

# INTERNATIONAL CONSERVATION

## NEWSLETTER

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### Dongsha Marine National Park

On January 17, 2007, the Ministry of the Interior announced the establishment of Dongsha Marine National Park as Taiwan's seventh National Park.

Formerly under military control, this region has been transformed into a place that symbolizes Taiwan's efforts to promote peace in the South China Sea. This is a region full of diverse resources such as fisheries, coral, oil, and natural gas. Taiwan hopes the establishment of this national park will further its contribution to international marine protection.

Dongsha Marine National Park includes the main island of Dongsha, the atoll, and the surrounding waters. With a total area of more than 353,600 hectares, this is the largest of Taiwan's seven national parks and is the second marine ecological protection area in Taiwan after Kenting National Park. Dongsha is the first area within Taiwan's natural protection system exclusively dedicated to the protection of a

marine environment.

#### *History*

Dongsha Marine National Park hosts one of the most ecologically diverse and unique areas in Taiwan. The Dongsha atoll is located in the South China Sea between Taiwan, Hong Kong, and the Philippines along important sea routes through the Taiwan Strait and the Bashi Channel. This unique location has endowed the area with a rich natural and human history.

The Dongsha atoll was first discovered during the Han Dynasty (206 BC – 220 AD). It was an important location for travelers along trade and fishing routes. In the early 20th century, a lighthouse, a meteorological observatory, and a radio station were constructed to assist with maritime safety. After World War II, the government of the Republic of China, Taiwan, gained the control of Dongsha Island. Today, Dongsha Coast Guard Administration maintains a presence on Dongsha Island, while the Kaohsiung City Government has taken over administrative responsibility.

## INTERNATIONAL CONSERVATION NEWSLETTER

The Dongsha atoll has played a key role in trade and fishing. These increased human activities have negatively affected the area's ecosystem. Two periods of intense disturbance occurred early in the 20th century. Hunting, as well as intensive phosphorous mining, by the Japanese from 1907 to 1909, had a severe impact on local bird populations. Then again, during the height of Japanese military expansionism between 1939 and 1945, increased development included the construction of an airport and other military buildings. More recently, disturbances from development, pollution, non-sustainable fishing, and climate change have all seriously and adversely affected the ecology of the Dongsha atoll. Nevertheless, growing concern for the preservation of Dongsha's natural beauty and rich cultural history culminated in the

### INSIDE

- **Dongsha Marine National Park**
- **Taipei's First Dedicated Wild Bird Hospital**
- **Nansha Taiping Island Turtle Breeding Reserve**
- **Campaign for Environmentally Sustainable High-tech Industry**

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establishment of the Dongsha International Research Station by the Kaohsiung City Government in 2004, followed by the Ministry of the Interior's announcement of a plan for a new marine national park.

### *Geography and Ecology*

The Dongsha atoll is located in the South China Sea, 450 km southwest of Kaohsiung. It has a standard sub-tropical climate with year round temperatures averaging over 21°C. The northeast monsoon, plum rains, and typhoons are all part of the weather system affecting this area. The main island, Dongsha Island, is less than three km long and covers only 1.74 km<sup>2</sup> and includes one lagoon. Extensive coral reefs in the surrounding area form the basis of a rich marine ecosystem. The Dongsha atoll has been called "the Imperial Crown of the South China Sea" and serves as home to diverse species of coral, sea stars, crustaceans, mollusks, and a multitude of marine plants. Meanwhile, the surrounding waters also provide good fishing grounds for grouper and sea bream, as well as lobster and other shellfish. To date, over 600 species of fish and 250 species of coral have been identified. The Dongsha atoll, with a diameter of 25 km, is primarily composed of clastic coral. Coral colonies and coral reef cover was estimated to be about 70 to 85 percent before the disturbances described above.

## INTERNATIONAL CONSERVATION NEWSLETTER

The small, sandy island of Dongsha provides a habitat for plants, invertebrates, reptiles, birds, and mammals. The plants on the island are mostly low bushes, shrubs, and tropical vines. The major species include the Silver silk tree, the Strawberry tung tree and the coconut. Including cultivated plants, there are at least 168 species found in the area. Little terns, turnstones, Gullbilled terns and other birds can be spotted among the 140 total species identified on the island, most of which are seabirds or migratory birds. Dongsha Island also plays an important role as a nesting ground for sea turtles. A variety of invertebrates such as mud crabs, hermit crabs, and sea stars also make their homes on the shoreline; however, overall species richness and populations are relatively low which may be due to both the natural environment and human disturbance of the island. Development of the island has led to increased pressure on the terrestrial environment from hunting, mining, invasive species, pollution, and other human impact. The greatest loss, however, has been attributed to the marine environment.

