NEW LIGHT ON THE BIRD PHENOMENON AT JATINGA IN NORTH CACHAR HILLS OF ASSAM

KALYAN K. GUPTA*

Introduction

Every year during the new moon phases, from August to October, a large number of birds are attracted by lights lit facing North to North-East, on the Jatinga saddle, when the sky is overcast, dark with fog or mist and drizzling with moderate wind from South. A few birds often die after colliding with posts or covers kept behind the lights or are killed, by local Khasi people. This phenomenon of attracting birds by powerful lights and subsequent killings gave rise to the myth of "mass suicide of birds at Jatinga".

Curious to see for themselves, Salim Ali and E.P. Gee went to Jatinga during November 1961. As the season was over by the time of their visit, they could not see the actual phenomenon but only could collect some feathers. From the collected feathers, a few species of birds such as Bittern, Little Egret, Hill Partridge, Green Pigeon, Laughing Thrush, Emerald Dove, Ruddy Kingfisher etc. (Gee, 1964) could be identified. Fascinated by the phenomenon the author undertook a systematic study of the phenomenon and this paper embodies the results of the study.

Topography

The Jatinga saddle lies approximately at 12° 12' North and 93° 04' East, about 9 km South-East of Haflong on the tri-junction of Luimding-Silchar Road and Haflong-Silchar Road. Haflong is the District Headquarters of North Cachar Hills District of Assam.

The Jatinga saddle is situated between Jatinga valley on the South and Dulong-Diyung valley to the North. The saddle links Barail Range in the East and the Shillong Plateau to the West. The saddle is the lowest point about 204 m above msl between Brahmaputra valley on the North and Barak valley on the South. The saddle is hardly 50 m long and 25 m wide and is on the watershed between Brahmaputra valley and Barak plains. The name Jatinga is very apt, meaning "from where water flows" in Zemi-Naga dialect.

Dulong River originates from the northern face and meets Diyung River about 5 km away. Jatinga flows from the southern face and meets River Barak at Jatinga Mukh about 60 km down South. The physical feature of Jatinga can be best visualised as two dissimilar funnels joined at the narrow ends. The Jatinga valley is narrow and long with steep high hills on both sides. The valley, at its widest at Harangajao, about 30 km away, is about 2.5 km wide again narrowing down to 100 m at Banderkhal, abruptly opening wide on Barak plains about just below Hilara-Bihara, whereas the Dulong valley is wide and short, meeting Diyung River about 5 km away from the saddle.

*Dy. C.F. (Retd.), Jadavpur, Kolkata (West Bengal)

Methodology

Observations were undertaken at Jatinga Bird Watch Tower (JBT) from August, 1986 to September, 1990, in continuation of observations initiated by H.P. Phukon, the then Divisional Forest Officer, from August, 1983 to September, 1985. Observations were carried from 2000 hrs to first light of next morning i.e. about 0400 hrs, during new moon phase, provided the climatic conditions were right.

For attracting birds a powerful 1 kw light was placed on the northern verandah of JBT facing North by North-East and switched on. All other lights in the tower were switched off. Covers were placed at the back of the light of prevent diffused lights making observers visible, staying behind the lights.

As the birds started flying in, towards light sources, the flight direction, time of arrival, species, species-wise number of individuals, ago of individuals and physical condition of the individual birds along with climatic conditions were recorded.

Results

It was observed that for successfully attracting birds towards light sources all the climatic conditions i.e., drizzling overcast nights with fog or mist, and gentle winds blowing from South must occur concurrently and not in isolation during new moon-phases. Whereas strong winds tend to clear the saddle of fog or mist, heavy rains discourage birds from flying to the light sources.

Night temperature, when the bird phenomenon occurred, varied from 18° to 22° C at the saddle, while only one km away temperature varied from 22 to 28°C. Relative humidity varied from 90% to 100%. While there was no perceptible wind away from the saddle, the wind velocity varied from 10 to 25 km per hour at the saddle. Annual average rainfall recorded at Gating was 2400 mm decreasing progressively away from the saddle.

