

Analysis Working Group
ESCE-16

BIRD STRIKES IN INDIA

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The Indian Air Force has recorded more than 800 bird strike incidents during the past 11 years, a few of which (25+) resulting in total destruction of aircraft and others causing minor to major damage. Some of these incidents have also resulted in loss of life and bodily injuries. The civil aviation too has suffered heavy losses, but detailed information is not readily available for periods prior to 1979. The statements made below are based on the bird strike data made available by the Civil Aviation Department and the Air Force.

1. Altitudinal distribution of bird strikes

The data suggest that more than 50% of the incidents occur in India from ground level to about 500 feet elevation, and only about 25% above 1000 feet. (Table - 1). That most of the strikes were recorded within 1000 feet indicates greater bird activity within this altitude. It is also evident that the military aviation suffers a number of strikes between 501 and 1000 feet whereas strikes within these altitudes are much less for civil aviation, obviously since civil aircraft do not usually perform low flying.

2. Species ratio in bird strikes

The figures: Vultures (usually whitebacked Gyps bengalensis) have been recognised to be the major cause of bird strikes resulting in 46% of the cases independently for the civil as well as military aircraft (Table 2). The next prominent bird species involved is the pariah kite (Milvus migrans govinda) a serious menace at many aerodromes. All other birds of prey including those marked as 'hawks' and 'eagles' amount to about 15%. Other birds regularly figuring in bird strike reports include pigeons, crows and owls.

Validity of these figures: The figures given above can only be taken as an indication of the major types of birds involved and their proportion. It is because for every incident where the bird species has been recorded there are several that are not. For example, of the 155 bird strike cases reported by the Civil Aviation for the year 1979, only 62 mention the bird species encountered. The problem is, the more commonly known and obvious birds are recorded whereas the less obvious and difficult-to-recognise birds get left out, resulting in somewhat lop-sided statistics.

Furthermore, even where bird species have been recorded the identifications are doubtful at least for some. In case of civil aircraft for instance, many of the bird identifications seem to be merely visual, made in the field. To illustrate this point: a. all of the bird species involved in night strikes during 1979 have gone unidentified, and b. a 'vulture' has been recorded at a southern airport (Trivandrum) runway where there are no vultures.

To remedy this situation and to assist in evolving positive measures to reduce bird hazards the Bombay Natural History Society, at the instance of the Government of India (Ministry of Defence), has undertaken to make an ecological study of bird hazards at aerodromes in India. This project is now in its second year. As a part of this study the Directorate General of Civil Aviation has instructed all aviation personnel to send all bird remnants to the BNHS for identification. The defence aviation has been sending bird remnants to the BNHS regularly, for the past one year.

Bird Strike Reporting:

Although bird strike incidents are recorded by civil aviation fairly regularly, recording of data is done in the prescribed format of the ICAO only from the recent years. Now the BNHS has prepared a national bird strike reporting form (see specimen copy) incorporating all ICAO categories and also adding at the end certain additional categories catering to local needs. The additional categories include use of strobe lights and aircraft radar, with which experiments are still being undertaken on and off, in India. This reporting form is being used by the air force. The BNHS has also undertaken special efforts to impress on the pilots the need to collect bird remnants. As a part of this programme a small booklet illustrated in colour describing some common problem birds is being published by the BNHS.

Acknowledgements

This study forms a part of the current ecological investigations of bird hazards at Indian aerodromes, being undertaken by the Bombay Natural History Society with Dr. Salim Ali as Principal Investigator, Messers S.M. Satheesan and Goutam Narayan as Research Biologists, and myself as Executive Investigator. The project is funded by the Aeronautics R & D Board, Govt. of India.

Table - 1

Distribution of bird strikes in India by altitude
(Bird strikes of unknown altitudes not included)

Flight altitude in feet	Indian Air Force		Civil Aviation year 1979 *** n-115
	1963-79 & 75-79*	1980 ** n-39	
0 - 500	54%	51%	76%
501 - 1000	22%	18%	4%
1001 - 2000	14%	13%	10%
2001 - 4000	7%	10%	3%
Above 4000	3%	8%	7%

* Data from IAF summary. ** Reported as individual cases
*** Data from Directorate General of Civil Aviation.

