

BIRD STRIKE PREVENTION IN CHINA

by Wei Tianhao
Kunming Institute of Ecology, Academia Sinica
25 Jiaochang East Road
Kunming 650223, China

Summary

The statistics and some accidents of bird strikes in China were described. In the Airforce, there were 50 accidents posed by birds during 1957-1982. Then, in September, 1994 there were 5 accidents at an Airforce Training Base, one of which was a serious event, and a new pilot was killed. However, in Civil Aviation, there were 34 accidents, during 1982-1995, one of which happened at Chongqing Airport, Sichuan Province, when two flocks of Grey Heron collided with a Boeing 757 while taxiing before taking off in February 1995.

First Symposium on Bird Strike to Aircraft of China (1st SBSAC) was held 25-28 October 1994 in Kunming. 32 delegates from 20 organisations of civil aviation, military, aircraft industry companies and biological institutes of China Academy of Science, universities and colleges attended. Meanwhile, Bird Strike Research Group, Ornithology Branch, China Zoology Society/Bird Strike Prevention Committee, Yunnan Zoology Society (BSRG/BS&PC) were established simultaneously.

Key Words: Statistics, Military Aviation, Civil Aviation, Country, Symposia

BIRD STRIKE PREVENTION IN CHINA

by Wei Tianhao, Kunming Institute of Ecology, Academia Sinica, 25 Jiaochang East Road, Kunming 650223, China

1 Statistics of Bird Strikes in China

The first bird strike accident of China was recorded in 1952. Thereafter, it was happened more or less in Civil Aviation and Airforce. Depended on the analysis, the damage by bird were 21% of total damages of aircraft of China.

In recent years, the accidents by birds are dramatically increasing, particularly, at seven major airports by the coast and large rivers. Furthermore, Swedish aeroplanes were struck by birds during 1938-1950 at Beijing Airport.

(i) In Airforce

During 1952-1994, there were 5 serious accidents posed by birds, 5 aircraft crashed, 3 pilots were killed. It is worth that these accidents happened 12-27 September 1994, in which one aircraft crashed, a new pilot was killed. Because of lack of proper report system, all accidents were reported only just after the serious accident.

Depended on a statistic of 50 accidents happened from 1967 to 1982, the features are as following:

- a At different speeds
26% were at 300-399 km/h, 20% at 200-299 km/h, 18% at 500-599 km/h, only 4% were above 700 km/h and below 100 km/h;
- b At different altitudes
18% were at 100-199m asl, 16% below 100m asl, 12% at 2000-3000m asl, 10% at 300-399m asl
- c In different phases
26% were in normal flight, 22% in landing and taking off, 8% in climbing;
- d In different months
18% in April, 16% in May, 14% in June, 12% in November;
- e By the species of bird
42% were struck by unknown bird species, 14% by goose, eagle and small bird each and every.
- f By the numbers of birds struck
48% were struck by single bird, 24% by flock, 28% were unknown
- g In different times of a day
24% were 19.00-21.00 and before 12.00, 18% 12.00-18.59, 16% after 21.00;
- h The damages of aircraft struck
The damage of aircraft occupied 42%, slightly damaged 32%, injury of pilot 6%, 20% no damage;
- i At the different parts
26% were at windshield, 22% at nose, 16% at engine, 10% at wing

(ii) In Civil Aviation

8 February 1995, in Chongqing Airport, a taxiing B757 before take-off encountered two flocks of Grey heron (*Ardea cinerea*), and some were ingested into the right engine. At the time of a danger, the pilot had to cease the take-off procedure. As results, 4 blades of the engine were damaged, 6 tyres of gear automatically flared. ...Finally, it cost 2,60 million dollars.

During 1982-1995, there were 34 serious accidents in Civil Aviation posed by birds in or near airports in China. The features are as following:

- a. **In different years**
There were 9 accidents in 1994, 6 in 1988, 4 in 1986 and 1990, 3 in 1989 and 1 in 1995;
- b. **At the different phases**
Most of the bird strikes took place during take-off;
- c. **at the different types**
Most of the aircraft struck were B737;
- d. **At the different parts**
The most parts of aircraft collided were engine;
- e. **In different months of a year**
21% appeared in August, 12% in May, July and October each and every ...
- f. **By species and numbers of birds**
The species of bird were Lapwing, Grey heron, Swallow, Eagle, duck and Pheasant, but there were 25 accidents not known by which species. However, the most accidents were struck by flocks.

