

BEAUTIFUL NUTHATCH

Sitta formosa

Critical —
Endangered —
Vulnerable C1; C2a



This nuthatch has a small, declining, severely fragmented population as a result of loss, degradation and fragmentation of evergreen and semi-evergreen forest. It therefore qualifies as Vulnerable.

DISTRIBUTION The Beautiful Nuthatch is scarce in high-altitude evergreen forests, ranging widely from the eastern Himalayas and outlying hills of north-eastern India and Bhutan through the highlands of Myanmar to scattered sites in the Annamite mountains of Laos and Vietnam. There is one record each in southern China and northern Thailand, but no confirmed record from either Nepal (see Remarks 1) or Bangladesh (see Remarks 2).

■ **CHINA** The species is known from a single locality:

■ **Yunnan Huanglianshan Nature Reserve**, Luchun county, two males collected, 1,720 m, April 1972, in evergreen broadleaved forest, male collected, 1,900 m, June 1985 (Yang Lan *in litt.* 1997, specimens in KIZCN).

■ **INDIA** Records are restricted to the eastern Himalayas in West Bengal and Sikkim and to the ranges of north-eastern India (including the Khasia, North Cachar, Barail, Naga and Mishmi hills). Records are from:

■ **West Bengal Darjeeling**, undated (Blyth 1843b), pre-1875 (specimen in NHMW), pre-1886 (two specimens in BMNH), May 1871 (specimen in BMNH), January 1873 (specimen in BMNH), some of these possibly from Mangpu or Senchal, but at least one “obtained in Darjeeling Station itself” by Tickell (Inglis 1933); **Senchal**, pre-1915 (Mackintosh 1915); **Mangpu** (Mong Phoo), February 1873 (specimen in BMNH); **Buxa Sanctuary** (Buxa Tiger Reserve), 1,400 m, 2–4, February 1992 (Allen *et al.* 1996);

■ **Sikkim** (see Remarks 3) **Tendong** (Mount Tendong), one, March–July 1867 (Bulger 1869);

■ **Arunachal Pradesh Etalin**–Malinye track, January 1994 (Singh 1994); **Dreyi**, Mishmi hills, 1,800 m, 4–5, January 1947 (female in USNM, Ali and Ripley 1948); **Glaio**, **Kamlang Wildlife Sanctuary**, unspecified numbers, 1,200 m, October 1997 (Singh 1999); between **Kore** and **Apa Tani**, Subansiri, two, undated (Betts 1956), presumably including the specimen (in BMNH) labelled “Apa Tani”, 1,500 m, April 1948; **Namdapha National Park**, seen regularly in recent years, Hornbill camp, February 1994 (Singh 1994), four between **Bulbulia** and **Rani jheel**, February 1994 (Alström *et al.* 1994b), October 1994–March 1995 (Athreya 1996), two at “27 Miles Camp”, April 1997 (J.-C. Kovacs *in litt.* 1998), between **Bulbulia** and **Embeong**, on three consecutive days, March 1998 (Hornbuckle 1998b, P. Holt *in litt.* 1998), two, December 1998 (D. Johnson *in litt.* 1999); **Dikrang**, Dafla hills, pre-1895 (male in BMNH); **Sessa Orchid Sanctuary**, West Kameng district, June 1994 (Singh 1994), January 1995 (Athreya and Karthikeyan 1995); **Toruputu peak**, Dafla hills, 1,750 m, two, winter 1874–1875 (Godwin-Austen 1876b, male in BMNH); **Sesni**, 1,300 m, April 1992 (Singh 1994); **Bhutia foothills** (presumably the foothills of the Aka hills adjacent to Bhutan), 450 m, August 1939 (male in BMNH);

■ **Assam Haflong**, Barail range, 1–2, February 1994 (Alström *et al.* 1994c); **Asalu**, North Cachar hills (see Remarks 4), undated (Godwin-Austen 1870a, male in BMNH); **Hungrum** (Hungroom), North Cachar hills, 2–3 records, undated (Baker 1901);

■ **Meghalaya Khasia hills** (see Remarks 4), apparently recorded by W. T. Blanford, undated (in Baker 1907b), and eggs were apparently taken (“brought to me”: thus the birds not actually seen) at 1,750 m, undated (Baker 1907b; see Remarks 2 under Grey-crowned Prinia *Prinia cinereocapilla*);

■ **Nagaland Kohima**, Naga hills, June 1950 (male in FMNH);

■ **Manipur Turthang**, pre-1895 (three specimens in BMNH); Bolnoi (untraced), Manipur hills, pre-1895 (specimen in BMNH).

