

Threatened Birds of Asia:

The BirdLife International Red Data Book

Editors

N. J. COLLAR (Editor-in-chief),
A. V. ANDREEV, S. CHAN, M. J. CROSBY, S. SUBRAMANYA and J. A. TOBIAS

Maps by

RUDYANTO and M. J. CROSBY

Principal compilers and data contributors

■ **BANGLADESH** P. Thompson ■ **BHUTAN** R. Pradhan; C. Inskipp, T. Inskipp ■ **CAMBODIA** Sun Huan; C. M. Poole ■ **CHINA** ■ **MAINLAND CHINA** Zheng Guangmei; Ding Changqing, Gao Wei, Gao Yuren, Li Fulai, Liu Naifa, Ma Zhijun, the late Tan Yaokuang, Wang Qishan, Xu Weishu, Yang Lan, Yu Zhiwei, Zhang Zhengwang. ■ **HONG KONG** Hong Kong Bird Watching Society (BirdLife Affiliate); H. F. Cheung; F. N. Y. Lock, C. K. W. Ma, Y. T. Yu. ■ **TAIWAN** Wild Bird Federation of Taiwan (BirdLife Partner); L. Liu Severinghaus; Chang Chin-lung, Chiang Ming-liang, Fang Woei-horng, Ho Yi-hsian, Hwang Kwang-yin, Lin Wei-yuan, Lin Wen-horn, Lo Hung-ren, Sha Chian-chung, Yau Cheng-teh. ■ **INDIA** Bombay Natural History Society (BirdLife Partner Designate) and Sálím Ali Centre for Ornithology and Natural History; L. Vijayan and V. S. Vijayan; S. Balachandran, R. Bhargava, P. C. Bhattacharjee, S. Bhupathy, A. Chaudhury, P. Gole, S. A. Hussain, R. Kaul, U. Lachungpa, R. Naroji, S. Pandey, A. Pittie, V. Prakash, A. Rahmani, P. Saikia, R. Sankaran, P. Singh, R. Sugathan, Zafar-ul Islam ■ **INDONESIA** BirdLife International Indonesia Country Programme; Ria Saryanthi; D. Agista, S. van Balen, Y. Cahyadin, R. F. A. Grimmett, F. R. Lambert, M. Poulsen, Rudyanto, I. Setiawan, C. Trainor ■ **JAPAN** Wild Bird Society of Japan (BirdLife Partner); Y. Fujimaki; Y. Kanai, H. Morioka, K. Ono, H. Uchida, M. Ueta, N. Yanagisawa ■ **KOREA** ■ **NORTH KOREA** Pak U-il; Chong Jong-ryol, Rim Chuyon. ■ **SOUTH KOREA** Lee Woo-shin; Han Sang-hoon, Kim Jin-han, Lee Ki-sup, Park Jin-young ■ **LAOS** K. Khounbolin; W. J. Duckworth ■ **MALAYSIA** Malaysian Nature Society (BirdLife Partner); K. Kumar; G. Noramly, M. J. Kohler ■ **MONGOLIA** D. Batdelger; A. Bräunlich, N. Tseveenmyadag ■ **MYANMAR** Khin Ma Ma Thwin ■ **NEPAL** Bird Conservation Nepal (BirdLife Affiliate); H. S. Baral; C. Inskipp, T. P. Inskipp ■ **PAKISTAN** Ornithological Society of Pakistan (BirdLife Affiliate) ■ **PHILIPPINES** Haribon Foundation for Conservation of Natural Resources (BirdLife Partner); N. A. D. Mallari, B. R. Tabaranza, Jr. ■ **RUSSIA** Russian Bird Conservation Union (BirdLife Partner Designate); A. V. Andreev; A. G. Degtyarev, V. G. Degtyarev, V. A. Dugintsov, N. N. Gerasimov, Yu. N. Gerasimov, N. I. Germogenov, O. A. Goroshko, A. V. Kondrat'ev, Yu. V. Labutin, N. M. Litvinenko, Yu. N. Nazarov, V. A. Nechaev, V. I. Perfil'ev, R. V. Ryabtsev, Yu. V. Shibaev, S. G. Surmach, E. E. Tkachenko, O. P. Val'chuk, B. A. Voronov. ■ **SINGAPORE** The Nature Society (Singapore) (BirdLife Partner); Lim Kim Seng ■ **SRI LANKA** Field Ornithology Group of Sri Lanka (BirdLife Affiliate); S. Kotagama; S. Aryaprema, S. Corea, J. P. G. Jones, U. Fernando, R. Perera, M. Siriwardhane, K. Weerakoon ■ **THAILAND** Bird Conservation Society of Thailand (BirdLife Partner); U. Treesucon; R. Jugmongkol, V. Kongthong, P. Poonswad, P. D. Round, S. Supparatvirkorn ■ **VIETNAM** BirdLife International Vietnam Country Programme; Nguyen Cu; J. C. Eames, A. W. Tordoff, Le Trong Trai, Nguyen Duc Tu.

