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Zero bird-strike rate - an achievable target, not a pipedream

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Abstract

This paper explains how zero bird-strike rate can be achieved by any aerodrome by constant efforts and perseverance of a dedicated team as evidenced from the author's experience on about 30 aerodromes in India. This paper stresses the importance of conducting survey of problem aerodromes every five years by an expert (Satheesan 1996c), necessity for employing an Ornithologist at every aerodrome, need for regular national-level training for bird-controllers (Satheesan, in press - b) and urgency for setting up Bird-strike Prevention Committees at national (interministerial) and airport levels. Bird strike rates were brought down to zero at the Trivandrum International Airport in 1992 and 1993 and to a low level at the Bangalore Airport in 1993 as a result of implementation of recommendations given by a study team including the author in 1989 and by the author alone afterwards (Satheesan 1996c). Another result of this was that vulture-hits to aircraft have been drastically reduced at Delhi, Bangalore and several other airports. Awareness programmes to educate the public can help reduce bird-strikes (Satheesan 1994a, 1994b). Step by step evaluation of and changes in policies and strategies followed by the Government as well as methods and gadgets employed by airport authorities and replication of successful experiments at problem airports hold the key to translating the dream, zero bird-strike rate, into reality.

(Key words: Zero bird-strike rate, achievable, target, bird-strike prevention, bird controllers. evaluation, changes, policies, strategies, methods, gadgets)

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Introduction

Providing a trouble-free aerodrome environment, accident- and incident-free operations and safe aircraft movements with zero bird-strike rate are the major targets of every aerodrome operator. Hoards of problems and obstacles of every sort including administrative ones hamper the progress in achieving these targets. In several aerodromes, the target of zero bird-strike rate remains a pipe dream. Here the focus is on this target and how to achieve it. Author's experience on about 30 aerodromes in India reveals that there is no substitute for the constant efforts and perseverance of a dedicated team executing a well-planned agenda on bird-strike prevention in an organized way.

Study area

The aerodromes in India surveyed and studied by the team of the Bombay Natural History Society (BNHS) including the author from 1980 to 1989 were Jammu, Srinagar, Delhi, Hindan, Agra and

Gorakhpur in north, Ambala, Sirsa and Jodhpur in northwest, Calcutta, Kalaikunda and Patna in east, Tejpur and Chabua in northeast, Bombay in west, Gwalior, Nagpur, Dundigal, and Hyderabad in central as well as Bangalore, Madras and Trivandrum in south India(Grubh, Satheesan & Narain 1988, Grubh *et al*. 1989). The aerodromes surveyed and studied by author alone after 1989 include Jodhpur, Jaisalmer, Naliya, Utterlai, Jamnagar, Bhuj all in northwest as well as Juhu in Bombay and Pune in west India in 1992, Adampur, Bhatinda, Nal and Ambala in northwest as well as Bareilly in north and Goa in west in 1993, Trivandrum in 1994 as well as Bangalore in 1995 and 1996. Delhi, Safdarjung (in Delhi), Hindan aerodromes were visited by author on several occasions in 1997 and 1998 to test the efficacy of some bird-scaring machines. Most of the aerodromes were visited more than twice and some several times such as Trivandrum (in 1983, 84, 85, 86, 87, 88, 92 and 94) and Bangalore (in 1983, 84, 85, 88, 95 and 96).

Methodology

These aerodrome studies comprised of the following activities:
(a) Field observations from control tower of aerodrome, inspection of infield areas and survey of buffer zone areas, 25 km in radius of the aerodrome to locate areas of bird activity and to find out the reasons for attracting birds and how these birds become a hazard to aircraft.
(b) Gathering bird strike data and bird strike remnants on a national level and from each aerodrome whenever survey was conducted.
(c) Identification of bird- and bat-strike remnants received at the BNHS from aerodromes all over India between 1966 and 1994.
(d) Analysis of bird-strike data received at the BNHS between 1966 and 1994 and later received from aerodromes directly during survey.
(e) Evaluating efficacy of bird repelling cartridges, other devices and machines as well as herbicides and insecticides.
(f) Providing practical, cheap, long-lasting and ecologically sound measures to tackle bird menace to aircraft in and around aerodromes and evaluating these recommendations from time to time.
(g) Discussing with airport and civic authorities on the implementation of recommendations to contain bird problem at aerodromes.
(h) Participating in the meetings of Airport Environmental Management Committees as well as National and International Bird Strike Committees on invitation.
(i) Providing training to bird controllers of civil and military aerodromes on request from concerned aviation's.
(j) Participating in national and international workshops, conferences and seminars on bird strikes to update information on bird strike prevention.

