

Threatened Birds of Asia:

The BirdLife International Red Data Book

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HAINAN LEAF-WARBLER

Phylloscopus hainanus

Critical —

Endangered —

Vulnerable B1+2a,b,c,d,e; C1

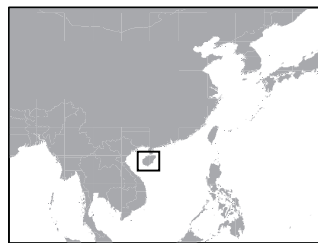
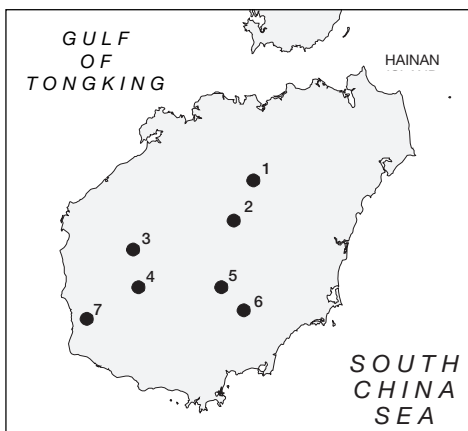


This species, known from only seven sites, has a small and declining range and population as a result of widespread deforestation. It therefore qualifies as Vulnerable.

DISTRIBUTION The Hainan Leaf-warbler was recently described from forested areas in the mountains of Hainan, China, and is presumably endemic to the island. It is currently known from just seven localities, but it must also occur in some of the other remnant forests on the island. Records are from:

■ **CHINA** ■ **Hainan Nanwei Ling Nature Reserve**, Tunchang county, 80–260 m, October–November 1998 (Gao Yuren and Yu Degun 1999); **Limu Shan Forest Park**, Qiongzong county, 50 seen, 1,000–1,500 m, June 1999 (KFBG in prep. c); **Bawangling National Nature Reserve**, Changjiang and Baisha counties, one seen, April 1988 (Olsson *et al.* 1993), one seen, 1,050 m, April 1998 (KFBG 1999); **Jiayi Nature Reserve**, Ledong county, 66 seen, 700–900 m, June 1999 (KFBG in prep. c); **Wuzhi Shan Nature Reserve**, Qiongzong county, ten seen, 1,500 m, June 1999 (KFBG in prep. c); **Diaoluo Shan** (which includes Baishuiling Nature Reserve, Lingshui county), April 1962, 640 m, August 1979 (Olsson *et al.* 1993, type in ASCN, two males in KIZCN), 32 seen, 800–900 m, May 1999 (KFBG in prep. b); **Jianfengling Nature Reserve**, Ledong county, 820 m, July–August 1979 (male and female in KIZCN), “common”, seen and tape-recorded, April 1988, singles and small flocks seen and tape-recorded, May 1989, when “it appeared to be one of the most common bird species” in one area, April 1992 (Olsson *et al.* 1993), up to 15 seen, July 1990 (J. Christensen *in litt.* 1999), c.30 seen, April 1994 (D. Holden *in litt.* 1999), two seen, 800–900 m, April 1998 (KFBG 1999).

POPULATION Since it was described in 1993, Hainan Leaf-warbler has been found to be numerous at several localities on the island. In Jianfengling Nature Reserve it appeared to be one of the commonest bird species in an area of secondary growth or scrub at the edge of



The distribution of Hainan Leaf-warbler

Phylloscopus hainanus: (1) Nanwei Ling Nature Reserve; (2) Limu Shan Forest Park; (3) Bawangling National Nature Reserve; (4) Jiayi Nature Reserve; (5) Wuzhi Shan Nature Reserve; (6) Diaoluo Shan; (7) Jianfengling Nature Reserve.

● Recent (1980–present)

mature forest along the road just outside the reserve in April 1992 (Olsson *et al.* 1993). Fairly large flocks (some of over 30 birds) were recorded in June 1999 foraging with other species at Jiayi Nature Reserve and Limu Shan Forest Park (M. W. N. Lau *per* J. Fellowes *in litt.* 1999). However, it is only known from a small number of sites, and its forest habitat has been greatly reduced in recent years (see Threats).

ECOLOGY Habitat This species is only known from forested areas in the mountains: at Jianfengling, most records were from secondary growth or scrub at the edge of mature forest, and very few individuals were observed inside the mature forest (Olsson *et al.* 1993), but at other sites it has been found in both intact primary forest and selectively logged forest (KFBG 1999, in prep. b,c). All records were from between 640 m and 1,500 m (Olsson *et al.* 1993, KFBG 1999, in prep. b,c; see Distribution), until Gao Yuren and Yu Degun (1999) found it at 80–260 m in Nanwei Ling Nature Reserve in 1998. Very little natural forest remains on Hainan below c.600 m (J. Fellowes *in litt.* 1999), and in the past the species may have occurred more widely at lower elevations.

Food The diet is unknown, but is presumably composed mainly of small leaf-dwelling insects and their larvae, as in other *Phylloscopus* warblers.

Breeding In late April 1992, several pairs were observed with fledged young and one nest was found with nearly full-grown young, on the face of a steep bank by a road, c.1.7 m above the road; breeding was found to be over in late May 1989, when the birds did not seem to be territorial and moved around in feeding flocks with other species (Olsson *et al.* 1993).

