

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. Supparatvikorn ■ **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

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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

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WHITE-SHOULDERED IBIS

Pseudibis davisoni

Critical A1c,d; A2c,d; C1; C2a
Endangered D1
Vulnerable —



This species has an extremely small, extremely rapidly declining, severely fragmented population as a result of deforestation, drainage of wetlands, hunting and disturbance. It therefore qualifies as Critical.

DISTRIBUTION The White-shouldered Ibis (see Remarks 1) declined precipitously during the course of the twentieth century and it is now confined to a few sites in southern Vietnam, southern Laos, northern Cambodia and Indonesian Borneo. Although this taxon is quite distinctive, a few records are open to doubt because of insufficient supporting evidence or the conditions under which sightings were made (see Remarks 2), and are listed below as unconfirmed.

■ **CHINA** There is only one record for the country:

■ **Yunnan** unspecified locality in the south-west, April 1899 (Ogilvie-Grant 1900c, Ingram 1912, Rothschild 1926, adult male in BMNH; see Remarks 3).

■ **MYANMAR** The species evidently ranged widely but very locally on larger rivers and their estuaries, in the swampy lowlands of Arakan, the Irrawaddy (Ayeyarwady) and Sittang plains and along the Mekong in Shan state (records from this area are given under Laos). While there is some possibility of confusion between this species and the Black Ibis *Pseudibis papillosa* in historical records from northern Myanmar (see Remarks 2, 4), there have been no recent records of either species in the country. Records are from: **Myingyan**, where “several collectors took eggs”, March 1901 (Smythies 1986, BMNH egg data); **Arakan**, 1909–1910 (Hopwood 1912b; see Remarks 4); **Henzada**, undated (Oates 1883; see Population); **Waw** (Wau), on the banks of the Pegu–Sittang canal, a nest in February of an unspecified year (Oates 1877a, 1883, *Stray Feathers* 9 [1880]: 300); near **Pegu** (Bago), where it was also seen along the Pegu–Sittang canal and on the Sittang plain, 1870s and 1880s (Oates 1877a, 1882), specifically April 1880 and April 1881 (specimens in BMNH); **Pakchan**, Tenasserim (Taninthayi), January 1875 (Hume 1875c, two specimens in BMNH); **Marang**, three, February–March 1928 (Smith 1942); **Bansadein** (Ban Sadein), February–March 1928 (Smith 1942); **Maliwun**, Tenasserim, two, February–March 1928 (Smith 1942), and nearby at Nalansine (Naleinsan), May–June 1875 (Hume and Davison 1878, male in BMNH wrongly catalogued as “Siam, opposite Mergui”); **Champang**, Tenasserim, December 1903 (Riley 1938, male in USNM); Nyaungbintha (untraced; a common place name in Myanmar), a pair, June 1929 (Smith 1942).

An unconfirmed record is from the “S. Mon Canal” (Mon South Canal: 20°19'N 94°30'E), Minbu district, where one was probably seen (although Glossy Ibis *Plegadis falcinellus* was not ruled out) in January 1936 (Roseveare 1952).

■ **THAILAND** Although the species was once quite widely but locally distributed in southern and peninsular Thailand (with one record from the Mekong in the far north), it is now “almost certainly extinct” (Round *et al.* 1988) with no confirmed records since 1937 (Deignan 1945). An unconfirmed record of Giant Ibis *Thaumatibis gigantea* in Sarahett, on the Petchaburi river, April 1910 (Williamson 1916), probably involved this species (see Remarks 4 under Giant Ibis). Records are from: **Chiang Saen** (Chieng Saen Kao, Chieng-sen-kao), 5–6, of which one was collected, January 1937 (male in USNM, Deignan 1945); between Vientiane and Nakae

on or near the Mekong at “Ban Nong Keng”, presumably **Ban Nong Kung**, undated (male in USNM, Riley 1938); Bang Yang, on the Tachin river (= Mae Nam Chai Si), and therefore near present-day **Suphan Buri**, breeding, undated (Herbert 1923–1926, Riley 1938); an old record from “Ajudhja (Royaume de Siam)”, where one (initially identified as *P. papillosa*) was apparently collected in 1862 (Oustalet 1877a,b) must have been in the neighbourhood of **Ayuthaya** (Ayudhaya), and probably underlies Deignan’s (1945, 1963) listing of the species from the central plains; **Tapli river** (Bandon river), several, July 1913 (Robinson 1915a; also Morioka and Yang 1996); **Khao Phanom Bencha** (Khao Bhanom Bencha; currently a wildlife sanctuary), September 1936 (Meyer de Schauensee 1946); **Nong Kok**, Krabi (Ghirbi), one female, December 1917 (Morioka and Yang 1996), date published incorrectly as December 1918 by Robinson and Kloss (1918b); **Koh Nakha Yai** (Ko Naka Yai), near Phuket, two females, February 1918 (Robinson and Kloss 1918b; also Morioka and Yang 1996); **Ban Kapang**, two males, December 1937 (two specimens in ANSP, Meyer de Schauensee 1946); “Teraor”, February 1879 (specimen in BMNH), presumably **Ban Tha Rua**, Phuket (D. R. Wells *in litt.* 2001), and therefore the undated record from that island mentioned by Hume (1879–1880) and Oates (1883), with a later record from Phuket at an unspecified locality, February 1918 (female in NRM, Gyldenstolpe 1920); **Thale Song Hong** (Lay Song Hong), Trang, several specimens collected, January 1910 (male in BMNH, Robinson and Kloss 1910–1911), and nearby at Khlong Muan (Krong Mon), Trang, February 1910 (female in MCZ), with an unspecified “Trang” record almost certainly from this area, March 1896 (female in USNM); **Ko Lanta** (Pulau Lontar), a pair, January 1917 (Robinson 1917, Robinson and Chasen 1936; also Morioka and Yang 1996).

■ **LAOS** Records previously came from the length of the Mekong and its major tributaries, but are now confined to the southern extreme of the country. They are: **Ban Houayxai**, fairly common with several flocks seen, December 1938 and January 1939 (Delacour and Greenway 1940b); **Ban Pakmet** (Pak Mat), Mekong river, one, January 1920 (Robinson and Kloss 1931); **Ban Muang**, Mekong river, one, January 1920 (male in BMNH, Robinson and Kloss 1931), with another shot the day before at Hoi Kun Yuang (Hoi Kun Yien), January 1920 (Robinson and Kloss 1931), this untraced site being between Ban Muang and Chiang Khan according to Thewlis *et al.* (1998); **Pak Lay**, Mekong river, July 1924 (male and female in USNM); a nest was found at Muang Phalan, with many sightings and breeding reports elsewhere on the lower and middle reaches of the **Xe Banghiang**, Savannakhet, 1944–1945 (David-Beaulieu 1949–1950); near **Salavan**, 1920s (Delacour *et al.* 1928); **Xe Don**, c.1930 (Engelbach 1932); **Xe Kong**, c.1930 (Engelbach 1932), this probably being within present-day Xe Pian NBCA, Attapu, where recent sightings have been from the **Xe Kong plains**, including singles (probably the same bird) on three dates, March 1993, and repeated sightings of three along the Xe Pian in the same area, May 1995 (Thewlis *et al.* 1998), with one on the Xe Pian 1 km upstream of its confluence with the Xe Kong, April 1998 (Duckworth *et al.* 1999), and two at Ban Sompoy, eastern Xe Pian NBCA, December 1997 (Robichaud 1998).