Out of about 250 bird species observed and identified by the author at North Cachar Hills, only 49 species were recorded at JBT during observations. During the seven year period of 1983 to 1990, successful observations could be made only on 129 nights, when the climatic conditions were right. On many promising nights no observations could be made either because of power failure or missing of one or more required climatic conditions. A number of times no observations could be made because of official pre-occupations.

Data on species and species-wise individual collected over 129 nights are tabulated year-wise in Table 1.

From Appendix I, it would be seen that out of 50 species sighted, only eight are true migrants, 22 species are local migrants, having restricted migratory movements. Another 20 species were confined to latitudinal movements.

It was further observed that at least 25% of the species recorded were either crepuscular or nocturnal.

Most of the birds examined, either dead or alive, at JBT were mostly juvenile or sub-adult and very few adult birds. Most of the adult birds were resident species with insectivorous habits.

Captured birds were found to be in

Table 1

Year of Observation	Number of nights	Number of species	Number of individuals
1983	14	22	73
1984	45	21	181
1985	10	10	21
1986	-	-	-
1987	12	15	62
1988	20	21	83
1989	13	19	68
1990	15	13	45
Total	129	50	533

Period of observation : From 2000 hrs to 0400 of next morning.

Table 2

Species-wise break-up of birds sighted at JBT in percentage of total individual sightings

Common English name	Scientific name	Percentage of Total
Indian Pitta	*Pitta brachyura*	24.0
Ruddy Kingfisher	*Halcyon coromonda*	12.0
Three-toed Kingfisher	*Ceyx erithacus*	09.0
Green Pigeon	*Teron pompadora*	07.0
Chestnut Bittern	*Ixobrychus cinnamomeus*	05.0
Blue Pitta	*Pitta cyanea*	05.0
White Breasted Water-hen	*Amaurornis phoencuru*	05.0
Indian Koel	*Eudyanamys scolopacea*	05.0
Unidentified Species	-	02.0
Others (42 species)	-	25.0

wet, cold, listless and shivering condition. When such birds were left undisturbed at a warm place, for a few hours, they regained strength and flew on release.

The flight directions of the birds approaching the JBT, were either from North or North-East i.e. from the direction of Barail Range towards Jatinga Saddle to the South. Not a single bird was seen coming from South even when lights were turned Southwards. It was further seen that even all climatic conditions were in right mix, no bird ever approach the Watch Tower except during August to October. All attempts during other months proved futile. Also, birds were not observed approaching the JBT during spring migrations, i.e. while flying from South to North from February onwards.

Discussion

The phenomenon of birds being attracted by powerful light sources is not unique to Jatinga. Salim Ali described similar incidents at Helsingburgh Light House in the North Sea off Sweden coast, in his autobiography (Ali, 1986). De Vera (1981) reported similar incidents of 'Bird Lighting' from Luzon in Philippines. There also, the phenomenon involved night flying migratory birds under similar conditions as that in Jatinga.

Baker (1981) related incidents of large scale death of birds at tall structures with lights on top in U.S.A. These killings involved night flying birds on autumn migration. Baker was of view that these killings were evidence of night flying migrants trying to navigate by moon or moon-substitute when real moon was not visible for comparison. He further suggested that such incidents should be higher during new moon phase and on southern migration when the preferred direction was towards the moon in the Northern hemisphere and not during spring migration when the chosen direction was away from moon.

Also, it is a well known fact that, to quote Salim Ali, "the young birds, in many cases not more than a couple of months old form the vanguard, the adults coming later, during southward journey" (Ali, 1941). This might explain the preponderance of sub-adult birds attracted to lights at JBT and near total absence of mature birds.

The abrupt and sudden change of weather on and immediate surrounds of Jatinga probably disorients birds and they tend to follow the direction on which the lights are burning, in this case, towards South, the preferred direction during autumn migration. This would happen, only if birds were using the moon for orientation.

The observed data of Jatinga bird phenomenon shows that the results are in agreement with the hypothesis proposed by Baker in his book on 'Bird Migration'.

