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Workshop on Asian Pangolins

The “Workshop on Asian Pangolins,” sponsored by the Taiwan Forestry Research Institute, Council of Agriculture and SWAN (Society for Wildlife and Nature) International, was held in Taipei, Taiwan from December 17 to 18, 2001. This was the first gathering of the Pangolin Specialist Group (PSG) of IUCN/SSC. Scientists from Taiwan, Hong Kong, Nepal, Sri Lanka and Thailand reported and discussed the biology, distribution, threats, conservation, and captive breeding programs of Asian pangolins (Chinese pangolin, Indian pangolin and Malayan pangolin) in Taiwan, southern China, Nepal, Sri Lanka and Lao PDR.

Participants at the workshop also discussed the future development of the PSG. Issues discussed included the problems, needs, networking, and research priorities of pangolin specialists, standard data collection, captive breeding techniques, and means to raise public

awareness. Participants at the workshop visited the Taipei Zoo where captive Formosan pangolins have been successfully bred. The workshop acted as a stepping-stone for better networking and information exchange within the PSG. It also helped to identify knowledge gaps regarding Asian pangolins. Participants were encouraged by the meeting and committed themselves to spending more effort on the research and conservation of pangolins.



Commercial Captive Propagation and Wild Species Conservation

A workshop on commercial captive propagation and wild species conservation, organized by the IUCN/SSC Wildlife Trade Programme was held in Florida from December 7 to 9, 2001. The workshop aimed to: review the known conservation benefits and costs of a range of commercial production systems for wild species such as aquaculture, medicinal and horticultural plant cultivation, and production

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of terrestrial animals; prioritize further research needs to determine the circumstances under which such production systems can relieve pressure on wild stocks; evaluate the direct environmental costs of these systems; and provide a strategy to develop policy guidelines on commercial captive production systems to ensure that species conservation and human development needs are met in future. Participants came from a variety of private, governmental and non-governmental organizations representing a range of disciplines including wildlife conservation, biology, economics, social anthropology, and commercial producers of medicinal plants and animals for the pet and ornamental trades. The workshop provided an opportunity to share

views and develop understanding between these diverse groups. Mr. Tang Hung-Chi, senior specialist at the Department of Aquaculture and Coastal Fisheries Administration, Council of Agriculture, was invited to present a report on Taiwan's work in the commercial aquaculture of wild species.

The outcomes of this workshop included: for the domestication of plants issue, a model to investigate the transition from wild collection to the domestication of medicinal species; for fish aquaculture, a checklist of issues to be addressed when assessing the conservation costs and benefits of potential aquaculture projects; for production of terrestrial animals, a study of the potential costs and benefits of captive production, a stakeholder analysis to determine who is likely to benefit under certain production systems, and (to be developed) a programme to review case studies and develop a widely tested set of recommendations.



New Coastal Wildlife Refuge

After four years in preparation, Taiwan's 14th wildlife refuge—the Hsinchu Coastal Wildlife Refuge—was finally created this year. Situated in northern Taiwan, the Refuge stretches along the Hsinchu coastline, which is known for its scientific and cultural value. The mud banks along the coast form the largest coastal wetland in northern Taiwan. The

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intertidal belt stretches more than 1,000 hectares and is abundant in natural resources. It provides habitat to shrimp, crabs, conches and other mollusks, attracting large numbers of waterfowl and *Grapsus grapsus*. In particular, Hsiangshan intertidal belt, located between the mouth of Keya Creek and Nankang Wuming Ditch, was listed in 1996 as one of the sites in the East Asia Waterfowl Protection Network by a COP meeting of the Ramsar Convention on Wetlands of International Importance.

The Hsinchu Coastal Wildlife Refuge occupies an area of 1,600 hectares, including the coastal area south of Keya Creek—wetlands at the mouth of Keya Creek, marshy wetlands at Sanhsingung Creek and Tachuang Creek, Hsiangshan mud wetlands, Haishanku mangrove wetlands, and Nankang Beach.

The mangroves at Keya Creek and Haishanku are made up of around 10 hectares of pure, artificially planted *Kandelia candel* (L.) Druce forest. Not far from Keya Creek, the area beside Haishan Fishing Port and Nankang Beach presents typical sand dune landscape with a wide variety of low-growing, creeping shrubs that are salt-resistant, need little moisture and keep the sand in place, including *Sesuvium portulacastrum* (L.) L., *Ipomoea pescaprae* (L.) Sweet. Subsp. *brasiliensis*, *Spinifex littoreus* (Burm. f.) Merr., *Suaeda nudiflora* Moq., *Brachiaria mutica* (Forsk.) Stapf, *Pandanus odoratissimus* LF var *sinensis* (Warb.) Kanehira, *Tetragonia tetragonioides*

(Pall.) Kuntze, and others. The dunes and shrubs that inhabit the dunes not only protect the coastline, but also provide a valuable nature lesson and interesting landscape features.

