

# Threatened Birds of Asia:

## The BirdLife International Red Data Book

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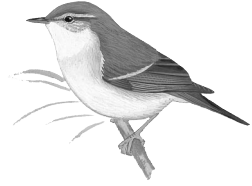
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## IZU LEAF-WARBLER

### *Phylloscopus ijimae*



Critical  —  
Endangered  —  
Vulnerable  C1

*This warbler qualifies as Vulnerable because it has a small, declining and severely fragmented population as a result of habitat loss, potentially compounded by pesticide use.*

**DISTRIBUTION** The Izu or Ijima's Leaf-warbler breeds on the Izu and Tokara islands in southern Japan, and occurs elsewhere in Japan on migration. Its winter range is very poorly understood, as the only records during that season are of small numbers in Japan, and of specimens collected twice on Taiwan and once in the Philippines.

■ **JAPAN** It occurs in the breeding season (and presumably nests) on all of the Izu islands between O-shima in the north and Aoga-shima in the south, and it was recently discovered nesting on Nakano-shima in the Tokara islands, almost 1,000 km to the south-west. There are non-breeding records from Honshu, Kyushu and the Nansei Shoto islands. Records (by island and prefecture) are as follows:

**Honshu** ■ **Tokyo** western suburb of **Tokyo**, September 1931 (male in YIO); ■ **Niigata Iwafune-gun**, April 1926 (male in YIO); ■ **Shizuoka** Okegaya-numa, **Iwata-shi**, April 1989 and October 1995 (WBSJ Totomi Chapters database); **Hamamatsu-shi**, at Miyakoda-cho, September 1993, and at Yotsuik park, April 1994 and April 1997 (WBSJ Totomi Chapters database); **Sanaru-ko** lake, Hamamatsu-shi, April 1991 (WBSJ Totomi Chapters database); **Minamiizu-cho**, southern Izu peninsula, several seen, August and September 1972, April 1973 (Higuchi 1973b); ■ **Wakayama** Kii Hino-misaki lighthouse, **Hino-misaki** cape, one found dead, April 1936 (Ishizawa 1966);

**O-shima** island, observed and considered likely to be breeding, May–June 1970–1973 (Higuchi 1973a, OSJ 1974);

**To-shima** island, April 1930 (male in MCZ), observed and considered likely to be breeding, May–June 1970–1973 (Higuchi 1973a);

**Nii-jima** island, observed and considered likely to be breeding, May–June 1970–1973 (Higuchi 1973a);

**Shikine-jima** island, observed and considered likely to be breeding, May–June 1970–1973 (Higuchi 1973a);

**Kozu-shima** island, May 1947 (female in MCZ), nests or fledglings found, May–June 1970–1973 (Higuchi 1973a);

**Miyake-jima** island, collected, undated (Stejneger 1892 in Austin and Kuroda 1953), May 1947 (six specimens in MCZ), April–May 1953 (five specimens in FMNH), May 1958 (three clutches, each of three eggs, in BMNH), collected at Ako, Toga and Tairo, April–May 1959 (four specimens in YPM), nests or nestlings found, May–June 1970–1973 (Higuchi 1973a), recorded in winter (unspecified years) (Higuchi 1973b), and down to the present day (J. T. Moyer *in litt.* 2000), but see Threats;

**Mikura-jima** island, May 1934, June 1951, May 1957, May 1959 (five specimens in MCZ and YPM), nests or nestlings found, May–June 1970–1973 (Higuchi 1973a);

**Hachijo-kojima** island, observed and considered likely to be breeding, May–June 1970–1973 (Higuchi 1973a);

**Hachijo-jima** island, May 1947 and May 1949 (two specimens in MCZ and YPM), undated (Takagi *et al.* 1986 in Brazil 1991), recorded in winter (unspecified years) (Higuchi 1973b), nests or nestlings found, May–June 1970–1973 (Higuchi 1973a);

*Aoga-shima* island, May 1897 (clutch of three eggs in BMNH), May 1947 (two males in MCZ), observed and considered likely to be breeding, May–June 1970–1973 (Higuchi 1973a);

