A bird survey of the Amarpur area of the Dibru-Saikhowa Biosphere Reserve, Assam, India

DESMOND ALLEN

The Amarpur area of the Dibru-Saikhowa Biosphere Reserve in north-east Assam was visited during 17–21 March 1998. A total of 107 species were recorded including five threatened species: Greater Adjutant *Leptoptilos dubius*, Ferruginous Pochard *Aythya nyroca*, Jerdon's Babbler *Chrysomma altirostre*, Black-breasted Parrotbill *Paradoxornis flavirostris* and Marsh Babbler *Pellorneum palustre*.

INTRODUCTION

The grasslands of north-east India are well known both for their large mammals, such as Indian rhinoceros Rhinoceros unicornis and Asian elephant Elephas maximus, and for restricted-range birds (Stattersfield et al. 1998). Much exploration of these areas was conducted in the early part of the twentieth century but, unfortunately, political problems and the presence of large, dangerous mammals have meant that many areas remain poorly surveyed. The birds of Dibru-Saikhowa Wildlife Sanctuary (DSWS) in north-east Assam have been reported on several times in recent years, most extensively by Choudhury (1994; but see also Choudhury 1995 and 1997, Talukdar et al. 1995, Kazmierczak and Allen 1997). The absence of rhinoceros in the sanctuary has made bird surveys easier, but the good coverage has been largely due to the enthusiasm and interest of the Wildlife Range Officer, Mr N. F. Sarmah.

However, the rather remote Amarpur area, on the north side of the Brahmaputra River, which is not included in DSWS, but is part of the wider Dibru-Saikhowa Biosphere Reserve (DSBR), has received very little attention. Mr Sarmah was keen to have an assessment of the avifauna of this region carried out and to receive recommendations for conservation of the area; he provided invaluable help for my short visit during 17–21 March 1998. The Amarpur area is of particular interest as it is known to have significant areas of tall grass, which are largely absent in the other areas of DSWS. Dr Anwaruddin Choudhury of the Rhino Foundation has been the only ornithologist to visit this area in recent times and, during a short visit in December 1993, he reported seeing a single Blackbreasted Parrotbill Paradoxornis flavirostris, a species for which there are hardly any recent records anywhere in its range. I was interested in seeing which other restricted-range grassland species occurred, since there seem to have been very few recent records of some of these either (Majumdar and Brahmachari 1986, Rahmani 1986, Stattersfield et al. 1998).

Since my visit however, Mr Sarmah has been most tragically killed by a rogue elephant he was trying to capture. It is characteristic that he was killed while trying to protect wildlife and to act on behalf of the local community which had been terrorised by this animal. Although his death is a great loss to conservation in

India, I hope that many others in his area will, nevertheless, have been inspired by him to take a deeper interest in its wildlife.

GEOGRAPHY

The Amarpur area lies in north-east Assam at c.27°50'N 95°35'E, forming a peninsula on the north side of the Lohit River, bordered to the east by the Dibang and to the west by the Dotung Rivers. It is a rather remote area, and at the time of my visit there were no telephone or radio communications in the area. A near-daily ferry was running from Kheeraghat on the south bank of the Lohit to Balighat on one of the small islands on the southern tip of Amarpur, carrying local people between the hill villages of Arunachal Pradesh and the main roads and markets of north-east India.

The part of the Amarpur peninsula within the reserve (Sarmah 1996) covers about 30 km². It is generally low-lying and much of it is flooded during the monsoon season. Owing to the force of the river flow at this time, these riverine areas often change their boundaries to some extent. The Dibang was clearly eroding the eastern edge of the area, while the small islands to the south also seemed to be shifting. Such remaking of the terrain presumably contributes to the maintenance of the grassland sere. The eastern central area forms a low hill that is still forested. The soil is impermeable enough to allow beels and water holes to remain wet, despite being higher than the main river level. The southern edge has two or more heavily grazed islands separated by shallow channels.

