa's experience in environmental

往南非展開見習之旅，見習內容包括了環境教育、保育實務、保育資訊技術、資源管理、生態旅遊、生態冒險活動、廢棄物管理、瀕危物種管理以及外來入侵種管理等領域。

南非，這塊對臺灣人而言，或許只是在「2010年世界盃足球賽」看過的地方，透過此次的交流，可帶來哪些不同的見度與認識？

上帝的餐桌 桌山國家公園

桌山是南非的重要地標之一，也是開普敦市的LOGO，對當地居民來說是神聖崇高的象徵。獨特的造型，自遠處觀之，山頂平坦如桌面，故得桌山之名。山頂海拔最高處為1,085公尺，周邊有多條登山步道通往山頂，許多遊客會選擇搭乘纜車上山。於桌山頂往北遠眺，可看到獅頭山(Lion's Head)、信號丘(Signal Hill)、如碗狀的市中心區(City Bowl)、羅賓島(Robben Island)，以及為2010世界盃足球賽所興建的足球場館(Stadium)。

遊訪此時，常可在開普敦市的各類文宣品、報紙上見及頗熟悉的催票景象，原來，桌山與國內的玉山同名列於正火熱進行的世界新7大奇景的28個決選名單中，故隨處可見「Vote for Table Mountain」的文案廣告。

桌山國家公園成立於1998年，由北邊的信號丘、桌山、到南邊的角點(Cape Point)皆為桌山國家公園的範圍，南北長度約70公里，總面積約為24,310公頃，涵蓋了許多海灘與海洋區域。地質學家表示，桌山可能是世界上最古老的山塊，且其生成年代至少是喜馬拉雅山的6倍。在整個園區中，植物種類超過2,200種，令人驚訝的是，在僅57平方公里面積裡，竟存有將近1,500種植物之紀錄。

經營管理方面，桌山國家公園分為北、中、南與海洋四個區域，每個區域皆有負責之主管(manager)與工

education, conservation practices and technologies, ecotourism, and the management of resources, wastes and alien species.

This program may help people in Taiwan know more about South Africa from broader perspectives, rather than simply as the country that hosted 2010 FIFA World Cup.

Table Mountain National Park (TMNP)

Table Mountain is a flat-topped mountain forming a prominent landmark overlooking the city of Cape Town in South Africa, symbolizing sacredness and sublimity in local residents' mind. It is 1,085 m above sea level, with several hiking trails and a cableway available to reach the top. Standing on the plateau and looking toward the north, a panoramic view of Lion's Head, Signal Hill, City Bowl, Robben Island, and the stadium built for 2010 FIFA World Cup are all clear in sight.

As Table Mountain, just like Yushan in Taiwan, is one of the 28 candidates in the New 7 Wonders of Nature campaign, ads of "Vote for Table Mountain" are seen in publications, newspapers, and almost everywhere in Cape Town.

Established in 1998, TMNP stretches from Signal Hill in the north, through Table Mountain, to Cape Point in the south, a distance of roughly 70 km, covering an area of 24,310 ha, including many beaches and marine areas. According to geologists, Table Mountain may be the oldest massif in the world, formed at least 6 times earlier than the Himalayas was. TMNP supports more than 2,200 plant species. It was once recorded that even in an area of only 57 sq km, nearly 1,500 plant species occurred!

TMNP is divided into four management areas: north, south, central, and marine. Each area has an Area Manager who manages a team consisting of section rangers and field staff. These teams are responsible

從桌山山頂可眺望開普敦市中心區、獅頭山及遠方海面上的羅賓島。
From the top of Table Mountain one could overlook City Bowl, Lion's Head, and Robben Island off the coast.





