

## THE INDIAN FAUNA DURING 1943-44

OFFICIAL statistics of the number of wild animals shot in the various provinces (except Madras) and in Kashmir and Jammu States during 1943-44 are given in the *Indian Forester*.<sup>1</sup> Of the animals that are in grave danger of becoming extinct but now safeguarded by Acts (*viz.*, the Bengal Rhinoceros Preservation Act, 1932, and the Elephant Preservation Act, 1879), only 3 rhinoceroses were killed in the whole of India (in Assam), and 33 wild elephants shot in the several provinces, Assam claiming the maximum (18).

Turning to carnivora, a total of 224 tigers and tigresses were shot, greater number in C.P. and Berar (73) and U.P. (69); of leopard or panther, 211 were shot, U.P. heading the list (50), and 37 each in C.P. and Berar and Bombay. Wild cats claim 91 (58 in Jammu and Kashmir). Of the bears shot, Himalayan black bear leads with 37 (30 in Jammu and Kashmir) and sloth bear 28. Of the deer tribe, the maximum number shot was *cheetal* or spotted deer 511 (Bengal responsible for 211, U.P. 57, C.P. and Berar 108), the number of sambar shot was 235 (95 in U.P. and 53 in C.P. and Berar). Of the 213 barking deer, Bengal is responsible for 120. Nine 4-horned antelopes were also shot.

Other interesting figures are Gaur or bison 38 (13 in Bombay), *nilgai* or blue-bull 212 (119 in Bombay), crocodile 16 (14 in U.P.), python 14 (6 each in Bengal and U.P.). Increase in the number of animals shot over last year's record is noted, in the case of leopard or panther 38; wild cats 76; *nilgai* 106; barking deer 54; *cheetal* or spotted deer 220. This increase in mortality in wild animals is perhaps due to the large increase in the fighting forces in India.

These figures refer to 'Reserve forests' only and are, therefore, no true reflection of the state of affairs. There is no machinery for the collection of figures of the numerous animals shot in the unclassified State forests, grants, grazing land, etc. There is also no record of mortality in the case of games and fishes.

Recently, it was reported in the press that 25 tigers were shot in one district in Assam outside Reserve during 1944, and there is no doubt that game animals and birds are rapidly disappearing in this country. The reason is indiscriminate slaughter of females and immature males in the open season and of both in the closed season, particularly deer and birds and unless Government takes timely action, India's marvellous fauna is doomed to extinction.

In 1935, the Government of India convened a conference of the representatives of all the Provinces and the States in India on the subject of the "Preservation of Wild Life", presided over by the late Mian Sir Fazl-i-Hussain. Since then, Dr. Bains Prasad, formerly Director, Zoological Survey of India, in his address to the Eighth Annual Meeting of the National Institute of Sciences of India in 1943, discussed at length the subject of "Conservation of Wild Life in India". Unfortunately their sug-

gestions have not yet been given effect to. It is now for the relevant post-war reconstruction committee to chalk out a programme, based on the recommendations of these two valuable memoranda.

A wise policy of wild life conservation should provide for: (1) Adequate laws of protection, (2) adequate areas as permanent sanctuaries or refuges for species in their known habitat, (3) adequate organization to enforce the former and administer the latter.

An active unofficial "All-India Organization" for the protection of games, fishes, fauna and flora of India on the models of similar organizations in all progressive countries can also render useful service in this direction. In 1936, the United Provinces inaugurated under the distinguished patronage of Sir Malcolm Hailey (now Lord Hailey), an "Association for the Preservation of Games" in that province, and also started publishing a journal entitled *The Indian Wild Life*. Owing to the abnormal conditions resulting from the war, the activities of this society has received a setback. The United Provinces is also the pioneer in India in passing the "National Parks Act, 1934" that resulted in the conversion of "Hailey Park" to "National Park" with an area of 100 sq. miles. Will other Provinces and States lag behind? What we need most are "National Sanctuaries". The relevant post-war reconstruction committee should bear this in mind.

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1. *Indian Forester*, March 1945, 71, No. 3.

A PODOSTEMAD FROM THE EASTERN  
GHAT HILLS IN ORISSA

MEMBERS of the family Podostemonaceæ have been recorded from South India, Ceylon, Eastern Himalayas, Assam, Burma, etc. (*cf.* Hooker,<sup>2</sup> Willis<sup>4</sup>). Recently, Randhawa and Joshi<sup>3</sup> reported the occurrence of a podostemad from the Kumaon Hills, Central Himalayas. According to them, the plant collected by them is to be regarded as a new species of *Zeylanidium* Tul., a sub-genus of *Hydrobryum* Endl. (Willis).<sup>4</sup> Haines<sup>1</sup> previously recorded the occurrence of *Lawia zeylanica*, another member of the family Podostemonaceæ from Orissa. According to him, it occurs in patches on the wet rocks in the rivers of Angul (Cuttack District) in Orissa. He described the same in his *Flora of Bihar and Orissa*.<sup>1</sup> The occurrence of a Podostemad from another locality in Orissa is recorded here and is of interest in connection with the geographical distribution of the family.