DESCRIPTION OF HABITAT TYPES

During visits in 1996 and 1998, I noted that much of the Dibru-Saikhowa Wildlife Sanctuary was heavily grazed by cattle and buffaloes but the Amarpur area still had some significant stands of tall grass, notably towards the centre of the peninsula. Some of this was being managed for the production of thatch, which could be seen on the roofs of local houses. This very tall grass (3+ m) may have been a *Saccharum* sp. Other tall grass species occurring in the reserve (Choudhury 1994) include nal *Arundo donax*, khagori *Phragmites karka*, ekra *Erianthus ravennae* and ulu *Imperata cylindrica*, but I was

unable to identify which of these species were present in which areas of Amarpur. Owing to the almost impenetrable nature of this habitat, the precise extent of tall grass habitat was not assessed. The central northeast area had low, swampy forest containing bher *Salix tetrasperma*, which in places had become depauperate owing to continued logging, but open areas within the forest allowed tall grass to develop.

On the western side of the peninsula large areas had been, and were continuing to be, cleared for agriculture, threatening the value of the grassland habitat. Some areas of several hectares were being grazed to a height of 50-100 cm. To the south were many graziers tending cattle and buffalo. The grass had been cropped to ground level by these animals so that it was no longer suitable habitat for the vulnerable grassland birds. Forest on the eastern edge of Amarpur had been cleared and much grassland had been grazed short, though a mix of habitats remained. The northern area was not visited. Such grazing affected most of the rest of DSWS that I visited, except for the rather small area opposite Dighaltarang.

SELECTED SPECIES ACCOUNTS

Several threatened (BirdLife International 2000) or restricted-range (Stattersfield *et al.* 1998), and/or poorly known species were seen. I have included details where these were not included in the recent comprehensive work on the region by Grimmett *et al.* (1998).

Greater Adjutant *Leptoptilos dubius* (Endangered) Two were seen on one day on the banks of the Lohit River, behaving very warily, probably indicating that they are persecuted in this area. (In Guwahati town they are very confiding.)

Ferruginous Pochard *Aythya nyroca* (Vulnerable) Fourteen were seen on the Dibang River.

The following three species were mostly seen in areas with dense grass of 2-4 m height, though they were also occasionally present where the grass was about 1 m high in areas adjacent to those with taller grass. The extensive areas of shorter grass did not harbour any of these three species.

Jerdon's Babbler Chrysomma altirostre (Vulnerable) This species was seen in a small part of the tall grass in the Dighaltarang area by myself, together with P. Holt, K. Kazmierczak and later J. Hornbuckle (Hornbuckle et al. 1998) but seemed more common in the more extensive habitat at Amarpur. The birds in both areas responded well to tapes of the species's calls of the race scindicum recorded in Pakistan by P. Davidson. The calls were often a descending series of tew-tew-tew tew tew tew, slightly accelerating and then slowing on the last two notes. Birds also made an agitated chitit tew, chitit tew and at other times a series of short sik! sik! calls. These calls seem very similar to those described by Showler and Davidson (1999) for C. a. scindicum, and sound similar to the recordings they made.

Showler and Davidson (1999) reported that the species prefers tall grass, notably *Phragmites karka* and

Saccharum, and that Typha was present at all the locations; also, that it was never seen in degraded areas of grass. Baker (1932) reported it to be 'very common' in North Lakhimpur, where he never saw it 'except in very long grass or reeds'. At Amarpur, the birds also seemed to prefer tall grass but Typha was not an obvious member of the community there. On one occasion two birds were seen, apparently feeding, in an extensive bushy area with trampled and grazed grass no more than 1 m high. However, this species has not been seen in other areas of DSWS where degraded grassland is extensive.

A photograph of C. a. scindicum by N. Bean in Oriental Bird Club Bulletin 25: 24 can be compared with one of C. a. griseigulare from Amarpur in Bulletin 30 p. 51. The throat of the latter seems to be very pale grey (in the field it appeared whitish), and bordered by a buff breast (unfortunately, the published photo appears to show a heavy brown wash that was not present in the original). Other birds seen were thought to have a distinctly greyer throat. However, specimens examined at the Natural History Museum at Tring, U.K., did not show any obvious dimorphism. The chin feathers of the museum specimens are all pale greyish-white, and the basal half of the throat, breast and belly feathers are mid-grey, contrasting noticeably with the paler terminal half. Since Baral and Eames (1991) reported this species from Nepal, noting the 'dusky-grey cheeks and throat', perhaps more remains to be learned about the plumage of this bird in the field.