作人員，包括地區管理員 (section ranger) 與野外工作人員 (field staff)，主要工作為生物多樣性經營管理、外來種移除、林火經營管理、遊客管理與執法工作 (Law Enforcement)。

在南區的好望角園區入園時必須要付費，入口處會依照不同季節，定出最晚的出園時間，出園時間訂立嚴謹，除了有預訂於園區內住宿的遊客，其他人若超過時間仍在園區內遊蕩，便會進行相關的罰款。此外，在特定地區的海邊設有烤肉設施與加蓋垃圾桶，供民眾使用，其加蓋垃圾桶設有特殊裝置，在蓋子上方，有一卡樁，需要先將卡樁壓下才能順利的將蓋子打開，是為避免野生動物 (尤其是狒狒) 翻找取食垃圾桶裡的食物，並極力宣導遊客不應隨意餵食，避免造成狒狒取食依賴而衍生出更多的傷人事件。

與臺灣不同的是，南非國家公園的員工均具有執法權，也有執法部門進行遊客管理、山難搜救、預防犯罪等工作，但均無配槍也無國家公園警察的編制，只有在必要時，才會由警察單位進行協助。目前在南非的國家公園裡，僅有位於東北方的克魯格國家公園，因為有強大的盜獵壓力，園區巡查員才有配槍。而有別於臺灣國家公園有各自的管理處，南非雖有 22 個國家公園，卻只有一個管理處 (Headquarters)，該名為 South African National Parks (簡稱 SANParks)。

for all operational activities, including biodiversity management, alien clearing, fire management, visitor management and law enforcement.

Entry fees are paid at the park's south area named "Cape of Good Hope." Exit times vary in different seasons. Visitors, except for those staying in overnight accommodation, who do not leave the park at the required time, will be fined. In some coastal areas equipped with a special kind of garbage bin, visitors are allowed to barbecue. This kind of garbage bin has a latch on its lid that needs to be pushed down and then the lid can be opened. It is designed to prevent wild animals, baboons in particular, from searching for food in the bins. Visitors are also reminded not to feed the baboons to avoid any possible accidents.

In contrast to Taiwan, where each national park has its own headquarters, the 22 national parks in South Africa are managed by only one headquarters called South African National Parks (SANParks). In addition, SANParks is not equipped with police corps, but all staffs, though unarmed, possess the power to enforce law. There is also a law enforcement division responsible for visitor management, search and rescue, and crime prevention. The police only intervene if necessary. Currently only rangers in Kruger National Park are armed due to serious poaching issues.



保護自然 不遺餘力

植物地理學家根據特徵性植物類型，將全世界劃分為植物地理區系(Floristic Kingdom)，包含泛北區(Boreal)、古熱帶區(Palaeotropical)、新熱帶區(Neotropical)、開普區(Cape)、澳洲區(Australian)與南極與巴塔哥尼亞區(Antarctic and Patagonia)。其中，位於南非的開普植物區系雖僅占世界面積的0.04%，然而其植物種類卻高達全世界的4%，是溫帶氣候中植物分布最多樣化的區域，已在2004年被宣布成為世界自然遺產地。

開普植物區系約有9,000種植物，其中以細葉灌叢植物(Fynbos)為最主要的植被群，約占80%以上；其他的植被群則包含海岸植被(Strandveld)、濕地(Wetlands)、犀牛灌叢(Renosterveld)與森林。這5種主要的植被群又依其土壤與降雨細分為21種植被類型，開普敦市涵蓋了其中的11種，更有3種特殊的植被全世界僅存於此地。

然而，當開普敦市的開發壓力與日俱增，物種的生存棲地亦遭受威脅，為保護珍貴的物種與棲地生命，至目

Protect the Nature by All Means

A phytogeographer divided the globe into six floristic kingdoms (Boreal, Palaeotropical, Neotropical, Cape, Australian, Antarctic and Patagonia) based on plant characteristics and distributions. The Cape Floristic Kingdom represents only 0.04% of the global area but contains 4% of the world's total plant species, the highest flora diversity in the temperate climate. In 2004, the Cape Floral Region Protected Areas were inscribed as a World Heritage Site.

This region is home to more than 9,000 plant species, 80% covered with fynbos. Other vegetation types include strandveld found mostly along the coast, wetlands, renosterveld, and forests. These 5 vegetation types are further classified into 21 subtypes based on soil properties and rainfall patterns. The city of Cape Town encompasses 11 of them, with 3 vegetation subtypes are endemic to Cape Town.