With contributions from: S. H. M. Butchart, D. S. Butler (maps), P. Davidson, J. C. Lowen, G. C. L. Dutson, N. B. Peet, T. Vetta (maps), J. M. Villasper (maps), M. G. Wilson

Recommended citation

BirdLife International (2001) *Threatened birds of Asia: the BirdLife International Red Data Book*. Cambridge, UK: BirdLife International.

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Wellbrook Court, Girton Road, Cambridge, CB3 0NA, United Kingdom

Tel: +44 1223 277318 Fax: +44 1223 277200 Email: birdlife@birdlife.org.uk

Internet: www.birdlife.net

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ISBN 0 946888 42 6 (Part A)

ISBN 0 946888 43 4 (Part B)

ISBN 0 946888 44 2 (Set)

British Library-in-Publication Data

A catalogue record for this book is available from the British Library

First published 2001 by BirdLife International

Designed and produced by the **Nature**Bureau, 36 Kingfisher Court, Hambridge Road, Newbury, Berkshire RG14 5SJ, United Kingdom

Available from the Natural History Book Service Ltd, 2–3 Wills Road, Totnes, Devon TQ9 5XN, UK. Tel: +44 1803 865913 Fax: +44 1803 865280 Email nhbs@nhbs.co.uk
Internet: www.nhbs.com/services/birdlife.html

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CHINESE MONAL

Lophophorus lhuysii

Critical —
Endangered —
Vulnerable C2a



This species is listed as Vulnerable because it has a small population which is continuing to decline because of ongoing habitat degradation and hunting within an already fragmented range.

DISTRIBUTION The Chinese Monal is endemic to the mountains of south-west China, where the eastern part of the Qinghai–Tibetan Plateau borders the Sichuan basin. It is recorded from north-east Tibet, south-east Qinghai, southern Gansu, western Sichuan and possibly north-west Yunnan, with records (by province; see Remarks 1) as follows:

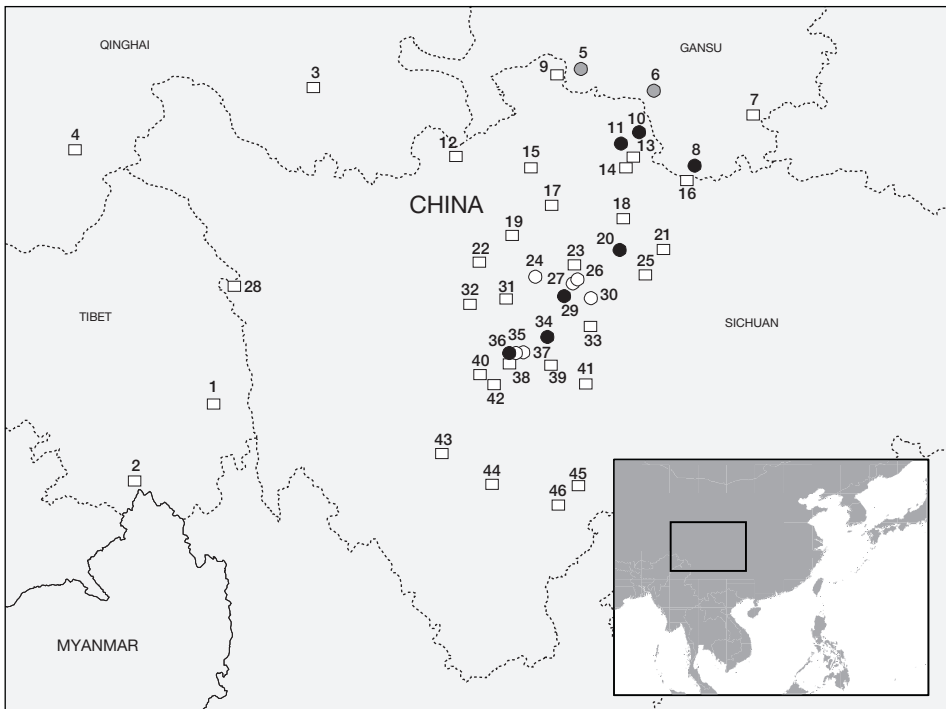
■ **CHINA** ■ **Tibet Markam county**, undated (Yin Binggao and Liu Wulin 1993); **Zayü county**, undated (Yin Binggao and Liu Wulin 1993);

