

INTERNATIONAL CONSERVATION

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International Association of Plant Taxonomy Award for *Flora of Taiwan*

Completed after almost 20 years of intensive work by a joint international team led by Taiwanese scholars, the second edition of *The Flora of Taiwan* recently received the Engler Silver Medal—the highest honor conferred by the International Association of Plant Taxonomy (IAPT). On September 26, 2004, Dr. Huang Tseng-chieng, editor-in-chief of *The Flora of Taiwan*, received the medal on behalf of the research team. Taiwan is the first Asian nation to be awarded this prestigious award, demonstrating the significance of *The Flora of Taiwan*.

IAPT deputy director and Royal Netherlands Academy member Dr. Pieter Baas personally granted the award to Dr. Huang. He applauded *The Flora of Taiwan* for its outstanding content. With more than 4,000 detailed and accurate illustrations of Taiwan's flora, the second edition of *The Flora of Taiwan* enables plant taxonomists all over the world to see at a glance the diversity of Taiwan's plants,

and provides the best possible tool for future research.

In his acceptance speech, Dr. Huang, who is professor emeritus at National Taiwan University, emphasized that the *Flora of Taiwan* was completed not through the hard work of any one person. He stressed that the honor should go to everyone who participated in the project, which involved 99 scholars from Taiwan, the United States, Great Britain, France, the Netherlands, Australia, New Zealand, Singapore, and China. The six volumes contain more than 4,077 species of plants, of which 3,815 are native to Taiwan and 1,067 are unique or endemic to the island and not found anywhere else in the world. *The Flora of Taiwan* also contains 262 naturalized or important exogenous species.

The IAPT is a longstanding and prestigious international academic group. First offered in 1987, the IAPT's Engler Award consists of gold and silver medals and is considered the greatest honor in the field of botany. The Engler Gold Medal is awarded every six years to scholars who have made outstanding contributions to plant taxonomy. The Engler Silver Medal is awarded annually as

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a commendation to notable plant taxonomy books and their authors.

Dr. Huang said that, compared to the Netherlands and other nations, which have national-level botanical museums containing millions of specimens, Taiwan's botanical resources were paltry. At present, Taiwan has only 200,000 plant specimens stored at the botanical museum at National Taiwan University's Institute of Ecology and Evolutionary Biology. He said that this third-level museum faced the annual problem of under-funding; therefore, its academic effectiveness was limited. He recommended that the government should take the initiative to integrate the resources of National Taiwan University, National Taiwan Normal University, the Academia Sinica, and the National Museum of Natural Science to establish a national-level

botanical museum and thus continue to improve botanical research.

In addition, several international experts and scholars, including members of the IAPT board of directors, participated in the 2004 International Seminar on Plant Diversity, held at the Academia Sinica from September 26 to 27, 2004. The seminar discussed a diverse range of issues from traditional taxonomy to the application of molecular biology techniques, evolution and speciation, and phylogeny and phylogeography.



10th Symposium on Cetacean Ecology and Conservation Seeks Sustainable Future for Whale Watching

The 10th Symposium on Cetacean Ecology and Conservation—Toward a Sustainable Future for Whale Watching, held from September 8 to 9, 2004, ended with the finalization of the Action Plan for Whale Watching in Taiwan (2005-2008). After a three-day field trip to Taiwan's east coast, international experts recognized the huge international tourism potential of Taiwan's cetacean resources, friendly people and beautiful scenery, but also indicated that Taiwan must take steps to proactively manage all whale-watching activities.

Whale watching in Taiwan has entered its eighth year. During these years, the speed of growth in the whale watching industry put Taiwan at the top of an International Fund for

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Animal Welfare (IFAW) list of nations developing a whale-watching industry. Although this growth has brought huge economic benefits, it has also been accompanied by several grave problems, including the threat of declining tourist numbers this year and chaotic fare pricing.

In light of this, the Taiwan Cetacean Society held a symposium in September. Experts and scholars from Taiwan and abroad were invited to discuss the current status and future of whale watching in Taiwan. Those present included Mr. Erich Hoyt, a senior researcher with the Whale and Dolphin Conservation Society (WDCS), Professor of Marine Biology and Wildlife and Fisheries Sciences of Texas A&M University and cetacean behavior expert, Dr. Bernd Wursig, Mr. Simon Childerhouse of New Zealand's Department of Conservation Science and Research Unit, Mr. Bruce See and Mr. Greg Vogt of South Africa's Whale Route, Mr. Samuel Hung, director of the Hong Kong Cetacean Research Project and others.

