The identification of bird remains as part of the bird strike reporting procedure.

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It has been recommended by the BSCE (London 1976) that bird remains which are found on the aircraft or the ground after a bird strike has occurred should be identified by ornithologists. This has been done in Denmark since 1974. A bird strike is usually reported by the pilot, whereas the birds are collected by the aerodrome personnel; they are sent to the ornithologist together with a few data on the incident. Thus there are in fact two reporting systems more or less independent of each other. This is probably also the case in other countries.

The Danish reports from 1977 on bird strikes and bird remains originating from bird strikes are compared in table 1. Only about 40% of the total number of recorded strikes is covered by both reporting systems. The best agreement is found in small airports, probably because of easy communication between air and ground personnel.

The incongruity between the results of the two systems stemmed in some cases from failure to report. In two cases the pilots claimed that they had no time to fill in the reporting form, and in two other cases no reports were made even if the aircrafts were

damaged (costs of repair 14,000 and 120,000 $, resp.). Some reports indicated that bird remains had been found, but for some unknown reason they were not sent in for identification. In a number of cases the circumstances of the bird strike have excluded one of the two reporting systems. For instance, the pilot may not have been able to observe the collision because of his strongly restricted view from the cockpit, but the strike was observed from the ground and the birds were found. Apparently this happens rather frequently. Or the pilot observed and reported a strike, but no bird remains could be found afterwards. It is often difficult to find remains on the aircraft, and if the strike takes place outside an aerodrome it is impossible to find them on the ground. 16 (16%) of the incidents listed in table 1 were not observed directly, but dead birds with collision marks were found on the runways. In some of these cases the birds may have been slung down onto the runway without actually hitting the aircraft, and consequently the pilot did not report a bird strike.

If the ICAO definition of a bird strike was used very strictly the number of recorded bird strikes would be rather small. Probably, in most countries strikes observed by pilots are included in the statistics. If also observations made from the ground and records of dead birds on the runway were included, the number of bird strikes would increase further. In the latter case the number of reported strikes in Denmark in 1977 would increase by nearly 100% (table 1). It may be that large differences in bird strike rates between different countries should be explained by fundamental differences in reporting procedures rather than by differences in efficiency.

In order to find the causes of a bird strike it is important to know the bird species involved. Table 2 clearly demonstrates

The increase of information which can be obtained by proper identification of the bird remains. However, this does not mean that information about the bird species in the pilot's report is of no importance, because in some cases it is the only information available.

The collection of all birds found dead after collisions or near-collisions with aircrafts provides a relatively large material of identified collision birds. The number of identified birds which refer to bird strikes reported by pilots is much smaller. Thus, in 1977 63 birds (from 33 incidents) were collected in the Copenhagen airport, and only 10 of these birds came from 7 incidents which had been reported by pilots. The material of identified collision birds from Copenhagen airport includes for the period 1974-77 17 species and 339 individuals. This local statistical information is in several respects useful in regard to the treatment of the bird strike problem in the airport. For instance, it quantifies the bird strike situation and demonstrates changes in the situation. Therefore it helps in identifying the problems and indicates whether the ethological and ecological measures undertaken against certain species have been successful. One example concerning the gulls is shown in table 3. Until now the gulls (especially Herring Gull and Black-headed Gull) are the birds which have received most of our attention. The decrease of gull strikes indicated by the table might be explained by an improved reporting of strikes with small bird species; this is, however, not the case in the Copenhagen airport.

The need for national and international bird strike statistics is obvious and is not questioned. But in some respects the local statistics, as indicated above, are more useful in the practical solution of the bird strike problems of the individual aerodromes and should therefore be as complete as possible. According to a

recommendation by the BSCE (London 1976) the aerodrome where the bird strike took place should be informed. In order to improve the local statistical information it is suggested that the aerodrome should receive not only a copy of the original report but also all further information on the incident, first of all information on the bird species and the costs.

Table 1. Number of bird strikes with civil aircrafts in Denmark 1977 as recorded by reports and by collection of bird remains.

Bird strikes recorded by	Copenhagen airport		Other airports, en route		Total	
collection of birds	26	48%	20	43%	46	45,5%
pilot reports	7	13%	14	30%	21	21%
	21	39%	13	28%	34	33,5%
Total	54		47		101	

Table 2. Comparison of reported bird species and identified bird remains. Bird strikes with civil aircrafts in Denmark 1977.

Information on bird species in reports		Identification of bird remains	Number of reports	
Correct species:	Lapwing	Lapwing	1	1
Correct group: (Genus or family)	Duck	Mallard	1	8
	Gull	Herring gull	2	
	Tern	Common tern	1	
	Gull	Common gull	3	
	Gull	Black-headed gull	1	
No information:	?	Partridge	1	7
	?	Common gull	1	
	?	Lapwing	3	
	?	Kestrel	1	
	?	Skylark	1	
Wrong species or group:	Gull	Oystercatcher	1	4
	Lapwing	Oystercatcher	1	
	Pigeon	House pigeon and Oystercatcher	1	
	Herring gull	Common gull	1	

Table 3. Relative frequency of gull strikes in Copenhagen airport.

	1974	1975	1976	1977
Number of birds killed by aircrafts	142	13	123	63
Number of gulls ---- " ----	130	11	84	18
Number of gulls in pCt.	92%	85%	68%	29%