■ **Qinghai Darlag county**, undated (Xian Yaohua *et al.* 1964, Li Xiangtao 1996); **Yushu county**, undated (Li Xiangtao 1996);

■ **Gansu Têwo county**, at “Diebu”, 1974 (Liu Naifa 1982, Ma Guoyao 1988, Lu Taichun 1991, He Fenqi *in litt.* 1993); **Zhugqu county**, 1974 (Liu Naifa 1982, Ma Guoyao 1988, Lu Taichun 1991); **Kang Xian county**, undated (Liu Naifa 1982, Ma Guoyao 1988, Lu Taichun 1991); **Baishuijiang National Nature Reserve**, Wenxian and Wudu counties, undated (Liu Donglai *et al.* 1996), recorded in Wenxian county, 1980 (Liu Naifa 1982, Ma Guoyao 1988, Lu Taichun 1991), possibly in Baishuijiang reserve and/or at other sites in this county;

■ **Sichuan Tiebu Nature Reserve**, Zoigê (Ruoergai) county, undated (Liu Donglai *et al.* 1996), recorded in Zoigê county, undated (Lu Taichun 1991), possibly in Tiebu reserve and/or at other sites in this county; **Baihe Nature Reserve**, Nanping county, 1978–1979, in subalpine conifer forest and alpine grasslands (Shi Dongchou *et al.* 1984; also Liu Donglai *et al.* 1996), up to four, 2,800–3,600 m, May 1985 (Buck 1985, King 1986); **Jiuzhaigou Nature Reserve**, Nanping county, undated (Liu Donglai *et al.* 1996), one heard and one above “Long lake”, 2,743–3,500 m, May 1986 (Robson 1986); **Aba county**, undated (Li Xiangtao 1996); **Wanglang Nature Reserve**, Pingwu county, undated (Li Guiyuan and Zhang Qingmao 1989; also Liu Donglai *et al.* 1996), recorded in Pingwu county, undated (Cheng Tso-hsin 1978), possibly in Wanglang reserve and/or at other sites in this county; **Huanglongsi Nature Reserve**, Songpan county, undated (Liu Donglai *et al.* 1996), recorded in or near to Songpan county on the “Upper Min”, “Wassu mountains”, six adult males and two immature males collected, 3,000–4,000 m, August or December c.1913, in alpine evergreen forest and tree rhododendron (Weigold *et al.* 1922, Jacobi 1924), recorded in Songpan county, undated (Lu Taichun 1991, Li Guiyuan 1995, Tang Chanzhu 1996), possibly in Huanglongsi reserve and/or at other sites in this county; **Hongyuan county**, undated (Li Xiangtao 1996); **Tangjiahe Nature Reserve**, Qingchuan county, undated (Liu Donglai *et al.* 1996), recorded in Qingchuan county, undated (Lu Taichun 1991), possibly in Tangjiahe reserve and/or at other sites in this county; **Heishui county**, undated (Lu Taichun 1991, Li Guiyuan 1995, Tang Chanzhu 1996); **Xiaozhaizigou Nature Reserve**, Beichuan county, undated (Liu Donglai *et al.* 1996), recorded in Beichuan county, undated (Lu Taichun 1991), possibly in Xiaozhaizigou reserve and/or at other sites in this county; **Barkam county** (Maerkang), undated (He Fenqi *in litt.* 1993); **Maowen county** (Maoxian county), undated (Li Guiyuan 1995), Chaping Shan, on the border of Beichuan and Maoxian counties, 1984 (Lu Taichun *et al.* 1986); **An Xian county**, undated (Lu Taichun 1991, Li Guiyuan 1995); **Jinchuan county**, undated (Lu Taichun 1991, Li Guiyuan 1995, Tang Chanzhu 1996); **Li Xian county**,