The Podostemad collected by the writer has ribbon-like and branching thallus. It was found growing closely attached to wet stones occurring in the hill stream 'Putra gadh' flowing through shady forest in the 'Jolla Mundi' Valley near the village 'Mogal patta' (82° 30' : 18° 59') situated about 4-5 miles north off Jeypore, Orissa. It was collected in the

flowering and fruiting stages in the month of January 1938 and was growing in association with a species of *Batrochospermum*. From a comparison of the specimens with characters of the other members of the family, it is found to belong to *Zeylanidium* Tul., which was described by Willis<sup>1</sup> as a sub-genus of *Hydrobryum* Endl. The plant here reported is identified as *Z. lichenoides*. The species has been previously recorded as occurring in Burma, Assam, Bombay Ghats to Travancore and Ceylon.

My thanks are due to Mr. K. C. Jacob (then of the Herbarium, Agricultural College, Coimbatore) for kindly confirming the identification of the species.

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#### EFFECT OF PHOTOPERIODIC TREATMENT ON POLLEN FERTILITY

Out of the five postulated phases in the developmental process of a plant, two have been established with reasonable certainty. Recent evidence<sup>1,2</sup> gives some indications regarding the nature of two new developmental phases.

During the course of investigations on phasic development of wheat at this Institute, it has been observed that the formation of normally functioning gametes depended upon preliminary phasic changes in the cells of the gametophyte brought about by photoperiodic treatment. As the results appear to be of some academic and practical interest a brief preliminary report is made here.

Graded seeds of three varieties of wheat (*Triticum vulgare*), viz., I.P. 165, I.P. 52 and P.C. 591, were germinated and kept for the first twelve days under the following five 'initial' light treatments:—

(1) Complete darkness; (2) six hours of natural light; (3) twelve hours of natural light; (4) same as No. (3) plus six hours of artificial light; (5) same as No. (3) plus twelve hours of artificial light (200 W. day-light lamp at a distance of 2 ft.).

At the end of this initial light treatment plans were exposed to three photoperiods, viz., (a) short-day—6 hr. day; (b) normal-day—12 hr. day; and (c) long-day—18 hr. day upto the time of anthesis.

Pollen sterility was determined by staining with aceto-carmin and counting the number of stained and unstained grains.

Sterility appears to increase with long as well as short photoperiods, more so in the former case. It is also worthy of note that photoperiodic treatment during the first twelve days has an appreciable effect on pollen sterility. Long-day treatment increases sterility.

TABLE I.  
Percentage pollen sterility and fertility indices for I.P. 165, I.P. 52 and P.C. 591 wheat (*Triticum vulgare*) under different photoperiodic treatments

Photo-periodic treatment	* Pollen sterility (per cent).			Fertility index		
	I.P. 165	I.P. 52	P.C. 591	I.P. 165	I.P. 52	P.C. 591
1 a	14.1	21.0	13.8	0.14	0.35	0.06
2 a	13.4	19.9	16.4	0.23	0.41	0.23
3 a	22.4	15.4	16.7	0.21	0.27	0.22
4 a	20.7	16.9	16.9	0.25	0.18	—
5 a	19.3	14.9	17.5	0.25	0.15	0.13
1 b	2.7	3.4	3.4	0.37	0.44	0.36
2 b	2.6	3.4	4.0	0.43	0.39	0.34
3 b	1.0	2.4	3.8	0.36	0.40	0.38
4 b	3.1	6.7	2.2	0.38	0.41	—
5 b	9.8	7.5	8.7	0.31	0.31	0.35
1 c	30.4	17.8	23.7	0.13	0.07	0.09
2 c	21.7	25.8	21.2	0.17	0.10	0.19
3 c	25.5	14.9	19.5	0.14	0.15	0.15
4 c	31.5	32.5	25.5	0.10	0.12	—
5 c	41.5	30.9	26.2	0.09	0.17	0.13

\* Each figure is a mean of 12 observations.

Fertility index within has been calculated by dividing the number of grains per ear by the product of numbers of spikelets per ear and the number of florets per spikelet is also adversely affected by long-day conditions.

The reversible nature of the thermo- and photo-induction effects<sup>2</sup> and abnormalities in development of spike in wheat under the influence of differential photo-treatments, as well as reduction in the number of spikelets and grains under long-day conditions, which have been observed at this Institute (unpublished records of the Imperial Agricultural Research Institute), together with the evidence presented here, as well as the work of O'mara<sup>3</sup> on auto-tetraploid *Secale cereale* warrant a suggestion that light has an influence on the developmental process in cereals beyond the photophase.

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