

prefers to live in a special biotope, situated on sandy soils and in dry streams or riverbeds. It requires an ample supply of food, the presence of suitable trees with thorny canopies and, apparently, a readily available supply of drinking water. The Banni grassland is an alluvial plain and, although there are *Acacia* trees near the settlements, *Salvadora* does not grow there to the same extent as it does further inland in Kutch; the plain also lacks watercourses or other readily available sources of water.

CONCLUSIONS

It appears that the Grey Hypocolius may be a regular winter visitor/passage migrant in some parts of Kutch. This area, excluding a large part of the great expanse of the Rann, lies between 22°47'N to 24°00'N and 68°25'E to 71°11'E in the north-western corner of India, directly south of the Sind province of Pakistan. A regular stream of migratory birds passes through this area in autumn and spring. The Great Rann of Kutch does not seem to act as a barrier as some ringing recoveries in Sind have demonstrated. Further information and surveys in other parts of the district, and in other areas of India and Pakistan, are required to clarify the status of this species in the subcontinent.

The scrub jungle which the Hypocolius inhabits is under constant threat of destruction at the hands of the cattle-grazers of the area, who are clearing it to cultivate the land on which it stands. Apart from this about 300 camels belonging to these people frequently browse on the leaves of *Acacia nilotica* and the shoots, leaves and clusters of berries of *Salvadora*. Apart from providing suitable habitat for the Grey Hypocolius, it is an important nesting and roosting biotope for a number of uncommon species.

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The Bengal Florican *Eupodotis bengalensis* in Indochina

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This paper summarizes and reviews our knowledge of the Bengal Florican *Eupodotis bengalensis* in Indochina, and documents recent sightings in Vietnam. The paper discusses possible patterns of migration and dispersion and how movements may be linked to breeding. Finally the conservation outlook in Vietnam is assessed.

The Bengal Florican *Eupodotis bengalensis*, together with its diminutive cousin the Lesser Florican *E. indica* are two small, strongly sexually dimorphic species of bustard endemic to the Indomalayan (Oriental) Realm. Both species are in decline and are now seriously at risk of extinction as a result of the loss of their grassland habitats (Collar and Andrew 1988).

The nominate form of the Bengal Florican is confined to the Indian subcontinent, where it is believed to be a resident in the remaining grasslands of the Nepal terai, whilst in India it survives and breeds in many disjunct pockets of habitat in Uttar Pradesh, West Bengal, Assam and Arunachal Pradesh (Narayan and Rosalind 1990). In addition, a second little-known subspecies *E. b. blandini* is known from Cambodia and Vietnam, where it appears to be a partial migrant. This short paper summarizes our current knowledge of this enigmatic Indochinese subspecies and provides some recent information on its occurrence and habitat in south Vietnam.

THE QUEST

For many years Jean Delacour and his colleagues had been aware of reports of bustards in Soai Rieng (Svay Rieng) Province, Cambodia, but believed them to be mistaken. However, on 6 January 1927 Delacour, P. Jabouille and W. P. Lowe stopped at Soai Rieng where the local Resident [Senior Administrator] M. J. Blandin informed them of the seasonal occurrence of bustards in the province. On 12 January, Blandin presented them with a live female Bengal Florican (Delacour 1929a).

The quest for the Bengal Florican in Indochina began in earnest at the end of June 1928 following Blandin's telegram to Jabouille informing him that the annual passage of floricans had begun. A native collector was immediately despatched with instructions to collect as many males in breeding plumage as possible (Delacour 1929a, Jabouille 1929). After seven or eight days of fruitless searching, Blandin and the collector drove 80 km north of Soai Rieng

Number	Sex	Date	Wing	Tarsus	Bill	Tail
1	M	05-07-28	320	136	60	155
2	M	06-07-28	315	138	60	160
3	M	06-07-28	320	130	60	165
4	M	07-07-28	315	131	55	168
5	M	07-07-28	320	130	58	137
6	M	07-07-28	322	132	58	148
7	F	08-07-28	325	134	57	157
8	M	08-07-28	319	129	60	163
9	F	04-01-28	325	143	60	160

Table 1 Biometrics of nine *E. b. blandini* (after Jabouille 1929)

to the village of Su Vu where, within a few days, they obtained eight specimens. Two further localities were visited but no additional Bengal Floricans were seen or obtained (Delacour 1929a, Jabouille 1929).