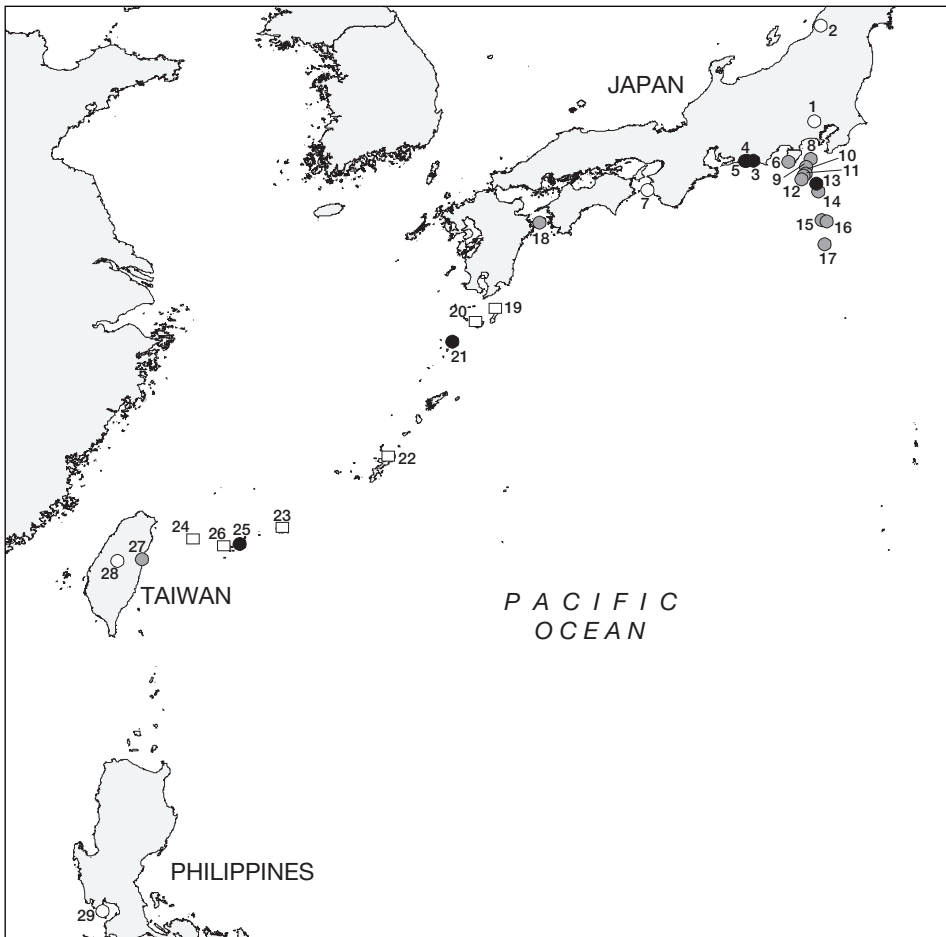
*Kyushu* ■ *Oita Mizunoko-jima* island lighthouse, three dead birds found, August 1960, April 1961 and May 1962 (Ishizawa 1966);

*Tanega-shima* island, recorded on migration, undated (Austin and Kuroda 1953);

*Yaku-shima* island, collected, undated (Yamashina 1938, OSJ 1974), passage migrant (OSJ 2000);

*Nakano-shima* island, Tokara islands, several singing, May 1988, nest found, June 1989 (Higuchi and Kawaji 1989, H. Morioka *in litt.* 1998), May 1994 (*Birder* 94/7);

*Okinawa* island, March 1925 (Kuroda 1926 in Brazil 1991), three collected in southern Okinawa at Iwa and near Momobaru, a hill village south of Kadena, August–October 1945



**The distribution of Izu Leaf-warbler *Phylloscopus ijimae*:** (1) Tokyo; (2) Iwafune-gun; (3) Iwata-shi; (4) Hamamatsu-shi; (5) Sanaru-ko; (6) Minamiizu-cho; (7) Hino-misaki; (8) O-shima; (9) To-shima; (10) Nii-jima; (11) Shikine-jima; (12) Kozu-shima; (13) Miyake-jima; (14) Mikura-jima; (15) Hachijo-kojima; (16) Hachijo-jima; (17) Aoga-shima; (18) Mizunoko-jima; (19) Tanega-shima; (20) Yaku-shima; (21) Nakano-shima; (22) Okinawa island; (23) Miyako-jima; (24) Yonaguni-jima; (25) Ishigaki-jima; (26) Iriomote-jima; (27) Hualien; (28) Puli; (29) Mt Cayapo.

