

CHINA

Saving species through sound

Acoustic monitoring helps Hainan conservationists track rare gibbons

By MA ZHIPING in Haikou mazhiping@chinadaily.com.cn

Daily life for Hainan gibbons in the hinterlands of the province's tropical rainforests begins at around 6 am, when the male heads of the five remaining families begin the high, melodious whistling that echoes through the thick, cloud-shrouded forests to reach villagers down in the valleys some 800 to 1,200 meters below.

"The whistling, which zoologists interpret as a way for each family to mark its territory, becomes richer and more harmonious as the matriarchs and other family members join the chorus. It's the most moving example of group singing displayed by the 20 remaining gibbon species in the world," said Chen Qing, a woodcutter-turned ranger who recently retired after working for more than 37 years at the Bawangling National Nature Reserve in southwestern Hainan Island.

Established in 1988 and covering about 300 square kilometers, Bawangling is the only habitat of the Hainan gibbon, or *nomascus hainanus*, to give the species its scientific name.

The world's rarest primate currently has a population of just 35, split into five families.

Bawangling forms a key portion of the Hainan Tropical Rainforest National Park, the country's best preserved tropical rainforest, which covers 4,269 square kilometers, or one-seventh of the island. More than 95 percent of the park is virgin forest and is home to 3,653 species of wild vascular plants and 540 species of terrestrial vertebrates, according to the park's administration.

The charming sounds made by the gibbons are currently being recorded and transmitted in real time to a cloud-storage terminal by

50 high-tech devices mounted in the trees. The Hainan National Park Research Institute and the International Union for Conservation of Nature launched the acoustic database project in January last year, with the aim of better protecting the park's flagship species by using the data to interpret their language, according to Wang Jichao, leader of the project and vice-dean of the life science college at Hainan Normal University.

"The devices are based on Huawei's Tech4Nature technology and are capable of automatically recognizing the sound of Hainan gibbons. They self-activate and start recording when one of the gibbons makes a sound," he said.

The Huawei system is being used in 30 national parks around the world and has won awards from the United Nations for its outstanding contribution to safeguarding nature, according to media reports.

Sorting out vocal cues

"Hainan gibbons, which are all a golden color at birth, live in trees all their life, and most of their movements are similar to human beings. Their arms are much longer than their legs, and they forage for food — fruit, bird eggs, young tree leaves and insects — up in the canopy around 15 meters above the ground," said Chen, who is familiar with most species and plants in the rainforest.

"At one point, the population of gibbons dropped to less than 10 and only two families in the 1980s. They were easily frightened and living in a fragile environment. But in recent years, they have become bolder. Now they stare at us with curiosity from just a few meters away if we come across them by chance during our daily surveys."

However, it is still difficult to track the gibbons. Protection remains



A female Hainan gibbon and her baby sit in the canopy of the rainforest in Hainan province. PROVIDED TO CHINA DAILY

challenging, and according to Wang, at the moment, the most effective way to track the gibbons is by sound.

"Like humans, Hainan gibbons produce vocal cues that can be deciphered to identify specific individuals. Advances in automated methods of collecting acoustic data, including wireless transmission and network storage, can help establish an acoustic database of the gibbons and other vertebrates, and help researchers draw a picture of linguistic structure and patterns of communication," Wang said.

"Analysis of the data, combined with behavioral image monitoring, will help us learn more about their lifestyle and about the ways they express emotions like joy, anger and sadness."

The acoustic monitoring devices don't have lights, which would distract or interfere with the creatures in the forests, making them suited to long-term, large-scale and real-time operations and a popular biodiversity monitoring tool, both domestically and abroad.

Analyzing data

For the next six months, Wang and his team of 10 will work with experts on cloud-storage, AI algorithms and voiceprint analysis programs, including Huawei's, to study data collected over the past year.

Then they will compile an initial report on the voice features of the gibbons, and try to interpret their daily behavior and more precisely determine where they live.

"The database is expected to be completed in three years. It will play a major role in comprehensive biological research and conservation work on gibbons and other rare species in Hainan's rainforests," said Wang, who is the project's leader.

He noted that the acoustic monitoring project is the first of its kind in China, being designed to track all major rare species in a single protected area.