undated (Lu Taichun 1991, Li Guiyuan 1995, Tang Chanzhu 1996); **Chienliang Shan** (“Chen Lliang Shan”, “Chin Liang Shan”) range, 50 km north of Wenchuan (Wenchuan), eight collected, May–July 1931 (Stone 1933, male in YPM), 3,050 m, September–October 1934 (male and female in AMNH); **Mianzhu county**, undated (Lu Taichun 1991, Li Guiyuan 1995); “**Gung Tang Goh**”, south-west of Wenchuan (Wen Chuan Hsien), Min drainage, May 1934 (Traylor 1967, male in FMNH); high mountains north-west of **Kuanhsien**, upper Minho, December 1914 (two males in BMNH and MCZ); **Baiyu county**, undated (Lu Taichun 1991); Sanjiang Xiang, **Wolong Biosphere Reserve**, Wenchuan county, 3,300 m, August 1979 (one specimen in STCCN), 3–4 daily, 3,800–4,000 m, April–May 1984, a local guide reporting that it is found throughout the reserve in and adjacent to high-altitude scrub during summer, and lower in winter (King 1985a), six, May 1989 (Clements 1989), found in the higher parts of the reserve (Deng Weijie 1990), recorded in Wenchuan county, undated (Cheng Tso-hsin 1978, Lu Taichun 1991, Li Guiyuan 1995, Tang Chanzhu 1996), possibly in Wolong reserve and/or at other sites in this county; **Yingxiuwan** (“Wasu hills”, “Ts’ao P’o area”), Wenchuan county, three males



The distribution of Chinese Monal *Lophophorus lhuysii*: (1) Markam county; (2) Zayü county; (3) Darlag county; (4) Yushu county; (5) Têwo county; (6) Zhugqu county; (7) Kang Xian county; (8) Baishuijiang National Nature Reserve; (9) Tiebu Nature Reserve; (10) Baihe Nature Reserve; (11) Jiuzhaigou Nature Reserve; (12) Aba county; (13) Wanglang Nature Reserve; (14) Huanglongsi Nature Reserve; (15) Hongyuan county; (16) Tangjiahe Nature Reserve; (17) Heishui county; (18) Xiaozhaizigou Nature Reserve; (19) Barkam county; (20) Maowen county; (21) An Xian county; (22) Jinchuan county; (23) Li Xian county; (24) Chienliang Shan; (25) Mianzhu county; (26) Gung Tang Goh; (27) Kuanhsien; (28) Baiyu county; (29) Wolong Biosphere Reserve; (30) Yingxiuwan; (31) Xiaojin county; (32) Danba county; (33) Dayi county; (34) Fengtongzhai Nature Reserve; (35) Gang Yang Go; (36) Jiajin Shan; (37) Shih Kgo To; (38) Labahe Nature Reserve; (39) Lushan county; (40) Kangding county; (41) Hongya county; (42) Luding county; (43) Jiulong county; (44) Mianning county; (45) Mabian Dafengding Nature Reserve; (46) Meigu county.

○ Historical (pre-1950) ● Fairly recent (1950–1979) ● Recent (1980–present) □ Undated