Unconfirmed records (see Remarks 5) include: Rangiroon, near Darjeeling, West Bengal, 1,950 m, December 1925 (two specimens in BMNH); Rangpo, south Sikkim, 550 m, December 1925 (specimen in BMNH).

■ **BHUTAN** Although repeatedly reported from the country (Ali 1962) doubts remained (e.g. Ripley 1982), and its presence was only confirmed in 1992 (Moet 1996). A 1994 record cited by Collar *et al.* (1994) and Harrap and Quinn (1996) is in error (Bishop 1999).

Records are from: Thrumshingla National Park, 2 km from **Thekpaling**, Shemgang district (Shemgang Dzongkhag), c.1,900 m, 21 in a flock, January 1997 (Pradhan 1997a), seven, April 1997 (Pradhan 1997b); **Tingtibi**, Shemgang district, 600 m, three, January 1992 (Moet 1996); km 25–km 42 on the **Deothang–Narphang road** (part of the “Tashigang road”), seen regularly in small numbers over recent years by many observers (including seven in April 1999), particularly around 1,400 m (King 1996, Farrow 1997, Bishop 1999a,b, D. Farrow verbally 2000). Although reported to occur in Jigme Dorji National Park (Yonzon 1992, Mongar and Sharma 1995) this record is best treated as provisional (Inskipp and Inskipp 1996).

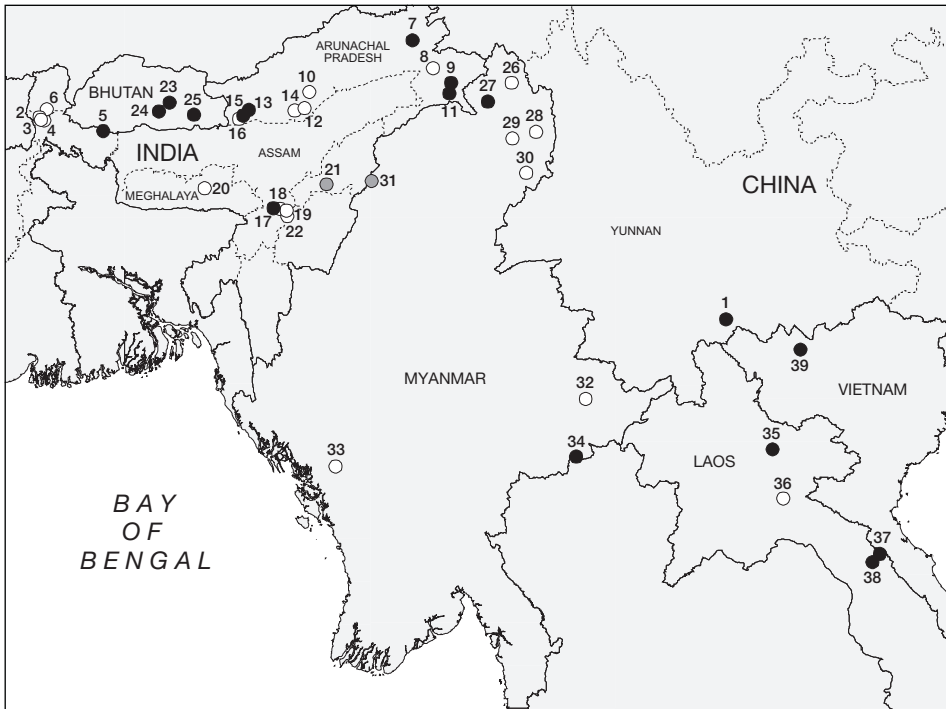
■ **MYANMAR** The species is apparently very locally distributed in the country (Smythies 1986). Given that it has occurred (albeit only once) in the Arakan hills (Stanford 1947), it is puzzling that no records come from the Chin hills (a continuation of the same range), particularly the region of Mount Victoria, apart from one unconfirmed report (see below). Records are from: near **Pangnamdin**, in the Nam Tamai valley, c.1,000 m, November 1938 (specimen in BMNH, Ticehurst 1939; also Stanford and Mayr 1940–1941); c.40 km to the north-west of **Putao**, c.20 in several different groups, 600–1,100 m, January and February 1998 (B. F. King verbally 1998); above the Nmai Hka (N’Mai Hka) and **Mekh Rame** river confluence, one, 1,850 m, December 1944 (Stanford 1947), and near the Mekh Rame, one, 2,000 m, December 1948 (Smythies 1949); **Htingnan**, in the “Triangle” east of Sumprabum, Kachin state, 1,000 m, January 1939 (female in BMNH; also Ticehurst 1939); above **Laukkaung**, Kachin state, N’Mai Hka drainage, 1,500 m, April 1948 (Smythies 1949); **Saramati** (Mount Saramati), Upper Chindwin, 1,600 m, one female, December 1960 (Ripley 1961); east of **Mong Hang**, Keng Tung, Salween–Mekong watershed, 2,100 m, February 1901 (Thompson and Craddock 1902, one specimen in BMNH), this presumably the basis for mention of the species in the “Southern Shan States” (Harington 1909a, Wickham 1929–1930); **Arakan hills** (Arakan yoma), Thayetmyo–Minbu border 1,500 m, several, December 1938 (specimen in BMNH, Stanford 1947).