In the past, Dongsha was well known for its beautiful coral reefs, but human activities have severely affected the marine ecosystem. Major disruptive factors include pollution, non-sustainable fishing practices, and global climate change. Monitoring between 1994 and

1998 showed that coral species declined drastically with extensive loss of the reef community and similar losses in the number of fish species. These changes resulted in a fundamental alteration in the structure of the natural community. Many of the productive coral reef communities were replaced by filamentous and macro-algae. The remaining fauna were low trophic level species with very few higher level predators. This shift in community structure inhibits re-colonization of corals and makes it increasingly difficult for the ecosystem to recover.

Many scientists agree that unsustainable fishing practices were responsible for this drastic decline. Between 1994 and 1998, nearly 8,000 boats from China, Hong Kong, Vietnam, and the Philippines were reported fishing near Dongsha. These vessels used a variety of intensive and destructive fishing methods, including gill nets, long lines, purse seines, and even dynamite and cyanide. It is estimated that 50 tons of cyanide and one ton of dynamite were dumped annually, and that nine tons of mercury batteries were discarded by fishing vessels in this area.

However, fishing is not the only threat to the coral ecosystem. Wide-scale coral bleaching around the world has been attributed to global climate change. One of the worst years on record occurred in 1998 due to an El Nino event that resulted in higher sea temperatures and coral

## INTERNATIONAL CONSERVATION NEWSLETTER

bleachings. Researchers attribute coral death in a 300 km<sup>2</sup> area of Dongsha to these abnormal climate effects. However, a survey conducted from 2005 to 2006 was somewhat reassuring since some of the coral has recovered.

Coral ecosystem is among the most productive and diverse of all ecosystems. Coral reefs in East and Southeast Asia are thought to harbor the greatest marine biodiversity in the world. By establishing Dongsha Marine National Park, Taiwan hopes to protect the area from human disturbance and plans to allow the power of nature to restore this ecosystem over the coming years.



### Taipei's First Dedicated Wild Bird Hospital

To provide a refuge for injured wild birds and deserted nestlings, the Wild Bird Society of Taipei (WBST) has established the 'Bread Home' Wild Bird Rehabilitation Center at the Zhishan Cultural and Ecological Garden near Yangmingshan. After nine years of planning and financed by private donations, the new center began operations on February 4, 2007. Named after the WBST's first rescue bird, it is the first dedicated wild bird hospital in the Taipei metropolitan area.

The origin of the rehabilitation center can

be traced back 14 years ago, when the WBST began rescuing injured birds. Their first charge was a sick Collared scops owl (*Otus bakkamoena*) named 'Bread' that had been taken in by a local family after it fell from its nest when one month old. By the time the WBST took over its care, the fledgling was in critical condition because its carers had not known how to look after it properly. After a diet of mainly white bread over more than two months, Bread's feathers had turned white and begun to fall out. The owl was so malnourished it could hardly stand.

Even though Bread recovered after more than one year of treatment, the owl could not be returned to the wild because it had spent too long in the company of humans. Up until his death nine years later, however, Bread was an ambassador for bird protection, regularly accompanying WBST volunteers on wild bird education activities in communities and schools in Taipei.

Since Bread's rescue, all injured birds—whether migrants that had flown into glass-clad office buildings or owls that had been hit by vehicles—were nursed back to health in the homes of WBST volunteers after veterinary treatment, said WBST rescue team leader Sie Guang-shan. However, the major problem with this was that most volunteers did not have the space or resources to train rescue birds to fly

## INTERNATIONAL CONSERVATION NEWSLETTER

again. Seeing the real need for a dedicated halfway house with training space, the WBST established the Bread Home in Shihlin to help rehabilitate birds to the wild.

The center takes in all injured wild birds, particularly those with broken wings and fledglings that have fallen from their nests. Experts and bird lovers provide professional care. Establishment of the center was made possible thanks to the generosity of Hotai Motor Company; however, due to the high costs of treatment, the WBST is requesting more volunteers and hopes that people can ‘adopt’ or sponsor the rescue birds.



### **Nansha Taiping Island Turtle Breeding Reserve**

The Marine Bureau of the Kaohsiung City Government recently announced the designation of Taiwan’s southern-most island as a sea turtle breeding reserve, thus strengthening protection of Taiwan’s marine biodiversity.

Located within the James Shoal (Zengmu Ansha) in the South China Sea, Taiping Island, where the reserve is located, is around 1,600 km off the main island of Taiwan and forms part of the Spratly Islands (Nansha). Also known as Itu Aba, the island is a tropical coral atoll with abundant and diverse marine biological

resources. Taiping Island is an important breeding ground for several protected species of sea turtle.

Marine Bureau officials said that the Spratly Islands have become one of the main breeding sites of the protected Green turtle (*Chelonia mydas*). Usually, the peak egg-laying period for Green turtles is July, but breeding in the Spratly Islands is somewhat different in that the turtles come on land to lay eggs as early as April. Egg laying takes place at Taiping Island only once every two to four years with an average of 100 eggs being laid per nest. However, hatch rates are only 50 to 70 percent. This low survival rate makes the species particularly susceptible to disturbance during the egg-laying, hatching, and hatchling development periods.