After visiting Yilan, Hualian and Taidong, the experts praised the infrastructure and facilities at Taiwan's whale watching ports. However, they agreed that Taiwan lacks an appropriate framework for regulating whale-watching activities. They said that too many operators had entered the whale-watching industry, attracted by large profits, and that fierce competition was pushing prices down and discounting tour quality. Furthermore, too many whale-watching vessels are increasing the threat to and impact on cetaceans.

At the end of the symposium, participants put forward their recommendations to protect cetaceans and prevent Taiwan's whale watching industry from becoming defunct. In particular, they urged operators to form a self-regulating whale-watching alliance. They also indicated that research is critically important. They called on the government to support basic cetacean ecology research, to emphasize educational programs, and to formulate more enforceable measures to regulate the number of whale-watching boats, whale-watching excursions, and methods of interaction with cetaceans, so that whale watching could be considered high quality ecotourism with strong environmental education value. Finally, they said that, only by realizing and valuing the environmental education aspect of whale watching, could a mutually beneficial balance be sustained between whale watching and Taiwan's cetacean populations.



Forestry and Nature Conservation Police Unit Formally Established

The Forestry and Nature Conservation Police Unit of the Council of Agriculture (COA), Executive Yuan, was formally established on July 1, 2004, with a total of 178 personnel in eight divisions. The force will be stationed at the Forestry Bureau of the COA and the eight Forest District Offices of Luodong, Xinzhu, Dongshi, Nantou, Jiayi, Pingdong, Hualian and Taidong. The police unit will be responsible for conducting routine patrols of their respective forest area and

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cooperating with COA personnel to investigate and eliminate activities within the forest area that contravene the Forest Law, Wildlife Conservation Act, Cultural Heritage Preservation Act and Soil and Water Conservation Act. The unit will comprise police officers with law-enforcement rights and forest personnel with forestry knowledge, who will jointly protect Taiwan's forest resources and investigate illegal activities.

COA officials said that the establishment of the police unit would facilitate mountain patrols and forest preservation work, as well as assisting the COA in its work in forest areas. In the past, forestry patrol personnel did not have law-enforcement rights, so were severely disadvantaged when it came to preventing illegal activities like arson, illegal logging, over-use of forest resources, and over-development of land. Furthermore, the lives of forestry patrol personnel were put seriously at risk if the offending party was carrying firearms. In light of this, the COA initiated negotiations with the Ministry of the Interior (MOI) and other relevant agencies to establish a Forestry and Nature Conservation Police Unit. Permission to allocate police resources and personnel was subsequently granted by the MOI and a professional police unit was established to implement the law and protect Taiwan's forests and natural resources.



Red Fire Ant Prevention and Control

To prevent the spread of red imported fire ants (*Solenopsis invicta*) in Taiwan, on September 3, 2004, the Council of Agriculture (COA), Executive Yuan, invited representatives from the Ministry of the Interior, the Ministry of Economic Affairs, the Ministry of Transportation and Communications, the Department of Health, and the Environmental Protection Administration to hold an inter-departmental meeting with red fire ant experts to create a regular cross-agency reporting meeting for the prevention and control of red fire ants, as well as establishing emergency taskforces for red fire ant control within local government and the COA's Bureau of Animal and Plant Health Inspection and Quarantine (BAPHIQ). To extend the effectiveness of control and prevention work and provide guidance and management, a three-year action plan for fire ant prevention was also drawn up. The relevant agencies were called on to increase funding and personnel quotas for prevention work to meet the current red fire ant crisis and deal with the management of other exotic species in the future.

Red imported fire ants originate from South America. They first entered the southern United States at the start of the 20th century and subsequently spread to Puerto Rico and other nations. The ants' spread was largely due to the movement of grass sod and woody ornamental plants used in landscaping in conjunction with the post-Second World War housing boom. In

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2001, they successfully crossed the Pacific Ocean to create new populations in New Zealand and Australia, where they pose a serious threat to agriculture and the natural environment.