At Dong Khanthung proposed NBCA there have been several unconfirmed local reports, and one bird seen poorly was provisionally identified as this species at Nong Phisuk, February 1998 (Round 1998).

■ **CAMBODIA** Although there are early records from coastal regions the species seems to have disappeared from this area and it is now apparently restricted to the centre and north of the country. Records are from: Nong Phaue, near a village close to **Siem Pang**, Stung Treng province, where two juveniles were caught (or perhaps taken from the nest), reportedly in September 1999, and photographed in March 2000 (*Cambodia Bird News* 4 [2000]: 59–60); **Ang Trapeang Thmor Reserve**, Banteay Meanchay province, one, April 1999 (C. M. Poole *in litt.* 1999); **Phumi Sre Kor** (Phum Sre Kor), two on Trapeang Kuen, May 1998 (Timmins and Soriyun 1998); **Angkor Wat**, one roosting on a temple, 1924 (Delacour and Jabouille 1925);

Siem Reap, many observed in 1920s (Delacour 1928), two collected, August 1938 (Eames and Ericson 1996, specimens in NRM); **Kompong Kdey**, December 1927 (female in BMNH); **Kompong Thom**, common in the province during the 1920s, although few specific records (Delacour and Jabouille 1925), five resting in a marsh near Kompong Thom town, accompanied by a single Giant Ibis, April 1924 (Delacour and Jabouille 1925); **Sambor**, one collected, undated (Oustalet 1877a); Trapeang Rompeak, **Baray district**, Kompong Thom province, two groups of eight and 12, May 1999 (Veasna 1999), and also in Baray district at Boeng Real, one, March 2000 (*Cambodia Bird News* 4 [2000]: 34–38); c.40 km up the **Stoeng Areng** towards Phnom Arek, near “Chum neap”, Cardamom mountains, two, April 1944 (Engelbach 1952); **Kompong Som** (“Kompong Sum Bon, near Sre Umbel” [Sre Ambel]), a village at the mouth of the Kompong Som river on the Koh Kong coast (neither the modern resort town of Kompong Som [Sihanoukville] nor on Koh Kong island [*contra* Thewlis and Timmins 1996]), December 1918 (two males in BMNH, Williamson 1921).

Unspecified or unconfirmed records include: Tonle Kong (Sekong river) (13°30'–14°30'N 106°15'E), Stung Treng province, between 40 and 80 km north-east of Stung Treng town (and thus in the region of Siem Pang; see above), one report by Sun Hean (*in litt.* 1997); “Province Angkor and Siem Reap” (six specimens in USNM); near Phum Chouay, 1 km north of the Tonle San (Sesan river), three reported in March 1996 (*Oriental Bird Club Bull.* 24 [1996]: 59–65).

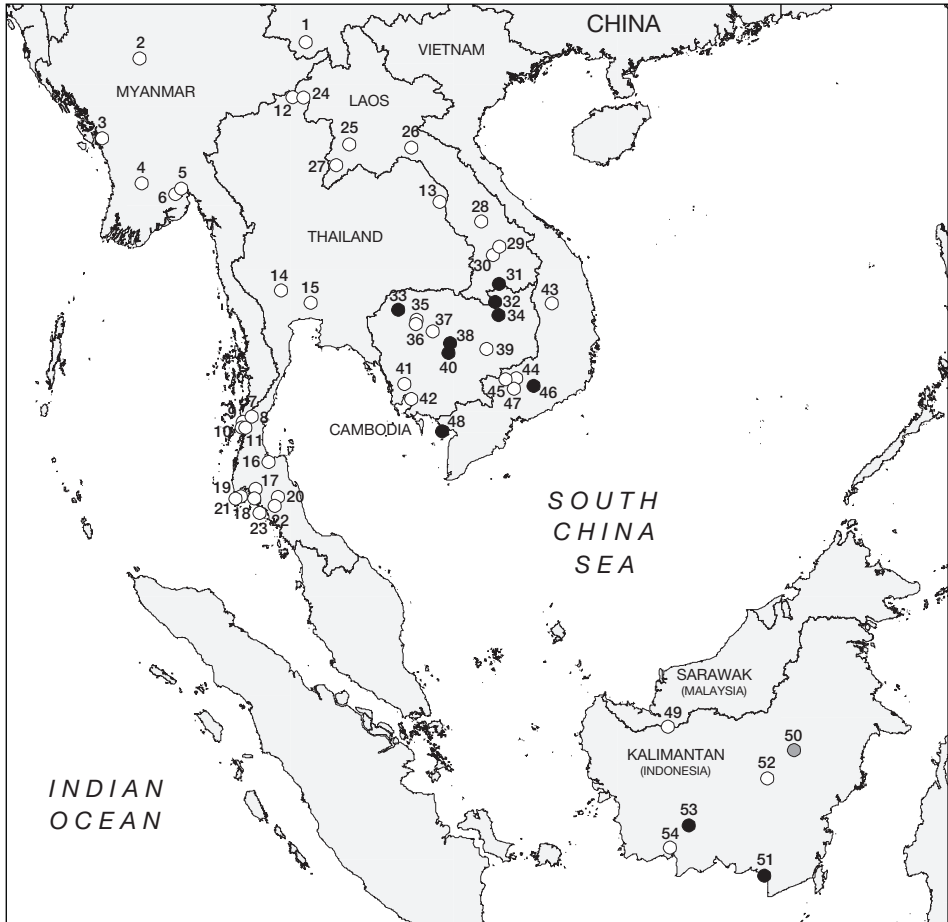
■ **VIETNAM** This species was previously widespread in southern and central Vietnam but is recently known from only two sites in the south. It is listed for Cochinchina (Bien Hoa) by Vo Quy (1975), probably based on one or more of the following records: **Pleiku**, Gia Lai province, widespread in the area, but specifically on the Pa river, a tributary of the Ayun river, 1933–1936 (David-Beaulieu 1939); **Phu Rieng**, Binh Phuoc province, 1929–1931 (David-Beaulieu 1949–1950); **Hon Quan**, Binh Phuoc province, 1929–1931 (David-Beaulieu 1949–1950); **Cat Tien National Park**, Dong Nai province, up to three observed in the Dak Lua wetlands in June 1991 (Eames *et al.* 1992), and perhaps the same birds regularly until at least March 1999 (J. C. Eames *in litt.* 1997, Dymond 1998, Atkins and Tentij 1998, P. Alind *in litt.* 1999, J. Christensen *in litt.* 1999, R. Koeppl *in litt.* 1999, R. Seitre *in litt.* 1999, G. Polet *in litt.* 2000), and two at Substation C10 during 1996 (Nguyen Cu *in litt.* 1997); **An Binh**, Binh Phuoc province, groups of 3–4 regularly encountered, 1920s (Delacour *et al.* 1928); **Kien Luong district**, Ha Tien plain, Kien Giang province, one on 15 April and a pair nearby on 2 August 1999, possibly only involving two birds (Buckton *et al.* 1999).

