

Conservation news

New hope for the Hainan gibbon: formation of a new group outside its known range[†]

The Hainan gibbon *Nomascus hainanus* is endemic to China's Hainan Island and is the world's rarest primate species. Once widespread throughout the island, a relict population of < 10 individuals survived in a single forest patch in Hainan Bawangling National Nature Reserve in the 1970s (Liu et al., 1989, *American Journal of Primatology*, 19, 247–254). The species was hovering on the brink of extinction, with only two family groups, until the turn of the new millennium. Since 2003, however, following conservation efforts by Kadoorie Farm & Botanic Garden and local conservation authorities, the gibbon population has gradually recovered, with a third and fourth family group formed in 2011 and 2015, respectively. The entire population of this Critically Endangered species was restricted to a c. 16 km² forest fragment in the Mt Futouling area of the Reserve (Chan, 2015, in *Primates in Peril: The World's 25 Most Endangered Primates 2014–2016*, pp. 67–69.)

At the end of 2019, the Reserve's gibbon monitoring team made an exciting discovery: a newly-formed pair of Hainan gibbons was detected in a forest c. 8 km north of the known gibbon range. This discovery is a milestone for the conservation of the Hainan gibbon as it represents the largest number of family groups in recent history and indicates the species' ability to expand its range.

This pair of gibbons were first reported by local villagers in October 2019, and confirmed, with the detection of a male solo call, by our community monitoring team in early November 2019 during a reconnaissance survey. A pair of gibbons were observed for the first time in mid December 2019 but only the male performed solo calls. The female joined the duets in early January 2020 and well coordinated duet calls were detected in mid January 2020.

The newly formed family group lives on the forested slopes of Mt Dongbengling, which rises to c. 850 m altitude. Vegetation of the area is dominated by grassy shrubland and secondary lowland forest, with remnant primary forest surviving in ravines and near the summit. The northward lowland adjacent to Mt Dongbengling has been converted to a rubber plantation estate, and the gently sloping southern valley between Mt Dongbengling and Mt Futouling was once covered in pine plantations and fire-maintained grassland, and must previously have presented an impassable barrier to the gibbons. Following natural succession the valley is now covered in forest, and the new gibbon group must

have used it as a corridor to explore suitable lowland habitat to establish their territory beyond Mt Futouling. The ability of the Hainan gibbon to utilize secondary forest and substantially expand its range is an encouraging sign for the long-term survival of the species, which appears to be slowly but steadily recovering.

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Conserving *Meconopsis smithiana*, a Critically Endangered plant species in Yunnan, China

Meconopsis smithiana (Handel-Mazzetti) G. Taylor ex Handel-Mazzetti, a perennial herb species of the family Papaveraceae, is endemic to the southern Hengduan Mountains in south-west China and the extreme north-east of Myanmar. It was first collected by Handel-Mazzetti in north-west Yunnan in 1916, and described by him as *Cathcartia smithiana* in 1923 (H. Handel-Mazzetti, 1923, *Anzeiger der Akademie der Wissenschaften in Wien, Mathematisch-Naturwissenschaftliche Klasse*, 60, 182). Since then, the species had only been collected a further four times, once each in 1938 and 1940, and twice in 1982, by Tse Tsun Yü, Kuo Mei Feng, and the Qinghai-Tibet Expedition, respectively. According to these collections (Tse Tsun Yü 20663; Kuo Mei Feng 8344; Qinghai-Tibet Expedition 8346, 8737), at the herbarium of the Kunming Institute of Botany, Chinese Academy of Sciences, this species is only known from the Irrawaddy–Salween divide, in the southern Hengduan Mountains, an area of c. 4,000 km² in western Yunnan.

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PLATE 1 *Meconopsis smithiana*. Photo: Rong Li.

occupancy of the species in these sites is c. 1,800 m². This suggests that it should be categorized as Critically Endangered on the IUCN Red List on the basis of criterion B2ab(i,ii,iii,v). Also, because of its restricted distribution, small population size and the degradation of its habitat, the species should be included in the list of Plant Species with Extremely Small Populations in China (Sun et al., 2019, *Trends in Plant Science*, 24, 4–6). Our survey and information obtained from interviews with local people indicated that the main threats to this species are its small population size, the high frequency of destruction by grazing, and habitat loss as a result of road construction. Urgent and effective measures need to be taken to protect this species.

The Kunming Institute of Botany is now carrying out studies on the phylogeography of *M. smithiana* and its genetic relationships to other *Meconopsis* species of the southern Hengduan Mountains, to obtain a better understanding of the microevolution of this species. With the collaboration of the staff of nature reserves, we are planning to collect seeds of *M. smithiana* for ex situ propagation and potential future restoration of the species in the wild. Using species distribution models we also plan to identify and explore other sites in China where the species could potentially occur.

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Key skills for future aquatic scientists in Latin America: academic capacity building through the CORRIENTE XXI project

Aquatic ecosystems harbour unique biodiversity and provide key ecosystem services. Conserving and sustainably managing marine and freshwater systems in times of global

change requires specific skills that aquatic scientists need to acquire and develop throughout their career. Higher education institutions have a responsibility to provide relevant and up-to-date science-based education, especially at the postgraduate level. To identify the essential competences that MSc students should acquire, the insights of multiple stakeholders are needed.

During 20–24 January 2020 a workshop was dedicated to the identification of a portfolio of competences and learning outcomes for future aquatic scientists in Quito, Ecuador. The workshop was the first scientific meeting for the CORRIENTE XXI project, funded by the European Union, which aims to support innovative education for research-based and sustainable management of marine and freshwater ecosystems. This joint project focuses on curriculum development through international capacity building between Peru, Ecuador, France and Belgium. For this workshop, academics gathered to develop a shared, systematic approach to identify competences for postgraduates of existing and planned MSc programmes in aquatic sciences, and to assess the expectations of students, recent graduates, teachers and future employers.

The overall objective of the workshop was to share knowledge on portfolios of competences and learning outcomes through training. During the workshop, the six partner universities worked towards acquiring the necessary skills to design and analyse surveys and to establish a portfolio of competences, which will be the basis of updated and new MSc programmes. The workshop comprised stakeholder analysis by each higher education institution, development of customized surveys for the four stakeholder groups, preparation of data analysis and dissemination, and capacity building on survey methods.

These analyses have been distributed amongst the stakeholders. The findings will be a key input for the first CORRIENTE XXI meeting, in the second half of 2020, and will be the basis for curriculum update and development in the universities involved in Peru and Ecuador. Overall, the 3-year CORRIENTE XXI project addresses pressing environmental issues by providing research-based academic training, a framework for transboundary cooperation between higher education institutions for science-based solutions to shared challenges, and academic capacity building for teaching personnel. The project will result in two new MSc programmes in Ecuador and the update of three MSc programmes in both Ecuador and Peru. Activities (workshops, staff training, job-shadowing activities, an integrative conference, an innovative job fair, and a summer school) will train Peruvian and Ecuadorian academic staff in innovative and integrative skills. CORRIENTE XXI aims to raise the level of the MSc programmes, increase graduate employability, and raise awareness of the importance of aquatic sciences and management. This will translate into more effective guidelines