Integrated monitoring systems, including remote sensing satellites, UAVs and ground equipment, have been installed in a number of national parks, including the North-

east Tiger Leopard National Park, the Yunnan Xishuangbanna Nature Reserve and giant panda reserves, to monitor the flagship species in each area, according to conservationists.

They suggested that in the future, research into Hainan gibbon conservation can be extended to interpret their behavior beyond simple communication.

How they choose a mate, for example, can help deepen understanding of human evolution.

They also proposed collecting phenological data, including the varieties of fruit trees that gibbons favor, and information about their predators and competitors.

Since 2005, Hainan has restored more than 330 hectares of gibbon habitat, planting around 300,000 trees that grow either the fruits or the leaves the species eats, and the protected habitat has expanded from 21.4 square kilometers in the 1980s to 4,269 sq km today, according to the park administration.

The steady recovery of the gibbon

population in Hainan is evidence of China's achievements in ecological and environmental protection in recent years.

The province's conservation efforts have renewed confidence in the future protection of endangered primates around the world, according to Jane Smart, global director of IUCN's biodiversity conservation group.

Professor Tang Yanfei, executive director of the Hainan National Park Research Institute, said that in accordance with the Hainan gibbon protection action plan, the province will establish a professional monitoring system and strengthen domestic and international cooperation in researching gibbon protection and sustainable community development.

Tang believes that with the new progress on scientific research, habitat restoration and improvements to the rainforest's ecological corridors, the number of gibbons in Hainan should double to around 60-70 individuals by 2035.

'110', '119' wedding wins over netizens

By CANG WEI in Nanjing cangwei@chinadaily.com.cn

After posting a video of them getting their marriage certificate on social media, a policewoman and a fireman were showered with blessings by hundreds of thousands of netizens across China. In the video, the newlyweds were both in uniform. Many netizens joked that their coupling was a combination of 110, the emergency hotline for police, and 119, the hotline for firefighters.

Bao Jianbang, the firefighter, works in Wuxi, Jiangsu province. He met his wife, Ren Qianni, at a friend's party in his hometown in Dongyang, Zhejiang province, in January last year.

"We fell in love at first sight," Bao said. "But she didn't like the idea of long distance relationships, so she hid her feelings for me at first."

A man of action, Bao began calling Ren frequently and drove back to Dongyang, more than 200 kilometers from Wuxi, to visit her whenever he had time. He would often drive back to Wuxi the same day.

On March 20, Bao unexpectedly showed up at Ren's birthday party with a bunch of flowers. Ren was finally moved by his persistence and sincerity and agreed to become his girlfriend.

Ren and Bao did not have too much time together.

Apart from the 200-km distance, both have stressful jobs that keep them busy. Last year, they didn't see each other for nearly six months, partly because



Bao was sent to Henan province in July to help with rescue efforts after severe floods inundated the area and claimed many lives.

"I didn't have much time to call her," Bao said. "There was too much work to do in the flood-hit areas. Although she got worried when our calls didn't connect, she told me every time we spoke that I just needed to take care of myself, and that she would take care of my parents in my hometown."

Ren was also taking part in rescue efforts after several powerful storms swept through their hometown, but she never told Bao.

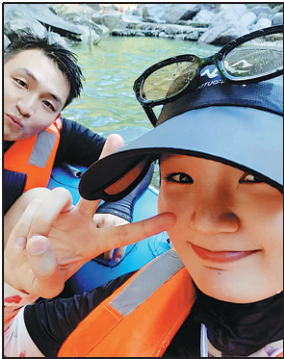
"I never saw her cry, but I cried after reading stories about her and her colleagues on social media," Bao said. "I thought that policewomen wouldn't be sent to dangerous places. She never told me what she was doing at the time because she didn't want me to worry."

In January, Bao asked for two days' leave and presented Ren with 99 roses on their wedding day. He said that they never expected to receive so many blessings from friendly netizens.

Bao said that he has also frequently been touched by friendly people he encountered in his work.

While he was in Henan in July, local inhabitants flooded their tents with food and drink.

"Many people had tears in their



From top: Ren Qianni (left) and Bao Jianbang at the marriage registration office in Dongyang, Zhejiang province. The couple at a local park. PHOTOS PROVIDED TO CHINA DAILY

eyes when they thanked us for our help," he said.

Bao said he plans to apply to work at home to spend more time with his wife and family members.