■ **MALAYSIA** There is only one record of the species in the country, despite the fact that its historical range extended quite far down peninsular Thailand and quite close to the Sarawak border in Kalimantan. The singleton involved was probably a wandering individual rather than a representative of a locally breeding population, since it was observed in a coastal location (Davison 1991a), at:

■ **Sarawak Batu Lintang** (in wet ricefields subsequently built over), near Kuching, November 1946 (Various hands 1958; also Smythies 1981).

■ **INDONESIA Kalimantan** The species is apparently restricted to interior Borneo. Holmes and Burton (1987) listed the following records but scrupulously indicated that the identification could not be certain (hence they are not mapped here, but should be regarded as important cues for future investigators; see Remarks 5): Binuang, December 1974; Banjarmasin, December 1974; Kedangpahu river, 1 km upstream from Muara Pahu, July 1984. Under this species, Silvius and Verheugt (1989) also reported unidentified ibises from the Mahakam lakes in 1988 and an editorial interpolation added further records from this region, one in 1983 and one referring to what later was published by Petersen, seeming to indicate the identifications as certain (which Holmes [1991] certainly does for the 1983 sighting, while Petersen [1991] clearly

does for the 1989 sighting). Confirmed records are as follows: **upper Mahakam river** between Long Bagun (upper) and Long Iram (lower), with records in 1912 and 1973 being greatly amplified by observations since 1989, involving birds at or near Long Melahan, Memahak Besar, Rukun Damai, Long Merah, Long Uray, Laham, Pt Barito Pacific, Dunamparoy, Ma'au and the Muring confluence on the Ratah river, Tukung, Long Wae, Datah Bilang, Lutan, Memahak Teboq, Tukang Merang and Long Kalian (Sözer and van der Heijden 1997; also Petersen 1991, Sözer 1994, Mann in prep.), an unconfirmed report from Ujoh Bilang in July 1983 (Petersen 1991) being from within this group of localities (near Long Bagun; see



The distribution of White-shouldered Ibis *Pseudibis davisoni*: (1) south-west Yunnan; (2) Myingyan; (3) Arakan; (4) Henzada; (5) Waw; (6) Pegu; (7) Pakchan; (8) Marang; (9) Bansadein; (10) Maliwun; (11) Champang; (12) Chiang Saen; (13) Ban Nong Kung; (14) Suphan Buri; (15) Ayutthaya; (16) Tapli river; (17) Khao Phanom Bencha; (18) Nong Kok; (19) Ko Nakha Yai; (20) Ban Kapang; (21) Ban Tha Rua; (22) Thale Song Hong; (23) Ko Lanta; (24) Ban Houayxai; (25) Ban Pakmet; (26) Ban Muang; (27) Pak Lay; (28) Xe Banghiang; (29) Salavan; (30) Xe Don; (31) Xe Kong plains; (32) Siem Pang; (33) Ang Trapeang Thmor Reserve; (34) Phumi Sre Kor; (35) Angkor Wat; (36) Siem Reap; (37) Kompong Kdey; (38) Kompong Thom; (39) Sambor; (40) Baray district; (41) Stoeng Areng; (42) Kompong Som; (43) Pleiku; (44) Phu Rieng; (45) Hon Quan; (46) Cat Tien National Park; (47) An Binh; (48) Kien Luong district; (49) Batu Lintang; (50) upper Mahakam river; (51) Purukcahu; (52) Seruyan river; (53) Pangkalan Buun; (54) Barito river.

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

map in Sözer and van der Heijden 1997); **Purukcahu** (“Puruktjau”; Puruk Tjahu), upper Barito river, central Borneo, September 1909 (Chasen and Kloss 1931a, Smythies 1981); **Seruyan river**, April 1984 (Holmes and Burton 1987) with records here judged to have been valid (Sözer and van der Heijden 1997, D. A. Holmes *in litt.* 1999); **Pengkalan Buun**, Kotawaringin, January 1952 (Various hands 1958), given as 1942 in Smythies (1981); **Barito river**, 1836 (Smythies 1981, Holmes and Burton 1987), but not during extensive fieldwork with targeted searches, 1989 (Wilkinson *et al.* 1991a; see Hancock *et al.* 1992), and at Barito Utara (north or upper Barito), 1979 (Smythies 1981); “Douson B.” (untraced), undated (Everett 1889).

POPULATION Despite the fact that the White-shouldered Ibis was clearly common in many portions of its range early in the twentieth century, the global population is now estimated to be below 2,500 birds (Rose and Scott 1997), and indeed the total population probably falls well short of this figure. Small numbers are still present in Indochina (Laos/Cambodia/Vietnam), where it is thought to be the most threatened large waterbird, “having clearly undergone a steeper decline” than other species (Timmins and Soriyun 1998). The total population in mainland South-East Asia is probably of a similar magnitude to that of the Giant Ibis, i.e. around 250 individuals (R. J. Timmins *in litt.* 2001). The Bornean population is also thought to be in the low hundreds at most (Sözer and van der Heijden 1997), and thus the global population of this species is almost certainly below 1,000 and very probably below 500.

Myanmar Early reports indicated that the species was locally quite numerous in the country. Macdonald (1906), for example, described it as “fairly common” on the banks of the Irrawaddy (Ayeyarwady) and neighbouring wetlands, while Oates (1878) and Hopwood (1912b) both considered it to be “not uncommon” in the Sittang plain and Arakan respectively (but see Remarks 4). On the Pakchan estuary, meanwhile, it was “not rare” (Hume 1875c), and even “not uncommon” around Nalansine (Hume and Davison 1878). However, it appeared to occur in Tenasserim only in the extreme south and was sometimes not present even there, thus being thought likely to be a visitor from adjacent Thailand (Hume and Davison 1878) where indeed it might have bred not far away in Trang province (see Distribution). Further north, in Pegu state, it was “rare” and infrequently seen, although regular around the lower Sittang plains and the Pegu–Sittang canal, where at least one nest was found (Oates 1877a, 1880, 1883). Oates (1883) also stated that “a black Ibis is not uncommon in the plains near Henzadah”, and while he never obtained a specimen it is virtually certain that these were *davisoni*. By the 1940s the species was “seldom seen” in all these regions (Smythies 1986), and the lack of recent reports suggests that the species is extinct in the country.