However, due to the rising pressure of urban development, wildlife habitats are being threatened. As a result, the city of Cape Town has set up 31 nature

1	2	3

1. 保護區工作人員介紹特殊設置之垃圾桶的使用方法。
The staff was explaining how to use the specially designed garbage bin.
2. 保護區中處處可見皆規範嚴明的告示牌。
Warning signs written with strict regulations are frequently seen inside the protected areas.
3. 大部分遊客上桌山的方式為搭乘纜車，右邊為桌山國家公園為票選世界新七大奇景的催票廣告。
Most tourists go up to Table Mountain by cable cars. On the right is the ad of "Vote for Table Mountain" for the New 7 Wonders of Nature campaign.



前為止，開普敦市已設立了31處自然保護區，以及一些私人、省級以及國家級的保護區。

保護 最完善的經營之道

開普敦市的保護區主要以保護植被為主，係依照不同植被類型過去的分佈情形與數量，以及目前的生存狀況，訂出一個可以使該類型植被永續生存的保育目標。市政府保育機關除做好現有保護區的經營管理工作，更積極地與省府或中央溝通，試圖增加保護區之間的連結、面積與數量。

另外，亦發展出一套鼓勵私有土地提供成為保護區的管理工作 (stewardship)。包括了去說服地主 (通常是農場擁有者) 把土地某部分當成保護區，若願意簽署同意書，則變為更嚴謹 (受法律規範) 的保護區，相對的，市政府也會提供經費，進行一些保護區的管理與維持工作 (如，設置圍籬、清除外來種等)。

市府管轄的31個自然保護區依所在位置之行政分區分為北區、中區、南區與東區，每個分區各有一位分區主管 (Area Manager)，大部分的市級自然保護區皆開放民眾付費進入，並依個別保護區的條件進行有

reserves and some other reserves at private, provincial, and national levels.

Protection is the Best Management

Conservation goals are set to maintain sustainable growth of each vegetation type based on its past and current statuses in Cape Town. The responsible authorities not only manage the protected areas, but also actively communicate with central and local governments, hoping to incorporate more land into protected areas.

The concept of stewardship has also been developed to consolidate private land into protected areas by donation, purchase, contract or cooperative agreement. Once the private land becomes a part of the protected areas, the city government provides funding for maintenance, such as building fences and clearing alien invasive species.

The 31 nature reserves, under the city government's jurisdiction, are divided into north, central, south, and east areas, each with one Area Manager. Most municipal nature reserves are open to the public with entrance fees. Certain activities are allowed in each area, such as hiking, picnic, barbecue, fishing, and water sports. Each nature reserve has one manager, one to two permanent or contract

1	2	3

1. 此處正進行移除外來植物的工作。為避免再生，植物砍伐後皆塗上農藥，以致形成一片橘紅色的地景。
The area was undergoing the process of clearing alien species. To make sure they would not grow again, these plants were all chopped off and sprayed with chemicals, which looked reddish orange in color.
2. 保護區的工作人員至社區幼稚園進行動物教學，讓生態保育向下紮根，不只是「紙上談兵」。
A staff member of the protected areas was teaching kids of a local kindergarten about the importance of protecting animals through hands-on experience.
3. Rondevlei 保護區湖泊中的河馬。
The wild hippos in the lake at Rondevlei Protected Area.

限度的活動，如健行、野餐、烤肉、垂釣或各項水上活動。個別保護區則編制有一位主管、一至兩位永久職員工或聘僱人員與一至兩位實習生或大學生。實習生與大學生來自大專院校相關科系，在前兩年的課程結束後，要進行一年的實習課程 (internship)，故幾乎每個保護區都有實習生，須協助保護區經營管裡的各項工作。如此一來，學生們藉由實際的實習經驗，更能深刻體會到環境保育的重要性，讓生態保育的工作不光只是在學校「紙上談兵」。

「林火管制」是南非自然保護區管理的另一大重點。由於南非特有的細葉灌叢植物群若長期處無火狀態，會使毬果無法打開、種子無法發芽，植群將無法更新而逐漸老化死亡。故每個保護區工作人員均需具備林火管理與救火之相關知識與技能。並且在每年特定時間進行適度的人為引火進以使植物能天然更新。

深刻體驗 以景交流

於參訪的行程中，曾在工作人員的帶領下搭乘動力船參觀開普敦市唯一有野生河馬的自然保護區，保護區四周有圍籬，主要為避免河馬逃逸傷人。行駛時，眾人發現有兩母一公的河馬，而公河馬有追逐趨近的意圖，由於在南非曾有河馬將船咬成兩半的紀錄，故整個航程都令人神經緊繃。

staff, and interns or college students, who major in relevant disciplines. After taking courses for two years, they are required to do an internship for one year to help with the managerial and operational work in the protected areas to learn the importance of environmental protection through hands-on experience.