DESCRIPTION

The type specimen of *E. b. blandini* was collected at Su Vu at sea-level on 7 July 1928. Seven other specimens were also collected at this site. The type is a male with a wing length of 322 mm; tail 148 mm; tarsus 132 mm; bill from gape to tip 58 mm and exposed culmen 41 mm. The collector stated that the iris was dark blue (Delacour 1929a), which differs from Delacour's additional claim that the iris was brown, bill horny blackish-brown and legs and feet yellowish-brown (Delacour 1929b).

Delacour described the new taxon following the examination of nine specimens, which he found to closely resemble *E. b. bengalensis*, but which differed in the rather richer colour of their plumage, in the shorter black ornamental feathers of the male and the comparatively shorter wings and the broader flatter bill [seven males: wings 315-322 mm, bill 55-60 mm; two females: wings 325 mm, bill 57-60 mm]. Table 1 provides biometrics of these nine specimens. Delacour named the new sub-species *blandini* in honour of M. A. Blandin (Delacour 1929b).

DISTRIBUTION

In Indochina, the Bengal Florican was first recorded 60 miles (80 km) north of Soai Rieng in south-east Cambodia, and subsequently in the adjacent province of Tay Ninh in Vietnam (Delacour 1929a and 1929b, Jabouille 1929, Delacour and Jabouille 1931). The species was later observed by Dr. P. Engelbach near Sisophon in north-west Cambodia, who also reported that the species had been seen and several recovered in the province of Kampot in southern Cambodia (Engelbach 1940a and 1940b).

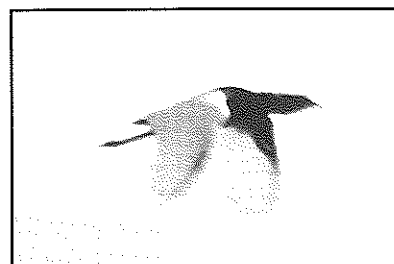


Figure 1. Male Bengal Florican.

Delacour and M. Berlioz subsequently discovered two mounted specimens (male and female) in the Paris Museum, dated 1880 and labelled 'M. Pierre, Tonkin'. Delacour stated that Pierre (Director of the Saigon Botanical gardens) never visited Tonkin and that the birds were probably obtained from the Saigon Zoological [Botanical] Gardens, where they

were sent from Soai Rieng (Delacour 1929a, Delacour and Jabouille 1931).

The only recent reports from Cambodia are of one collected by Francis Stewart in May 1959 in Kompong Thom and the species was noted in 1960 in Battambang near Sisophon by Ho Tong Lip (Thomas 1964).

The Bengal Florican was not included in a review of birds which might have once occurred in Thailand (Lekagul and Round 1991), although it may have once inhabited the former grasslands of the flood-plain of the Chao Praya

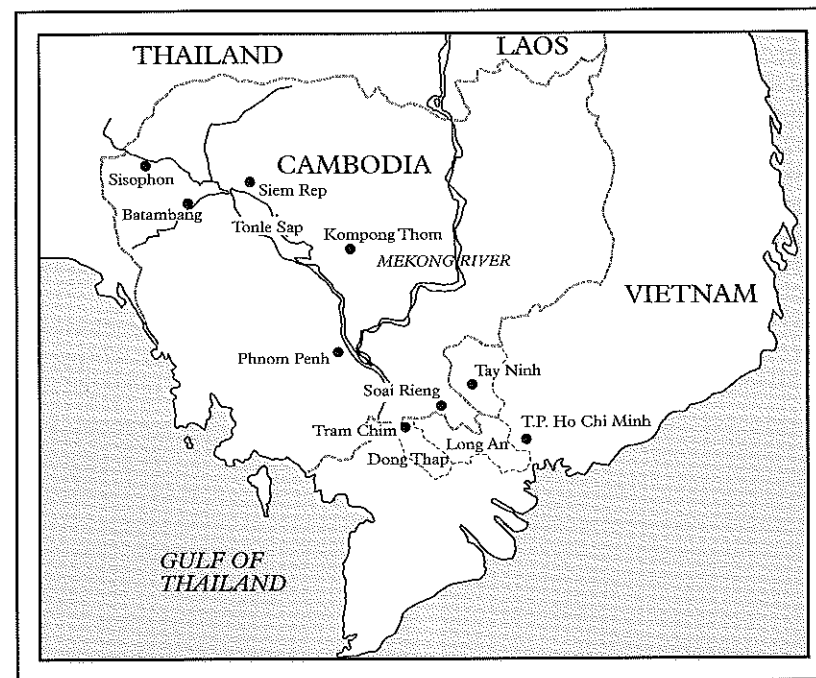


Figure 2. Places mentioned in the text.

