

Yunnan snub-nosed monkey research of the Kunming Institute of Zoology, Chinese Academy of Sciences

Yuan-Ye MA

At the beginning of 2016, I returned to the Baima Snow Mountain with a CCTV film crew. As the birth place of the Yunnan snub-nosed monkey, Baima Snow Mountain in northwest Yunnan belongs to the transition zone between the Qinghai-Tibet and Yunnan-Guizhou plateaus, and is regarded as the most magnificent of the Yunling Mountains. Revisiting my old haunt, I cannot help but recall the international snub-nosed monkey research launched by the Kunming Institute of Zoology (KIZ) so many years ago.

Back in 1991, commissioned by the KIZ and approved by the Chinese Academy of Sciences and State Forestry Department, my colleagues and I went to the mountains to catch the legendary Yunnan black monkey to help establish a snub-nosed monkey domestication and breeding program. Time flies, 25 years have passed in a moment, and once again I set foot in this magnificent mountainous region.

The first report of the mysterious and unverified Yunnan snub-nosed monkey came from a Frenchman named Pere Armand David in 1871, although his report was only based on hearsay. Some 19 years later, two other Frenchmen, RP Soulie and Monseigneur Biet, captured seven Yunnan snub-nosed monkeys in Deqin County. The skulls and skins were later stored in a Paris museum as the first real body exhibition of the Yunnan snub-nosed monkey. Seven years later, the French zoologist Milne-Edwards gave these specimens a scientific description and nominated the species as *Rhinopithecus bieti*. However, in the following 100 years, dramatic societal change, the replacement of original hunting by large-scale hunting, the denudation of virgin forests, and the destruction of the natural balance between humans, wild animals and plants, resulted in the large scale extinction of many animal species. Once again, the existence of the Yunnan snub-nosed monkey was questioned.

In 1960, Professor Hong-Shou Peng of the KIZ coincidentally observed several Yunnan snub-nosed monkey skins in Deqin County, suspecting that this mysterious species was still alive. Through contact with the indigenous ethnic minorities, he was surprised to find that the Yunnan snub-nosed monkey was not unknown, and the locally named "Daqing monkey", "white monkey" or "flower monkey" was still hunted for fur.

After the Cultural Revolution, the KIZ decided to restore the previously suspended Yunnan snub-nosed monkey study. In 1979, Zhi-Xiang Li, Shi Ma, and Ying-Xiang Wang collected

three complete specimens in Deqin, 19 years after Professor Hong-Shou Peng found the skins. At the beginning of the 1980s, however, researchers had still not seen a living Yunnan snub-nosed monkey in the wild. As such, the KIZ organized a number of multidisciplinary and systematic examinations of the species. Scholars such as Shou-Chang Bai, Qi-Kun Zhao, Bao-Qi Wu, and Wen Xiao conducted ecological and behavioral field observations. In 1994, Yong-Cheng Long and his colleagues completed numerous surveys of the exact location of each natural population and estimated population numbers. Professor Long continued his ecological and conservation work until his retirement in 2015. In the laboratory, Yan-Zhang Peng, Zhi-Zhang Ye, Ru-Liang Pan, Rui-Lin Liu, and Yao-Ping Zhang studied the evolution, morphology, and anatomy of the Yunnan snub-nosed monkey, while Li-Ming Shi, Bing Su, Wen Wang, and Ya-Ping Zhang conducted detailed genetic and evolutionary research. At the same time, related scientific papers were continuously published in domestic and international journals and magazines. In 1987, Shou-Chang Bai, Ru-Jin Zou, and Wei-Zhi Ji successfully captured several living Yunnan snub-nosed monkeys in Weixi and introduced these wild animals to the laboratory at the Chinese Academy of Sciences, making the domestication and breeding of the Yunnan snub-nosed monkey a possibility.

However, at that time, the captured monkeys in Weixi were all females and in poor health due to severe stress. To establish a viable breeding population, we needed to increase their numbers and obtain a number of males. Bao-Ping Tian, Zeng-Rong Mu, Dong-Sheng Li, Wen Wang (who was still a PhD student then), and I began a second field expedition to Weixi in 1991. To better understand how to capture the necessary individuals, we first needed to establish a good relationship with the local Li-Su minority people. The Li-Su people live simply, with little regard for money or material possessions, but with a different sociality than that of people from the city. At night, everyone would sit around a bonfire, warming themselves and nodding off. A dirty porcelain jar filled with a variety of animal

Prof. YY MA was at the Laboratory of Primate Cognitive Neuroscience, Kunming Institute of Zoology, Chinese Academy of Sciences from 1982 to 2015. E-mail: yuanma0716@vip.sina.com.cn
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bones soaked in wine was passed from one person to the next, and when it came to our turn, we drank like the local people. Such is the way in which to establish a good relationship with this community, which we did, and the village hunters were then willing to help us. Our expedition commenced in earnest, and after two arduous days of trekking, we arrived at an alpine meadow at an elevation of more than 4 000 m, an altitude inaccessible to most people. During the day, we searched for any possible clues left by the monkeys, such as hair and feces, and at night, we all crowded into one tent. For 10 days, we did not see a shadow of a monkey, let alone catch one. Conditions worsened with heavy nighttime rain overwhelming the entire tent, and we had to resort to cooking cuckoo flower as our provisions became depleted. During that time, external communication was extremely difficult, with the closest town post office many hours away. When the last of our food was consumed, we sadly left empty-handed. On the second attempt, we changed our strategy by letting the hunters' first search for monkeys, with our group rushing to catch up when they found them. Thus, the second expedition was relatively successful, and we were able to catch two adult females and an infant; however, we still did not manage to capture an adult male. At the moment monkeys were captured, we prepared antipsychotic drugs such as diazepam to reduce their stress. Practice had proven that this was a good way to calm them.

Two hours after injection, the animals no longer feared people, and would even take food from our hands. The KIZ organized a third field expedition. All things come to those who wait, and we finally caught two male monkeys. These monkeys still live at the primate center at the KIZ, and have successfully produced many offspring.

Now with my return to Weixi, I have found the local people to be much more aware of primate protection and conservation. The hunters who helped us catch the monkeys have "quit" their old profession, transitioning to local forest keepers whose responsibility it is to protect the Yunnan snub-nosed monkey. Most scientists who commenced research on the Yunnan snub-nosed monkey at our institute have since retired or sadly passed away. Professor Hong-Shou Peng, who found the first Yunnan snub-nosed monkey, died on a Northwest Yunnan scientific expedition in 1980. A few years later, researcher Zhi-Xiang Li also regrettably passed. In 1993, Li-Ming Shi, who was the head of our institute at that time and greatly contributed to the snub-nosed monkey research, died from illness, and in 1998, Professor Yan-Zhang Peng also left us. They all died in their 60s. Even as I finished *this* article, I received the shocking news that Ying-Xiang Wang also left the world recently. However, their pioneering work has been written into the research history of the Yunnan snub-nosed monkey. Let us never forget their names.