BLACK-BREASTED PARROTBILL Paradoxornis flavirostris (Vulnerable, restricted-range) This species was initially found by a beel with some tall grasses within an area of low woodland. It was also often seen within areas of low shrubs and singing from the tops of tall stands (3+m) of grass. Several pairs and/or small family flocks were observed each day. They responded well to tape playback of their calls, the characteristic call seeming to be an even-spaced we we we we we we, rising slightly in pitch. Another call seemed to be a rather nasal gneer gneer gneer, perhaps the bleating call referred to by Ali and Ripley (1983). Birds in pairs seemed to be slightly dimorphic, with the black of the throat and breast being more extensive and blurred in one bird of the pairs seen (see photograph in Oriental Bird Club Bulletin 30: 51).

This species has subsequently been recorded from the main area of Dibru-Saikhowa: one bird was seen in the Dighaltarang area by P. Holt/Sunbird in November 1999; and a pair and two singles were seen there by C. Robson, E. Vercruysse and D. Heywood (Robson 2000). Singh *et al.* (1999) reported seeing a group on 23 March 1998 in grassland adjacent to the Amarpur area in D'Ering Memorial Wildlife Sanctuary, Arunachal Pradesh. It has also been rediscovered at Kaziranga National Park (Barua and Sharma 1999) and photographed there on 2 May 2001 in an area of very tall grass, by D. Roberson (http://montereybay.com/creagrus/parrotbill_blbr.html).

Marsh Babbler *Pellorneum palustre* (Vulnerable, restricted-range) This poorly known regional endemic was reported to be common in this area by Stevens (1914-1915). It was observed in parts of the Kolomi area of DSWS in 1996 and 1998 (Kazmierczak and

Allen 1997, Hornbuckle *et al.* 1998). It has also been recorded on a few occasions in Kaziranga N.P. (Barua and Sharma 1999). At Amarpur, however, it was common in tall grass and grass jungle with trees, usually close to water.

The calls were quite varied but often started with a low throaty rolling grgrgrgr chew-hwee or grgrgrgrgr weehoo, or chackchack chuhee, each phrase repeated many times, followed sometimes by a series of chichi chu-hee. On repeated playback this developed into a more aggressive chacha hwee chacha hwee ... later becoming chachahwe we we we we wu, the latter notes in a descending series. It responded aggressively to tape playback of most of its calls. An explosive churkik choocheer also seemed to belong to this species although, owing to the skulking nature of the bird, I could not be sure.

In the forested areas at Kolomi Puff-throated Babbler P. ruficeps was quite common, and was seen in the same habitat of low bushes at the forest edge as Marsh Babbler; it was also heard once at Amarpur. The skulking habits of the two do not help identification and, on two occasions, a single Marsh Babbler appeared to be trying to hide its white underparts, by keeping the body crouched low. The rusty sides of the throat, sides, flanks, and undertail-coverts, the pale rusty belly and the lack of an obviously contrasting chestnut crown distinguished Marsh Babbler. There seemed to be some variation in the rusty colour and in the streaking; one bird at least appeared to have a narrow broken eye-ring of two buffy crescents; these show on skins as pale buffy feather bases above and below the eye and were presumably exposed in some kind of display.

Puff-throated Babbler *Pellorneum ruficeps* was quite common in the forested areas at Kolomi, and was seen in the same habitat of low bushes at the forest edge as Marsh Babbler; it was also heard once at Amarpur.

JERDON'S BUSHCHAT Saxicola jerdoni This species was common in tall grass especially along watercourses. There seemed to be a male holding territory about every 100 m, both here and, during the 1998 trip at least, at Kolomi too. Males perched near the top of *Phragmites* stems at 2-3 m height and sang a clear, thrush-like song of two or three syllables, followed by a trill: swee swoo swoo (rapid trill). Females were much more skulking and only rarely seen. This species is reported as being very rare at Kaziranga N.P. (Barua and Sharma 1999).

Rufous-Rumped Grassbird Graminicola bengalensis While not considered threatened, Rufous-rumped Grassbird is a rarely seen species that was observed three times in grass of about 1 m height. It did not respond in any observable fashion to a tape made of the species by N. Gardner at Chitwan. It is occasionally seen at Kaziranga N.P. (Barua and Sharma 1999). Singh *et al.* (1999) reported it in March 1998 in D'Ering Memorial Sanctuary, presumably in grassland.

CHESTNUT-CROWNED BUSH WARBLER Cettia major This species is known to overwinter in this tall grass habitat and was seen on one occasion. There seem to be few recent winter records and Barua and Sharma (1999) list only one recent record for Kaziranga N.P.