River. In 1978 birds of unknown origin were reported from Bangkok bird-market (Inskipp and Inskipp 1983).

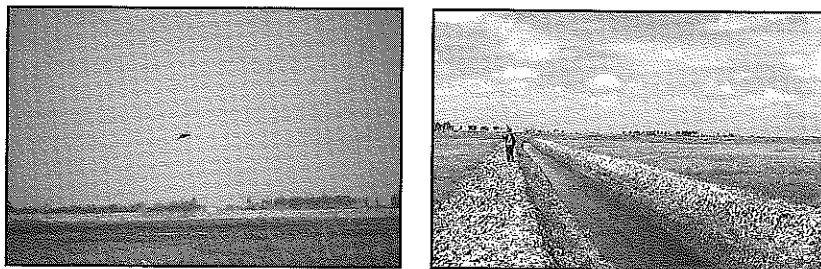
Although previously reported from Tay Ninh Province in Vietnam (Delacour and Jabouille 1931), it was only in February and March 1990 that Bengal Floricans were first observed in Tam Nong District in nearby Dong Thap Province by researchers working for the International Crane Foundation. Two adult males and a third bird described as a female (but with white wings and therefore an immature male), were observed at one locality and a third male at a nearby second location. The birds were seen on a number of occasions at these sites (Archibald 1990). Between 18 and 21 February 1993 two males were recorded in the same area (Huong Norton-Payson verbally).

On 9 February 1994, Jeb Barzen and I observed a female and Nguyen Cu, Bjorn Erik Larsen and I saw and photographed a male in the same vicinity on 10 and again on 14 February (Fig. 1). These birds were seen at the same location as the 1993 sightings. The localities at which *E. bengalensis* has been seen and collected are indicated in Figure 2.

HABITAT

At Su Vu, Bengal Floricans were found in grassland about 1 m tall. The ground was described as very dry but also seasonally covered with water (Jabouille 1929). In the 1920s the Province of Soai Rieng had great open plains, dry from the autumn to the spring, suggesting extensive areas of habitat suitable for Bengal Floricans (Delacour 1929a). In north-west Cambodia, Engelbach flushed a male on 29 January 1939 whilst crossing the vast uncultivated plains which extended from the east of Sisophon to the Thai border. Whilst offering little in the way of further habitat description, he described the area as very appropriate for this species (Engelbach 1940a and 1940b).

In February 1994, in Dong Thap Province, Vietnam, Bengal Floricans were found in an habitat fragment (4 km²) supporting a mosaic of riparian grassland vegetation (Figures 3 and 4). Grasses and sedges recorded in a



Figures 3 and 4. Riparian grassland habitat of the Bengal Florican.

brief search of the area included *Cynodon dactylon*, *Cyperus halpan*, *Eleocharis dulcis*, *Fuirena umbellata*, *Oryza rufipogon* and (probably) *Saccharum* sp. Vegetation composition varied and included areas supporting extensive beds of *Eleocharis dulcis*. Vegetation structure included areas of short grassland c. 300 mm tall and with grasses up to 2 metres tall in wetter areas. The area was mostly dry but did include some small water bodies not exceeding 50 m².

MOVEMENTS

According to Blandin, Bengal Florican passage around Soai Rieng began at the end of June and he believed the birds moved north to breed at the onset of the rains. In the Su Vu area, local people reported that the Bengal Floricans were only visitors and left the area at the beginning of the rains and did not remain to breed (Delacour 1929a, Jabouille 1929). It was suggested by Delacour that they went to nest in the semi-deserted and uninhabited part of Cambodia between the River Mekong and the western slope of the Annamitic chain (Delacour 1929a).

In Dong Thap Province, Vietnam a local farmer recently reported that Bengal Floricans spent the dry season in the area and that he once found a nest containing two white eggs which he believed to belong to the species. [The same farmer also, however, reported seeing a flock of 20 Bengal Floricans (Archibald 1990)]. However, Baker (1921) records the egg colour of the nominate form as olive-green not white. On 4 January 1994 I visited a site in Dong Thap Province from which Bengal Floricans had been reported in 1993. The entire area was still inundated with water and no Bengal Floricans were noted.

DISCUSSION

As a result of civil strife, most of the entire range of *E. b. blandini* has been off-limits to ornithologists for the last forty years. We have no recent information at all about the present distribution of this species in Cambodia and it is currently only known from one site in Vietnam.