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

(Phillips 1947; also OSJ 1974), recorded at scattered localities in winter (unspecified years) (Brazil 1991);

*Miyako-jima* island, specimens collected on migration, undated (OSJ 1974);

*Yonaguni-jima* island, specimens collected on migration, undated (Yamashina 1935, 1938, OSJ 1974);

*Ishigaki-jima* island, December 1981 (Brazil 1991);

*Iriomote-jima* island, October–November (unspecified years) (Brazil 1991).

■ **CHINA ■ TAIWAN** Ticehurst (1938) speculated that Taiwan might be a wintering area of this species, which may prove to be correct as there are two (previously unpublished) non-breeding records: **Hualien**, Hualien county, March 1960 (specimen in USNM); **Puli** (Pulish, Hori), Taichung, December 1924 (male and female in YIO).

■ **PHILIPPINES** There is only a single record of this species from Luzon, although it has been speculated that the southern Philippines may be the main wintering area (Gilliard 1950):

*Luzon Mt Cayapo*, Lamao, in the Mariveles mountains, Bataan province, where three males and three females were taken on 15 December 1947 (Gilliard 1950, Dickinson *et al.* 1991; only five specimens found in AMNH, labelled from 640 m).

**POPULATION** This species used to be locally common, or even abundant, on several of the Izu islands (e.g. Austin and Kuroda 1953, Moyer 1957). For example, during roadside transect counts conducted in June 1973, it was found at densities of 30.0 and 10.6 birds per km on To-shima, 1.3 birds per km on Nii-jima, 0.6 and 5.8 birds per km on Kozu-shima, 15.6 and 38.0 birds per km on Miyake-jima, 13.6 and 31.8 birds per km on Mikura-jima, 11.9 and 1.7 birds per km on Hachijo-jima and 13.8 and 9.2 birds per km on Aoga-shima (Higuchi 1973a). These statistics doubtless lay behind the assertion that the species was abundant on Miyake and Mikura (OSJ 1974). It is or was relatively rare on Shikina-jima and O-shima (Moriyama 1923, Higuchi 1973a). On Nakano-shima in the Tokara islands, a density of 4–5 singing males per km of transect was found in 1988 and 1989 (Higuchi and Kawaji 1989, H. Morioka *in litt.* 1998). Given that the total area of the Izu islands is only c.300 km<sup>2</sup> (J. T. Moyer *in litt.* 1996, Stattersfield *et al.* 1998), it is unlikely that the population of this species ever exceeded more than a few tens of thousands of individuals, and it is now likely to be just a few thousand.

Its numbers have decreased markedly since the 1970s (H. Morioka *in litt.* 1998). These declines have been noted, for example, on Miyake-jima and Mikura-jima, where it remains rather common but not as abundant as previously (N. Ichida *in litt.* 1994, J. T. Moyer *in litt.* 1996), and on O-shima, where much of the natural forest has been cleared (OSJ 1974, Brazil 1991). In August 2000 the very important population on Miyake-jima suffered a cataclysmic downturn as the island erupted (see Threats).

Nothing is known about numbers in the Philippines but it is believed to be rare (Dickinson *et al.* 1991), although given that the only record in the country concerns six birds taken on a single day it is not surprising that Gilliard (1950) referred to the species as “apparently common during migration”.

**ECOLOGY Habitat** In the Izu islands, this species is found mainly at low altitudes in light deciduous and mixed woods including subtropical evergreen forest, and also in tangled scrub, alder thickets and scrub around habitation (OSJ 1974, Brazil 1991). However, it is mainly a bird of subtropical forests, not scrub (J. T. Moyer *in litt.* 1996). It nests in most types of wooded habitat, including evergreen, deciduous and bamboo, although its density may vary considerably from site to site, even in similar vegetation and habitat (H. Morioka *in litt.* 1998). On Nakano-shima in the Tokara islands, its singing and feeding areas were in the higher parts of trees, whereas in the Izu islands it is sometimes seen in the forest understorey (Higuchi and Kawaji 1989). In the Philippines, it was recorded “in the uppermost tier of

original high tropical forest” (apparently, i.e., in the canopy of primary forest) (Gilliard 1950), leading Dickinson *et al.* (1991) to believe it to “inhabit forest and forest edge”.

**Food** Stomach analysis revealed that its diet consists largely of insects, but some seeds are also taken (Yamashina 1935). It forages for food at all levels, but often in the lower branches and sometimes on the ground in the Izu islands (Moyer 1957, Martins 1987, H. Morioka *in litt.* 1998), and in the forest canopy in the Tokara islands (Higuchi and Kawaji 1989).