collected, May–August 1938 (Hall 1955, two specimens in BMNH); **Xiaojin county**, undated (Lu Taichun 1991, Li Guiyuan 1995); **Danba county**, undated (Lu Taichun 1991, Dai Bo *et al.* 1994, Li Guiyuan 1995, Tang Chanzhu 1996); **Dayi county**, undated (Lu Taichun 1991, Li Guiyuan 1995); **Fengtongzhai Nature Reserve**, Baoxing county, undated (Liu Donglai *et al.* 1996), recorded in or near to this reserve in Baoxing county (Moupin), “not very numerous”, 3,660 m, c.1867, 1869 and 1873, in open prairies above the forest (Sclater 1874, three specimens in SNMS), collected in February, March and November 1962–1964, 3,000–3,800 m (Li Guiyuan *et al.* 1976), December 1981, June–July 1983 (three specimens in ASCN; also Cheng Tso-hsin 1978, Lu Taichun *et al.* 1991, Tang Chanzhu 1996); **Gang Yang Go**, west of Baoxing (Moupin), February 1931 (Traylor 1967, four specimens in FMNH); **Jiajin Shan**, San-Shi-Liu-Dang and Chang-Ai-Wo, 1983 (Lu Taichun *et al.* 1986, He Fenqi *et al.* 1988); **Shih Kgo To**, probably west-south-west of Baoxing (Moupin), March 1931 (Traylor 1967, immature male in FMNH); **Labahe Nature Reserve**, Tianquan county, undated (Zhang Zhengwang *in litt.* 1997), recorded in Tianquan county, undated (Lu Taichun 1991, Li Guiyuan 1995), possibly in Labahe reserve and/or at other sites in this county; **Lushan county**, undated (Lu Taichun 1991, Li Guiyuan 1995); **Kangding county** (Tatsienlu, Tachienlu, Tatsien-lou, Taschien), three collected, “uncommon”, undated (Oustalet 1893), male collected, 1890, pair collected, before 1939 (three specimens in BMNH), collected at “Wantung”, near Kangding (Taschien), June 1890 (male in BMNH), male and female seen above “Walee”, 25 km south of Kangding (Tachienlu), June 1929 (Stevens 1930), male, two females and young male collected, October 1931 (Stone 1933; also Cheng Tso-hsin 1978, Lu Taichun 1991, Dai Bo *et al.* 1994, Tang Chanzhu 1996); **Hongya county**, undated (Li Guiyuan 1995, Zheng Guangmei and Wang Qishan 1998); **Luding county**, undated (Lu Taichun 1991, Dai Bo *et al.* 1994, Li Guiyuan 1995, Tang Chanzhu 1996); **Jiulong county**, undated (Dai Bo *et al.* 1994, Zheng Guangmei and Wang Qishan 1998); **Mianning county**, undated (Zheng Guangmei and Zhang Zhengwang 1993, Li Xiangtao 1996); **Mabian Dafengding Nature Reserve**, Mabian county, undated (Liu Donglai *et al.* 1996, Zhang Zhengwang *in litt.* 1997), recorded in Mabian county, undated (Zheng Guangmei and Zhang Zhengwang 1993, Li Xiangtao 1996), possibly in Mabian Dafengding reserve and/or at other sites in these counties; **Meigu county**, undated (Li Xiangtao 1996).

Unconfirmed records are from Emei Shan, undated (Zheng Guangmei and Wang Qishan 1998) and Lou Xian county, undated (Zheng Guangmei and Zhang Zhengwang 1993, Li Xiangtao 1996), but both of these are below the known altitudinal limits of this species (He Fenqi *in litt.* 1999).

■ **Yunnan** The species is reported from the following three nature reserves, but there is as yet no conclusive evidence that it occurs in north-west Yunnan (Han Lianxian *in litt.* 1994, He Fenqi *in litt.* 1999): Baima Xueshan National Nature Reserve, Deqin county, undated (Liu Donglai *et al.* 1996); Bitahai Nature Reserve, Zhongdian county, “rare” (Zheng Guangmei and Zhang Zhengwang 1993, Yang Lan 1995); Lugu Hu Nature Reserve, Ninglang county, undated (Liu Donglai *et al.* 1996).

POPULATION The Chinese Monal population has been estimated to total 5,000–20,000 individuals, and is believed to be declining, but not rapidly (He Fenqi in McGowan and Garson 1995). A more accurate current estimate may be 10,000–25,000 individuals (He Fenqi *in litt.* 1999). Detailed surveys have been completed at several localities in Sichuan: at Jiajinshan in Baoxing county, a survey in 1983 recorded 32 males, 34 females and 12 young birds in an area of 50 km², at a density of 1.58 birds per km²; at Chapingshan on the border of Beichuan and Maoxian counties, a survey in 1984 recorded 30 males, 34 females and 12 young birds in an area of 45 km², at a density of 1.32 birds per km² (Lu Taichun *et al.* 1986); and in Nanping county, population densities of 0.9–4.0 per km² have been recorded (Shi 1986 in Li Xiangtao 1996). In Gansu, a survey in 1974 recorded less than 100 birds in both Tewo and Zhugqu counties, and a survey in 1980 found a population of less than 200 in

Wenxian county in an area of 500 km² (Lu Taichun 1991). The total population in Gansu has been estimated at below 200 (Ma 1988 in Li Xiangtao 1996). There have been no reports from Qinghai in recent years, and it has been suggested that the species may be extinct there (Li Xiangtao 1996, Zhang Zhengwang *in litt.* 1997). In Tibet, the population has been estimated to be below 100 (Yin Binggao and Liu Wulin 1993 in Li Xiangtao 1996).