An unconfirmed record is from the North Chin hills, where eggs and unidentifiable remains of a shot bird were thought to be this species, 1913–1915 (Hopwood and Mackenzie 1917); this record was thought “doubtful” by Ticehurst (1939), and indeed a Beautiful Nuthatch would have to suffer extraordinary damage to be unidentifiable in the hand.

■ **THAILAND** Although hitherto found on only one mountain, the species may possibly occur on Doi Langka and other high peaks of the northern Khuntan range, since some other species with limited ranges (e.g. Red-tailed Laughingthrush *Garrulax milnei* and Red-faced Liocichla *Liocichla phoenicea*) show this pattern of distribution in Thailand (P. D. Round *in litt.* 1998). The single record is from: **Doi Pha Hom Pok**, a pair, January 1986 (Hopkin 1989).

■ **LAOS** There have been no sightings in the far north where the species would be expected to occur. Records are from the Annamite range in the east of the country, often close to the border with Vietnam, as follows: **Phou Louey NBCA**, Houaphanh, two, probably a pair, 1,750 m, May 1998 (Davidson 1998); **Phou Kobo** (Phou Kabo), Xiang Khouang, one male collected, c.2,000 m, February 1939, and then a group of c.10, October 1939 (David-Beaulieu 1940, 1944), this site falling within present-day Nam Xam NBCA (Duckworth *et al.* 1999); Nakai-Nam Theun NBCA, Khammouane, 1–3 seen on three occasions in the **upper Nam Xot** catchment, 1,500–1,600 m, April 1994 (Thewlis *et al.* 1998), and two pairs in this area, March 1997 (Tobias 1997); along the **Ban Navang** logging road, Nakai-Nam Theun NBCA, one at c.950 m, April 1994 (Timmins and Evans 1996).

■ **VIETNAM** Somewhat surprisingly, given the distribution of records in Laos, there have been no records from the Annamite range on the Vietnamese side of the border. All records come from the region of **Mt Fan Si Pan**, in the far north, with sub-sites including Sa Pa (Chapa), Lao Cai, listed by Vo Quy (1981), and in or around Hoang Lien Nature Reserve, Lao Cai, one male collected, February 1939 (Eames and Ericson 1996; see also Delacour and Greenway 1940a,c), two at 1,550 m, January 1997 (Kalyakin and Korzun 1997), and the



The distribution of Beautiful Nuthatch *Sitta formosa*: (1) Huanglianshan Nature Reserve; (2) Darjeeling; (3) Senchal; (4) Mangpu; (5) Buxa Sanctuary; (6) Tendong; (7) Etalin; (8) Dreyi; (9) Kamlang Wildlife Sanctuary; (10) Apa Tani; (11) Namdapha National Park; (12) Dikrang; (13) Sessa Orchid Sanctuary; (14) Toruputu peak; (15) Sesni; (16) Bhutia foothills; (17) Haflong; (18) Asalu; (19) Hungrum; (20) Khasia hills; (21) Kohima; (22) Turthang; (23) Thekpaling; (24) Tingtibi; (25) Deothang-Narphang road; (26) Pangnamdin; (27) Putao; (28) Mekh Rame; (29) Htingnan; (30) Laukkaung; (31) Saramati; (32) Mong Hang; (33) Arakan hills; (34) Doi Pha Hom Pok; (35) Phou Louey NBCA; (36) Phou Kobo; (37) upper Nam Xot; (38) Ban Navang; (39) Mount Fan Si Pan.