Historical data on the dispersion and seasonal migration of *E. b. blandini* are scant but it seems possible that the movements and breeding of this bird are linked to the arrival of the south-west monsoon and subsequent inundation of some grassland areas. By June the south-west monsoon has begun in southern Indochina and as areas become inundated one could expect Bengal Floricans to move north to drier (higher) areas not yet affected by the rain and imminent rise in water levels. This would account for a northward movement around Soai Rieng in June, the absence of Bengal Floricans in Dong Thap in

January, and their reappearance by February once water levels had subsided.

If the movements of *E. b. blandini* are determined in this way then the question arises of when and where does the species breed? In the Indian sub-continent the nominate sub-species begins its breeding cycle before the onset of the rains, when the sparse grassland vegetation affords suitable habitat for the males to establish territories within which to display. Pre-monsoon showers afford the females opportunity to select nesting sites and most chicks hatch before the monsoon arrives and the males then disperse (Narayan and Rosalind 1990). In southern Vietnam and Cambodia, the south-west monsoon usually begins in April or May. The records of Bengal Floricans in Dong Thap Province in February could then refer to birds preparing to breed there. The Bengal Florican is known to lay a second brood (Baker 1921) and it is possible that after breeding in Dong Thap floricans could move north to attempt a second brood in the drier grasslands of Cambodia not yet rejuvenated by the summer rains. However, it is also documented that Bengal Floricans are seldom found in wet-land (Baker 1921) and it is believed doubtful that they can nest successfully in flood-prone grasslands (such as those in Dong Thap Province) (Narayan and Rosalind 1990). The possibility therefore also exists that the birds in Dong Thap Province are non-breeding visitors. The plain truth is, however, that we just do not know.

CONSERVATION OUTLOOK

The current extent of suitable Bengal Florican habitat in Indochina is likely to have been affected and reduced by human activities. Although the human population of Cambodia is small (6.8 million in 1989), in neighbouring Vietnam it is very high and was recently estimated to be 66.8 million (Collins *et al.* 1991). Both Cambodia and Vietnam support agricultural economies based on the intensive cultivation of wet rice and consequently both countries have high rural population densities in areas favourable to this agricultural activity. For example, in the lower Red River Delta of north Vietnam human population density is extreme with around 1,200 persons per km² (Fforde 1989).

In Vietnam, most suitable Bengal Florican habitat in the Plain of Reeds in Dong Thap Province has already been converted to wet-rice cultivation and it seems certain that large areas of the former grasslands in south-east Cambodia have met a similar fate since Delacour and his colleagues visited the area sixty-five years ago. The early settlement and cultivation of the grasslands of central Thailand along the Chao Praya River would also account for the absence of any documentation of the species' former occurrence in that country.

In border districts of Dong Thap Province, Vietnam there are now many Vietnamese who have left Cambodia as a result of continuing civil strife. The locality at which Bengal Floricans were observed in February 1994 has new settlers living along its perimeter and the grassland is already under conversion to paddy. Drainage canals have been dug across the area and marker flags have been posted to indicate land-claims by homesteaders. Indeed, wet rice is already being cultivated along the southern periphery of the area. This site is subject to disturbance by fisherman, who use a variety of means including electro-shocking. It seems unlikely that Bengal Floricans will survive at this site beyond 1994.

The Government of Vietnam has a programme to settle and cultivate remaining areas in what was the Plain of Reeds. Much of this area has a low agricultural potential for rice cultivation, because of the underlying acid sulphate soils. The cultivation of these soils requires the application of high levels of fertilizer and rice yields remain consistently low. The consequences of excavating drainage canals in this area can be seen in Figure 4. Exposure of the sub-soil to air results in rapid oxidation of the iron compounds therein, whilst subsequent leaching into the ditch-water produces sulphuric acid, which rapidly kills freshwater life.

Although Bengal Floricans have been seen recently in the nearby Tram Chim Nature Reserve, it seems very unlikely that, if indeed the species does breed in Vietnam, the available habitat in this protected area could support more than 1-5 pairs given that territory size in India ranges from 2-4 ha (Narayan 1990). The vegetation at this second site also superficially appeared more homogeneous, both in structure and floral composition and lacked the variation of open areas and edge habitats than at the site at which I observed Bengal Floricans in February 1994. It is perhaps noteworthy however, that Eastern Grass Owl *Tyto longimembris* was recorded at both sites. This is a widespread but little-known grassland dependent species for which Dong Thap Province is also the only currently known site for this species in Indochina. Like the florican, this species may also be an indicator of prime grassland habitats.