ECOLOGY Habitat The Chinese Monal inhabits subalpine rhododendron scrub, subalpine and alpine meadows and exposed cliffs above the treeline (particularly favouring areas with both dense scrub and steep crags), and it sometimes moves down into subalpine coniferous forest; it has been recorded between 2,800 and 4,900 m, but it is normally found between 3,300 and 4,500 m (He Fenqi *et al.* 1988, McGowan and Garson 1995, Stattersfield *et al.* 1998). Liu Naifa (1982) reported that in Gansu it occurs only above 4,000 m. Surveys in Sichuan found that most Chinese Monal nested in the subalpine meadow zone at 3,600–4,000 m, where the dominant plants were *Kobresis pygmaea*, *Cardamine tangutorum*, *Polygonum tenifolium* and *Fritillaria cirrhosa*; the major feeding area of this species, where some birds also breed, was the subalpine shrubby zone at 3,300–3,600 m, just above the treeline, where the vegetation included *Salix*, *Caragana* and *Rhododendron* (Lu Taichun *et al.* 1986). It is very timid and difficult to approach, and in summer it stays in dense scrub for most of the day, but is active, noisy and conspicuous around sunrise and less so in late afternoon (King 1986, Lu Taichun *et al.* 1986).

This species shows little change in habitat preference over the year, and it does not usually move seasonally or altitudinally, although in winter it is usually found on south-facing slopes and in very cold weather it may move into coniferous forest below 3,300 m; in winter, it usually roosts in the branches of rhododendron shrubs, whereas in summer it often simply sits on the ground by the crags (Lu Taichun *et al.* 1986, He Fenqi *et al.* 1988). Radio-tracking studies in 1993 found that it did not move great distances from one season to the next, or make significant altitudinal movements up or down the mountains; it seemed to occur in larger groups in winter than in spring, and some of these were bachelor groups with as many as eight male monals (Bell 1995).

Food This species is omnivorous, and it digs for food with its powerful bill, its main foods being flowers, young leaves, buds, bulbs and roots, and sometimes insects and other small animals; in winter, it feeds mainly on the roots of perennial herbaceous plants, seeds and sometimes mosses, and in summer it feeds on the bulbs of fritillary (locally called “bei mu”) *Fritillaria* (Lu Taichun *et al.* 1986, He Fenqi *et al.* 1988, He Fenqi *in litt.* 1999). This species of fritillary is one of the most important and popular medicinal bulbs in China, and in spring the monal’s diet also includes a fungus which infects and grows in a caterpillar *Hepialus oblifurcus*, and is also one of the most valuable medicinal plants in China (Bell 1995).

Breeding Lu Taichun *et al.* (1986) and He Fenqi *et al.* (1988) studied the breeding ecology of the Chinese Monal in Sichuan, and all data in this paragraph are from these studies. It breeds between the end of March and June. Flocks of non-breeding birds were recorded during the breeding season, and it was found that only a small proportion of hens had chicks, which suggested that this species may take several years to reach maturity and possibly even that mature birds do not breed every year. The nests were in caves or in narrow crevices on steep cliffs, or among dense scrub, at 3,500–4,000 m. Clutch size was normally 3–5 eggs. Birds appeared to be monogamous but did not seem to be territorial, and the shortest distance between the eight nests found was c.30 m. Only the females incubated the eggs, and were so attached to their nests that they allowed humans to approach to within 1 m.

THREATS The Chinese Monal is one of (now) two threatened bird species that are entirely restricted to the “West Sichuan Mountains Endemic Bird Area”, threats and conservation measures in which are profiled by Stattersfield *et al.* (1998).

Table 1. Changes in the extent of natural habitats within this species's range in south-west China. The data in this table are reproduced from MacKinnon *et al.* (1996), and show the estimated areas (both original and remaining in km²) of presumably suitable habitats within this species's known range, and the area of each habitat estimated within existing protected areas. However, it is important to note that this only gives an indication of the extent of reduction of presumed habitats, as there is no information on the time-scale over which they have been lost, and this species does not necessarily occur throughout each habitat in each province.

Province	Habitat	Original	Remaining	%	Protected	%
Qinghai	alpine grasslands	182,020	111,418	61	101,520	55.8
Qinghai	alpine sparse vegetation	92,840	74,271	80	112,020	121
Qinghai	cold coniferous forest	6,714	3,984	59	720	10.7
Qinghai	rhododendron scrub	1,887	1,510	80	0	0
Gansu	alpine grasslands	24,002	14,401	60	1,020	4.2
Gansu	alpine sparse vegetation	2,009	1,406	70	0	0
Gansu	cold coniferous forest	16,351	12,190	75	3,820	23.4
Gansu	temperate coniferous forest	398	40	10	0	0
Sichuan	cold coniferous forest	100,213	57,459	57	2,319	2.3
Sichuan	rhododendron scrub	10,952	8,761	80	0	0