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

following records from around O Qui Ho village (Lo Quy Ho; linked to Fan Si Pan but not on the main ridge: J. C. Eames *in litt.* 2001), Lao Cai: one pair, January–March 1995 (Kemp *et al.* 1995), 1995, one, October 1996 (J. C. Eames and Nguyen Cu *in litt.* 1997), at 1,900 m, one, October 1997 (A. W. Tordoff *in litt.* 2000), three sightings of pairs, January 1998 (Mauro 1999), and September 1998 (R. J. Safford *in litt.* 1999).

POPULATION The Beautiful Nuthatch is generally difficult to find throughout its rather extensive range (Baker 1922–1930, Smythies 1986). It appears to be highly local in distribution, a factor that renders any assessment of its overall population size fraught with difficulty. On the basis of current information, however, there is little to suggest that the population exceeds 10,000 individuals. Moreover, given widespread loss of habitat, a decline has probably occurred, although its predilection for relatively high altitudes offers some protection against the unforgiving rates of habitat destruction in the lowlands and foothills.

India It was “extremely rare” in the North Cachar Hills district of Assam and the Khasia hills of Meghalaya around 1900 (Baker 1907b), while in the Dafla hills of Arunachal Pradesh it was only “occasionally seen” (Godwin-Austen 1876b). A number of specimens originate from Sikkim and West Bengal, suggesting that it might once have been locally common there. Stevens (1923–1925), however, remarked that it was “undoubtedly very rare and extremely locally distributed” in this region, while Inglis (1933) added that “neither Stevens, Shaw nor ourselves have been fortunate to come across this beautiful Nuthatch” during the many years that they worked in Sikkim and the region of Darjeeling. It is now apparently absent from West Bengal, still present in the Barail range of southern Assam, and locally fairly common in Arunachal Pradesh, especially in and near Namdapha National Park.

Bhutan The species has regularly been recorded in recent years, but it remains scarce and local. Sightings of a group of 21 indicate that it is fairly common in some areas and the pristine state of forest throughout much of the country suggests the overall population may be relatively large (but see Threats).

Myanmar Although records are scattered over a broad swathe of the country, the species was described as “very rare indeed” by Smythies (1986). A relatively high population density was recorded north-west of Putao (not far from Namdapha National Park in India), where c.20 individuals were seen in several different groups over a two-week period (B. F. King verbally 1998). Although this is the only record of recent years, there has been a total lack of fieldwork in most areas.

Thailand The only record (Hopkin 1989) indicates that the species is most probably (and at best) extremely rare in the country.

Laos Apparently suitable habitat remains extensive in a few regions, notably in Nakai-Nam Theun and Phou Louey NBCAs (Tobias 1997, Davidson 1998) and it is likely that a significant population survives in the country (probably high 100s at least: JAT). However, the species is distributed thinly and locally even where suitable habitat exists, and it is impossible to draw any firm conclusions regarding the current size of its population.

Vietnam There are few population data from the country. However, a recent spate of records suggests that an important population persists around Mt Fan Si Pan. Further small populations are likely in the remote border regions along the central Annamites shared with Laos.

ECOLOGY Habitat The Beautiful Nuthatch has been recorded from a wide span of elevations and, to a lesser degree, a broad variety of habitat types. It has been found at 1,600–1,900 m in China (Yang Lan *in litt.* 1997) and 600–2,100 m in Myanmar (see Distribution). In North Cachar Hills district of Assam it was only found “on the highest peaks” (Baker 1907b). In Nakai-Nam Theun NBCA, Laos, it is most often encountered between 1,500 and 2,000 m

(Tobias 1997, Thewlis *et al.* 1998), with one record from c.950 m (Evans and Timmins 1998). In Namdapha National Park, India, it has been seen down to 700 m (Singh 1994). Some altitudinal movement downslope occurs in the non-breeding season: it is generally found at 1,500–2,400 m in summer, descending to 350–2,200 m in winter (Grimmett *et al.* 1998).