Table - 2

Proportion of strikes per bird species in India
(Strikes of unknown bird species not included)

Species	IAF (from 1975 to 1980) *	Civil Aviation (for 1979) ** n-65
Vulture (usually white backed)	46%	46%
Kite (usually Pariah Kite)	10%	21%
Other birds of prey	15%	14%
Pigeon	5%	5%
Crow	3%	3%
Owl	3%	3%
Other birds	18%	8%

* Data from Air Force. ** Data from Civil Aviation

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BIRD STRIKE DATA

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TO BE FILLED PREFERABLY BY THE PILOT

YOUR REPORT WILL PROVIDE INFORMATION VITAL TO BIRD HAZARD PREVENTION PROGRAMMES.

AIRCRAFT OPERATOR/OWNER		MAKE, MODEL		ENGINE MAKE, MODEL		AIRCRAFT REGISTRATION		DATE 08			TIME (LOCAL)		LIGHT 10										
01/02		03/04		05/06		07		DAY	MONTH	YEAR	09		DAWN	DAY	DUSK	NIGHT							
AERODROME				RUNWAY		LOCALITY, IF ENROUTE						HEIGHT ABOVE GROUND		SPEED (IAS) (KTS)									
11/12				13		14						15		16									
PHASE OF FLIGHT		PARKED		TAXI		T/O RUN		CLIMB		ENROUTE		DESCENT		APPROACH		LANDING ROLL							
17		A		B		C		D		E		F		G		H							
AIRCRAFT PARTS	RADOME	WIND SHIELD	NOSE-OTHER	ENG-1	ENG-2	ENG-3	ENG-4	PROPELLER	WING/ROTOR	FUSELAGE	LDG-GEAR	TAIL	LIGHTS	OTHER (SPECIFY)									
STRUCK	18	19	20	21	22	23	24	25	26	27	28	29	30	31									
DAMAGED	18	19	20	21	22	23	24	25	26	27	28	29	30	31									
EFFECT ON FLIGHT				SKY CONDITION 37				PRECIPITATION															
NONE	ABORTED TAKE OFF	PRECAUTION LANDING	ENGINES SHUT-DOWN	OTHER (SPECIFY)		NO CLOUD	SOME CLOUD	OVER-CAST	VISIBILITY (NM)	FOG	RAIN	SNOW											
32	33	34	35	36		A	B	C	38	39	40												
BIRD SPECIES* (IF KNOWN)	NUMBER OF BIRDS (approx.) SEEN AT TIME OF STRIKE		SIZE OF BIRD		PILOT WARNED OF BIRDS BY		NONE																
41	42		43		S	M	L	45	46	47	X												
REMARKS (Describe damage, injuries and other pertinent information) 46/47																							
ADDITIONAL INFORMATION (AT THE TIME OF STRIKE)		EXTERNAL LIGHTS "ON"		NAV.	LANDING	RED ROT BEACON	WHITE ROT BEACON	WING	STROBE	NOT "ON"	RADAR (AIRCRAFT)		WIND SPEED (KTS)										
											"ON" NOT "ON"												
THIS FORM FILLED BY				BIRD REMAINS* ENCLOSED HEREWITH				SENDER															
NAME:				YES				NOT COLLECTED				SEARCHED BUT NOT FOUND				DATE				INITIALS.			
BIRD REMAINS HELP IN IDENTIFYING THE BIRD. EVEN A FEATHER, A FOOT OR A BEAK IS VALUABLE AND SHOULD NOT BE IGNORED																							
THIS FORM INCORPORATES THE ENTIRE ICAO BIRD STRIKE INFORMATION SYSTEM OF 1979 (FROM CODE NO. 01 to 47)																							

RETURN THIS TO BOMBAY NATURAL HISTORY SOCIETY