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Playback Method Improves Effectiveness of Fairy Pitta Surveys

The Endemic Species Research Institute (ESRI) of the Council of Agriculture (COA) announced in early March that its use of the playback method in bird population surveys has doubled the number of Fairy pitta recorded in Taiwan.

Known in Chinese as the 'eight-color bird', the globally-threatened Fairy pitta (*Pitta nympha* (Temminck & Schlegel)) is classified by IUCN's Red List of Threatened Species as Vulnerable and is listed as a rare and valuable species under Taiwan's Wildlife Conservation Act. The species breeds in Taiwan before migrating to Borneo for the non-breeding season and is estimated to have a global population of between 2,500 to 10,000.

Previously, little was known about this secretive forest dweller because studies and population surveys were extremely difficult to

conduct within its preferred habitat of quiet, leafy undergrowth in the lower levels of dense forests. However, researchers from ESRI in central Taiwan devised the *in-situ* playback survey method after closely studying the Fairy pitta's call and territorial behavior. It was found that males are highly territorial and will often respond to tape-recorded calls. The playback survey method was tested at a known Fairy pitta habitat in Linnei, Yunlin County, and was found to achieve excellent results. In fact, the new survey method yielded population estimates that were twice as high as those made previously without the playback methodology.

Usually, bird population surveys are conducted based on visual sightings, according to researchers at ESRI; however, this technique generally results in far lower population estimates of those bird species that prefer secluded habitats or are active in densely covered environments. Relatively secretive bird species, like the pitta, that prefer sheltered

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habitats often use their call as an important communication tool. If tape-recorded calls are played within their habitat, a territorial response can often be evoked by any male birds present, allowing researchers to more accurately assess the species' occurrence and population numbers. However, care must be taken not to repeat this technique too often during the nesting season to prevent overstressing the birds and jeopardizing their survival.

After establishing the playback method as a viable technique for increasing the likelihood of detecting Fairy pittas, ESRI went a step further and devised a systematic survey method that researchers used in an island-wide survey of Fairy pittas in Taiwan. With the help of

various wildbird societies around Taiwan, ESRI mobilized more than 250 volunteers to help carry out a comprehensive population survey. The researchers found that regions of substantial forest cover in Taiwan's low-elevation hill areas were all potential habitats for Fairy pittas. In particular, forested hills in Taoyuan, Miaoli, Taichung, Yunlin and Tainan counties were all found to have the highest occurrence of Fairy pittas. A conservative estimate of Taiwan's overall Fairy pitta population was put at more than 2,000 individuals, according to ESRI researchers.

Overall, the play-back method enabled researchers to make a breakthrough in their understanding of the current status of Fairy pittas in Taiwan.



Record Number of Black-faced Spoonbills in Tainan

The number of globally endangered black-faced spoonbills (*Platalea minor*) inhabiting the Tainan area has reached a record high of 741 individuals, according to the results of the two-day 2005 International Black-Faced Spoonbill Census taken on January 22 and 23, 2005. The census recorded a total population of 757 for Taiwan. The spoonbill population reported for Tainan is significantly higher (by

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113 birds) than the previous record of 628 individuals taken last year.

The Hong Kong Bird Watching Society, which coordinated the census, recently announced that the world-wide population of black-faced spoonbills revealed by the International Census 2005 had reached a new high of 1,475 individuals. This was found to be an increase of just over 22% from the figure of 1,206 individuals recorded in 2004, indicating that the population is recovering from previous low numbers.

The International Black-faced Spoonbill Census, which has been carried out for several years now, is co-ordinated by the Hong Kong Bird Watching Society every year over a weekend in late January. Birdwatchers and conservationists at known black-faced spoonbill habitats around the world, including Taiwan, Hong Kong, Macau, Japan, South Korea, Vietnam, Mainland China, The Philippines and Thailand undertake a synchronized survey of total spoonbill populations in their area.

The organizations mobilized as part of the survey of black-faced spoonbill habitats in Tainan County included the Wild Bird Society of Tainan County, the Wild Bird Society of Tainan, the Black-faced Spoonbill

Conservation Association, the Black-faced Spoonbill Family Wildbird Association, and others. The statistics gathered on January 23 were as follows:

Some 407 black-faced spoonbills were observed near Tsengwen Estuary, including 360 within the main habitat at the Chiku Black-faced Spoonbill Wildlife Refuge, nine on the northern fish ponds at Chiku, 14 at the eastern fishponds at Chiku and 24 at the new habitat at Tingshan. Another 57 spoonbills were seen in the estuary of Bachang Creek, which straddles Tainan and Chiayi counties. At wetlands in nearby Sitsao Township, 277 spoonbills were observed, taking the total number of black-faced spoonbills observed in the Tainan area, including Chiku, Chiangchun, and Peimen in Tainan County, and Tainan City, to 741 individuals. A further four spoonbills were seen in the Chuoshui estuary of Yunlin County, one at Chihpen wetland in eastern Taitung County and 11 at Wengti wetland in northeastern Yilan County, bringing the island-wide total to 757.