Its favoured habitat is dense evergreen broadleaved forest (Smythies 1949, Yang Lan *in litt.* 1997, Inskipp *et al.* 1999). Specimens were taken in a clearing in dense forest and “snared in medium forest” (BMNH label data), and an individual in Myanmar was seen in “open country with scattered trees” (Smythies 1949), implying that it can tolerate a certain degree of habitat disturbance, but in general the species is found where forest is largely intact; it is most frequently observed foraging from the middle to upper canopy of very large trees draped in mosses, lichens, orchids and other epiphytes (David-Beaulieu 1944, Harrap and Quinn 1996). High on Doi Pha Hom Pok, whence the only Thai record occurred, the habitat consists of 20 m tall evergreen forest “with dense encrustations of mosses and epiphytes” (Hopkin 1989).

While it has always been considered rare and very locally distributed in all portions of its range, the reasons for this rarity remain obscure. Speculation that it might be due to very specialised habitat needs (Collar *et al.* 1994, Harrap and Quinn 1996) is at least partially undermined by the fact that it has been recorded in a variety of habitats (see above). In Nakai-Nam Theun NBCA it was regularly encountered in canopies of *Fokienia hodginsii*, a cypress-like conifer which is locally frequent on ridges in montane evergreen forest (Tobias 1997, Tobias *et al.* 1998, Thewlis *et al.* 1998), but although the bird may be ecologically reliant, at least locally or partially, on this rare and relict tree species, it has been recorded further north in Laos in typical old-growth evergreen forests devoid of large conifers (Davidson 1998), and no link with *Fokienia* is reported around Mt Fan Si Pan in Vietnam (J. C. Eames *in litt.* 2001; see Remarks 6); moreover, no other association has been noted in the rest of its range. While it might be seasonally or locally restricted to certain altitudinal zones or forest types, no consistent association has been identified; moreover, it seems that its populations were naturally highly scattered and at low density before the recent fragmentation of montane forest in Asia.

The species is usually encountered in “pairs or small parties” (Baker 1922–1930, 1932–1935, Smythies 1986), although a remarkable flock of 21 was observed in a single tree in Bhutan (R. Pradhan *in litt.* 1998). It very frequently consorts with mixed-species flocks, often including other bark-gleaners such as *Cutia Cutia nipalensis* (in both Laos and Bhutan; Timmins and Evans 1994, R. Pradhan *in litt.* 1998) and Velvet-fronted Nuthatch *Sitta frontalis* (Tobias 1997). In Bhutan, it has also been recorded in a mixed-species flock including Long-tailed Broadbill *Psarisomus dalhousiae*, Lesser Racket-tailed Drongo *Dicrurus remifer* and Maroon Oriole *Oriolus trailli* (Bishop 1999). Individuals in Buxa Sanctuary, India, were observed at a slightly lower level, associating with White-browed Scimitar-babblers *Pomatorhinus schisticeps*, Lesser Yellownapes and Lesser Racket-tailed Drongos, 3–6 m up in 15 m tall trees (Allen *et al.* 1996). Despite Baker’s (1922–1930) assertion that its actions “when clambering about trees are remarkably like that of a woodpecker”, the bird is distinctly nuthatch-like in demeanour and movements, if a little more ponderous (Grimmett *et al.* 1998).

Food The species often gleans food from around lichens and epiphytes, as well as on more open branches. Hopkin (1989) described a pair in Thailand “feeding unobtrusively in the mossy crevices and branches”. In Laos the species spent the bulk of foraging time on larger limbs of *Fokienia hodginsii*, which were often heavily laden with epiphytes (Tobias 1997). In Bhutan, a group of four individuals was watched foraging by Bishop (1999), who noted their preference for the horizontal and angled branches of large, fairly open trees, and their general avoidance of the main trunk; these birds tended to work “unhurriedly” along or up a branch for a few metres, switching from side to side pecking at the bark and “associated lichens”, sometimes hanging upside-down from branches for long periods in the manner of

many *Sitta* species. Stomach examination of Chinese specimens found beetles and insect larvae (Yang Lan *in litt.* 1997).

