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RCBAS Marine Biologist Receives Japanese Ecology Award

A leading Taiwanese researcher has received the 14th Biwako Prize for Ecology for his long-term study of Taiwan's marine ecology and his contribution to marine conservation. Dr. Ming-shiou Jeng, a research fellow at the Research Center for Biodiversity at the Academia Sinica (RCBAS) in Taipei, is the second Taiwanese national ever to receive the award. Dr. Arthur Chen-tung Chen of National Sun Yat-sen University in Kaohsiung won the prize nine years ago for his research on lake ecologies.

To promote ecological research, the Shiga Prefectural Government in Japan presents the Biwako Prize for Ecology to one Japanese and one foreign researcher each year. This year, Jeng and a Japanese researcher were honored in an award ceremony in Otsu City, on July 1. They received certificates of merit and prize money of 5,000,000 Japanese Yen.

Jeng was selected for the award based on his 30-year career researching marine crustaceans and recording marine change in Taiwan, as well as his recent success in establishing marine protected areas (MPAs) around Taiwan and its outlying islands, according to the review committee.

Over the course of his career, Jeng has focused his research on Taiwan's marine decapod crustaceans and has published dozens of related theses and books. Most notably, his research on the feeding behavior of shallow water hydrothermal vent crabs at Gueishan Island, published in *Nature* in 2004, brought the biological diversity and research value of Taiwan's marine ecology to the eyes of the world.

Shallow water hydrothermal vent crabs are a new species unique to Taiwan, said Jeng. They are able to survive in the extremely acidic and toxic environment created by the sulfur spews of the hydrothermal vents at depths of 15 meters beside Gueishan Island. The crabs feast in

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enormous numbers—something like 300 individuals per square meter, on passerby planktons which are killed by the sulfur spews, the first time such behavior has ever been observed, according to Jeng’s research.

Jeng has also documented the systematics and ecology of more than 120 snapping shrimp species in Taiwan. In recent years, he has been instrumental in the creation of MPAs around the island to conserve and restore valuable and endangered marine biological resources. “There are currently over 2,000 national-level marine protected areas in the world,” he said. “But

Taiwan, unbelievably, does not have a single successful MPA. I hope that at least 20 percent of the coastline around the island of Taiwan can be preserved in MPAs. Only then can some of our species be restored.” Citing the successful examples of government-designated MPAs in Malaysia and Indonesia, Jeng has called on the government and people to protect Taiwan’s unique marine resources. To this end, he has been actively involved in the establishment of Dongsha Marine National Park in the Penghu Archipelago and two MPAs in Green Island and Hobihu within Kenting National Park that are guarded by local volunteer rangers.

The Biwako Prize for Ecology was started in 1991 by the Shiga Prefectural Government, where Biwako Lake, Japan’s largest freshwater lake, is located, to promote conservation and related research. The Prize honors researchers from Japan, East Asia, New Zealand, Japan and other nations who have made significant contributions in the field of marine ecology research and marine conservation.



Salamander Documentary Wins Platinum Award

A documentary film about the Guanwu salamander by a leading Taiwanese nature filmmaker received a platinum Remi Award in

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the Nature and Wildlife category of the 40th WorldFest Houston International Film Festival, on April 28. The Guanwu salamander, first discovered in 1996, is a rare amphibian that lives mainly in the Guanwu area of Shei-pa National Park in Miaoli County, central Taiwan.

‘In Search of the Relic Species from the Jurassic Period—the Story of the Guanwu Formosan Salamander’ by internationally renowned nature documentary director Chen Jin-fa took three years to research and film, and was commissioned by the Shei-pa National Park Headquarters.

The Guanwu salamander, a rare subspecies of the Formosan salamander (*Hynobius formosanus*), is a precious relic species or ‘living fossil’ from the Jurassic period some 180 million years ago. In recent years, however, the continued survival of this rare species has come under threat from the effects of global warming and climate change. Conservation efforts were further hampered by limited knowledge of the species’ life cycle and habits.

To help preserve the Guanwu salamander, three years ago, the Shei-pa National Park Headquarters authorized film director Chen to investigate and film the salamander in its habitat. Despite numerous setbacks, Chen managed to film a female salamander and its young in the mud and debris slide-ravaged mountains of

central Taiwan following Typhoon Aere in 2004, uncovering the first pictures of this secretive animal’s life history. The film’s completion not only records the life history of the Guanwu salamander, but it also marks an important milestone in its conservation.



Taiwan Customs Officials Seize Illegal Wildlife Products

Taiwan’s border police and customs officials seized two shipments of endangered wildlife products concealed within imported containers in May 2007. The illegal caches included protected antelope horns and snakeskins worth an estimated NT\$23 million.

Officers from the First Corp of the Special Police Third Headquarter and the Keelung Customs Bureau found the smuggled wildlife products at Keelung Harbor. The specimens had been hidden in a container of traditional Chinese medicines on a vessel arriving by sea from China via Hong Kong. Some 680 Saiga antelope (*Saiga tatarica*) horns were among the stash with a street value of up to NT\$20.1 million, while the dried skins of 302 Hundred-pace vipers (*Deinagkistrodon acutus*) were valued at around NT\$2.5 million. One of the antelope horns was embedded with a bullet.