**Breeding** The breeding season is April–June, when nests are built low in trees or in bamboo 0.4–6 m above the ground, and the clutch size is 2–4, usually 3–4 (Yamashina 1942, H. Morioka *in litt.* 1998). This is in contrast to Eastern Crowned Warbler *Phylloscopus coronatus* (which replaces Izu Leaf-warbler on the large Japanese islands), which nests on the ground and in holes in banks (Brazil 1991).

**Migration** The Izu Leaf-warbler arrives in the Izu islands in late March or early April and leaves in late September and October (Yamashina 1942, Austin and Kuroda 1953, OSJ 1974, H. Morioka *in litt.* 1998), although a very few may winter on these islands, e.g. Miyake-jima and Hachiko-jima (Higuchi 1973b; see Distribution). By considering also a specimen (AMNH 450403) he believed to be this species from Catbologan, Samar, in April 1888, Gilliard (1950) ventured the idea that it “winters in the high tropical forests of the southern Philippines, migrating southward in December and northward in March and April”; but although the Samar specimen is now judged to be a Philippine Leaf-warbler *P. olivaceus* (see Dickinson *et al.* 1991), this interpretation of the December record from Luzon is still viable. On migration the species is known from the southern Izu peninsula and elsewhere on mainland Honshu (Higuchi 1973b), and from several islands in the Nansei Shoto between Honshu and Taiwan (see Distribution). However, the status of the species in the Nansei Shoto is complicated by the presence of one breeding population, and the possibility exists that some birds may winter in the archipelago. It is also possible that many birds winter undetected in upland Taiwan. As with certain other Japanese nesting species, such as Japanese Night-heron *Gorsachius goisagi* and Yellow Bunting *Emberiza sulphurata* (see relevant accounts) it may be that the main wintering grounds are indeed the Philippines, but that some birds travel only as far as the Nansei Shoto or Taiwan.

**THREATS** The Izu Leaf-warbler is one of two threatened bird species that are restricted to the “Izu Islands Endemic Bird Area”, threats and conservation measures in which are profiled by Stattersfield *et al.* (1998).

**Habitat loss** This species is threatened by habitat loss in the Izu islands, for example on Miyake-jima where much natural forest has been replaced with the fast-growing softwood *Cryptomeria japonica* for timber production (J. T. Moyer *in litt.* 1996). Road construction and developments for tourism are also removing valuable habitat on Miyake-jima, and large-scale road construction is damaging its habitat on Mikura-jima (J. T. Moyer *in litt.* 1996). It has become uncommon on O-shima where much of the natural forest has been destroyed (Brazil 1991). The Tokyo prefecture government (which has authority over the Izu islands) is planning to construct either a camp ground or a marine park at Toga Point on Miyake-jima, which could destroy some of its habitat (J. T. Moyer *in litt.* 1996). On Mikura-jima there is a long-term plan to relocate the village, or build a new village, at Nango in the south of the island, close to a valuable nesting area for Izu Leaf-warbler (J. T. Moyer *in litt.* 1996). However, the rate of habitat loss in its breeding range does not appear to be sufficient to account for the recent decline in its numbers, prompting speculation that the cause may lie with deforestation in the winter quarters (Collar *et al.* 1994).

**Eruptions on Miyake-jima** (Information in this paragraph is taken entirely from J. T. Moyer *in litt.* 2000). Various volcanic eruptions occurred on Miyake-jima in 2000, the most powerful (on a scale not recorded on the island for 2,500 years) in late August, when the summer migrant Izu Leaf-warblers were still present. The entire island was covered in a fine,

heavy ash, and foliage-dwelling insects suffered very high mortality. Insectivores such as the Izu Leaf-warbler and Styan's Grasshopper-warbler *Locustella pleskei* (see relevant account) suffered considerably as a result, as all their sites and habitats were badly affected. Moreover, August was very dry, and any rain or dew was immediately absorbed into the ash, compounding the mortality in these two species. Close to 100% breeding failure was predicted in the leaf-warbler; indeed altogether the species appeared to suffer 90% mortality during August. Moreover, it is doubtful whether more than a few adults would have been able to complete a long-distance migration after such late-summer malnutrition and water deprivation. Although if no further eruptions occur the vegetation might be expected to recover quickly, in October the main crater began emitting deadly gases which, on still days, covered the island and proved toxic to both animals and plants.