This phenomenon occurs only during new moon phases of August to October and only when the sky is overcast, dark, cold with drizzles and fog accompanied by light to moderate wind blowing from South. At this time the birds are on southward flight as on autumn migration. Birds are attracted by the lights pointed northwards, to face the birds flying from North to South. The real moon is not visible and is replaced by a strong light source on the desired direction, probably enough to make bird disoriented and drawn towards the light sources.

Conclusion

The peculiar topographical feature of the saddle has resulted in a unique microclimate at Jatinga which is not available even a short distance away, during early autumn. This climatic formation contributes largely to the phenomenon of large number of birds being attracted to powerful light sources on cloudy dark nights during new moon phases when on autumn migratory flights.

On the basis of studies this phenomenon could only be satisfactory explained on the basis of the hypothesis presented by Baker i.e. nocturnal migrants on autumn migration, using the moon for orientation, are disoriented in adverse weather conditions and in absence of real moon are drawn towards strong light sources burning in the desired direction.

Appendix I

Birds observed at Jatinga Bird Watch Tower attracted by light during August to September (1983 to 1990)

Common Name	Scientific Name	Status	Feeding Time	Remarks
1	2	3	4	5
Grey Heron	*Ardea cinera*	M	D	Seen only once in 1984
Purple Heron	*Ardea purpurea*	LM	C/D	O
Pond Heron	*Ardeola grayii*	R/LM	D	F
Cattle Egret	*Bubulcus ibis*	R/LM	D	F
Little Egret	*Egretta garzetta*	R	D	O
Night Heron	*Nycticorax nycticorax*	LM	N	F
Tiger Bittern	*Gorsachius melanophus*	LM	N/C	F
Chestnut Bittern	*Ixobrychus cinnamomeus*	LM	N	C
Yellow Bittern	*Ixobrychus sinensis*	LM	N/C	F
Black Bittern	*Ixobrychus flavicollis*	M	N/C	O
Bittern	*Botaurus stellaris*	M	N	O
Whistling Teal	*Dendocygna javanica*	LM	D	O
Cotton Teal	*Nettapus coromandelianus*	R/LM	D	O
Grey Quail	*Coturnix coturnix*	LM	D	O
Blue-Breasted Quail	*Coturnix chinensis*	R/LM	D	O
Hill Partridge	*Arborophila torquela*	R	N	O
Button Quail	*Turnix tanki*	LM	D	O
Blue-Breasted Banded Rail	*Rallus striatus*	LM	D	O
Banded Crake	*Rallina eurizoides*	R	N	O
White-Breasted Water-hen	*Amaurornis phoenicurus*	LM	D	O
Moore Hen	*Gallinula chloropus*	LM	D	O
Pheasant-tailed Jacana	*Hydrophasianus chivirgus*	LM	D	O
Eastern Curlew	*Numenius arquata*	LM	D	Recorded only once in 1985
Wood Cock	*Scolopax rusticola*	LM	N	O
Green Pigeon	*Treron pompadora*	LM	D	C
Imperial Pigeon	*Ducula aenea*	R/LM	D	O
Turtle Dove	*Streptopelia tranquebarica*	LM	D	O
Spotted Dove	*Streptopelia chinensis*	R/LM	D	O
Emerald Dove	*Chalcophaps indica*	R/LM	D	O
Indian Parakeet	*Psittacula eupatria*	LM	D	F

Contd...

1	2	3	4	5
Blossom-headed Parakeet	*Psittacula roseata*	R/LM	D	F
Crested Cuckoo	*Clamator coromandus*	RM	D	O
Hawk Cuckoo	*Cuculas varius*	LM	D	O
Violet Cuckoo	*Chalcites xanthorhychus*	LM	D	O
Drongo Cuckoo	*Surniculus lugubri*	LM	D	O
Koel	*Eudinamya scolopacea*	LM	D	O
Swift	*Apus offinis*	R/LM	D	O
Ruddy Kingfisher	*Halcyon coromaanda*	R/LM	D	C
Three-toed Kingfisher	*Ceyx erithacus*	R/LM	D	F
Blue-naped Pitta	*Pitta nipalensis*	M	D	C
Indian Pitta	*Pitta brachyura*	M	D	C
Blue Pitta	*Pitta cyanea*	LM	D	F
Hooded Pitta	*Pitta sordida*	LM	D	C
Red-rumped Swallow	*Hirando daurica*	LM	D	F
Brown Shrike	*Lanius cristatus*	M	D	O
Racket-tailed Drongo	*Dicrurus paradiseus*	R	D	O
Bronzed Drongo	*Dicrurus aeneus*	R	D	O
Monarch Fly catcher	*Monarcha azurea*	R	D	O
Blue Rock Thrush	*Monticola solitarius*	M	D	O