Migration Olsson *et al.* (1993) were not aware of any records between September and March, but could not determine conclusively whether this species is migratory. However, the record at Nanwei Ling in October–November 1998 (Gao Yuren and Yu Degun 1999) suggests that it is likely to be present on Hainan throughout the year.

THREATS The Hainan Leaf-warbler is one of two threatened bird species that are entirely restricted to the “Hainan Endemic Bird Area”, threats and conservation measures in which are profiled by Stattersfield *et al.* (1998). Further information relevant to its conservation is given in the account for the other threatened Hainan endemic species, the Hainan Partridge *Arborophila ardens*.

Habitat loss Forest loss and fragmentation is the main threat to this species on Hainan. The area of natural tropical forest on this island decreased from 16,920 km² in 1943 to 3,000 km² in 1994, mainly as a result of excessive timber extraction, the replacement of forest by rubber plantations, slash-and-burn agriculture and the unrestricted cutting of wood for fuel and other uses (Zhou Guangyi 1994). In another analysis, forest cover declined from 8,630 km² (25.7% of the island) in 1949 to about 2,420 km² (7.2%) in 1991 (Collins *et al.* 1991; see also Smil 1984, Table 1). Much of the remaining forest is probably disturbed and not of full stature, so is not capable of supporting many of the specialised forest birds (W. Bleisch *in litt.* 1993).

Habitat	Original	Remaining	%	Protected	%
subtropical evergreen broadleaf forest	7,480	832	11	108	1.4
lowland wet evergreen forest	7,192	754	10	72	1.0
tropical semi-evergreen forest	9,288	1,612	17	336	3.6

Table 1. Changes in the extent of natural habitats within this species's range on Hainan. 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 on the island.

MEASURES TAKEN *Protected areas* Hainan Leaf-warbler has been recorded in the following protected areas: Bawangling National Nature Reserve (56 km², forests apparently in good condition), Jianfengling Nature Reserve (77 km², forests apparently rather disturbed and too small), Baishuiling Nature Reserve (30 km², forests probably in good condition), Nanwei Ling Nature Reserve, Wuzhi Shan Nature Reserve (134 km², forests on upper slopes apparently in good condition but lower slopes seriously degraded), Limu Shan Forest Park (a proposed nature reserve) (7 km², forests probably in good condition but tiny), Jiayi Nature Reserve (83 km², forests apparently in good condition, if centred on the peak of the mountain) (see Distribution; sizes and condition from MacKinnon *et al.* 1996).

The species is rather common in several of these protected areas, including Jianfengling, Jiayi, Diaoluo Shan, Limu Shan and Wuzhi Shan, and its existence does not seem to be under immediate threat at present because at least parts of these reserves are protected from logging (Olsson *et al.* 1993, J. Fellowes *in litt.* 1999). It is also known to occur in Bawangling and Nanwei Ling Nature Reserves, the former of which includes substantial areas of primary forest and is less disturbed than most of the island because of its inaccessibility (Gao Yuren 1998). Nanwei Ling is a county-level nature reserve, where all logging was prohibited when the reserve was established in the mid-1980s, but financial difficulties in the late 1990s prevented real forest protection; an area of 2.67 km² of forest was illegally cleared in 1997 for replacement with a plantation, although this was discovered and stopped, and the forest is affected by cattle herding and rattan collection (Gao Yuren and Yu Degun 1999). It is likely that the Hainan Leaf-warbler occurs in some more of the 78 protected areas on Hainan (see Gao Yuren 1998), but many of them do not appear to contain suitable habitat or are too small and isolated (W. Bleisch *in litt.* 1993). It probably also occurs in some unprotected forests in the central and south-western mountains of Hainan (M. W. N. Lau *per* J. Fellowes *in litt.* 1999).

Research Recent surveys have added considerably to knowledge of the distribution and abundance of this species (Gao Yuren and Yu Degun 1999, KFBG 1999, *in prep.* b,c).

MEASURES PROPOSED *Protected areas* MacKinnon *et al.* (1996) made the following recommendations for the protected areas where this species has been recorded: at Bawangling National Nature Reserve, extend the reserve to c.120 km², to include all remaining natural forests in this area, and extend this reserve to meet other reserves in the area and manage as a single conservation unit; at Jianfengling Nature Reserve, enlarge the reserve to link up with the rest of the South-west Hainan Conservation Unit; at Baishuiling Nature Reserve, link with Diaoluo Shan if possible; at Wuzhi Shan Nature Reserve, reconstruct forest corridors to link this reserve with Qizhiling Nature Reserve in the south; at Limu Shan Forest Park, gazette as a nature reserve and consider an extension to join it with Fanjia Nature Reserve; at Jiayi Nature Reserve, extend the reserve to Mihanling. There is a need for more protected areas to be established in the mountains in the south of the island (within the likely range of this species), for example at Nanwei Ling, where it is proposed that the Hainan provincial government should upgrade the 11.03 km² county-level nature reserve (with 9.33 km² of surviving forest) to a provincial-level nature reserve with tight restrictions on habitat destruction (Gao Yuren and Yu Degun 1999).

Research Further surveys are required to determine the distribution of Hainan Leaf-warbler (which could be linked to the surveys required for the Hainan Partridge), with the aim of determining whether the existing protected areas are adequate for its conservation, and if not, to identifying those additional important areas that need to be protected. Ecological studies are also needed to improve understanding of its habitat requirements.