Thailand In southern Thailand around 1900, it was “evidently common in Trang” (Robinson and Kloss 1910–1911, Robinson and Chasen 1936), and certainly “commoner than *Thaumatibis gigantea*” (Riley 1938). Gyldenstolpe (1920), however, described it as “apparently rather rare” in the country and absent from the north, an opinion later contradicted by Deignan (1945, 1963) who recorded the species on the Mekong river in the far north, and mentioned that it once occurred on the once-extensive swampland of the central plains (see Distribution). There has been no further report since 1937; it is recorded as extinct in the Peninsula (Wells 1999), and it evidently disappeared from the entire country during mid-period of the twentieth century (P. D. Round *in litt.* 1998).

Laos The species was once “very common” along major rivers (Delacour and Greenway 1940b), including the Mekong and the middle and lower Xe Banghiang along which it nested in large numbers around 1945 (David-Beaulieu 1949–1950). Small flocks were frequently encountered along the Mekong between Louangphabang and Savannakhet in June 1929 (Bangs and van Tyne 1931) and in 1944–1945 (David-Beaulieu 1949–1950). A major decline has clearly taken place (Thewlis *et al.* 1998), and the paucity of sightings implies that, even if the species does still breed, extinction in Laos may be imminent. Despite this fact, large areas of apparently suitable habitat remain in the south such that, given a change in hunting practices

(assumed to be the primary pressure on its population: see Threats), it is possible that the species could recolonise (Duckworth *et al.* 1999).

Cambodia It was “a common bird” in 1924 (Delacour and Jabouille 1925), especially in the north-east (Delacour 1929b). Although it was apparently less numerous than Woolly-necked Stork *Ciconia episcopus* (itself “incredibly common” 60 years ago [and now also rare]: Thewlis *et al.* 1998), it was nevertheless described as “very abundant” in the region of Siem Reap and Angkor (Delacour 1924b). In the 1920s, large numbers were seen between Kompong Thom and Siem Reap (Delacour 1929b), a region in which, just four decades later, the species was already “rather rare” (Thomas 1964). It has now declined further in the country and retreated from almost all its previous range (Scott 1992), so that the population is now dangerously small and fragmented (R. J. Timmins *in litt.* 2001). Sun Hean (*in litt.* 1997) provided a sobering population estimate for the country: 30 individuals in widely scattered areas and probably decreasing. The difficulty of surveying appropriate regions and the general lack of survey work suggests, as does a subsequent sighting by Veasna (1999) of 20 individuals (two flocks of 12 and eight) at one location, that this estimate was overly pessimistic. Given this fact, and further sightings in its former stronghold in the north and east (see, e.g., Timmins and Soriyun 1998), plus the large area of potentially suitable habitat available, a population of at least 100 seems likely (Veasna 1999). It should also be noted, however, that the sighting of 20 individuals has not been repeated despite considerable survey effort in 2000, and that while the Tonle Sap inundation area is probably the stronghold of the species in Indochina, the total population might nevertheless be in the order of tens rather than hundreds (R. J. Timmins *in litt.* 2001). Moreover, a recent survey in Preah Vihear province found 40–70 Giant Ibises (see relevant account), but failed to encounter White-shouldered Ibis (P. Davidson *in litt.* 2000). Conversely, the encounter rate of Sarus Cranes *Grus antigone* in northern Cambodia during the breeding season suggests that the area might contain a larger number of the two threatened ibis species than records suggest (see Population under Giant Ibis *Thaumatibis gigantea*). It is clear, however, that the scale of decline in Cambodia during the twentieth century was staggering.

Vietnam Early twentieth-century reports indicate that the species was “not uncommon” at Pleiku, being encountered along the length of all major watercourses in the area (David-Beaulieu 1939), “common” at Hon Quan and Phu Rieng (David-Beaulieu 1949–1950), and regularly in groups of 3–4 individuals around An Binh (Delacour *et al.* 1928). However, it has become very rare in Vietnam, undergoing a massive contraction in range (Nguyen Cu *in litt.* 1997), such that it was recently considered extinct in the country (Scott 1989) until rediscovered in Cat Tien National Park (Eames *et al.* 1992). It was also recently found at a new location in the Ha Tien plain of the Mekong delta, with 2–3 birds found in 1999 (Buckton *et al.* 1999). Nevertheless, the Vietnam population appears to be tiny and perhaps on the verge of extinction.

Indonesia Holmes and Burton (1987) reported that, despite their separate, extensive fieldwork in apparently appropriate habitat in Kalimantan in the 1980s, they had no concrete records of the species, and speculated that possibly a relict population survived in the Barito swamps into the 1970s. Holmes (1991) further commented that “the remarkable lack of early records suggests that it may have always been rare”. Possibly the only remaining viable population of this species in Kalimantan (and hence in Borneo) is along the middle and upper reaches of the Mahakam, where recent observations suggest that total numbers may only be between 30 and 100 individuals (Sözer and van der Heijden 1997). Other sightings derive from the Barito river and smaller rivers flanking Tanjung Puting (Holmes 1991, Smythies 1999). People of the Kenyah Umajalan tribe know the species from the Apokayan river region, south of the Kayan-Mentarang reserve in the western part of East Kalimantan (Sözer and van der Heijden 1997).

An assortative pattern of records has been noted (Sözer and van der Heijden 1997), with a preponderance of blue-headed (presumed adult) birds along the Mahakam river (large, with

river traffic and settlements) and white-naped (presumed immature) birds along the Ratah river (small, well forested, quiet); however, an explanation for this distribution is not apparent.

ECOLOGY Habitat The species mainly frequents watercourses and nearby lakes (David-Beaulieu 1939). At An Binh, Vietnam, it occurred in narrow marshy valleys and grassy ponds in clearings in flat, forested country (Delacour *et al.* 1928). It is currently found in Cat Tien National Park along small streams in areas with open dipterocarp forest, the total area of this habitat remaining in the park being relatively small (Nguyen Cu *in litt.* 1997). In Xe Pian NBCA, Laos, one bird fed at two pools amongst open dry-deciduous forest on the Xe Kong plains and others were seen repeatedly along the banks of the Xe Pian, when almost all pools outside the river channel were probably dry (Thewlis *et al.* 1998).

Birds are also regularly recorded in dry habitats. For instance, Wildash (1968) stated that it occurred in “cultivated lowlands” in southern Vietnam, and this was borne out by sightings in the Mekong delta in 1999 of birds frequenting recently ploughed areas of seasonally inundated grassland which were dry at the time (Buckton *et al.* 1999). Furthermore, while it “feeds in marshes and along the banks of muddy streams” in Myanmar, it had also “been seen out on the burnt-up paddy plains in hot weather” (Smythies 1986), and not only in swamps but in “old paddy fields” (Smith 1942). On Ko Lanta, Thailand, it was seen “frequenting an open grassy plain interspersed with bushes near the sea” (Robinson and Chasen 1936). On the Tapli river, Thailand, Robinson (1915a) collected a male from a flock in a tree, and reported (under “*Pseudotantalus leucocephalus*”) that flocks of White-shouldered Ibis were met every evening roosting in tall trees. A small flock on the Mekong river in northern Thailand, however, was evidently roosting at night on a sandbar (Deignan 1945). Like the Black Ibis, therefore, flocks of the species apparently use tall trees when available for nocturnal roosting, or inaccessible terrestrial sites when trees are unavailable (Hancock *et al.* 1992).