Status	Feeding time	Remarks
M = Migrant	D = Diurnal	F = Frequent
LM = Local migrant	C = Crepuscular	C = Common
R = Resident	N = Nocturnal	O = Occasional

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SUMMARY

Every year during autumn-new-moon-phase a large number of birds are attracted by strong unidirectional light sources kept burning on the Jatinga saddle under specific climatic conditions. A five year long study revealed that out of two hundred or more species of birds

found in North Cachar Hills, only about fifty species were involved in the phenomenon. Only eight species made up for 75% of the sightings. Most of the individual birds were sub-adults. An analysis of the observed data revealed that night flying birds on autumn migration flight were guided by moon, and in absence of moon were misdirected by any artificial light burning in the desired direction. This was strongly supported by the hypothesis proposed by Baker (1981), that the migratory birds on southward migration, in the Northern Hemisphere, were guided by moon.

असम की उत्तरी कछार पहाड़ियों में जटिगां के पक्षि संघटन पर नया प्रकाश

कल्याण के० गुप्त

साराशं

प्रतिवर्ष शरद नवचन्द्र प्रावस्था में कितने ही पक्षी विशिष्ट जलवायु दशाओं में जटिंगा पीठ पर जलते रखे हुए तीव्र एकदिश प्रकाश स्रोत से आकर्षित होते हैं । पांच वर्षो तक किए गए इस अध्ययन से पता चला कि उत्तरी कछार पहाड़ियों में पाई जाने वाली दो सौ या उससे भी अधिक पक्षी जातियों में से केवल लगभग पचास जातियां इस घटना में लिप्त हुई पाई गई । केवल आठ जातियां देखे जाने के 75% अवसरों में मिली । अधिकांश पक्षी उप-वयस्क रहे । प्रेक्षित आंकड़ों का विश्लेषण करने पर पता लगा कि रात में उड़ने वाले पक्षी शरद प्रव्रजन की उड़ानों में चन्द्रमा से मार्गदर्शन पाते हैं और चन्द्रमा न रहने पर वांछित दिशा में जल रहे किसी भी कृत्रिम प्रकाश से दिशा भ्रष्ट हो जाते हैं । इसे बेकर (1981) द्वारा प्रस्तावित प्रस्थापना से जोरदार समर्थन मिलता है कि प्रव्रजी पक्षी उत्तरी गोलार्ई में दक्षिण और प्रव्रजन करते समय चन्द्रमा में मार्गनिर्दशित होते हैं ।

References

Ali, Salim (1941). *The Book of Indian Birds*, VI Edition. The Bombay Natural History Society, Bombay, 1986.

Ali, Salim (1986). *The Fall of a Sparrow*. Oxford University Press.

Ali, Salim and S. Dillon Ripley (1987). *The Hand book of the Birds of India and Pakistan*. Compact Edition, Oxford University Press.

Ali, Salim and S. Dillon Ripley (1983). *A Pictorial Guide to Birds of Indian Sub-Continent*. Oxford University Press.

Baker, R.R. (1981). *Bird Migration*. The Solution of a Mystery. Hodder and Stoughton, London.

De Vera, E. (1981). The Art of Bird Lighting, *Canopy International,* January.

Gee, E.P. (1964). *Wildlife of India*. Collins, London.

Phukon, H.P. (1987). *Death at Jatinga*. Government of Assam, Forest Department.