**Pesticides** Another possible cause of the population decline could be the increased use of pesticides and other agrochemicals in the breeding range, which might affect the species directly or indirectly through the reduction of its insect prey (H. Morioka *in litt.* 1998).

**MEASURES TAKEN** **Legislation** *Japan* The Izu Leaf-warbler has been designated as "Vulnerable" under the law for the Conservation of Endangered Species of Wild Fauna and Flora, and it has been protected as a National Monument since 1975 (Kato *et al.* 1995). It is also on the Red List of Japan, which means that its conservation importance is recognised and it can be used as a reference species in environmental impact assessment for development projects (Environment Agency of Japan *in litt.* 1999).

**Protected areas** It has been recorded in or near to the following protected areas (all information taken from the Environment Agency of Japan's list of prefectural protection areas): in Shizuoka, Amagi Protection Area (53 km<sup>2</sup>), Mizukubo Protection Area (296 km<sup>2</sup>, including a "special protection area" of 15 km<sup>2</sup>) and Sanaru-ko Protection Area (1 km<sup>2</sup>); in Wakayama, Mihama Protection Area (4 km<sup>2</sup>) and Hidaka Protection Area (1 km<sup>2</sup>); in the Izu islands, Nii-jima Protection Area (108 km<sup>2</sup>, including a "special protection area" of 2 km<sup>2</sup>), Miyake-jima Oyama Protection Area (3 km<sup>2</sup>, established for the protection of this species and the Izu Thrush *Turdus celanops*; see relevant account); in the Nansei Shoto, To-shima Protection Area in Kagoshima prefecture (84 km<sup>2</sup>), and Yonaguni National Protection Area (3 km<sup>2</sup>) and Ikema Protection Area (3 km<sup>2</sup>, on Miyako-jima) in Okinawa prefecture. Although the entire Izu Archipelago has been declared as a national park by the national government, and several valuable places have been designated as "special protected areas", there are no rangers in the entire park and loss and modification of habitats continue on many islands; however, the Miyake-jima Nature Centre protects a small sanctuary on that island (J. T. Moyer *in litt.* 1996).

**MEASURES PROPOSED** **Habitat protection** *Japan* Although this species can be found in a variety of habitat types, it prefers forests with a well-developed canopy, and the maintenance and enhancement of areas of suitable forest and woodland on the Izu islands is important if its numbers are to be maintained or increased. New development on these islands should be carefully planned to minimise their negative effects on the habitats of this and other endemic species. The infrastructure and manpower of the national park on the Izu islands needs to be strengthened, to enforce habitat conservation measures there. *Philippines* The species is known from one "key site" (Mariveles Mountains, Luzon) and this should be formally designated as a protected area under the NIPAS process.

**Research** *Japan* Studies should be conducted to investigate the possible impact of pesticide use on the insect prey of this (and many other) species, with the aim of introducing the appropriate controls if the evidence shows the impact to be significant. The status of the population of this species should be monitored rigorously throughout its breeding range, with detailed analyses of major tracts of habitat on different islands, so that changes in

numbers can be detected as early as possible. A programme of fieldwork is needed in the Nansei Shoto to determine the range of the species there and the degree of use of the islands by migrant birds (clearly such work could be twinned with similar such studies urged for the Izu Thrush). *Outside Japan* Further surveys are urgently required to determine the species's true wintering range in Taiwan and Luzon. Since it could probably be mistaken in the field for another warbler (e.g. Philippine Leaf-warbler), the information in Sonobe (1982), Martins (1987) and Brazil (1991) should be used to help prevent misidentifications, and the contact calls of the species should be taped in Japan and made available to fieldworkers in Taiwan and the Philippines. A re-examination of all *Phylloscopus* specimens collected in the Philippines (particularly those in PNM and UPLB) might bring one or two *ijimae* to light, and improve knowledge of winter distribution.

**REMARKS** (1) Opinion has varied over the taxonomic status and affinities of this species, which has been treated as a race of Eastern Crowned Warbler *Phylloscopus coronatus* and even as an insular derivative of Pale-legged Leaf-warbler *P. tenellipes*, but which is now generally accepted as an independent relict of the *P. coronatus*–*P. occipitalis* (Western Crowned Warbler) superspecies (see reviews by Martins 1987 and Inskipp *et al.* 1996). Studies of nesting preferences (Austin and Kuroda 1953), vocalisations (Martens 1980) and DNA (Richman and Price 1992) indicate that *P. ijimae* is a valid species.