The hazards posed by fire ants are many, including dangers to human health, public safety, agriculture, and the economy. The ants respond rapidly and extremely aggressively to any disturbance of the colony. A single fire ant can sting repeatedly and will do so even after the venom sac has been depleted. They possess one pair of toothed mandibles for grasping the skin before stinging. Initially, the sting results in a localized burning sensation. This is followed within 24 to 48 hours by the formation of a white pustule at the sting site. These pustules can become sites of secondary infection if not kept clean and can leave permanent scarring. In some cases, the venom causes a severe allergic reaction in the victim, which in turn can cause chest pains, nausea, dizziness, shock, and, in rare cases, even death.

Fire ants are omnivorous. They attack and eat earthworms and other organisms that inhabit soil. After destroying the microhabitat within the soil, they then turn to crop seeds, fruit, young seedlings, tender shoots, and root systems for food, causing substantial harm to crop growth and high loss of yields. Like many other ants, fire ants are attracted to electric currents and will infest electrical equipment. If the ants build their nest near residential areas in outdoor equipment, like electricity meters, telephone junction boxes, transformers, traffic light control boxes, etc., they can cause short circuits and equipment malfunction.

BAPHIQ pointed out that the aforementioned cross-agency fire ant prevention and control meeting will be convened by the deputy minister of the COA and will meet every quarter to discuss and monitor the status of fire ant prevention and eradication work. The BAPHIQ emergency taskforces for red fire ant control will be led by BAPHIQ's director and will meet monthly with other agencies. In addition, the county governments of Taipei, Taoyuan and Jiayi counties, all of which have reported ant infestations, will be asked to establish county-level prevention taskforces. BAPHIQ recommended that these be led by the deputy magistrate of the relevant counties in order to monitor the progress of prevention work in areas within their jurisdiction.

BAPHIQ officials also stated that the goal of the three-year action plan is for those areas in Taiwan where fire ants have been reported to effectively control or totally eradicate the ants within the next three years. The scheduled timetable for action is as follows: in the first year, it is hoped that the area of land affected by fire ants can be effectively controlled and the spread of the pest totally prevented; in the second year, it is hoped that the level of threat can be brought down from high alert to low alert; and, in the third year, it is hoped that the level of alert can be kept at low control or full eradication of fire ant populations.

To increase the effectiveness of domestic fire ant prevention and control measures, the COA invited experts and scholars from National Taiwan University, National Chung

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Hsing University, National Chia Yi University, National Pingtung University of Science and Technology, and the Academia Sinica to establish a national center for red fire ant prevention. In addition to designing effective prevention methods, the center will be responsible for providing guidance, reporting and assessing the extent of red fire ant infestation, allocating resources and materials, and other duties.

Officials said that the inter-departmental meeting also reviewed the current status of prevention work undertaken so far by individual agencies and departments. At the meeting, transport and communications officials and economics ministry representatives said that, although no reports of damage to domestic telecommunications systems or electric power facilities had been made, as yet, monitoring efforts would continue to be strengthened. The Chiang Kai-shek International Airport Administration said that the fire ant infestations in areas under its jurisdiction had been controlled effectively and no fire ants had been found at either of the two airport terminals. Those present at the meeting agreed that monitoring at airport, telecommunications and electricity facilities and equipment should be stepped up to prevent any fire ant damage.

Officials from BAPHIQ said that it and the relevant government departments would continue to improve public awareness of the dangers of red fire ants and how to prevent their spread. A special fire ant prevention and control seminar will be held in the near future and a section of BAPHIQ's website

(www.baphiq.gov.tw) will be devoted to fire ant prevention so that members of the public can understand about fire ant ecology and prevention. The website will also be used as a channel for reporting fire ant infestations.



Regulations for Gaomei Wildlife Refuge

Following the Council of Agriculture's decision, on September 30, 2004, to designate Gaomei Wetlands, in Taichung County, as a wildlife Refuge, the Taichung County Government announced its regulations for managing the Refuge and surrounding area. These include outlawing all wildlife (flora and fauna) collection activities, and all picking, felling or burning of plants and trees within the Refuge, without permission from the relevant authorities. Existing fishing activities within the Refuge will still be permitted, as long as fishermen do not contravene Refuge management and operation regulations.

Gaomei Wetlands Wildlife Refuge is located at Dajia Creek estuary in Taichung County. Covering an area of around 701.3 hectares, the Refuge has abundant wild flora and fauna. The area is an important natural coastal habitat in central Taiwan and has at least 105 species of plants, 117 species of birds, 25 crab species, eight mollusk species, and six fish species. In recent years, the wetlands have become a popular and important location for school field trips and weekend recreational activities. Consequently, the Taichung County Government recently publicized its regulations

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for management of the Refuge to protect its valuable flora and fauna.