Other poorly known species, notably Swamp Prinia *Prinia burnesii* and Slender-billed Babbler *Turdoides longirostris*, were intensively searched for, but not found.

CONCLUSION

Since my visit, and in response to recommendations from Mr Sarmah and from the Rhino Foundation, the Assam State government has proposed that the reserve become a national park, and moves to achieve this are in progress. Hopefully this will enable the Indian Forestry Service to take appropriate measures to help conserve existing tall grass areas, and allow others to regenerate.

Local communities can play a positive role in the maintenance of seral ecosystems such as tall grass. Showler and Davidson (1999), quoting Dabadghao and Shankarnarayan (1973), detail the effects of anthropogenic changes on tall grassland habitats. Perhaps in the long term ecotourism can have a further positive impact. However, the growing demand for dairy products supplied by the graziers will certainly need to be balanced with the needs of wildlife.

The tall grass of Amarpur is of great value for many restricted-range grassland birds. Just how important remains unclear. Much remains to be discovered about the present distribution and populations of species such as Black-breasted Parrotbill and Marsh Babbler, not to mention their ecological requirements. More detailed bird surveys of the great national parks of the Assam floodplain are needed in order to get a better measure of the importance of Amarpur to these and other scarce or localised birds.

ACKNOWLEDGEMENTS

I am very much indebted to N. C. Sarmah not only for his invaluable logistical help and also for his enthusiasm and encouragement not only to myself but also to his staff with whom I worked. I consider his death is a great loss both personally and to conservation in northeast India. I am also very grateful to his staff, including S. C. Mishra, Range Officer at Dholla, and Ranjit Doley, my guide and aide at Amarpur, who made my stay so much more effective, and enjoyable; and also to Krishnalal Niral for our accommodation in his khuti. I also want to thank Mark Adams and the Natural History Museum for access to the collections, Paul Holt for his record, Ewan Urquhart for comments on *Saxicola* spp., and Krys Kazmierczak for commenting on drafts.

REFERENCES

Ali, S. and Ripley, S. D. (1983) Handbook of the birds of India and Pakistan. Compact edition. New Delhi: Oxford University Press. Allen, D. (1998) Report to the Indian Forestry Service concerning the Amarpur area of the Dibru-Saikhowa Biosphere Reserve. Unpublished.

Baker, E. C. S. (1932) *The nidification of birds of the Indian Empire*. London: Taylor and Francis.

Baral, H. S. and Eames, J. (1991) Jerdon's Babbler *Moupinia altirostre*: a new species for Nepal. *Forktail* 6: 85-87.

Barua, M. and Sharma, P. (1999) Birds of Kaziranga National Park, India. *Forktail* 15: 47-60.

BirdLife International (2000) Threatened birds of the world. Cambridge, U.K.: BirdLife International.

- Choudhury, A. (1994) A report on a bird survey of Dibru-Saikhowa Wildlife Sanctuary, Assam, India. Unpublished.
- Choudhury, A. (1995) Bird survey of Dibru-Saikhowa Wildlife Sanctuary. Oriental Bird Club Bulletin 22: 15.
- Choudhury, A. (1997) The status of the birds of Dibru-Saikhowa Sanctuary, Assam, India. *Oriental Bird Club Bulletin* 25: 27-29.
- Sanctuary, Assam, India. *Oriental Bird Club Bulletin* 25: 27-29. Dabadghao, P. M. and Shankasrnarayan, K. A. (1973) *The grass cover*
- of India. New Delhi: Indian Council of Agricultural Research. Grimmett, R., Inskipp, C. and Inskipp, T. (1998) *Birds of the Indian subcontinent*. London: Christopher Helm.
- Hornbuckle, J., Allen, D., Holt, P. and Kazmierczak, K. (1998) North-east India: 20th February-13th March 1998. Unpublished report.
- Kazmierczak, K. and Allen, D. (1997) A short ornithological survey of Dibru-Saikhowa Wildlife Sanctuary. Newsletter for Birdwatchers 37: 84-85.
- Majumdar, N. and Brahmachari, G. K. (1986) Major grassland types of India and their bird communities: a perspective. Pp. 205-214 in P. D. Goriup, ed. *Ecology and conservation of grassland birds*. Cambridge, U.K.: International Council for Bird Preservation.
- Rahmani, A. (1986) Grassland birds of the Indian subcontinent: a review. Pp. 187-204 in P. D. Goriup, ed. *Ecology and conservation*