Results

(i) Field studies in and follow up visits to several aerodromes revealed that there is a reasoned necessity for surveying every problematic aerodrome once every five years by an expert especially when the bird strikes are on the rise (Satheesan 1996c). This has lead to the achievements of the airport authorities at Trivandrum and Bangalore airports. Without surveying, the dynamic problem of bird menace cannot be understood clearly and solution will be enigmatic. Continuous follow up and persuasion to implement recommendations for habitat modifications to reduce water-logging, instituting effective drainage system, mowing vegetation cover, erecting tall barbed fences, repairing breached concrete boundary walls , removing illegal meat-sale shops and closing down of a bird-attracting garbage dump very close to a runway end helped the bird controllers achieve zero bird-strike rate at Trivandrum airport in 1992 and 1993 (Satheesan 1996c). In the same way implementation of concrete recommendations to close down a water treatment plant as well as piggery and pig meat sale shops very close to airport wall, to reduce airport vegetation and to cover the roof and sides of a carcass processing unit at Bangalore have considerably reduced bird strike rate at Bangalore airport by 1993 (Satheesan 1996b, 1996c).

Table 1. Number of bird hit incidents recorded for Trivandrum and Bangalore airports from 1980 to 1994-95.

Year →	1980	81	82	83	84	85	86	87	88	89	90	91	**92**	**93**	94	95
Trivandrum	9	8	8	6	5	8	15	13	15	8	12	5	**0**	**0**	3	-
Bangalore	3	5	2	5	4	9	13	9	9	8	5	9	5	**3**	6	4

At the request of the airport authorities resurveys were initiated by the author at the Trivandrum airport in 1994 and at Bangalore in 1995 as well as in 1996 when bird problem showed some sign of increase in 1994. Resurveys resulted in providing fresh recommendations to contain bird menace at both the airports(Satheesan 1994a, 1995, 1996b)

(ii) There is necessity for employing an Ornithologist at every problem aerodrome to assist the flight / air safety departments. The major work of the Ornithologist includes evolving practical methods to prevent bird strikes, guiding bird controllers to repel birds from runways, helping them to collect bird strike remnants and identify species from remnants and analyzing bird strike data. The bird scientist should co-ordinate with the Flight safety or Air safety Department but report to the Director of the Airport. There should be a senior scientist / Ornithologist at the Operations or Safety division of the Headquarters of Civil and Military aviations to guide and co-ordinate with ornithologists working at aerodromes.

(iii) There is an urgent need for conducting regular national level training for bird controllers of civil and military airports especially taking into consideration the airport operator liability in the event of a bird-strike caused aircraft accident (Satheesan in press -b). In India the author was involved in training bird controllers at national level in 1992 and 1996. The training material developed by the author in 1996 is still being used by the Airport Authority in their Institute of Aviation Management, New Delhi. Ideally the training material should be revised from time to time. Training should include practical sessions in the field other than class room lectures.

(iv) There is a need to have a High Level Bird Strike Committee (Interministerial) at national level and an Airport Environmental Management Committee at aerodrome level(Satheesan 1991, 1992). Often the committees exist but are not able to function properly due to political and other impediments. A recommendation to set up a modern abattoir and a carcass processing centre at Delhi, Agra and several other towns and cities given to the Government of India was not implemented as yet because of various reasons including political ones.

