Bird Strike Committee Proceedings

2005 Bird Strike Committee-USA/Canada 7th Annual Meeting, Vancouver, BC

University of Nebraska · Lincoln *Year* 2005

THE BIOLOGICAL PROTECTION OF THE CZECH AIR FORCE´S.

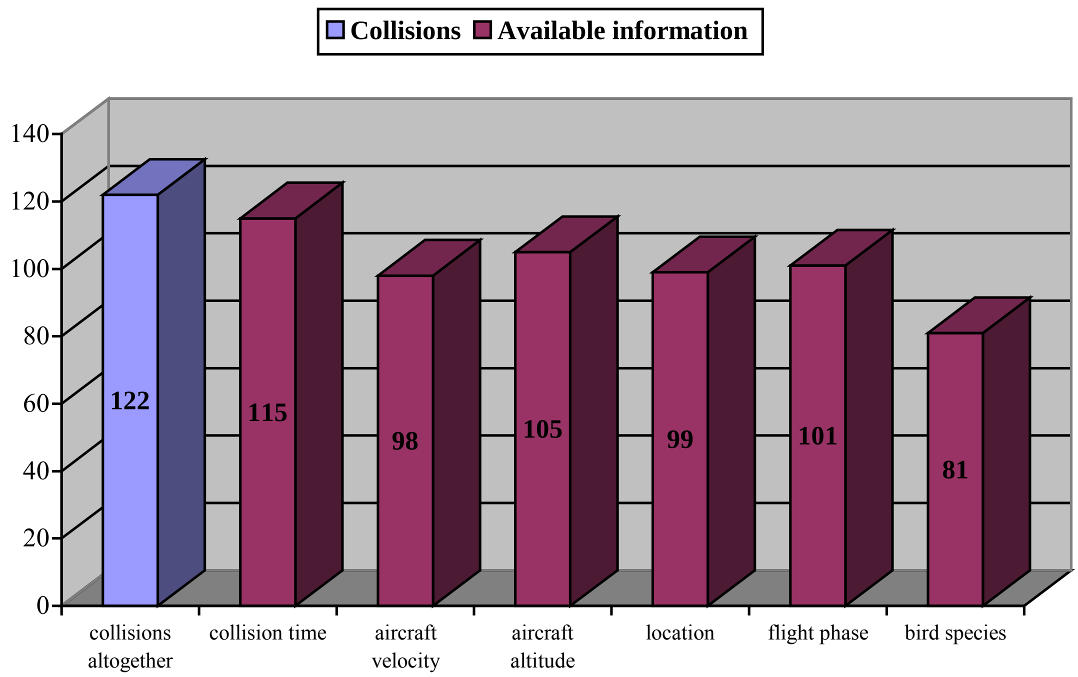
Milan ŽUFFA-KUNČO
Chief of the Veterinary Service, Headquarrters of Joint Forces,

THE BIOLOGICAL PROTECTION OF THE CZECH AIR FORCE´S.

This contribution compares all known collisions of the Czech Air Force's aircraft with birds, from 2000 to 2004. In the course of this period we have assayed 122 cases altogether. Unfortunately, it hasn't been possible to obtain all needed data due to whether objective or subjective reasons. We have got information:

- on the collision time in 115 cases (94% of all cases),
- on the velocity of aircraft by the collision in 98 cases (80% of all cases),
- on the altitude of aircraft by the collision in 105 cases (86% of all cases),
- on location of the collision in 99 cases (81% of all cases),
- on the flight phase by the collision in 101 cases (83 of all cases),
- on the bird species /identification/ in 81ases (66% of all cases).

A list of available data



Within following chapters we specify an occurrence of collisions with a view to the individual spheres of interest.

Chapter I. Birds participating in collisions - a list of individual species.

With regard to the species of birds and their part in collisions, black-headed gulls, pigeons and swallows (respectively martins) participate equally in the majority of all cases. Kestrels, starlings and swifts compose the next significant group of birds. Looking at the mentioned facts from the point of view of the individual bird species size, we can see that birds of big and middle size are represented approximately at the same level. Consequently, the size obviously isn't the most important factor that determines danger to the frequency of collisions. The big species participate at collisions sporadically according to their less numerousness, but on the other hand these collisions are more dangerous.

The dangerous bird species have some general features of their way of life. They are related to human residences and then to airbases at the same time whether for reason of food (kestrels, gulls) or to build there nests (swallows, martins, larks). These species often lead similar life in big social comities, colonies or flocks (gulls, starlings) which is profitable to use for active flushing. Considering the fact that a significant number of collisions happens within internal areas of airbases, we have to take above-mentioned factors for fundamental.