Breeding In Myanmar one collected specimen was almost ready to breed in April (Smythies 1949). Nests reportedly found by Baker (1922–1930, 1932–1935) in India were “placed in trees at considerable heights from the ground” and contained 4–6 eggs or young.

Migration The species is probably largely resident (Smythies 1986), although minor altitudinal movements seem to occur (Ali and Ripley 1968–1998, Grimmett *et al.* 1998; see Habitat). On the strength of the single record, it was believed to be a very scarce winter visitor in northern Thailand (Lekagul and Round 1991). David-Beaulieu (1944) also thought it was a rare winter visitor to Phou Kobo, Laos, although again evidence for this was very scant. Indeed, recent records indicate that it breeds in Laos (Tobias 1997, Davidson 1998) and there appears to be no reason to suspect that the species is anything but an altitudinal migrant, either here or elsewhere in its range.

THREATS The Beautiful Nuthatch is considered threatened by forest destruction, primarily as a result of logging and shifting cultivation (Collar *et al.* 1994, Harrap and Quinn 1996, Choudhury 2000c). As the altitudes it prefers generally exceed those frequented by agriculturists and timber extraction teams, the species is possibly more secure than most. Nevertheless, the current isolation of montane forest above deforested lowlands possibly impinges on its non-breeding dispersal (see Habitat and Migration), and its low population density may render it more susceptible to habitat fragmentation. Perhaps most pertinent is the link between this species and the oldest, largest (and sometimes commercially most valuable; see below) tree species in montane forest; these trees tend to occur only in pristine habitat and are the first to be exploited for their timber. These facts imply that the species will be quick to disappear when forests are selectively logged or fragmented.

Details of habitat loss in Yunnan, China, appear in the equivalent section under Rufous-necked Hornbill *Aceros nipalensis* and White-speckled Laughingthrush *Garrulax bieti*. Forest loss has been considerable in the north-eastern states of India (including around Namdapha National Park) and this is likely to have had some impact on the population of this species. In the Barail range of Assam, forests on slopes near roads are disappearing rapidly in the face of slash-and-burn (Jhum) cultivation, but those at higher altitudes are currently largely untouched (E. Jirle *in litt.* 1994). In Bhutan, Sherpa (1994) suggested that shifting agriculture is likely to become a problem for the country’s forests and that overgrazing and burning will also cause significant damage, despite an enlightened forestry policy (see Measures Taken). Little is known about current rates of forest loss in Myanmar but it is likely that huge areas of habitat have been lost; an account of deforestation in the mountains of India, Bhutan and Myanmar appears in the equivalent section under Rufous-necked Hornbill *Aceros nipalensis*. Logging operations appear to be the greatest threat to the preferred habitat of this species in Laos: in certain portions of the Annamite mountains it is associated (either ecologically or coincidentally) with *Fokienia hodginsii*, a localised and highly valuable timber species traded for \$2,500/m³ uncut for grade “A” wood (Timmins and Evans 1994, IUCN 1997, Thewlis *et al.* 1998). In Nakai-Nam Theun NBCA *Fokienia* trees were being extracted by helicopter from the upper Nam Xot catchment (a prime site for Beautiful Nuthatch; see Remarks 6) and a logging road from Ban Navang was planned to reach the same area (Timmins and Evans 1994). Both these activities were terminated during environmental assessments related to the (postponed) Nam Theun 2 Hydropower Project, but there remains a serious risk, given the tempting financial rewards, that they will be resumed (Tobias 1997, Tobias *et al.* 1998, J. W. Duckworth *in litt.* 1999). Habitat at Phou Louey NBCA is threatened by logging and shifting agriculture (Davidson 1998); the long history of the latter practice in the region has resulted in a relative scarcity of the old-growth forest preferred by this species. Habitat loss is the main cause for concern in Vietnam (Nguyen Cu *in litt.* 1997); an account of threats

at Hoang Lien Nature Reserve appears under Wood Snipe *Gallinago nemoricola*. In particular, forest at this site is characterised in its natural condition by *Fokienia hodginsii* which has been selectively logged, perhaps to the detriment of the Beautiful Nuthatch (A. W. Tordoff *in litt.* 2000). The forest around O Qui Ho village is contiguous with but outside Hoang Lien Nature Reserve and is currently being rapidly cleared for cheyotte *Sechium edule* cultivation (A. W. Tordoff *in litt.* 2000).