Continually pounded by the waves, Hsiangshan intertidal belt absorbs and loses moisture with the ebb and flow of the tides and prevents seawater from encroaching onto the land. Natural resources are abundant and the low-habitat species that inhabit the area provide bait, making the area an important aquaculture breeding area for fish, shrimp, crabs and mollusks. It marks the northern-most limit of Taiwan's oyster aquaculture industry. Aquaculture in the region has a history of over 100 years and, at its peak, was an important part of the local landscape.

Over 40 species of crab have been discovered at Hsiangshan intertidal belt, including Stimpson's ghost crabs (*Ocypode stimpsoni*) and bright-blue soldier crabs (*Mictyris brevidactylus*), which can often be seen amassing into dense armies at appropriate seasons. In addition, 274 species of resident and migratory birds—more than half the number of bird species seen in Taiwan—have been recorded at the southern port area on the north bank of Keya Creek. Most transient birds arrive here to rest or winter as fall turns to winter.

The main threat to the Refuge comes from leisure activities. On weekends, after the tide goes out, armies of jeeps and other off-road

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vehicles charge onto the beaches and holidaymakers leave a trail of trash and burnt-out barbecues. In addition, because the coastline is long and flanked by the West Coast Expressway it is often subject to illegal dumping of waste earth from construction projects, unwanted furniture and other large scrap. These factors not only pose a serious threat to the continued survival of species on the wetlands, it also pollutes the environment and destroys the scenic beauty of the coastal landscape.

Plans for conservation and sustainable management have been drawn up to ensure the survival of the plant and animal resources within the Refuge. An administrative center, which will be run by a director or jointly by researchers, has been established to help strengthen public education activities and also to commission scholars and experts to conduct natural resource surveys and environmental monitoring projects within the Refuge.



Council of Agriculture Supports International Conservation Activities

During 2001, the Council of Agriculture (COA) of the Executive Yuan continued to participate in international activities. Furthermore, the COA donated funds and

supported a number of countries and organizations in the implementation and planning of conservation projects.

Firstly, the COA helped the Species Survival Commission (SSC) of the World Conservation Union (IUCN) to undertake a major conservation publicity and education project in 2001, which involved the translation of “IUCN Guidelines for the Prevention of Biodiversity Loss Caused by Biological Invasion” and “IUCN Guidelines for the Placement of Confiscated Animals” into five languages and their publication and distribution around the world.

Secondly, the COA provided funds to the IUCN’s World Commission on Protected Areas (WCPA) for the editing and distribution of three issues of *Park* and *WCPA News*. *Park* is a publication to discuss issues related to protected areas, including theoretical and actual cases. The main objective of *Park* is to provide WCPA and IUCN members and the general public with the latest information on protected areas around the world. *WCPA News* is an important tool for information exchange. The newsletter reports on global protected area issues, including meetings, publications, member reports and other information.

The COA also helped the Wilderness Leadership School Trust (WLST) to undertake an educational project called the Imbewu Project, which hopes to provide the citizens of

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South Africa with new notions about the environment and cultural history. By telling stories in the local dialect, the project aims to teach traditional knowledge to the younger generation and let them gain hands-on experience of nature. Participants are encouraged to take part in conservation and environmental protection activities.

Another project funded by the COA was the publication of the *Earth Negotiations Bulletin* (ENB) by the International Institute for Sustainable Development (IISD). This publication provides balanced, up-to-the minute and objective reports on United Nations environmental and developmental meetings with the aim of creating fair exchange of information during meetings, in the hope that international negotiations processes can become more open and transparent. ENB provides useful information to decision-makers and individuals interested in influencing decision-making processes. At the same time, it provides academic institutions with information regarding international environmental conferences.

In addition, the COA also supported the Trade Records Analysis of Flora and Fauna in Commerce (TRAFFIC International) in its efforts to enforce CITES and related national legislation, including using the *TRANSECT* process to investigate major cases of international illegal trade, providing relevant information to the law-enforcement bodies of

various nations, and helping implement corrective measures. The Traffic cooperated with CITES secretariat, various governments, international law-enforcement agencies (Interpol and the World Customs Organization (WCO)) and non-governmental organizations in the use of training programs to increase nations' law-enforcement abilities and improve the effectiveness of CITES. Other work included researching and expanding the use of law-enforcement tools, collecting, analyzing and disseminating information about illegal trade, and editing and publicizing information regarding CITES.

Last but not least, the COA donated funds to the Lusaka Agreement Task Force (LATF) for the acquisition of vehicles for wildlife law-enforcement operations in Africa, including promoting investigation work and fighting crimes against wild animals. In addition, the COA donated vehicles, communications apparatus and other equipment to help Senegal improve the management of Ferlo National Park in North Senegal.