Ever since the first black-faced spoonbill arrived in Taiwan on the afternoon of the Mid-Autumn Festival, last year, on September 28, 2004, the number of spoonbills arriving at the Tsengwen River Estuary has continued to rise. Over the species' wintering period,

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fortnightly population surveys were conducted in the Tainan area. Twice, new record highs were established with reports of 808 and 842 individuals. These figures were significantly higher than the previous high of 728 individuals recorded last winter.

Classified as 'endangered' by BirdLife International, the black-faced spoonbill's current unofficial population stands at 1,276 individuals. However, the actual figure is likely to be somewhat higher, as this number does not take into account populations in areas where no surveys are taken. Therefore, it is generally accepted that the global population of black-faced spoonbills should be higher this year than it was last year.

The International Black-faced Spoonbill Census 2005 recorded a new high number of 1,475 individuals. It is also very likely that the actual number is even higher than this figure because more black-faced spoonbills were counted outside the census period.

Details of the Census are listed below. The figures shown are the counts recorded during the census period, while the figures in parentheses are extra counts recorded outside the census period.

- Taiwan: 757
- Deep Bay (Hong Kong and Shenzhen): 311

- Japan: 103 (47)
- Hainan Island: 77
- Fujian: 63 (8)
- Xuan Thuy, Vietnam: 56
- Macau: 39
- Haifeng, Guangdong: 39
- Jeju, Korea: 21
- Yenchang, Jiangsu: (21)
- Chongmindao, Shanghai: 8
- Thailand: 1 (1)
- The Philippines: (2)

Total: 1,475 (79)



Half of Taiwan's Fish Species Face Extinction from Habitat Loss and Pollution

Although the island of Taiwan is minute on a global scale, accounting for less than three ten-thousandths of the world's total land area, the oceans surrounding it harbor a huge diversity of marine species. In fact, Taiwan's waters are home to one-tenth of all known marine species in the world. However, over the past 30 to 40 years, almost half to two-thirds of species that were once abundant have already declined to occasionally seen, rare, to even extinct. In fact, researchers from Taiwan's Academia Sinica said that major habitat loss and marine pollution was putting half of Taiwan's fish species at risk of extinction.

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The acting director of the Academia Sinica's Research Center for Biodiversity (RCBAS), Dr. Kwang-Tsao Shao, said that many fish species in the marine areas around Taiwan faced the threat of extinction unless efforts are made to preserve them. Shao made the statement at a special seminar entitled *Fish Have their Say—Save our Fish!* Held at the Academia Sinica on January 25, 2005.

Shao's research backs up the grim prediction made last year in the academic journal *Nature's* report on the "Extinction Risk from Climate Change", in which researchers stated that climate change would produce the sixth Mass extinction. Using projections of species' distributions for future climate scenarios, the researchers assessed extinction risks for sample regions covering some 20% of the Earth's terrestrial surface. They predicted, on the basis of mid-range climate-warming scenarios for 2050, that 15% to 37% of species in the sample regions and taxa would be 'committed to extinction'.

Taiwan has a huge number of different fish species in its waters because it is located at the meeting point of three major oceans and the depths of its waters vary greatly. Other reasons for the abundance of marine species are the diversity of Taiwan's low-lying habitats and its location beside the world's largest continental shelf.

However, the government's continued long-term emphasis on economic progress at the expense of the environment and on land areas, rather than marine environments, combined with the wilful plundering of marine resources, and uncontrolled pollution and destruction of marine and coastal habitats has meant that not only huge numbers of large-sized key species, like cod, tuna and whale sharks, but also thousands of smaller, less obvious species and even as yet undiscovered and unnamed species are already disappearing from the world's oceans.

So how serious exactly is the loss of biological diversity currently faced by Taiwan? Dr. Shao said that his Laboratory of Fish Ecology and Evolution had recently conducted a survey of fish species impacted by electric power generation plants and fish species in intertidal belts that showed that large-sized, high economic-value species and populations were vanishing at an astonishing rate.

In addition, recent research had also revealed that Taiwanese tourists visiting coral reef areas around Taiwan were not going there for diving or snorkelling activities to see fish, but were going there to eat them! Shao said that Taiwanese tourists were consuming as much as 30 tons of reef-species fish every year! Furthermore, the release of household and

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industrial waste water, pollution from refuse dumps, and trawlnet fishery was destroying sea-bed environments at an alarming rate. Shao compared the destruction of marine habitats to the wholesale felling of forests. The Taiwan government is also 'murdering' marine species through its continuous replacement of natural coastline with artificial or reclaimed land.

Because there are so many fish species, it is impossible to undertake species conservation by means of preserving genetic resources. Shao called on the government to preserve the marine ecosystem for all species of fish through the designation of marine reserves or by means of developing artificial reefs at suitable marine locations.