Direct persecution is certainly only a secondary threat to this species, as it is relatively small and often keeps to the canopy. However, hunting in the north-east Indian hills is common, and many ingenious techniques for bird-catching have been developed by local peoples (see, e.g., Baker 1907b, Choudhury 2000c), whose hunting practices have apparently reduced populations of most birds, perhaps including this one. Hunting levels in Myanmar are also probably high; comments on this issue appear under Rufous-necked Hornbill. In Thailand, the area where this nuthatch has been found is subject to a high level of human disturbance (hunting, including of small birds, butterfly collecting and the use of fire to burn forest understorey) (P. D. Round *in litt.* 1998). Hunting is extraordinarily intense throughout Laos (Thewlis *et al.* 1998) and probably affects this species in all but the remotest localities (e.g. the upper level of Nakai-Nam Theun NBCA) where its impact is as yet relatively minor (JAT). An account of the threat imposed by high hunting levels in Vietnam appears under Rufous-necked Hornbill and Vietnamese Pheasant *Lophura hatinhensis*.

MEASURES TAKEN *Legislation* The species is legally protected in Thailand (WARPA); its family (Sittidae) appears on the list of protected species in Myanmar (1994). It receives no protection in either China, India, Laos or Vietnam.

Protected areas* China** The only known locality in China has been established as Huanglianshan Nature Reserve (which contains c.103 km² natural forest) (Yang Lan *in litt.* 1997). ***India The species occurs in Namdapha National Park (1,985 km²), which protects large areas of suitable habitat. It has also been observed in Sessa Orchid Sanctuary (c.100 km) and probably also occurs in the adjacent Eagle Nest Wildlife Sanctuary (217 km²). Although there have been no recent records from Senchal, West Bengal, a population might persist within Senchal Wildlife Sanctuary. ***Bhutan*** The national forest policy proposes to “ensure primarily the preservation of the environment, and only thereafter derivation of economic benefits that flow from rationally managed resources”, and to maintain forests over 60 % of the country (Adams 1989). This far-sighted approach to forestry and the country’s environmental heritage goes some way to ensuring a safe long-term future for this species. Its occurrence within Thrumshingla National Park provides further vital protection for the species (Inskipp and Inskipp 1998; but see Threats under Rufous-necked Hornbill). ***Laos*** It has been recorded within three NBCAs: Nam Xam, Phou Louey and Nakai-Nam Theun (Duckworth *et al.* 1999; but see Remarks 4 under Masked Finfoot *Heliopais personata*), the first of these on the basis of an early twentieth century record. The cessation of *Fokienia* logging in Nakai-Nam Theun has at least temporarily assisted the species (Tobias 1997). It is hoped that montane forests in the protected area will be preserved with or without completion of the hydropower development (Tobias *et al.* 1998). ***Vietnam*** All sightings are located within or near Hoang Lien Nature Reserve (Nguyen Cu *in litt.* 1997, A. W. Tordoff *in litt.* 2000).

MEASURES PROPOSED *Legislation* The species should be listed as protected in China, India, Laos and Vietnam.

Protected areas In India the protection of Namdapha National Park, Sessa Orchid Sanctuary and Eagle Nest Wildlife Sanctuary should be improved; in particular, improved infrastructure would increase the potential for ecotourism, a development that could help fund conservation action in these areas (Athreya and Karthikeyan 1995). In Bhutan the boundaries of Thrumshingla National Park should be extended east towards Yongkhala to