Other restrictions include outlawing the hunting and poaching of wild animals, the destruction of the natural environment, and developmental activities, including waste disposal, land development, sand and soil collection, rock quarrying, etc. Unless permission has been obtained from the relevant authorities, the release or introduction of animals is also not allowed. Furthermore, any water conservancy construction projects within the Dajia Creek and tidal areas must receive permission from and be subject to monitoring by the relevant authorities in accordance with the Water Conservancy Act, the Wildlife Conservation Act and other relevant legislation.

In addition, vehicles and all other modes of transport, except for those engaged in existing fishery or agricultural activities, are no longer permitted to enter the Refuge unless permission has been obtained from the government authorities. However, based on the need to increase local conservation awareness, parties wishing to conduct ecotours of the Refuge are invited to apply for permission from the county government. The same applies for persons or groups wishing to undertake academic research, conduct educational tours or collect wildlife samples.



Record Frog Hawk Numbers in Kenting

Over 50,000 Grey frog hawks (*Accipiter soloensis*) were spotted in a single day, this

September, at Kenting in south Taiwan, breaking all records.

The record-breaking total of 51,037 hawks was recorded on September 17, 2004, as part of an annual survey of the migratory species. Previously, the record stood at 47,028, which was the number of birds recorded on September 16, 2002. Last year, just 36,125 birds were spotted in mid-September.

Bird watchers from all over Taiwan gathered at Shedding on the Kending Peninsular early on September 17 to await the Grey frog hawks. At around 6 am, the first group of 1,200 hawks set off across the sea on their southward migration. One group after another followed this right up until mid-day. A total of 11 groups of at least 1,000 hawks were recorded, of these the largest flock of 2,640 hawks was recorded at 11:34 am.



Introduction to Taiwan's Nature Reserves: Chiuchiu Peaks Nature Reserve

Established on May 22, 2000, Chiuchiu Peaks Nature Reserve covers an area of 1,198.4466 hectares. Located on the north bank of Wu Creek in Nantou County, the Reserve incorporates the eighth to 20th forest compartment of the Puli Forest Area. The many jagged ridges of Chiuchiu Peaks, can be clearly seen from Shuangdong on provincial route 14A. The Reserve is managed by the Forestry Bureau and was established to preserve the unique landslide cliff scenery created by the Chichi Earthquake that struck central Taiwan on September 21, 1999.

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Chiuchiufeng, literally 'Nine-nine peaks', is named after the 99 peaks that supposedly make it up. From a distance, the dense mass of uneven, rocky ridges look like dancing tongues of flame, giving it its alternate name of Huoyanshan or Fire Mountain. The unusual scenery makes it a popular sightseeing destination in Nantou County. At the foot of the mountain, there is a camping site and a National Art Village, established by Taiwan's cabinet-level Council for Cultural Affairs.

The geology of Chiuchiufeng is composed of a layer of Pleistocene upper Toukoshan Formation gravel, with a thickness of around 1,000 meters. In terms of topography, the area is a mass of saw-tooth-edged ridges. The water permeability of the gravel layer is excellent, so it cements densely and induration increases during drought periods. However, during the rainy season, the gravel is easily broken off through rain erosion, causing the formation of a multitude of sharp ridges divided by deep troughs. The section beside Wu Creek is particularly prone to frequent landslides because the river erodes large sections of rock at the mountain foot, creating overhangs that eventually collapse. This creates an impressive scenery of cliff walls and precipitous ravines.

The area is extremely valuable for academic research, environmental education and general sightseeing purposes. It is one of three major 'fire mountain' topographies in Taiwan, alongside Huoyanshan in Miaoli and 18 Arhat Mountain (Shiba Luohanshan) at Liugui, in Kaohsiung County. Protected areas and nature reserves have already been

established at both Miaoli and Liugui, demonstrating the urgent need to protect Chiuchiufeng and other fragile areas.

The gravel landslides that occurred at Chiuchiufeng during and following the Chichi Earthquake stripped the mountain of its vegetation, presenting the unique and somewhat unearthly scenery that is now protected through the establishment of Chiuchiu Peaks Nature Reserve under the Cultural Heritage Presentation Act.



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