English Name	Latin Name	Number Of Cases
Swallow or Martin	*Hirundo rustica or Delicon urbica*	**15**
Black-headed gull	*Larus ridibundus*	**13**
Pigeon	*Columba livia f.domestica /palumbus, oenas/*	**12**
Kestrel	*Falco tinnunculus*	**6**
Starling	*Sturnus vulgaris*	**3**
Swift	*Apus apus*	**3**
Lark	*Alauda arvensis*	**3**
Buzzard	*Buteo buteo*	**3**
Rook	*Corvus frugilegus*	**3**
Horned owl	*Asio otus*	**3**
Turtle-dove	*Streptopelia turtur /decaocto/*	**2**
Teal	*Anas platyrhynchos*	**2**
Owls	*Strigiformes*	**2**
Spotted wood-pecker	*Dendrocopos major*	**2**
Bats	*Chiroptera*	**2**
Common quail	*Coturnix coturnix*	**1**
Partridge	*Perdix perdix*	**1**
Lapwing	*Vanellus vanellus*	**1**
Linnet	*Carduelis cannabina*	**1**
Finch	*Fringilla coelebs*	**1**
Wagtails	*Motacillidae*	**1**
Green-finch	*Chloris chloris*	**1**
No identification		**41**
$\sum$		**122**

Chapter II. Classification of collisions by months.

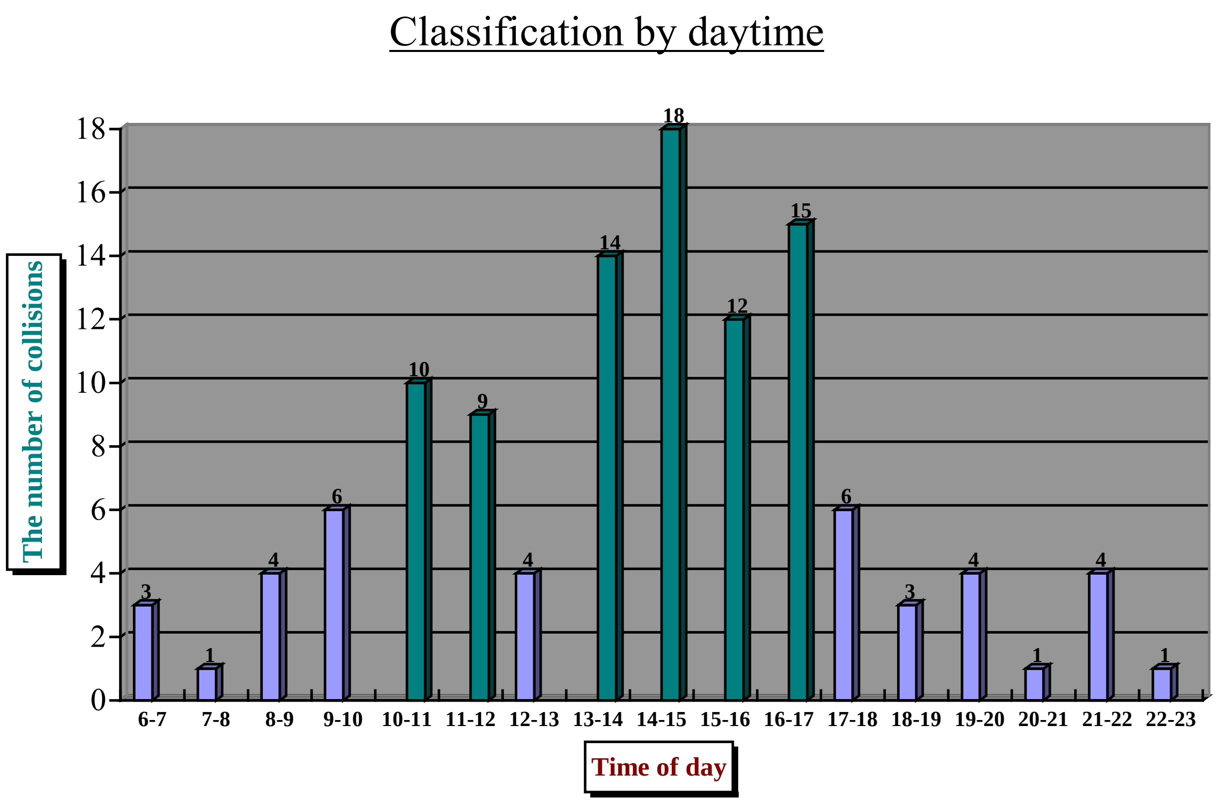
The most dangerous season with regard to the risk of collision is the period from May to September, when the biggest frequency of collisions appears in June and August. According to the months change at the same time the bird species that cause most cases.

From March to June pigeons and turtle-doves are significant species and from June to July gulls and swifts dominate at similar level, when the risk of collision with gulls persist to August. The dominant species of August are without a doubt swallows and martins. During September starlings and buzzards are the oftenest cause of collisions.

An "Average" Month Within The Period 1993-1999	**An Average Number Of Collisions Within An "Average" Month**
January	0,0
February	0,4
March	1,0
April	1,0
May	4,0
June	4,0
July	4,0
August	4,0
September	4,0
October	1, 0
November	0,4
December	0,2
	∑ 24

<u>Chapter III.</u> Classification of collisions by the daytime.