improve the coverage of lower-altitude broadleaved forests (Inskipp and Inskipp 1998), which might be seasonally important for this species. There is an urgent need for suitably placed and effectively protected forest reserves in Myanmar; one option would be to establish a reserve in the Putao region, as this could be contiguous with Namdapha National Park in India and protect additional populations of Rufous-necked Hornbill, White-bellied Heron *Ardea insignis*, Snowy-throated Babbler *Stachyris oglei* and various other threatened fauna. In Thailand, Doi Pha Hom Pok should be declared a wildlife sanctuary as it supports habitat used by this species and also contains populations of other regionally or globally threatened taxa (P. D. Round *in litt.* 1998). In Laos conservation of adequate habitat in which this species occurs is required (Duckworth *et al.* 1999). The ban on *Fokienia* logging in Nakai-Nam Theun NBCA, Laos, should be maintained (Duckworth *et al.* 1999). A further requirement is the hiring and adequate training of protected-area staff in Nakai-Nam Theun NBCA (see Remarks 3 under Crested Argus *Rheinardia ocellata*) and the establishment of cooperative agreements with local communities to ensure the long-term survival of relevant habitats and species (Thewlis *et al.* 1998). Measures needed at Hoang Lien Nature Reserve, Vietnam, are outlined under Wood Snipe, but in addition logging of *Fokienia hodginsii* should be curtailed within the reserve area (A. W. Tordoff *in litt.* 2000), and this reserve should be expanded northward to encompass and protect forest around O Qui Ho village, which is of importance to this species and several others (Tordoff *et al.* 1999).

Research Additional surveys are required throughout the range of this species to assess its current distribution and status. Of particular urgency is the estimation of population size and trends in key protected areas such as Thrumshingla National Park in Bhutan, Namdapha National Park in India, Nakai-Nam Theun NBCA in Laos and Hoang Lien Nature Reserve in Vietnam. These data should be used to judge whether stringent protection of these key sites will prove sufficient in maintaining viable populations. Finally, ecological investigation should seek to clarify more exactly the habitat requirements of the species (including the existence or otherwise of an association with *Fokienia hodginsii* in Indochina).

REMARKS (1) Although never recorded in Nepal, and unlikely now to occur, the species has been recorded in western West Bengal, suggesting that, in common with the Rufous-necked Hornbill *Aceros nipalensis* and White-bellied Heron *Ardea insignis* (see relevant accounts) it was once found in the mountains of eastern Nepal but has retreated eastward, presumably owing to habitat loss. (2) The species has been listed as a winter visitor to the Chittagong Hill Tracts and adjacent lowlands (Rashid 1967; hence Khan 1982, Ripley 1982). No further details are provided, however, and this information is almost certainly based on inference (see Remarks 2 under Manipur Bush-quail *Perdica manipurensis*). A record in the north-east of Bangladesh in November 1988 (Harvey 1990) was withdrawn by the observer as unconfirmed (Thompson *et al.* 1993). There are therefore no primary records from the country. (3) The species was clearly fairly common in some localities in Sikkim/West Bengal as L. Mandelli collected a fine series of specimens (eight in BMNH; and see Remarks 5) from unspecified localities, November 1870–August 1879. Much of latter-day Sikkim falls within present-day West Bengal, and therefore some or all of these specimens might have come from mountains that now stand in the latter. (4) Although Oates (1889–1890) noted a specimen from Asalu in the Khasia hills (i.e. Meghalaya), no trace either of the species or the locality could be found in the area, leading Baker (1894–1901) to conclude that Oates must have meant Asalu in the North Cachar hills. Indeed, as the specimen is labelled “Asalu, North Cachar hills”, and Godwin-Austen (1870a), the original collector, merely listed the record vaguely as from either the Khasia hills or the North Cachar hills, there seems little doubt that Baker was correct. (5) As R. Meinertzhagen’s specimens of this species appear to have been re-stuffed (at least two of them, on the basis of preparation technique, probably being stolen L. Mandelli specimens: P. C. Rasmussen *in litt.* 2000), they are discounted here as

evidence. It is worth noting, moreover, that Meinertzhagen's (1927) description of his first encounter with the species involved a vividness that, with hindsight, might be considered excessive ("in the life of an ornithologist there are some moments that are forever remembered"; the bird was "so close that to shoot would have ruined him as a specimen", but despite "its beauty when the sun caught it in flight... I reluctantly pulled the trigger..."). (6) While an association between the species and *Fokienia hodginsii* has been contested (J. C. Eames *in litt.* 2001), it remains true that *Fokienia* is a montane tree species and therefore its exploitation (and the associated disturbance caused) will be detrimental to the Beautiful Nuthatch where their ranges overlap.