In Indonesia, the only records from Kalimantan in the decades up to the mid-1980s were from “sandbanks in the forested upper reaches of the Barito and Mahakam” (Holmes and Burton 1987; see Remarks 6). Records in the period 1992–1996 were of birds foraging on large gravel and shingle banks exposed when rivers are low, the birds sometimes resting on mud when rivers were high, or roosting in large trees along rivers. Slow, deep stretches of river generally lack gravel banks and appear to be avoided, and all records were along large or medium rivers with forested banks (Sözer and van der Heijden 1997). Most records were of groups of 2–14 birds, although white-naped forms were never seen in groups larger than three (Sözer and van der Heijden 1997). Roosting is reported by locals to be communal, with large *Bangeris* trees being used (Sözer and van der Heijden 1997).

The habits of this species are generally similar to the closely related Black Ibis (Hume 1875c, Hancock *et al.* 1992). It is less gregarious than many other ibis species, occurring most frequently as single individuals, pairs or occasionally small flocks (Oates 1883, Hopwood 1912b, Engelbach 1932, Smythies 1986). The largest groups recorded are of 15 individuals observed on sandbanks of the Pa river, in Vietnam (David-Beaulieu 1939) and 12 in northern Cambodia (Veasna 1999). It was often seen early in the twentieth century in groups of three, which were presumed by David-Beaulieu (1949–1950) to comprise a pair with their single offspring. In South-East Asia it sometimes consorts with Giant Ibis (David-Beaulieu 1949–1950, Timmins and Soriyun 1998). Unlike the Black Ibis, which in India is usually relatively tame, the White-shouldered Ibis is usually extremely shy (Oates 1883, Hopwood 1912b; see Threats: Hunting).

Food The species has been reported stalking for long periods around recently burnt-up patches of grassland “looking into cracks of the soil for small reptiles” (Oates 1882). Its diet is said to consist mainly of locusts, grasshoppers and seeds (Baker 1922–1930). Like the Black Ibis it presumably also forages on a variety of adult and larval arthropods, polychaetes, some vegetable matter, and even lizards and small mammals (Hancock *et al.* 1992). In the

Mekong delta birds foraged in recently ploughed grassland, on one occasion in association with a small group of Woolly-necked Storks (S. T. Buckton verbally 2000). In Indonesia birds have been seen pecking between the stones on gravel banks and swallowing small items of prey, and on mudbanks they probed with their bills (Sözer 1994, Sözer and van der Heijden 1997). A local informant reported fruit as food (Petersen 1991), although this is perhaps unlikely.

Breeding In Myanmar the White-shouldered Ibis bred in February and March, with eggs close to hatching being taken on 13 February in Pegu (Oates 1877a, Macdonald 1906). An active nest was found in Laos in March (David-Beaulieu 1949–1950). At least one pair was seen displaying in Cat Tien National Park, Vietnam, in June 1991 (Eames *et al.* 1992). In Indonesia copulation was witnessed in February, and immatures (identified on smaller size and shorter bills) were seen in November (three birds accompanying six adults) (Sözer and van der Heijden 1997). Two young juveniles were reportedly trapped in Cambodia in September 1999, and photographs taken in March 2000 show these birds still in juvenile plumage (*Cambodia Bird News* 4 [2000]: 59–60). The available evidence suggests that the species breeds between February and July.

While the Glossy Ibis breeds in large colonies, “*davisoni* never does” (Smythies 1986), suggesting that the small colony of “Black Ibis” found by Christison *et al.* (1946) in Myanmar was more likely to be the smaller *Plegadis* rather than either *Pseudibis* species (see Remarks 4). Indeed, although two or three nests of its congener, the Black Ibis, may sometimes be found in fairly close proximity, as a rule this latter is a solitary nester (Hume and Oates 1889–1890, Hancock *et al.* 1992), and there is no evidence to suggest that *davisoni* is any different. One nest found in Myanmar was described as a “small, shapeless mass of sticks” on the branch of a tree c.5 m from the ground (Oates 1877a), or a “structure of sticks placed low down in a large tree growing in a wilderness of reeds” (Oates 1883). Another nest found in Laos was constructed in the bare branches at the top of a 20–25 m high tree (David-Beaulieu 1949–1950). A round, deep, compact nest, belonging either to this species or Giant Ibis, was found in Dong Khanthung proposed NBCA about 15 m up a 20 m tall *Shorea obtusa* tree (Round 1998). A report from Myanmar asserts that this species bred on tall “cotton” trees (presumably *Bombax*) (Macdonald 1906), such exposed locations rendering the nests susceptible to predation by raptors. Indeed, a well-grown chick was observed being attacked by a Changeable Hawk-eagle *Spizaetus cirrhatus*, although in this case the parents mobbed the eagle aggressively, successfully defending their brood (David-Beaulieu 1949–1950). Locals in Indonesia reported that birds always nest in large *Bangeris* trees along rivers (Sözer and van der Heijden 1997). Reports of clutch size vary: Oates (1877a, 1883) found a nest with two eggs in Myanmar, while David-Beaulieu (1944) reported clutches of 2–4 eggs.

Migration The species is currently largely resident, moving locally in response to fluctuations in water level. Although it is difficult to ascertain the nature of seasonal movements in the nineteenth and early twentieth centuries when its population was large, it appears that these movements were then occurring. Historical records from the Thai-Malay peninsula fall mainly in the winter months (September–March), as did records from Myanmar (Hume and Davison 1878; see Distribution), this either being the result of influxes or a biased sampling period. In the 1870s and 1880s, however, the species was deemed to be resident in Pegu, Myanmar (Oates 1877a, 1882). Small-scale movements in response to season may well occur in Indonesia (Sözer and van der Heijden 1997).

THREATS In continental South-East Asia the White-shouldered Ibis is thought to be “as threatened if not more so” than Giant Ibis on account of its population being of similar size but more fragmented (R. J. Timmins *in litt.* 2001), while in the only other part of its range it is “perhaps the most endangered species on the island of Borneo” (Holmes and Burton 1987: 20). It has been judged that the catastrophic decline and current endangerment of the species

is attributable to direct human persecution, combined with the drainage of wetlands and the loss of secure feeding, roosting and nesting areas, rather than to deforestation (Round 1988a, Hancock *et al.* 1992, Duckworth *et al.* 1999), although it is by no means certain that the massive loss of lowland forest in peninsular Thailand (see Threats under Gurney's Pitta *Pitta gurneyi*) or the steady diminishment of forest fringing the Mahakam river in Borneo (see Threats below) might not have played a significant part.