Habitat loss The subalpine and alpine meadow habitats of Chinese Monal have been degraded in some areas by an increase in the grazing of wild yaks (Lu Taichun *et al.* 1986, He Fenqi *et al.* 1988). The forests in western Sichuan are part of the second most important timber-producing region in China, and are being rapidly exploited, even at the high altitudes which this species inhabits; forest cover in Sichuan is estimated to have been reduced from 19% to 12.6% between the early 1950s and 1988, with mature natural forest being particularly affected (Smil 1984, 1993, see Table 1). New road construction for logging within this monal's range is of concern, as it has improved access to alpine habitats, which is a key factor in determining the level of use by local people (D. Rimlinger *in litt.* 1999). In Wolong Biosphere Reserve, the large-scale collection of medicinal herbs may be affecting the feeding habitat of the monals (B. F. King verbally 1998).

Disturbance The large-scale collection of *Fritillaria* and other herbs for Chinese medicine causes localised disturbance, and nests are sometimes destroyed by these activities (Lu Taichun *et al.* 1986, He Fenqi *et al.* 1988). However, a study in 1993 found that the collection of *Fritillaria* was probably not a significant threat to this species in the study area because the amounts collected were limited by its remoteness (Bell 1995). However, there is a lot of human disturbance in the areas occupied by this species in Wolong Biosphere Reserve (B. F. King verbally 1998).

Hunting Hunting is also considered to be an important (but localised: P. J. Garson *in litt.* 1999) threat (Zheng Guangmei and Wang Qishan 1998). At one site surveyed in the early 1980s, a substantial decrease in numbers was found during a visit in November 1987, and discussion with the local forestry department indicated that this was the result of illegal hunting (*WPA News* 20 [1988]: 6).

MEASURES TAKEN Legislation The Chinese Monal is a Nationally Protected Species (First Class) in China (McGowan and Garson 1995, Zheng Guangmei and Wang Qishan 1998). It is listed on Appendix I of CITES.

Protected areas The Chinese Monal has been recorded in many nature reserves in the Qionglai Shan and Min Shan ranges, several of which were originally established for the conservation of the giant panda *Ailuropoda melanoleuca* (McGowan and Garson 1995, see IUCN 1992, 1993), but it is not known from any protected areas in the west of its range (Stattersfield *et al.* 1998). It has been reported from the following protected areas: Baishuijiang Nature Reserve in Gansu (2,137 km², habitats apparently in very good condition with wide altitudinal range and vegetation types), Tiebu Nature Reserve in Sichuan (200 km², an

“interesting area”), Jiuzhaigou Nature Reserve in Sichuan (200 km², habitats apparently mostly in excellent condition but threatened by tourism), Baihe Nature Reserve in Sichuan (200 km², forests apparently in good condition except in the valleys and at the northern face of the reserve), Huanglongsi Nature Reserve in Sichuan (400 km², important forests and geological formations), Wanglang Nature Reserve in Sichuan (332 km², forests apparently in good condition), Tangjiahe Nature Reserve in Sichuan (400 km², habitats apparently somewhat damaged but valuable), Xiaozhaizigou Nature Reserve in Sichuan (67 km², habitats apparently in good condition but rather small), Wolong Biosphere Reserve in Sichuan (2,000 km², large areas of habitat apparently in excellent condition but some damaged areas), Fengtongzhai Nature Reserve in Sichuan (400 km², habitats apparently in good condition but the southern end very damaged), Labahe Nature Reserve in Sichuan (200 km², forests apparently much logged but still valuable), Mabian Dafengding Nature Reserve in Sichuan (340 km², habitats on lower parts of hills apparently damaged), Baima Xueshan National Nature Reserve in Yunnan (1,901 km², habitats apparently in good condition), Bitahai Nature Reserve in Yunnan (141 km², habitats apparently in good condition), Lugu Hu Nature Reserve in Yunnan (81 km², habitats apparently in fine condition) (protected areas size and condition from MacKinnon *et al.* 1996).

Research Several studies have been completed of the population density and ecology of this species (e.g. Lu Taichun *et al.* 1986, He Fenqi *et al.* 1988; see Population and Ecology). Nine Chinese Monal were radio-tracked in northern Sichuan in winter 1993, as part of a study of the seasonal behaviour, habits, diet and movements of this species in its home range; this work was designed to help understand how much suitable habitat for this species needs to be included inside protected areas (Bell 1995).