At present, there is not a proper reporting system for bird strikes in China, and no one devotes to identify the remains. So, there were public names only, for example, 'birds', 'large bird', 'small bird' or 'ducks', 'waterbird', 'eagle', 'heron' and so on.

- G. **At the airports**
The airports that bird strikes took place were Beijing, Tianjing, Nanjing, Shanghai, Hangzhou, Nantong, Xiamen, Luyang, Wuhan, Guilin, Chengdu, Chongqing, Kunming and Jinghong. Others were happened before.

2. On First Symposium of Bird Strikes to Aircraft in China

Contacted and negotiated with related personnel and the authorities, First symposium on bird strikes of China was held during 25-28 October 1995, in Kunming. 32 delegates attended, including officers from CMI Aviation Administration of China, engineering from Institute of Aeronautics, companies of China Aviation Industry, professors from Institutes of biology and ecology, Academia Sinica and colleges.

At the end of the symposium, the first organisation of Birdstrike Research Group, Ornithology Branch, China Zoology Society/Birdstrike & Prevention Committee, Yunnan Zoology Society (BSRG/BS&PC) was established.

Professor Zheng Zuoxing (Cheng Tso-Hsin), famous ornithologist, congratulated the symposium and the establishment of BSRG/BS&PC through telephone from Beijing. A Deputy director, Kunming Branch, Academia Sinica, a Vice Chairman of Yunnan Science and Technology Association, a Director of Yunnan Zoology Society, and delegates from China Ecology Association and from Ornithology Branch, China Zoology Association, attended too.

Dr. John Thorpe, Chairman of BSCE, congratulated in letter from UK and provided a list of thesis at 22 meeting of BSCE and 'Bird Hazard Check list', ICAO.

After the Symposium, the Secretary Group edited a newsletter 'AVIATION AND BIRDS NEWS', two issues a year. An English edition, we think, will be edited in 1996.

3. A Project on Bird strike Prevention in Airport

After the accident occurred 8 February this year at Chongqing Airport, invited by CMI Aviation administration of China, I have been Beijing and Chongqing Airport twice to negotiate and start a

project on bird strike prevention at the airport, in which a primary ecological investigation will be conducted at first. But unfortunately, there are some troubles in negotiation with Authority of Chongqing Airport, so the project stopped after the initiation.

4 Exchange the information and Co-operation

It is obvious that bird strike reduction is a grand international programme. Therefore, it requires close co-ordination and co-operation among countries and regions, especially among developed and developing countries. So, we hope that we, west and east, developed and developing countries and areas, could discuss an intensive co-operation programme in every aspect of the bird strike reduction. So that, such countries, as China, could take a part in the international co-operation, undertakes the tasks of bird strike reduction and can do all they could do.

Now, Second Symposium of Bird strikes to Aircraft of China (2nd SBSAC) are discussing with related authority. At that time, we will welcome you all faithfully to attend for making lectures, training related staff, advising and visiting our country.

5 Acknowledgements

Recent years, as a scientist engaged bird strike reduction in China, I have obtained help from many countries.

At first, on behalf of BSRG/BS&PC, China, I thank heartily to Dr James Forbes, Chairman of BSC-USA, Dr Richard Dobson, Program Chair, BSC-USA, who gave me a good opportunity to attend the five meeting and to make the presentation there August last year, as well as, to Dr Bruce MacKinnon, Chairman of BSC-Canada, let me know many experts above.

I owe it, also, to Dr Hans Dahl, BSCE retired Chairman, to Dr John Thorpe, present Chairman of BSCE, and to Dr Jochen Hill, Chairman of BSC-Germany, who have provided us much more information and valuable consultations.

It is worth, as well as, saying thanks to Mr Hans Blokpoel, Canadian Wildlife Service. His book 'Bird Hazards to Aircraft' (1976) let me see overall picture of bird strike reduction the world over, which was given by Professor Brian Chapman, Corpus Christi State University. Since then, according to the outline, my colleagues and I translated, edited into a Chinese manuscript 'Bird Collision with Aircraft and The Prevention'. At the moment, the manuscript is enlarging and up-dating from 17-22 Proceedings and Working Papers of BSCE, Minutes of 21-22 Meeting of BSC-Canada, some brochures and other articles.

Finally, I beg faithfully and thank sincerely all related authors for a permission of translating and citing your works, articles and brochures; of course, an adequate acknowledgment will be given.