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The now protected Saiga antelope once inhabited large areas of the Eurasian steppes from central Asia to Mongolia and Xinjiang Province in China. Now, due to extensive poaching, they are only found in Russia, Kazakhstan, and western Mongolia. Saiga antelope populations have been hunted to near extinction for their horns, which are used in traditional Chinese. Over the past decade alone, numbers have declined by around 90 percent and the Saiga antelope is now classified as critically endangered by the IUCN. The species is believed extinct or near extinct in China.

Purported to have the same detoxifying and fever curing properties as rhinoceros horn, Saiga horn was actively promoted as a substitute for endangered rhino horns and became even more valuable. According to Chinese *Materia Medica*, Saiga antelope horn is believed to clear wind and liver heat, and to dispel hot toxins, thus is considered an important medicine for treating fevers, convulsions, and sudden paralysis. It is an expensive medicine, being priced by gram.

The authorities also seized 302 dried Hundred-pace vipers, including meat, bone, but no viscera. The Hundred-pace viper is listed by the Council of Agriculture as an endangered species. It is extremely hard to catch and commands a high price on the black market because of the popular belief that liquor infused with Hundred-pace viper can detoxify the body

and strengthen the kidneys. Hundred-pace viper spirits are used to remedy impotence, bronchitis, and various skin complaints.

The police are investigating the incidents and have ordered formal statements from the shipments' consignees. Furthermore, customs authorities called on people in Taiwan not to put their faith in folk remedies that use endangered wild animals. They warned that anyone using such medicines ran the risk of prosecution under the Wildlife Conservation Act and, more importantly, reminded people that by using wildlife products they were responsible for the massacre and possible extinction of endangered animals.



Sustainable Management of Coral Reefs in Taiwan

Marine biologists and researchers recently met with local entrepreneurs and residents of Hengchun in south Taiwan to discuss the sustainable management of Kenting's coral reefs. In particular, the voice of the region's young people was heard through the participation of around a dozen local college students, who expressed their concern about the valuable marine resources of their home area and their importance to the local economy.

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The exchange of ideas and information came as part of the Sustainable Management Seminar on Taiwan's Coral Reefs held jointly by the Kenting National Park Headquarters, the Taiwanese Coral Reef Society, the Underwater Photography Association Taiwan, the Research Center for Biodiversity at the Academia Sinica (RCBAS), the National Museum of Marine Biology and Aquarium, and other agencies on May 2 and 3, 2007 as part of the 2007 Coral Biodiversity and Conservation Week. Some of the island's top ocean scientists presented papers at the seminar, which was attended by over 100 local residents, fishermen, scuba divers, diving and snorkeling shop operators, Hengchun area high school teachers, and local hotel and restaurant owners.

Most notably, students from National Hengchun Vocational High School, many of whom have lived in Hengchun all their life, discussed Kenting's coral reefs for the first time with leading marine experts from Taipei and Kaohsiung. They expressed their concern for the Hengchun area and its marine resources, and highlighted the importance of local people in the otherwise mainly academic discussion of the sustainable development and management of Kenting's coral reefs.

During the seminar, Kenting National Park Headquarters Director Shih Chin-fang outlined her strategy for managing marine areas and

resources, while Dr. Fang Tung-yung of the National Museum of Marine Biology and Aquarium explained his long-term analysis of spatial change in Kenting's coral communities. His colleague Dr. Meng Pei-jie explored the hydrology, productivity and environmental pressures of Nanwan. The Taiwanese Coral Reef Society presented papers including: 'Past and Present Coral Reef Fish' by chairman Rong-Quen Jan, 'The Experience of the Houbihu Marine Reserve Model at Kenting' by standing committee member Tsai Yung-chun and 'Ocean Thinking' by standing committee member Kuo Tao-jen. The acting director of RCBAS, Dr. Kwang-tso Shao analyzed 'Latest News of Coral Reef Fish', and Professor Chang-feng Dai of National Taiwan University's Institute of Oceanography gave a paper entitled 'Global Climate Change and its Impact on Taiwan's Coral Reefs'. For the full versions of these papers in Chinese, please visit: <http://www.sinica.edu.tw/~tcrs/work/2007-4-27a.pdf>



Wildlife Conservation and Research Symposium in Taipei

Over 50 biologists and conservationists put forward conservation-related ideas and reported results of recent biological research at a Wildlife Conservation and Research Symposium at National Taiwan University's International

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Conference Center in Taipei on June 28 and 29, 2007.

Recently developed molecular techniques are being used to classify Taiwan's small mammals more accurately, leading to a better understanding of their physiology and more effective conservation plans for them, according to Dr. Lin Liang-kung of Tunghai University's Department of Life Sciences.

Of Taiwan's estimated 80 or more species of small mammal, many are either unnamed or wrongly classified, he said. However, advances in molecular science are enabling the discovery of new species and the reclassification of existing species to give them a more accurate taxonomic status, he said.