Captive breeding Chinese Monal is very difficult to keep in captivity (Zheng Guangmei and Wang Qishan 1998). This is largely because of a high mortality rate from disease, but in recent years the Endangered Species Breeding Centre in Beijing has worked with San Diego Zoo on a captive-breeding programme, and a captive flock of c.20 birds has been established and F2 generation birds were hatched in 1995 (Zhang Zhengwang *in litt.* 1997).

MEASURES PROPOSED *Protected areas* Although Chinese Monal occurs in many protected areas, its status in most of them is poorly understood and a review of the existing reserves is required throughout its range, to determine which are the key sites for its conservation; it will then be possible to determine whether there is a need to upgrade the status of any of them or to extend their boundaries to include additional areas of subalpine forest and alpine habitats, whether measures are necessary at some sites to rehabilitate and restore suitable habitat, and whether some new protected areas need to be established (see McGowan and Garson 1995). Many of the existing reserves were established to protect forests and wetlands, and it is likely that the areas of suitable habitat for this species within many of them are relatively small. There is a need for further surveys to locate areas with extensive alpine habitats outside the existing protected areas, which may be suitable for establishment as new reserves for Chinese Monal and other species (D. Rimlinger *in litt.* 1999).

MacKinnon *et al.* (1996) made the following recommendations for the protected areas where this species has been recorded: at Baishuijiang Nature Reserve, manage as part of Min Shan Conservation Unit and strengthen poaching and logging control; at Tiebu Nature Reserve, retain as a reserve and protect well; at Jiuzhaigou Nature Reserve, strengthen protection of the reserve and linkage with the Min Shan Conservation Unit and control tourism; at Baihe Nature Reserve, strengthen protection of the reserve and link with Jiuzhaigou Nature Reserve and the rest of the Min Shan Conservation Unit; at Huanglongsi Nature Reserve, strengthen linkage with the rest of the Min Shan Conservation Unit; at Wanglang Nature Reserve, link with Jiuzhaigou Nature Reserve and the rest of the Min Shan Conservation Unit; at Tangjiahe Nature Reserve, strengthen protection of the reserve

and forest corridors to the rest of the Min Shan Conservation Unit; at Xiaozhaizigou Nature Reserve, reconstruct forest corridors to link up with the rest of the Min Shan Conservation Unit; at Wolong Biosphere Reserve, strengthen protection as soon as possible; at Fengtongzhai Nature Reserve, extend the reserve and strengthen linkage with Heishuiling, Wolong and the rest of the Qionglai Shan Conservation Unit; at Labahe Nature Reserve, reconstruct forest corridors to the Qionglai Shan Conservation Unit in the north-east; at Mabian Dafengding Nature Reserve, jointly manage with the Meigu Dafengding reserve; at Baima Xueshan National Nature Reserve, manage as part of Nujiang-Lancan Convergence Unit; at Bitahai Nature Reserve, strengthen protection of the reserve especially against logging and drainage; at Lugu Hu Nature Reserve, survey the avifauna.

Habitat management Measures are required within the range of Chinese Monal to help control herb collection, hunting, and the increased areas of alpine habitats used for the grazing of yaks, both inside and outside protected areas.

Research As described above, further extensive surveys are required in western Sichuan and elsewhere in the range of this species, with the aim of establishing more nature reserves for its conservation (McGowan and Garson 1995, Zheng Guangmei and Wang Qishan 1998). Intensive ecological studies are also required, particularly to determine the impacts of human exploitation (including yak grazing) on the subalpine and alpine habitats of this species.

Education Given that human disturbance is one of the greatest threats to this species, public education is an important element in efforts to protect it. This threatened species lives in areas that are only rarely visited by man, and people should be encouraged to treat them and their habitats with respect and certainly not to hunt them (He Fenqi *in litt.* 1999).

REMARKS (1) Many of the published records of this species (and of other galliforms in mainland China) are given by county, and they often do not include the actual localities where birds were found, the type of record (specimens collected, sight records, reports by local people, etc.), the number of individuals recorded or the dates. Such records are very important for the understanding of the overall distribution of a species, but are of limited value for assessing its conservation status and in helping to decide where to target conservation actions. The collection and publication of more detailed information is necessary to improve understanding of the conservation status of this and other Chinese birds. (2) This species was listed to occur in Nanchuan county, Chongqing municipality, by Li Xiangtao (1996), but this record is outside its normal range and appears unlikely to be correct because none of the mountains in that area is high enough for it.