Hunting and disturbance In India, its close relative the Black Ibis was considered "very fair eating, and often shot on that account" (Beavan 1865–1868), indicating what fate might have befallen its South-East Asian counterpart. Hopwood (1912b) confirmed that *davisoni* is also "an excellent bird for the table", a quality that has clearly neither escaped the attention of local people throughout its range nor improved its chances of survival. Doubtless as a result of prolonged hunting pressure, it is generally very shy. The flock encountered by Deignan (1945) on the Mekong river, for example, was "exceedingly wild" and could only be stalked "from a boat at nightfall". Likewise, W. Davison found birds "excessively wary" (Hume 1875c), and they often proved difficult to shoot opportunistically (see, e.g., Oates 1882, 1883, Hopwood 1912b, David-Beaulieu 1949–1950). However, for hunters waiting concealed at waterholes in the dry season it is possibly much easier to hunt (J. W. Duckworth *in litt.* 1999). It has long been restricted to areas less frequented by people (Oates 1882) and the current high levels of hunting and intensive use of wetlands by people almost throughout South-East Asia has probably played a large part in its demise. It is presumably not a coincidence that the species only persists in two of the most remote and uninhabited tracts of Asia. The fact that it is now extinct in Thailand and probably Myanmar, and on the verge of disappearing from the rest of South-East Asia, suggests that it is extremely susceptible to disturbance and hunting, and requires high levels of protection if it is to survive.

Hunting in Laos is almost ubiquitous for a variety of cultural and economic reasons (see Thewlis *et al.* 1998) and populations of all large and conspicuous species have declined precipitously as a result. Widespread wetland disturbance and hunting (especially in the dry season) has also reduced the availability of suitable and secure foraging habitat in Cambodia (Sun Hean *in litt.* 1997). Hunting has also probably been the primary factor behind the species's virtual disappearance from Vietnam (J. W. Duckworth *in litt.* 1999; see Threats under Pale-capped Pigeon *Columba punicea*): at Cat Tien National Park, it has reportedly been shot by villagers (Nguyen Cu *in litt.* 1997), and although there have been no such reports since 1997, it is thought to roost within the park but frequently feeds across the Dong Nai river in Lam Dong province, suggesting that disturbance or opportunistic hunting in agricultural areas might pose the greatest threat, especially as so few individuals remain (G. Polet *in litt.* 2000). A major threat in Indochina is the "constant spread of villages" into remote regions, especially as new settlements are invariably established beside rivers, and the ever-increasing number of settlements is paralleled by increases in boat traffic, disturbance and hunting (R. J. Timmins *in litt.* 2001). In Kalimantan in the mid-1980s it was speculated that human disturbance might have driven this species into atypical habitat (but see Remarks 6) in the interior (Holmes and Burton 1987). However, it does not appear to be hunted along the Mahakam river, nor is disturbance from river traffic significant (Sözer and van der Heijden 1997).

Habitat loss and modification *Thailand* A brief account of wetland loss in the country appears under Giant Ibis. *Laos* As in most South-East Asian countries, wetlands in Laos are frequently settled by human populations and used for fishing, cultivation (most of the Mekong floodplain in southern Laos has been converted to rice paddy), livestock-grazing and grass-harvesting (Thewlis *et al.* 1998). If a population of this species is confirmed at Dong Khanthung proposed protected area, it will face the threats outlined under Giant Ibis. *Cambodia* Suitable habitat at Ang Trapeang Thmor Reserve is threatened by plans to develop a village at the site (C. M. Poole *in litt.* 1999), although hopefully the establishment of a protected area has eliminated this threat. Additional information appears under Giant Ibis.

Vietnam Although hunting is likely to be the main cause of the species's decline, much suitable habitat has been converted to cultivation (especially rice) or destroyed as a result of intense military activity (Humphrey and Bain 1990, Hancock *et al.* 1992). In particular, vast areas of forest and wetland have been lost since the early twentieth century, such that "freshwater wetlands inside forest habitats are now sadly rare in Vietnam and few protected areas support representative samples" (Wege *et al.* 1999). Recent sightings come from an area of seasonally inundated grassland in the Mekong delta, a habitat which is under severe threat from conversion to agriculture, principally rice paddy (Buckton *et al.* 1999). Threats relevant to Cat Tien National Park are outlined under Orange-necked Partridge *Arborophila davidi*. The total area of suitable habitat remaining in the park is relatively small: the Bau Sau (Crocodile) lake and Dak Lua wetlands combine to provide 250 ha of wetland habitat in the dry season, increasing to c.2,000 ha in the wet season as large areas of forest and bamboo flood during peak inundation (G. Polet *in litt.* 2000). Disturbance of these wetland areas by fishermen and bamboo-shoot collectors may affect breeding success (Eames *et al.* 1992, Nguyen Cu *in litt.* 1997) as might tree-burning for the extraction of sap (Nguyen Cu *in litt.* 1997). Control of these problems, however, has apparently been much more effective since 1998 (G. Polet *in litt.* 2000). **Indonesia** In Kalimantan, forest clearance and degradation, including the loss of large *Bangeris* trees for roosting and nesting, may be the main threats (Sözer and van der Heijden 1997). In particular, the Seruyan region is apparently under extreme pressure from deforestation (D. A. Holmes *in litt.* 1999).

Trade Although there is little evidence of trade in the species, an individual was found in Bang Sai bird park, Ayuthaya, Thailand, in the early 1990s (probably imported from Laos/Cambodia), suggesting that the threat of illicit trade exists and that it might be encouraged through acquisitions by aviaries (Round 1996b).

Pollution Use of fertilisers and pesticides is common in South-East Asia and has presumably had a negative impact on populations of this species (Hancock *et al.* 1992; see also Hancock and Kushlan 2000). In Kalimantan, pesticide use may increase relatively soon as the basin is settled through transmigration and internal resettlement schemes (Sözer and van der Heijden 1997).

MEASURES TAKEN **Legislation** The White-shouldered Ibis has been protected under Indonesian law since 1978 (Inskipp 1986). It is also legally protected in Myanmar (Wildlife Act 1984) and East Malaysia (Smythies 1999).

Protected areas In Laos the species has been recorded in Xe Pian NBCA (but see Remarks 4 under Masked Finfoot *Heliopais personata*), in Cambodia at Ang Trapeang Thmor Reserve, and in Vietnam in small numbers at Cat Tien National Park (details of measures taken at this site appear in equivalent section under Orange necked Partridge).

Control of hunting The governments of Laos and Vietnam are having notable success in controlling gun ownership with apparent benefits to populations of large waterbirds in some areas (J. W. Duckworth *in litt.* 1999).

Education Posters highlighting the plight of large waterbirds and carrying an appeal to stop hunting have been distributed in southern Laos by the WCS Lao programme, and amongst other species these feature illustrations of White-shouldered Ibis (W. G. Robichaud verbally 1997). It also appears on awareness material (posters and books) produced and distributed by the Wildlife Protection Office in Cambodia as part of an ongoing campaign to reduce waterbird hunting (Veasna 1999, C. M. Poole *in litt.* 1999): educational videos have been shown to villagers, emphasising the laws prohibiting hunting and the need to conserve large waterbirds (Veasna 1999).