- of grassland birds. Cambridge, U.K.: International Council for Bird Preservation (Techn. Publ. 7).
- Robson, C. R. (2000) From The Field Oriental Bird Club Bull. 32:69. Sarmah, N. C. (1996) Checklist of the birds of Dibru-Saikhowa. Tinsukia, India: Muriruddin Ahmed.
- Showler, D. A. and Davidson, P. (1999) Observations of Jerdon's Babbler *Chrysomma altirostre* and Rufous-vented Prinia *Prinia burnesii* in Punjab and North-west Frontier Provinces, Pakistan. *Forktail* 15: 67-76.
- Singh, P., Nair, M. V., Barua, M. and Athreya, V. (1999) Bird survey in selected localities of Arunachal Pradesh, India (March 1997-July 1998). Dehra Dun: Wildlife Institute of India.
- Stattersfield, A. J., Crosby, M. J., Long, A. J. and Wege, D. C. (1998) Endemic Bird Areas of the world: priorities for biodiversity conservation. Cambridge, U.K.: BirdLife International (BirdLife Conservation Series).
- Stevens, H. (1914-15). Notes on the birds of Upper Assam. J. Bombay Nat. Hist. Soc. 23: 234-268, 547-570, 721-736.
- Talukdar, B. K., Barman, R., Bhattacharjee, P. C. and Sarma, N. C. (1995) Storks of Dibru-Saikhowa Wildlife Sanctuary, Assam. Oriental Bird Club Bull. 22: 49-50.

Desmond Allen, c/o 9A Dean Crescent, Littledean, Cinderford, Glos GL14 3PB, U.K. Email: dnsallen@ukonline.co.uk