Conservation can also be assisted by learning from traditional cultures, according to National Taiwan University Forestry Department Assistant Professor Dau-jye Lu. As human society develops, contact between humans and wild animals will increase, raising the need for conservation plans to consider the role and issues of local people, he said. By learning directly from local people, conservation issues can be assessed more objectively and conflicts between humans and nature can be more effectively resolved, he said.

Lu pointed out that indigenous cultures were a valuable resource in solving conservation problems because indigenous people in Taiwan

and around the world have lived harmoniously with nature for many hundreds of years, using animal resources in traditional, sustainable ways.

As well as focusing on conservation and related topics, the seminar also introduced the latest findings in biology research in Taiwan. Areas of discussion included amphibian and reptiles, freshwater fish and invertebrates, birds, mammals, and conservation and restoration. Representatives of National Taiwan University Biodiversity Research Center and other agencies that helped organize the seminar said that they hoped that this seminar and others like it would help improve awareness of the status and results of Taiwan's latest wildlife research. They also hoped the seminar would enable participating professors, students, government officials, and representatives from conservation NGOs to work together to improve the quality of Taiwan's conservation work.



New Mole Species Found at Yushan

Taiwanese and Japanese researchers formally announced the discovery of a new species of endemic mole in May this year. The Taiwanese high mountain mole was published as a new species distinct from the Taiwanese lowland mole in the international life science journal *Systematics and Biodiversity* published

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by the Natural History Museum in London.

Characterized by its small body size, dark fur, protruding snout, and long tail, the Taiwanese high mountain mole (*Mogera kanoana*) was sufficiently different from the Taiwanese lowland mole (*M. insularis*) to merit being classified as a distinct species.

The species was first recorded by the Japanese naturalist Tadao Kano in 1940, according to a researcher at the Yushan National Park Headquarters. Kano discovered the mole in the Syueshan Mountain Range and published his findings that the mole he had discovered was distributed in habitat distinct from that of the Taiwanese lowland mole. However, at the time, Kano left only written evidence and no images or specimen records, so the Taiwanese high mountain mole remained something of a mystery until only a few years ago when Taiwanese and Japanese researchers surveyed Taiwan's central mountains and collected specimens.

With the support of the Yushan National Park Headquarters, Dr. Liang-kung Lin of Tunghai University's Department of Life Sciences, Dr. Shin-ichiro Kawada of the Laboratory of Animal Management and Resources at the Graduate School of Bio-Agricultural Sciences, Nagoya University and other researchers undertook a survey of Taiwanese high mountain moles over several years in the Lulinshan area at Tatajia in the

Yushan National Park. The researchers caught 11 specimens of the native mole and, after phylogenetic study of morphological, karyological and molecular characteristics, determined that it was indeed a distinct species. To commemorate the man who first discovered the animal, they decided to give the Taiwanese high mountain mole the specific name *kanoana*, after Tadao Kano.



Marine Biologists Discover 10 New Species of Sea Slug

Marine biologists from a south Taiwan university recently announced the discovery of 10 new sea slug species during a survey of Taiwan's waters. Known in Chinese as 'gems of the seabed', sea slugs currently number around 3,000 species, thus the new discoveries have received significant interest from the international scientific world.

The 10 new species of sea slug were among some 150 sea slugs recorded in the ocean around Taiwan, Penghu (the Pescadores), Little Ryukyu (Liuqiu), Green Island and Lanyu (Orchid Island) under a project led by Professor Michael Hin-Kiu Mok of National Sun Yat-sen University's Asia-Pacific Ocean Research Center. Of these 150 sea slugs, around 120 were newly recorded in Taiwan, 10 of which may have

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been found for the first time ever, according to Mok.

At present, 2,700 to 3,000 species of sea slug have been identified around the world. Only four to five species of sea slug are found off the coast of Australia, according to the president of the Malacological Society of Australia. This makes Taiwan's discovery of 150 species in its waters extremely important, said Mok. The finding has led to a significant amount of attention from the international community, he said, adding that 61 of these species were found in the Wai-an area off Penghu Island.

As to why the Wai-an sea area was so productive in terms of sea slugs, Mok said that the high concentration of sea slugs may be due to the region's unique marine environment and its ocean currents. He urged Taiwan's government to immediately designate Wai-an as a marine reserve, so that sea slugs and other resources can be better protected.

Nudibranchs, the group of shell-less mollusks known as sea slugs, have developed sophisticated chemical defense mechanisms. This is particularly important because promising industrial and medicinal products have been isolated from known species. New species may provide cures for diseases that are currently untreatable.

In addition to revealing its remarkable sea

slug research achievements, National Sun Yat-sen University also announced the completion of its inventory of zooplankton in the Kuroshio sphere around Taiwanese waters. The results included 71 species of Siphonophora in 30 genera and nine families, 18 species of Thaliacea in 12 genera and three families, 26 species of Heteropoda in 11 genera and four families, and 622 fish larvae in 295 genera and 138 families. The study revealed the incredible zooplankton biodiversity of Taiwan's marine area. Researchers said that the data was significant to Taiwan's National Digital Archives and could be used to assess fishing grounds in the Kuroshio sphere, making it highly useful to the fishing industry.



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