In order to protect the turtles and the other marine resources of the islands, the Kaohsiung City Government Marine Bureau designated Taiping Island as a Turtle Breeding Reserve under Article 45 of the Fisheries Act. With Taiping at its center, the protected area covers terrestrial egg-laying habitat from the beach to the outer edge of the forest, as well as the marine area from the inter-tidal zone and low-tide mark to 12 nautical miles offshore. The reserve came into effect on March 3, 2007.



## INTERNATIONAL CONSERVATION NEWSLETTER

### **Campaign for Environmentally Sustainable High-tech Industry**

The US-based Silicon Valley Toxics Coalition (SVTC) is calling for greater efforts for environmental sustainability in Taiwan's high-tech industry. The international action group exposed a tide of toxicity that is currently being created by the island's electronics industry at a workshop on sustainability organized by the Taiwan Environmental Action Network (TEAN) on March 23, 2007. Taiwan is a major force in the global IT industry, therefore, it must consider the feasibility of greener products and production, said SVTC representatives in discussions with local industry and environmental groups.

The government-sponsored Hsinchu Science Park in north Taiwan is far too close to residential centers, according to SVTC founder and former executive director Mr. Ted Smith. Pollution from electronics production is directly affecting the lives of neighboring residents, he said, though steps are being taken to reduce pollution. However, the contamination of agricultural crops by toxic effluent from the Taichung Science Park at the center of the island is still a major concern, he said in a speech at the Sustainable High-tech Workshop organized by TEAN and the Industrial Technology Research

Institute (ITRI) in Hsinchu.

His concerns were echoed by SVTC executive director Ms. Sheila Davis, who said that environmental and social justice must be closely linked to the rapid development of the high-tech sector to increase the environmental sustainability of the electronics industry. She put forward four basic principles: environmental justice, the extended responsibility of the producer, warning principles, and green chemistry policies, as the means to achieving this.

Apart from avoiding direct threats to human health, environmental justice means enabling all individuals to enjoy equal participation and decision-making rights in creating a healthy environment, she explained. Already, a number of people in Taiwan are putting forward the idea of producers' extended responsibility, however the impact of electronic products on humans and the environment must be considered equally, she said.

The concept of warning principles argues that producers should be responsible for the uncertainties and risks inherent in certain new products, Davis continued. In particular, she said that she was worried about the current trend for nanotechnologies. Consumers were being persuaded to accept nanotechnologies and their purported advantages without considering the

## INTERNATIONAL CONSERVATION NEWSLETTER

potential risks to the environment and public health posed by the creation of new and hitherto previously unknown materials, she said. Therefore, the producers of nanotechnologies must take full responsibility for the full duration of nano-products' lifespans, she said.

Davis also explained that the goal of green chemistry policy was to reduce or prohibit the use of toxic substances in the development and production of chemical materials. This aim reflects SVTC's vision for electronic products: to allow their continued usage, while requiring environmental sustainability and a toxic-free future. To achieve this, the SVTC acts in three-directions simultaneously: legislation, green procurement, and direct action.

Regarding the status of e-toxicity in Taiwan, SVTC founder Smith held up two stripped electronic circuit boards that had been collected on a visit to Erren Creek in south Taiwan. In the past, gold recovery was one of the foremost e-waste recycling operations on Erren Creek. Mixtures of hydrochloric and nitric acid were used to 'burn' up to 100 kg of gold from the computer components every day before being disposed of directly into the river. The operators of these illegal e-waste recycling centers poisoned the river, said Smith, and they have a responsibility to clear up their pollution.

Even though Taiwan's Environmental Protection Administration (EPA) has spent tens

of millions of NT\$ trying to remedy the situation, Erren Creek is still being polluted with old circuit boards and other electronic waste, he said. Furthermore, local aquaculture farmers are still using water from the Creek in fish farming. Smith said local people had the right to know the real health risks of the river's contamination and also the heavy costs of cleaning up and restoring Erren Creek.

Instead, Taiwan continues to build science parks and people in Taiwan and around the world continue to demand newer and more sophisticated consumer electronic products. Therefore, Smith said that he believes the future of Taiwan's high-tech industry lies in finding non-toxic means of product design and manufacture. Unless manufacturers are committed to reducing the toxicity of design and production, environmental improvement is impossible, he said. The government, NGOs and various enterprises in Taiwan are already concerned about environmental issues, he pointed out, and if the three can work together, Taiwan will discover that, although it is only tiny in terms of geographic size, it can be enormous in terms of its impact on the world.

The Sustainable High-tech Workshop was attended by local electronics giants Acer Inc., Asus International, and others. During the discussions, their representatives said that they supported green product design and agreed with

## INTERNATIONAL CONSERVATION NEWSLETTER

the principle of the extended responsibility of the producer. However, they said that toxic-free high-tech product design and manufacturing could only become a reality with the wholehearted participation of universities, colleges and other research institutes in the search for alternatives.



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