MEASURES PROPOSED **Legislation** If the species should be included on CITES (Sözer and van der Heijden 1997), clear evidence of its existence in trade is required; and if captive breeding

is to be countenanced (see below), Appendix II listing would be appropriate to allow international transfers. Legal protection in Laos, Cambodia and Vietnam should also be sought.

Protected areas The White-shouldered Ibis now survives at a few scattered sites in small numbers and requires urgent and concerted conservation effort (particularly to eliminate hunting pressure) if it is to survive. The most important population in mainland Asia is scattered from extreme southern Laos through adjacent north-east Cambodia to the Tonle Sap basin; appropriate conservation efforts should be targeted in this area (Timmins and Soriyun 1998, R. J. Timmins *in litt.* 2001), especially as they would benefit a suite of threatened large waterbirds (Thewlis and Timmins 1996; see equivalent section under Giant Ibis). Such efforts could and indeed perhaps should involve a variety of approaches. One proposal is that international cooperation across the Laos–Cambodia border should be instigated, involving an ICDP with a trans-boundary refuge system (Thewlis and Timmins 1996). Another is that “safe havens” should be established for large waterbirds, a scheme involving the exclusion of human activity around important foraging and roosting sites for storks, ibises and cranes, particularly in the dry season when habitat availability is most constrained and birds consequently most vulnerable to disturbance and hunting (Timmins and Soriyun 1998). This idea, if found to be workable, should be expanded to cover as many sites as possible in northern Cambodia and southern Laos (Hancock *et al.* 1992, J. W. Duckworth *in litt.* 1999). In terms of protected areas, Xe Pian NBCA (along with Dong Khanthung proposed NBCA, where the species might also occur) is considered the most significant area for bird conservation in Laos as it contains populations of several highly threatened waterbirds (Thewlis *et al.* 1998, Duckworth *et al.* 1999); specific measures proposed appear under Sarus Crane. The wetlands and grasslands at Ang Trapeang Thmor Reserve, Cambodia, also deserve effective protection as they provide important habitat not only for this species but also for Sarus Crane, Bengal Florican *Houbaropsis bengalensis* (see relevant accounts) and several other scarce species (C. M. Poole *in litt.* 1999). Further south, in the Trapeang Rompeak area of Kompong Thom province, the area used by White-shouldered Ibises is probably too large to designate as a strictly protected zone of the Tonle Sap Biosphere Reserve because of manpower and funding constraints, but it should if possible be made a multiple-use area wherein natural resources are harvested sustainably and hunting or trade of endangered species is monitored and controlled (Veasna 1999).

Given the weakness of protected area management in much of South-East Asia, however, especially in the (currently) remote and unnavigable wilds of northern Cambodia, the establishment of reserves or “safe havens” might well be immaterial in the short or medium term (J. W. K. Parr *in litt.* 2000). As an alternative, economic analyses of wetlands as “natural fisheries” could be instigated at critical wetland areas, ideally involving local community participation and providing clear evidence to local villagers that maintaining wetlands in their natural state will be of benefit to the entire community; other incentives (including ICDPs) could be provided to key village communities to gain villager confidence, particularly regarding the drawing up of regulations for access to fish resources and the protection of endangered waterbird species (J. W. K. Parr *in litt.* 2000). While this approach might prove effective for discrete sites, the problem of conserving the White-shouldered Ibis in Indochina revolves around its very low density but apparently obligate mobile behaviour across thousands of square kilometres of habitat; there are no real or static concentrations of the species to protect and the challenge of properly conserving an area large enough to embrace a viable population is daunting (R. J. Timmins *in litt.* 2001). In general, conserving the species will require problems to be tackled on a broad scale, perhaps by looking at socioeconomic/political/cultural factors in key areas and thereby judging where and how to focus conservation resources (R. J. Timmins *in litt.* 2001).

In Vietnam the scenario is simplified because the species only occurs at two sites. Disturbance and exploitation of wetlands within one of these, Cat Tien National Park, should

be controlled as much as possible in core areas for the species. The initial difficulties involved in achieving this aim are underlined by an incident in the park in March 1991 during which one park guard and one fisherman were killed (Robson *et al.* 1991, Hancock *et al.* 1992). Fortunately, these tensions appear to have subsided and protection of the area has improved dramatically (G. Polet *in litt.* 2000; but see Threats). Further measures proposed at Cat Tien National Park appear in the equivalent section under Orange-necked Partridge. In addition, the establishment of at least one protected area in the Ha Tien plain, Mekong delta, has been suggested (Buckton *et al.* 1999). An ecosystem-management approach should be applied to the U Minh wetlands (which provide potential habitat for the species in the Mekong delta area), maintaining a natural hydrology and harvesting wetland resources sustainably; in particular, peat exploitation and cultivating rice on peat substrates should be discontinued as these are inefficient land-uses and cause biodiversity loss (Safford *et al.* 1998). The only other habitat thought capable of supporting the species is in Lo Go–Sa Mat Nature Reserve, and this should be surveyed and protected accordingly (J. C. Eames *in litt.* 2001; see equivalent section under Giant Ibis).

In Indonesia the crucial area is the Mahakam river, but close and intensive study of the situation there is required before a robust proposal for forest conservation can be advanced (see below).

Research Before embarking on a discussion of research requirements and proposals for this species it is important to stress that continued exploration is not the outstanding priority. So daunting is the task of conserving the White-shouldered Ibis, and so immediate its urgency, that the emphasis should firmly fall on preserving existing (albeit small) populations rather than searching for new ones (with the possible exception of Borneo). Nevertheless, much remains to be learnt about the whereabouts of populations in northern Cambodia, and, given the paucity of ecological information about the species (its habitat use, seasonal movements and basic ecology and breeding biology are largely obscure), appropriate research would facilitate the design of conservation strategies (Thewlis and Timmins 1996, Duckworth *et al.* 1999, R. J. Timmins *in litt.* 2001). Although surveys have been called for in southern Laos (Thewlis *et al.* 1998), it has become increasingly clear that no undiscovered large populations survive in the country and conservation efforts should be targeted at Xe Pian NBCA (perhaps also Dong Khanthung proposed NBCA) and, especially, northern Cambodia. In this country all important breeding areas need to be identified and further (possibly aerial) surveys are required to identify important wetlands for foraging waterbirds during the late dry season when wetlands are most scarce (Mundkur *et al.* 1995a, Duckworth *et al.* 1999). The recent record of juveniles in Stung Treng province (*Cambodia Bird News* 4 [2000]: 59–60) suggests that the area should be searched to locate breeding populations of the species. A regional wildlife research and conservation team should be established in northern Cambodia, including a training centre to increase the capacity of local officials and to coordinate research, conservation and education (Veasna 1999). In Kompong Thom province, further research on the status and identification of critical areas for the species is needed, together with follow-up studies to assess population trends and threats; dry-season surveys should also be carried out (Veasna 1999). Additional surveys are perhaps required in Vietnam to pinpoint and quantify populations of this species, particularly around Cat Tien National Park (Eames *et al.* 1992, Nguyen Cu *in litt.* 1997). Moreover, a detailed study of the few surviving individuals in this area should be undertaken so that an accurate picture of feeding, roosting, and hopefully breeding sites in and around the protected area can be drawn and conservation action modified accordingly (G. Polet *in litt.* 2000). Efforts to assess the numbers and movements of individuals in the Ha Tien plain are also required (S. T. Buckton verbally 2000). Survey work is urgently needed in Kalimantan to assess population size and habitat requirements, map the species's precise range and identify critical areas to be designated as reserves. Initially a survey should be conducted in the Mahakam lakes region and upper Mahakam river area (Silvius and