Fire management is critical to the nature reserves in South Africa because many of the fynbos seeds germinate only after the intense heat of a fire; therefore every staff member must have fire management knowledge as well as firefighting skills. Fires are set under controlled conditions in certain times every year to allow natural regeneration of vegetation.

A Fruitful Exchange Experience

In this trip, we visited by boat the only nature reserve having wild hippos under the guidance of its staff. Fences had been built around the area to prevent the hippos from escaping and hurting people. As we were told of an accident of hippos wrecking the boat, everyone was all nerves when one of the male hippos intended to approach and chase us.



在植物育種繁殖的研習中，生物多樣性經營管理分支的 Mr. Geert 帶我們到其中一個自然保護區去採集兩種瀕臨絕種的 Proteaceae (山龍眼科) 植物 (*Serruria aemula* 與 *Leucadendron levisanus*) 來進行扦插繁殖，從剪取枝條、植物育種、再扦插至培養土中，Mr. Geert 耐心地教導完整流程，讓我們親自操作並對於扦插繁殖能有更全面的收穫與認識。

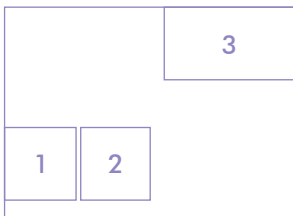
此行另參觀了兩處污水處理廠，此為處理社區的民生廢水，經由多道程序，最後將處理過並且達到排放標準的廢水，排入鄰近保護區的濕地(河流或水塘)中，亦藉由濕地的淨化功能，最後一起排入海中，而這天然或人工的水體，竟也成為野生鳥類的棲息活動場所。

本次交流學習一共拜訪了開普敦市約21處保護區，見習到了許多值得學習與特有的經營管理模式，在一次交流會議中，臺灣國家公園的美景介紹

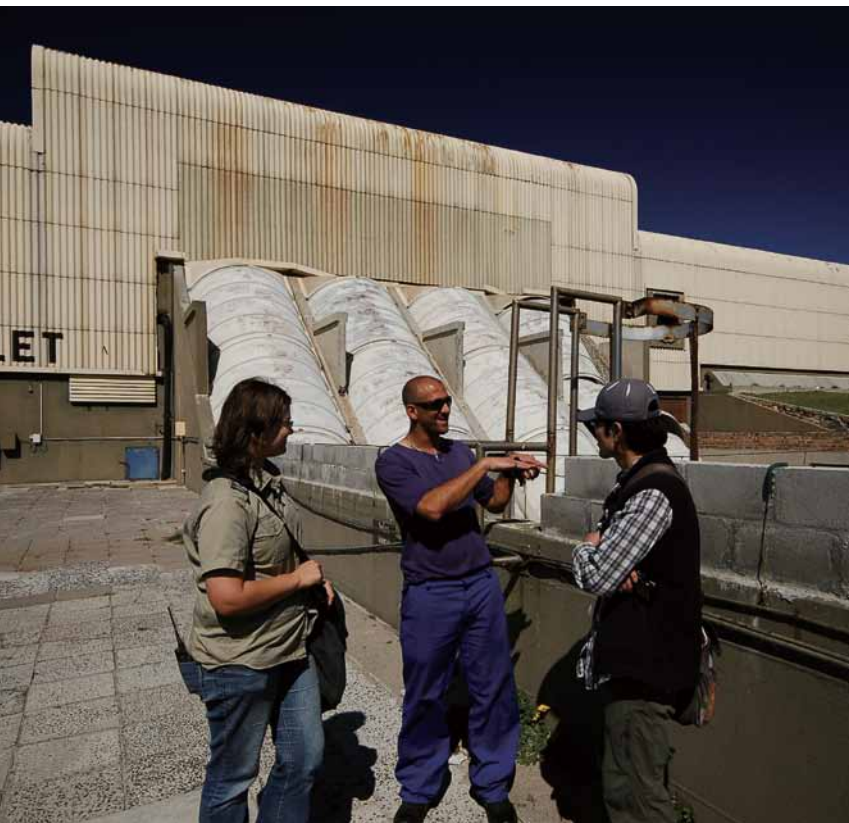
In the plant propagation workshop, Mr. Geert, in charge of biodiversity management, took us to one of the nature reserves to collect two endangered species belonging to Proteaceae family, *Serruria aemula* and *Leucadendron levisanus*. He patiently taught us the cuttage propagation method step by step and let us practice by ourselves. That was an extremely valuable experience.