Nan-ao Hardwood Forest Reserve

Introduction to Taiwan's Nature Reserves

Located within Nan-ao Township in Ilan County in eastern Taiwan, Nan-ao Hardwood Forest Nature Reserve is situated between the

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watershed of Hoping Creek and the mountain ridge in the upper reaches of Nan-ao South Creek. Nearby creeks converge into a lake, known as Shenmi (Mystery) Lake. The Reserve, which covers an area of around 200 hectares, protects an area of virgin hardwood forest bordering Shenmi Lake and the rare animal and plant species that inhabit it.

Shenmi Lake, which gets its name from the fact that it is enshrouded in mist all year-round, is a pristine, old mountain lake. The sediment on the bottom of the lake is thick and the water is shallow. The lake relies on rainfall for replenishment. At the point where water enters the lake, there is an area of *Salix kusanoi-Lagerstroemia subcostata* forest. The rest of the lake is surrounded by tall grasses, mostly *Miscanthus floridulus*. This proves that the lake area is a typical example of hydrarch succession toward mesic-surrounding. The Reserve protects *Sparganium fallax* Graebner, *Potamogetonaceae maaclianus* A. Bennett and other rare plants. The examples of ecological phenomena like lake evolution and forest reduction and expansion, and the rare marsh flora in the Reserve are valuable from a research standpoint and should, therefore, be preserved.

The Reserve lies at an elevation of between 700 and 1,500 meters. Temperatures change according to elevation. The mean annual temperature is around 13.5 to 16.5 , with seasonal lows of 7.5 to 9.6 and seasonal

highs of 20.3 to 22.2 . Mean annual precipitation is around 2,700mm, with rain falling mainly during the typhoon season in August and September.

The Reserve lies within the thick cloud belt of Taiwan's mountain area and flora belong to the understory of Quercus Forest zone. The natural forest is composed of damp- and dark-loving broadleaf and coniferous species with *Cyclobalanopsis longinix*, *Litsea acuminata*, and *Lithocarpus* being dominant. In addition, *Machilus thunbergii* and *Engelhardtia roxburghiana* are also commonly seen. The land flora in the Reserve can be roughly divided into three types: *Salix kusanoi-Alnus rubra* type, *Lagerstroemia subcostata-Potentilla amurensis* type and *Cyclobalanoriss longinix-Castanopsis carlesii* type. Lakeside flora can be divided into four types: *Potamogetonaceae maaclianus* -*Ceratophyllaceae* type, *Sparganium fallax-Schoenoplectus mucronatus* type, *Isachne globosa (Thunb) Ktze-Oenanthe javanica* type and *Miscanthus floridulus*. In addition, there is a relative abundance of lichens, ferns and orchid family species.

Twelve species of mammal, 50 bird species, five reptiles, seven amphibians and one fish species have already been discovered in the Reserve. Most of the animals are found in the broadleaf forest. The most commonly seen mammal in the Reserve is the Red-bellied tree squirrel (*Callosciurus erythraeus roberti*).

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Other mammals include Formosan blind moles (*Mogera insularis*), masked civets (*Paguma larvate*), ferret badgers (*Melogale moschata*), muntjacs (*Muntiacus reevesi*), Formosan macaques (*Macaca cyclopis*) and wild boar. The most common mountain birds include Chinese bamboo partridges (*Bambusicola thoracica*), Rufous laughing thrushes (*Garrulax poecilorhynchus*), Gould's fulvetta (*Alcippe brunnea*), Grey-cheeked fulvetta (*Alcippe morrisonia*), White-eared sibia (*Heterophasia auricularis*), Rusty-cheeked scimitar babblers (*Pomatorhinus erythrogenys*) and White-throated flycatchers (*Abroscopus albogularis*). Six species of waterfowl are found in the lakeside area, including moorhens (*Gallinula chloropus*), Green-winged teals (*Anas crecca*), Northern pintails (*Anas acuta*), Little grebes (*Podiceps ruficollis poggei*), Mandarin ducks (*Aix galericulata*) and Black-crowned night herons (*Nycticorax nycticorax*).



Upcoming Events

The 4th Conference on Protected Areas of East Asia and the Working Session of IUCN/WCPA will be held in Taipei, Taiwan, from March 18 to 23, 2002. This conference is organized by the IUCN/WCPA-East Asia Steering Committee and the Taiwan Organizing Committee for the 4th Conference on Protected Areas of East Asia. The main theme of this conference is "Benefits Beyond Boundaries in

East Asia," and the aims are to further the development of protected areas in East Asia and strengthen their management by an exchange of information and the continuation of international cooperation and collaboration among the countries and territories of East Asia.

Participants will have the opportunity to join presentations and discussions on six subjects: Conserving Mountain Ecosystems, Conserving Marine Ecosystems, Connecting Protected Areas to Social and Economic Concerns, Building Capacity to Manage Protected Areas, and Conventions on Biodiversity and World Heritage.

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