In addition, he said that the government must pass the Coast Law and the Regulations for Leisure and Tourism Management in Coastal and Marine Areas as soon as possible to give conservation efforts the legitimacy they require. Furthermore, the Wildlife Conservation Act must include rare marine species on its list of protected species in order to stamp out illegal fishing and trading. Finally, he said that conservation measures to protect economically valuable fish resources must be drawn up and implemented. He suggested that these include fixed fishing periods, fishing laws, fishing tackle, or catch quotas, limitations

and prohibitions on fish size so that small fish that have been caught by mistake at least have the opportunity to return to the ocean to grow.



Successful Farming of Yellowfin Tuna

The Fisheries Research Institute of the Council of Agriculture (COA) in Tungkang, south Taiwan, recently announced that Yellowfin tuna (*Thunnus albacares*) fry had been successfully reared by artificial means in sea cages in the seas off Hsiao Liu-chiu and Checheng in south Taiwan, over the past two years. Furthermore, the farmed fish were five to 10 times heavier than their wild counterparts. After rearing for two years, fish weighing 20 to 30 kilograms were ready for market, creating a production value 100 times that of wild fish. The COA said that this new method of yellowfin farming would open up new horizons in marine aquaculture.

Taiwan's COA began researching sea cage aquaculture techniques and looking at medium- and low-level artificial floating fish reefs at its sea cages cultured off Hsiao Liu-chiu and Checheng, two years ago, in the hope of finding ways to replace wild tuna fishery with aquatic farming. The move came after Taiwan became the object of international criticism for its

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excessive tuna fishery. In particular, the international community is pressuring Taiwan to reduce its catch of bluefin and sockeye tuna and other fish species. Demands that Taiwan reduce its annual sockeye catch by 16,000 tons or face sanctions has seriously impacted Taiwan's fishery industry and fish markets.

In January, this year, the Fisheries Research Institute and National Sun Yat-sen University's College of Marine Science in Kaohsiung jointly held the 'Seminar on Yellowfin Tuna Farming Techniques and Promotion of the Nanfang Marine Farm Project' at the Fisheries Research Institute in Tungkang. COA Deputy Director C. C. Lee said that the successful rearing of yellowfins was important, particularly now that Taiwan faced severe limitations on its tuna fishery by the international community. The institute's research team began work on the yellowfin farming project in 2003, in response to this pressure. A total of 12 medium-level artificial fish reefs were placed in the oceans around Taiwan to attract yellowfin tuna, bonito, spearfish and other species to gather and stay there. Then individuals were caught. Of these, yellowfins were the most numerous. Each year, 1,000 tons of small yellowfin fry, or the equivalent of 400,000 to 500,000 young fish, were caught. The fish were then transported to

offshore sea cages at Hsiao Liu-chiu and Checheng for farming for two years.

Officials from the institute pointed out that they were able to move the yellowfins into the sea cages without touching or damaging the yellowfins' skins. After one year of artificial rearing, the yellowfins had reached up to 10 kilograms in weight. By two years, their weight had doubled to 20 kilos. At their biggest, yellowfins can grow up to 176 kilograms. Furthermore, officials said that the survival rate was extremely high. As far as fishermen are concerned, the catching of young tuna and artificial rearing constitutes legal operations.



Penghu Announces Conservation of Endemic Cuttlefish

The Penghu Marine Biology Research Center, on January 14, 2005, warned that the endemic Penghu cuttlefish was in danger of becoming extinct. It called for immediate action in devising and implementing conservation measures for the species. In related news, the Inshore Fisheries Research Institute of the Taiwan Fisheries Research Institute (TFRI) also stated that last year's catch figures for mullets in the region had reached an all-time low.

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The Penghu Marine Biology Research Center, which is one of five research centers within the TFRI under the Council of Agriculture, raised the alarm about the disappearing cuttlefish in its report on the 2004 first quarter operations of its Commission for the Expansion of Fishery in the Southern Region.

A researcher at the Center, Dr. Chin-jung Lin, said a major typhoon, which hit the Penghu Islands on June 23, 2001, had seriously damaged coral reefs inhabited by the endemic Penghu cuttlefish, causing severe habitat loss. He said that cuttlefish populations were being decimated further by over-fishing after Penghu cuttlefish prices reached the astronomical rate of up to NT\$1,000 per catty (around 600 grams) on local fish markets. He said that this was causing the 'commercial extermination' of the species. In 2001, the species' population was estimated at just over 6,000 individuals. This year, the population is expected to have dropped to well under 5,000, leading researchers to fear that this endemic cuttlefish is gradually entering the species extinction phase.

To preserve the species and ensure its sustainable utilization within Penghu County, the local government announced a total ban on the catching, owning, trade in, processing, and utilization of Penghu cuttlefish, effective

immediately and ending on December 31, 2006. Only researchers may apply to the Penghu County Government for permission to catch the species for experimental and scientific research purposes. Anyone who flouts the moratorium will be prosecuted under Clause 60 Section 2 of the Fisheries Act and may be taken into custody and punished with a prison sentence of up to three years or fines of up to NT\$150,000 with or without a prison sentence, if found guilty.



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