"I'm sorry that I have had to let her down many times because of the long distance and work pressures. I'll try my best to make it up," he said. "I'll be good tempered and nice, no matter how angry she might become with me in our future life."

Guo Jun contributed to this story.

Ngari shows gratitude to Shaanxi

By PALDEN NYIMA in Lhasa palden_nyima@chinadaily.com.cn

Four trucks carrying frozen mutton, traditional anti-pandemic medicines and mineral water donated by Ngari prefecture in the Tibet autonomous region arrived in Shaanxi province recently.

The donations are intended to help Shaanxi fight its outbreak of COVID-19, with which it has been wrestling since early December. The 4,000-kilometer journey took eight drivers five days and nights, during which they drove over six passes at altitudes exceeding 5,000 meters and endured temperatures as low as -30 C.

Lying at an average altitude of 4,500 meters, Ngari has a population of around 120,000. The remote prefecture has long lacked adequate transportation and goods.

Since 1994, Shaanxi has been providing the prefecture with financial support, and 700 officials and technicians have been sent to

contribute to its socioeconomic development. With Shaanxi now struggling to overcome its outbreak, Ngari decided to return the favor and donated an array of goods, including 1,191 boxes of mineral water, 600 packs of frozen mutton and 5,556 sachets of Tibetan medicine, with a total value of about 900,000 yuan (\$142,000).

"These donations represent the care and blessings of the people of Ngari. The dark cloud of the epidemic will eventually disperse, and the dawn is ahead," Zhang Xiaoping, deputy Party chief of Ngari, was quoted by Xinhua News Agency as saying. "May the people of Shaanxi win the battle against the epidemic as soon as possible."

Yang Tao, a courier from Shaanxi who works at a delivery office in Tibet's Dingri county, said he was touched by the prefecture's generosity.

"Ngari is not a wealthy place, but it has made a generous gesture of support to Shaanxi. This is not

easy," he said, adding that he believes his home province will soon defeat the outbreak. "When one of us is in trouble, we must all shoulder the burden together."

Sonam Yangkyi, a Ngari resident, said: "Over the past two decades, Tibet has received assistance from other provinces and regions. Thanks to the resources, investments, projects and supplies they provided, Tibet has undergone a great leap forward in its socioeconomic development."

Sonam said that she is happy her prefecture was able to help in Shaanxi in its time of need.

"As a native of Ngari, I am overwhelmed by this generosity. It demonstrates the love of our people for other provinces and regions," she said. "We believe Shaanxi will defeat the epidemic together with the efforts of all Chinese people, and I believe this friendship between our region and other parts of China will last forever, like the constant flow of the Yellow and Yangtze rivers."

Tibet tourism doubles in last five years

By PALDEN NYIMA and DAQIONG in Lhasa

The Tibet autonomous region received more than 41 million tourists last year, and tourism revenues exceeded 44 billion yuan (\$7 billion), according to an announcement at an annual meeting of the regional people's congress recently.

Tibet has been a popular destination for domestic and overseas tourists for decades due to its rich heritage, natural appeal and unique traditional cultures.

In recent years, the region has been making a major effort to upgrade the quality of services for tourists. Cultural products and incentives have been introduced to benefit both visitors and business operators.

The region received more than 150 million tourists during the 13th Five-Year Plan (2016-20) period. The boom brought in nearly 213 billion yuan, more than double the amount during the previous Five-Year Plan (2011-15) period, according to Xinhua News Agency.

Wang Songping, the head of the region's Department of Tourism Development, was recently quoted by local media as saying that tourism offers a window into the region's unique features.

"Tourism sectors should focus on Tibet's unique folk culture and natural resources, particularly in rural areas, and allow more rural residents to benefit from tourism," he said.

With its beautiful lakes, snow-capped mountains, forests and a

wide variety of cultural activities, Nyingchi city is a major attraction.

According to its tourism development bureau, Nyingchi invested more than 110 million yuan on infrastructure in its major tourism spots last year. Official data from the bureau shows that it is home to some 700 guesthouses owned by rural residents, that received 4 million visits last year.

Last year, 27,000 rural residents found job opportunities in tourism, an increase of 4 percent year-on-year. Around 1.38 million tourist visits were made to operators in rural Nyingchi, generating over 178 million yuan in revenues.

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