(v) Vulture-hits to aircraft were reduced at several aerodromes as a result of implementation of some of the specific recommendations. Vulture populations have declined in several towns and cities such as Delhi and Bangalore due to non-availability of carcasses. In the seventies and eighties the vulture populations had increased several folds due to unchecked explosion of human population, unplanned urbanization and inefficient carcass disposal system in towns and cities (Satheesan 1994b, 1996a, 1996e). Between 1980 and 1994 the Indian Airforce had lost 15 aircrafts due to vulture-hits alone and for the civil and military aviation together the financial loss due to bird hits was around 30 billion rupees per year. But when banning the practice of indiscriminate dumping of carcasses was forced by recommendations given by the BNHS earlier and by the author later, vultures were denied food in most of the urban areas. The result was that vulture-hits became rare in several aerodromes(Satheesan 1995, 1996b, 1996c).

(vi) Policies and strategies of the Government towards birdstrike prevention have to be evaluated from time to time. In many countries it takes a few catastrophes or serious bird strike incidents or accidents to open the eyes of the aviation authorities in the Government. Employing Ornithologists to control birds at airports is taken up with interest only in some developed countries such as USA, Canada and Netherlands. Governments of most countries take assistance of Ornithologists only through projects. Flight Safety or Air Safety is not given due importance and bird-strike problem is not taken seriously at all by several countries. It is high time to evaluate the methods and gadgets employed by airport authorities.

Quite often the improvisations of a resourceful bird controller help to ward off birds concentrated on and around the runway and not a costly or sophisticated machine. Selection of a bird repelling machine and how best and when or how often to use it is the efficiency and intelligence of a dedicated team working for bird strike prevention at every airport. Optimal use of selected (less harmful) insecticides and herbicides can definitely reduce attractions for birds in and around runway. Bird repelling gel applied on likely perches can discourage birds from visiting installations near runway and roosting areas. Sound and light used in a judicious manner can help repel birds from aerodromes (Satheesan, in press - a). Distress calls can be used against specific problem birds and long range bird scaring cartridges are effective against soaring scavenging birds such as vultures and kites. Ultrasonic Bird Repellent Devices are not useful against pigeons roosting in hangars.

(vii) Successful experiments to prevent bird strikes by repelling birds carried out in any aerodrome, may be it is by habitat manipulation, using herbicides or insecticides or using bird repelling devices based on light and or sound, are worth replicating but under supervision of an Ornithologist with enough experience in aerodrome environment.

(viii) Bird strike prevention is a national and international responsibility. The common man in any country has his role in making airport environment unattractive to birds. Hence Civil and Military aviations should make every effort to educate the public through mass media on the horrors of bird strikes and the gravity of the national loss due to bird strikes (Satheesan 1994a, 1994b). Recommendations to contain bird menace at airport can be implemented only with the co-operation of the civic authorities and the public at large. Hence a Joint or Participatory Airport Environment Management Committee should be set up to implement the recommendations. Officials from the Ministry of Environment and Forests, Officials of Civic Administration, Citizens of eminence and Ornithologists should be also part of this committee..

Conclusion

There is no substitute for hard work, sincerity, dedication, commitment and perseverance in executing a well planned bird control programme in and around airport that too through Joint or Participatory Airport Environment Management. When whole-hearted participation of groups of people concerned about bird strike problem is assured in the bird control process, zero bird-strike rate cannot be elusive.

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Biography

S M Satheesan, a post-graduate in Zoology(Calicut Univ.) and Education (Bombay Univ.), received his Ph D degree from the University of Bombay. The doctoral thesis is on Ornithology and related to bird strikes at some Indian aerodromes. He worked as a scientist at the Bombay Natural History Society (BNHS) from 1978 to 1994. He was the head of the Bird Hazard Research Cell of BNHS till 1994 and an independent Consultant to aerodromes in Bird Aircraft Strike Prevention from 1994 to 1998. He has worked on and for about 30 aerodromes in India for bird strike research and control. He is currently working as a Senior Programme Officer with WWF-India in their Forests & Wildlife Conservation Division, but still pursuing his commitment to Bird Strike Prevention through national and international fora.