Moreover, we visited two wastewater treatment plants which process domestic sewage through multiple procedures. The treated sewage that meets discharge standards then flows into neighboring wetlands (rivers or ponds) to be cleaned and eventually flow into the sea. These natural or artificial water bodies have even become habitats for wild birds.

We visited a total of 21 nature reserves in the City of Cape Town and learned about many distinctive management and operation models. In one of the meetings, our presentation on the national parks in Taiwan won much applause from



1. 在 False Bay 一處大型污水處理廠裡，由工作人員介紹污水處理及排放過程。
In a large wastewater treatment plant at False Bay, a staff member was explaining how the sewage was processed and discharged.
2. 生物多樣性管理分支的 Geert 先生正在調配扦插所需之培養土。
Mr. Geert, in charge of biodiversity management, was mixing the soil needed for cottage breeding.
3. 棲息於 Simon's Town Boulder 海岸的非洲企鵝群，此為桌山國家公園海洋區負責管理。
A group of African Penguins (*Spheniscus demersus*) were resting in a corner of the coast of Simon's Town Boulder, an area designated to the marine area of Table Mountain National Park.





贏得所有參與人士的讚賞，在場有位男士拿出將近30年前曾經到過台北與花蓮（太魯閣國家公園）的照片拿給我們分享，並表示有生之年還想再到臺灣飽覽這些美景。

在季刊出刊前獲得的最新消息，桌山國家公園已晉升為世界新7大奇景之一。雖然，擠進前28強的臺灣玉山最後功虧一簣，但仍是一個美好經驗。要讓世界見度臺灣，就必須透過不同的交流，才能讓臺灣之美廣布出去。或許，在環境限制下，有許多空間尚待我們去克服與學習，但毫無疑問的，臺灣的美景是大自然對我們最貨真價實的饋贈，於此，我們應透過更多的交流，以激盪出更多美麗的火花。🌍

the participants. One gentleman even shared his photos taken nearly 30 years ago in Taipei and Taroko National Park (TNP), saying that he wished to see the beautiful scenery again in his life.

Right before the publication of this issue of NPQ, it was announced that Table Mountain National Park has been voted as one the world's New 7 Wonders. Though Yushan fell short to make the list at the last minute, it was still an honor to rank among the final 28 candidates. Taiwan's beauty must be demonstrated to the world in different ways. Although there are many obstacles ahead, we should not waste the most treasurable gift endowed to us by the Nature. Through international exchange programs like this one, we can make the beautiful island be seen by people around the world. 🌍

簡介 Profile

陳家鴻 Chia-hong Chen

大學與研究所主修生物，學生時代為墾丁陽光之子，也是雪霸、玉山解說志工。1998年走過聖稜線後從此愛上了登山，2006年有幸進入夢想的職場工作，現為雪霸國家公園遊憩服務課技士。

Chen majored in biology in university and graduate school, during which he volunteered as "the Son of Sunshine" (volunteer interpreter) of Kenting National Park, and also served as volunteer interpreter in Shei-Pa National Park and Yushan National Park. He has been a mountain-lover since he climbed Shengling Ridge in 1998. He considered himself lucky as he has been able to work where he longs for since 2006. He is now a Technical Specialist of the Recreation Service Division at Shei-Pa National Park.