Although the outlook for the Bengal Florican in Dong Thap Province appears bleak, it is encouraging that floricans have at least been discovered at a new site in Vietnam and the possibility must exist that other small populations may exist elsewhere in Dong Thap, Long An and Tay Ninh Provinces in Vietnam.

An extensive survey of grassland areas in Cambodia and Vietnam is now urgently required with a view to identifying areas suitable for protected area establishment. Before any effective conservation prescription for this species can be proposed we must discover the nature of the seasonal movements and how they relate to breeding. The conservation of such a species with a

dispersed distribution poses a major challenge. However, with the increasing relaxation of travel restrictions in both Cambodia and Vietnam at least the possibility for conducting surveys has now become a real possibility and should be seized!

I would like to thank my field companions Jeb Barzen, Huynh Duy Tu Thieng, Bjorn Erik Larsen and Nguyen Cu. Thanks also to Robert Clay and Tim Inskipp, for providing me with key references and to Huong Norton-Payson for being Huong Norton-Payson. Figure 1 was carefully created by Monica MacKinnon during breaks from computer games. Thanks to Frank Lambert for commenting on an earlier draft of this paper.

Fieldwork was undertaken over a public holiday whilst I was an employee of BirdLife International on secondment to WWF - The World Wide Fund For Nature Vietnam Programme.

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Ornithological records from Laos, 1992-1993

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From October 1992 to July 1993 birds were surveyed at one small nature reserve in North Laos (*sensu* King *et al.* 1975) and three large protected areas of forest in South and Central Laos. Status and distributional data are presented for 437 species, including eight Globally Threatened and 21 Globally Near-threatened species (*sensu* Collar *et al.* 1994), namely Siamese Fireback *Lophura diardi*, Green Peafowl *Pavo muticus*, White-winged Duck *Cairina scutulata*, Red-collared Woodpecker *Picus rabieri*, Brown Hornbill *Anorrhinus tickelli*, Sarus Crane *Grus antigone*, Masked Finfoot *Helipais personata*, Grey-headed Lapwing *Vanellus cinereus*, Jerdon's Baza *Aviceda jerdoni*, Lesser Fish-Eagle *Ichthyophaga humilis*, Grey-headed Fish-eagle *I. ichthyastus*, White-rumped Vulture *Gyps bengalensis*, Long-billed Vulture *G. indicus*, Red-headed Vulture *Sarcogyps calvus*, Rufous-winged Buzzard *Butastur lioenter*, White-rumped Falcon *Polihierax insignis*, Oriental Darter *Anhinga melanogaster*, Schrenck's Bittern *Ixobrychus eurhythmus*, White-shouldered Ibis *Pseudibis davisoni*, Giant Ibis *P. gigantea*, Lesser Adjutant *Leptoptilos javanicus*, Blue-rumped Pitta *Pitta soror*, Bar-bellied Pitta *P. elliotii*, Yellow-breasted Magpie *Cissa hypoleuca*, Brown-rumped Minivet *Pericrocotus cantonensis*, Green Cochoa *Cochoa viridis*, Red-tailed Laughingthrush *Garrulax milnei*, Grey-faced Tit-Babbler *Macronous kelleyi*, Rufous-throated Fulvetta *Alcippe rufogularis* and, provisionally, Black-bellied Tern *Sterna acuticauda* and Asian Golden Weaver *Ploceus hypoxanthus*. A further 24 species regarded as being At Risk in Thailand by Treesucon and Round (1990) were recorded. The observations of Giant Ibis *Pseudibis gigantea* were the first any where since 1962.

NON-STANDARD ABBREVIATIONS AND CONVENTIONS USED

NR, Nature Reserve; IUCN, The World Conservation Union; NBCA, National Biodiversity Conservation Area.

Lao words incorporated into place names: Houay = stream, Xé = river, Nam = river, Phou = mountain, Sayphou = ridge, Ban = village, Pak = river mouth, Nong = lake or pool.

The division of Laos into North, Central and South used by Delacour and Jabouille (1931) and King *et al.* (1975) is followed throughout this paper. Central Laos is defined to the north by a line running east-northeast to a point a little north of Ban Napè. The river Xé Banghiang forms the southern boundary.

The term Indochina is used here, following King *et al.* (1975), to refer collectively to the three countries of Laos, Vietnam and Cambodia.

The taxonomy and nomenclature of Sibley and Monroe (1990, 1993) are followed throughout.