

ANTI-BIRD COLLISION STROBE LIGHTS : FIELD EXPERIMENTS ON INDIAN BIRDS

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ABSTRACT

The paper reports the field experiments with Anti-Bird Collision strobe lights, recently developed by Hella KG Hueck & Co, Germany, against Indian birds such as Kites and Vultures.

Tests were conducted in early morning and day time on baited birds in their natural habitats and those resting on runway and air terminal or soaring over the key.

None of the birds showed any avoidance or fear response to the strobe light. Behaviour of the birds with respect to the flashing lights indicates that the strobe lights may not be effective against the heavy soaring Indian birds, probably due to the low visibility of flashes in increased daylight and temperature. However, on-board studies are required to confirm these results.

(Keywords : Strobe light, Birds, Aircraft)

1.0 Introduction

Strobe lights have been suggested as a potential on-board device to disperse birds from the flight path of an approaching aircraft. However, its capacity to reduce the rate of bird strikes is not fully evaluated. Notable physiological changes were recorded in Laughing Gulls, American Kestrels (Green *et al.*, 1993), Kites and Vultures (Pilo *et al.*, 1988) when exposed to strobe light flashes under laboratory conditions. This suggests that the strobe light stimuli may elicit fear or stress response in birds. However, the response of birds to flickering light from an approaching aircraft may vary and depend upon several environmental factors, primarily the daylight conditions. The most powerful version of the Anti-Bird Collision (ABC) strobe light has recently been developed by Hella KG Hueck & Co., Germany, with a flash rate of 120 flashes per minute. On-board tests of these lights on Swiss MD-80 aircraft have recorded a bird strike reduction rate of 22.40%.

The present paper describes the field experiments conducted with the ABC lights on Indian birds.

2.0 Design and Approach

Anti-Bird Collision (ABC) strobe light was supplied by Hella KG Hueck & Co., Germany. This unit has a flash rate of 120 flashes/minute. The strobe light unit was installed on an adjustable platform and operated through an inverter and autotransformer (the autotransformer was necessary because direct D.C. input to the energy boxes of strobe light unit created technical problems). Two sets of experiments were conducted; in first, the birds were exposed to strobe light from a stationary position while in second test, the system operated from a moving trolley. The tests were conducted on baited birds in their natural habitat where several species were present in large groups as well as those resting on runway and air terminals on an aerodrome.

Test birds include Pariah Kites (*Milvus migrans govinda*), Indian Whitebacked Vultures (*Gyps bengalensis*), Scavenger Vultures (*Neophron percnopterus*), Crows (*Corvus splendens*) and Cattle Egrets (*Bubulcus ibis*). The strobe light flashes were directed towards birds from a distance ranging 50 to 350 ft in baited area and 200 to 400 ft on aerodrome, during early morning (0630-0730 hrs, temperature 20 to 26°C) and day time (1100-1200 hrs and 1430-1600 hrs, temperature 35 to 41°C). The exposure time varied from 2 to 15 minutes continuously or two minutes flash on with flash off intervals.

3.0 Results and Discussion

The birds in the baited area showed no evasive action or distress behaviour towards the strobe light flashes even at a close range of 50 ft both during early morning hours or during day time. The strobe lights from a distance of 50 ft captured the attention of kites but not of vultures. None of the birds exhibited any avoidance or fear response to the strobe light flashes either from stationary or from mobile position. During day time the brightness of strobe lights was markedly reduced.

Our findings reveal that strobe lights may not induce stress or fear response in free ranging Indian birds. The probable reason can be the inadequate brightness or low visibility of strobe light during day time. During experiments it was observed that as the day light increases the visibility of flashes decreases. The flight test results of ABC lights from Germany do not indicate the weather and temperature prevailed during the operation period. Our results suggest that the day light and temperature are important factors which influence the strobe light efficiency. However, strobe light operating from an approaching aircraft probably could be effective in reducing bird strike rate as evidenced from Swiss Air-Hella flight tests. In tropical countries like India, heavy soaring birds like Vultures and Kites are the problem birds during flight operation. Hence, further experiments are required to assess the efficiency of strobe

lights to act as an 'early warning and recognition device' for the birds to turn out of the flight path of an approaching aircraft.

4.0 Acknowledgements

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5.0 Literature Cited

Green, J., Bahr, J., Erwin, R. and Peel, H. 1993. Reduction of bird hazards to aircraft : Research and development of strobe light technology as a bird deterrent. Report prepared for Transportation and Development Center, Transport Canada. pp. 1- 125.

Pilo, B., Menon, G.K., Emmanuel, K.S. and Paul, V.F. 1988. Project Bird Hazard : Strobe light ground experiments. Report prepared for Aeronautics Research and Development Board, Ministry of Defence, Government of India. pp 1-20.

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