Verheugt 1989). Apart from this region, however, surveys are needed of the middle and upper reaches of the rivers of Central Kalimantan, notably the Waringin, Seruyan (whose lower reaches have a substantial but still unstudied lake), Mendawai, Kahayan and Kapuas, not only for the ibis but also for Storm's Stork *Ciconia stormi* and indeed the avifauna in general (Holmes 1991). A survey of the Apokayan river region, from which the species is reliably reported (see Distribution, and Remarks 8), is urgently needed.

In all cases, emphasis should be placed on identification by experienced observers rather than local reports (see Remarks 2 and 7). Another fact that should be borne in mind when surveying for the species is that it gives a "weird cry" (Smith 1942) or an "unearthly scream", at rest or in flight (Hume and Davison 1878), that can apparently be heard "fully two miles [3.2 km] off" (Oates 1883), this presumably greatly increasing its detectability if recognised.

Education A waterbird protection programme involving education of local people has been proposed (Thewlis and Timmins 1996). Although action has been initiated by WCS in Laos and the Wildlife Protection Office in Cambodia, action needs to be consolidated and continued, particularly in Champasak and Attapu provinces (Duckworth *et al.* 1999) and in northern Cambodia (Veasna 1999). In Laos (and the point is also relevant to Cambodia and Vietnam) there is an urgent requirement to train protected-area staff (see Remarks 3 under Crested Argus *Rheinardia ocellata*) and to establish cooperative management agreements with local communities that ensure long-term survival of habitats and the species they support (Thewlis *et al.* 1998). The poster campaign aimed at reducing the hunting of large waterbirds should be continued indefinitely (Duckworth *et al.* 1999). An environmental education campaign should also be pursued in Boeng Prabel, Trapeang Rompeak, Viel Anh Chanh and Kruos Kraom districts of Kompong Thom province, Cambodia (Veasna 1999). A research and training centre for wildlife conservation in northern Cambodia should be established, in order to increase the capacity of local officials and to coordinate wildlife research, conservation and environmental education (Veasna 1999). In Vietnam, an information campaign should seek to inform all Cat Tien National Park staff and local communities of the importance and endangerment of the species, emphasising the importance of protecting it from hunters and reporting all sightings of it at park headquarters (G. Polet *in litt.* 2000).

Captive breeding Given the precarious situation facing this species, consideration should be given to the potential role of captive breeding (Duckworth *et al.* 1999). Certainly if trade in it is found (as implied by the recommendation that a CITES listing is warranted), the owners of the birds in question should be urged to donate or loan them to a highly reputable institution such as JWPT (now DWPT) with a track record in the captive breeding of ibises.

REMARKS (1) This taxon is sometimes treated as a subspecies of Black Ibis *Pseudibis papillosa* (see Inskipp *et al.* 1996 for comments). (2) Given good views, the identification of White-shouldered Ibis should be straightforward. However, as Asian ibises are often very shy in response to hunting pressure, views are sometimes distant and brief and in such cases care should be taken to eliminate both Glossy Ibis *Plegadis falcinellus* and Giant Ibis *Thaumatibis gigantea*. Moreover, surveys are increasingly conducted from light aircraft and the difficulties of judging size and identification features are then considerable. (3) The date for this record is mistakenly given as 1889 by Hancock *et al.* (1992). (4) The situation in Arakan, Myanmar, is slightly unclear. In the nineteenth century, *P. papillosa* was recorded from this state (Blyth 1875) before the description of *P. davisoni*, a circumstance that led Oates (1883) to urge caution in accepting the identification. Smythies (1986) stated that within Myanmar "the subspecies *papillosa* is recorded only from Arakan", this being based on a record of a colony near Tumburu in coastal Arakan or the Arakan yoma foothills (Christison *et al.* 1946) which was later thought "doubtful" and probably referable to White-shouldered Ibis (Hancock *et al.* 1992). However, the possibility of confusion with Glossy Ibis (a colonial nester; see Breeding) suggests that this record should be treated as unconfirmed. It should, however, be

pointed out that *papillosa* has been recorded in south-east Bangladesh (Harvey 1990) and is thus not unlikely to occur in neighbouring Arakan, Myanmar. Arakan is therefore included in the range of *davisoni* on the authority of Hopwood (1912b), who certainly had good views of them (indeed he ate them) and had no doubt in listing them as *davisoni*. Further clarification of whether Hopwood (1912b) or Christison *et al.* (1946) were correct in their identification is hardly likely to be forthcoming given that both forms of *Pseudibis* have retreated far from this region of Myanmar. (5) Holmes (1991) listed these records as if they were certain, but then made a textual comment to the effect that they were not. However, Holmes (1991) also listed the 1988 record from the Mahakam lakes as certain and offered no caveat. (6) Although Holmes and Burton (1987) added that this was “a very different habitat from that used elsewhere in its range on mainland Asia”, this was probably in reference to the Black Ibis (which was at that time generally considered conspecific), which occupies open habitats in the Indian subcontinent (see, e.g. Ali and Ripley 1968–1998). At any rate, the White-shouldered Ibis has been repeatedly reported on sandbanks and in both humid and deciduous forests in continental South-East Asia, and thus their comment does not apply. (7) Few informants in Dong Khanthung proposed NBCA were able to differentiate reliably between *Thaumatibis gigantea* and *Pseudibis davisoni*, a point to be borne in mind by researchers conducting village-based surveys in the ranges of these two species (Round 1998). (8) D. A. Holmes (*in litt.* 1999) remarked that records from the Apokayan plateau highlands of Kalimantan were difficult to believe, but that no option for the species should be ignored. (9) On the basis that ibises in general may be identified with ease, it has been proposed that local counterparts or even villagers may be used to collect general distributional data on both White-shouldered and Giant Ibis (identification between these two species being less critical as baseline information; see Remarks 7) (J. W. K. Parr *in litt.* 2000). This would have many advantages (e.g. data collection over a wide area and at any time of year) but would probably be confounded by reported records of Glossy Ibis (JAT; see Remarks 2).