APPENDIX

List of bird species recorded in the Amarpur area, Assam, India 17-21 March 1998

RED JUNGLEFOWL Gallus gallus

GREYLAG GOOSE Anser anser

RUDDY SHELDUCK Tadorna ferruginea

Spot-billed Duck Anas poecilorhyncha

COMMON TEAL Anas crecca

COMMON POCHARD Aythya ferina

Ferruginous Pochard Aythya nyroca

Tufted Duck Aythya fuligula

YELLOW-LEGGED BUTTONQUAIL Turnix tanki

White-browed Piculet Sasia ochracea

FULVOUS-BREASTED WOODPECKER Dendrocopos macei

STREAK-THROATED WOODPECKER Picus xanthopygaeus

GREATER FLAMEBACK Chrysocolaptes lucidus

LINEATED BARBET Megalaima lineata

Blue-throated Barbet Megalaima asiatica

Соммон Ноорое Upupa epops

INDIAN ROLLER Coracias benghalensis

Dollarbird Eurystomus orientalis

COMMON KINGFISHER Alcedo atthis

STORK-BILLED KINGFISHER Halcyon capensis

WHITE-THROATED KINGFISHER Halcyon smyrnensis

PIED KINGFISHER Ceryle rudis

GREATER COUCAL Centropus sinensis

ASIAN BARRED OWLET Glaucidium cuculoides

LARGE-TAILED NIGHTJAR Caprimulgus macrurus

ORIENTAL TURTLE DOVE Streptopelia orientalis

SPOTTED DOVE Streptopelia chinensis

RED COLLARED DOVE Streptopelia tranquebarica

WHITE-BREASTED WATERHEN Amaurornis phoenicurus

COMMON MOORHEN Gallinula chloropus

PINTAIL SNIPE Gallinago stenura

COMMON SNIPE Gallinago gallinago

GREEN SANDPIPER Tringa ochropus

COMMON SANDPIPER Actitis hypoleucos

TEMMINCK'S STINT Calidris temminckii

PACIFIC GOLDEN PLOVER Pluvialis fulva

LITTLE RINGED PLOVER Charadrius dubius

Kentish Plover Charadrius alexandrinus

RED-WATTLED LAPWING Vanellus indicus

OSPREY Pandion haliaetus

ORIENTAL HONEY-BUZZARD Pernis ptilorhyncus

CRESTED SERPENT EAGLE Spilornis cheela

HEN HARRIER Circus cyaneus

COMMON KESTREL Falco tinnunculus

DARTER Anhinga melanogaster

LITTLE CORMORANT Phalacrocorax niger

GREAT CORMORANT Phalacrocorax carbo

LITTLE EGRET Egretta garzetta

Grey Heron Ardea cinerea

CATTLE EGRET Bubulcus ibis

Indian Pond Heron Ardeola grayii

LITTLE HERON Butorides striatus

BLACK STORK Ciconia nigra

Greater Adjutant Leptoptilos dubius

Long-tailed Shrike Lanius schach

GREY-BACKED SHRIKE Lanius tephronotus

Rufous Treepie Dendrocitta vagabunda

House Crow Corvus splendens

Large-billed Crow Corvus macrorhynchos

WHITE-BROWED FANTAIL Rhipidura aureola

BLACK DRONGO Dicrurus macrocercus

COMMON IORA Aegithina tiphia

DARK-THROATED THRUSH Turdus ruficollis

SMALL NILTAVA Niltava macgrigoriae

GREY-HEADED CANARY FLYCATCHER Culicicapa ceylonensis

WHITE-TAILED RUBYTHROAT Luscinia pectoralis

BLUETHROAT Luscinia svecica

ORIENTAL MAGPIE ROBIN Copsychus saularis

DAURIAN REDSTART Phoenicurus auroreus

COMMON STONECHAT Saxicola torquata

WHITE-TAILED STONECHAT Saxicola leucura

JERDON'S BUSHCHAT Saxicola jerdoni

GREY BUSHCHAT Saxicola ferrea

CHESTNUT-TAILED STARLING Sturnus malabaricus

COMMON STARLING Sturnus vulgaris

ASIAN PIED STARLING Sturnus contra

COMMON MYNA Acridotheres tristis

JUNGLE MYNA Acridotheres fuscus

WHITE-VENTED MYNA Acridotheres cinereus

GREAT TIT Parus major

PLAIN MARTIN Riparia paludicola

BARN SWALLOW Hirundo rustica

RED-WHISKERED BULBUL Pycnonotus jocosus

RED-VENTED BULBUL Pycnonotus cafer

YELLOW-BELLIED PRINIA Prinia flaviventris

PLAIN PRINIA Prinia inornata

PALE-FOOTED BUSH WARBLER Cettia pallidipes

CHESTNUT-CROWNED BUSH WARBLER Cettia major

GREY-SIDED BUSH WARBLER Cettia brunnifrons

COMMON TAILORBIRD Orthotomus sutorius

Dusky Warbler Phylloscopus fuscatus

Smoky Warbler Phylloscopus fuligiventer

TICKELL'S LEAF WARBLER Phylloscopus affinis

GREY-HOODED WARBLER Seicercus xanthoschistos

STRIATED GRASSBIRD Megalurus palustris

Rufous-rumped Grassbird Graminicola bengalensis

Rufous-necked Laughingthrush Garrulax ruficollis

Marsh Babbler Pellorneum palustre

PUFF-THROATED BABBLER Pellorneum ruficeps

WHITE-BROWED SCIMITAR BABBLER Pomatorhinus schisticeps

STRIPED TIT BABBLER Macronous gularis

CHESTNUT-CAPPED BABBLER Timalia pileata

JERDON'S BABBLER Chrysomma altirostre

STRIATED BABBLER Turdoides earlei

BLACK-BREASTED PARROTBILL Paradoxornis flavirostris

Oriental Skylark Alauda gulgula

White Wagtail Motacilla alba

CITRINE WAGTAIL Motacilla citreola

YELLOW WAGTAIL Motacilla flava

OLIVE-BACKED PIPIT Anthus hodgsoni

STREAKED WEAVER Ploceus manyar

Black-headed Munia Lonchura malacca

YELLOW-BREASTED BUNTING Emberiza aureola

BLACK-FACED BUNTING Emberiza spodocephala



Allen, Desmond. 2002. "A bird survey of the Amarpur area of the Dibru-Saikhowa Biosphere Reserve, Assam, India." *Forktail* 18, 87–91.

View This Item Online: https://www.biodiversitylibrary.org/item/266694

Permalink: https://www.biodiversitylibrary.org/partpdf/283674

Holding Institution

Natural History Museum Library, London

Sponsored by

Natural History Museum Library, London

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Oriental Bird Club

License: http://creativecommons.org/licenses/by-nc-sa/4.0/

Rights: http://biodiversitylibrary.org/permissions

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at https://www.biodiversitylibrary.org.