With regard to the daytime, we could evaluate 115 cases. From this number 99 cases (94% of all cases) occurred by daylight and 13 collisions (6% of all cases) happened in dark /it means later than 30 minutes after the sunset/. The following graph shows detailed classification of collisions in single hour intervals:

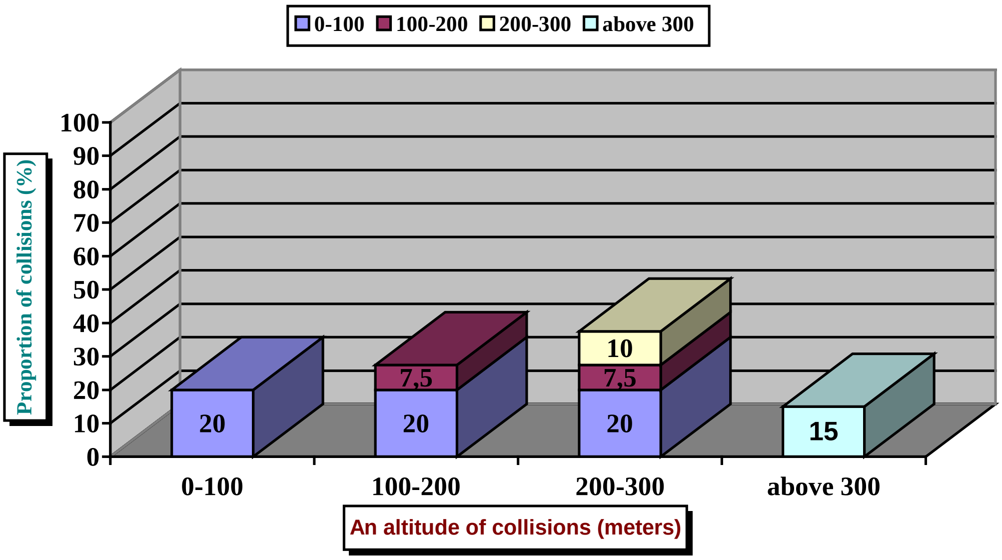


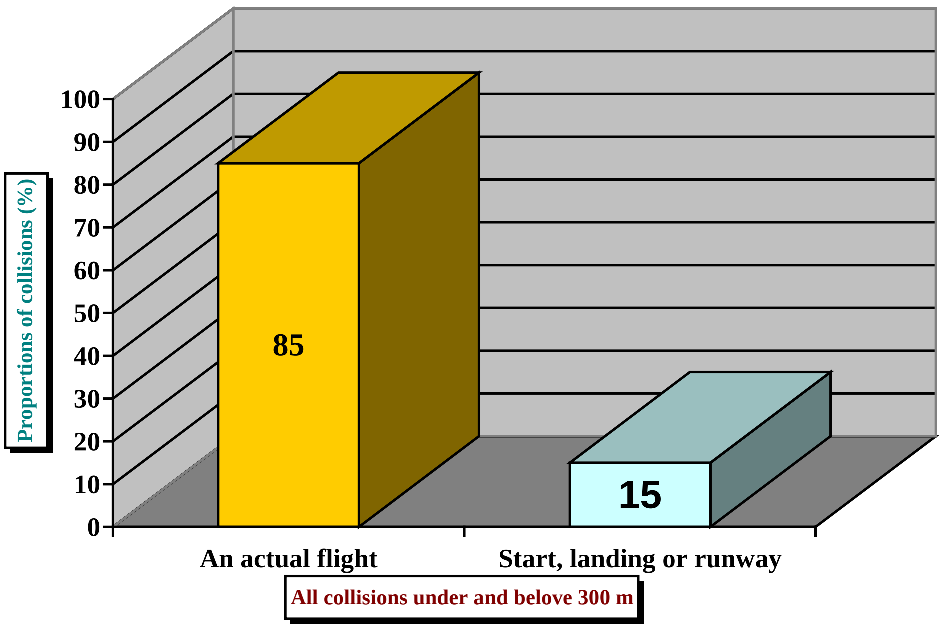
We can see that inside a day there exist two periods with a higher number of collisions. It is the time between 10-12 a.m. and then between 1-5 p.m. It is likely to discuss, whether these two imaginary peaks are caused by a higher activity of birds or by a more intensive air traffic during these intervals. Unfortunately, we have failed to obtain detailed information on the number of flown hours classified by the daytime. However, mentioned time intervals have to be regarded as the most hazardous periods.

Chapter IV. Classification of collisions by the altitude.

If we analyse altitudes, in which collisions occur, we can find out that 20% of collisions occurred under 100 meters, 27,5% under 200 meters and 37,5% under 300 meters. With regard to the fact that approximately one half of collisions under 300 meters (85% of all collisions) occurred during start, landing or right on runway, it is highly presumable that collisions in the altitude under 300 meters will continue hard to prevent. The second group of collisions above 300 meters (15% of all collisions) occurred by an actual flight and therefore it is recommended to plan missions with a view to reduce the movement of aircraft in this altitude to the lowest degree.

Classification by altitude

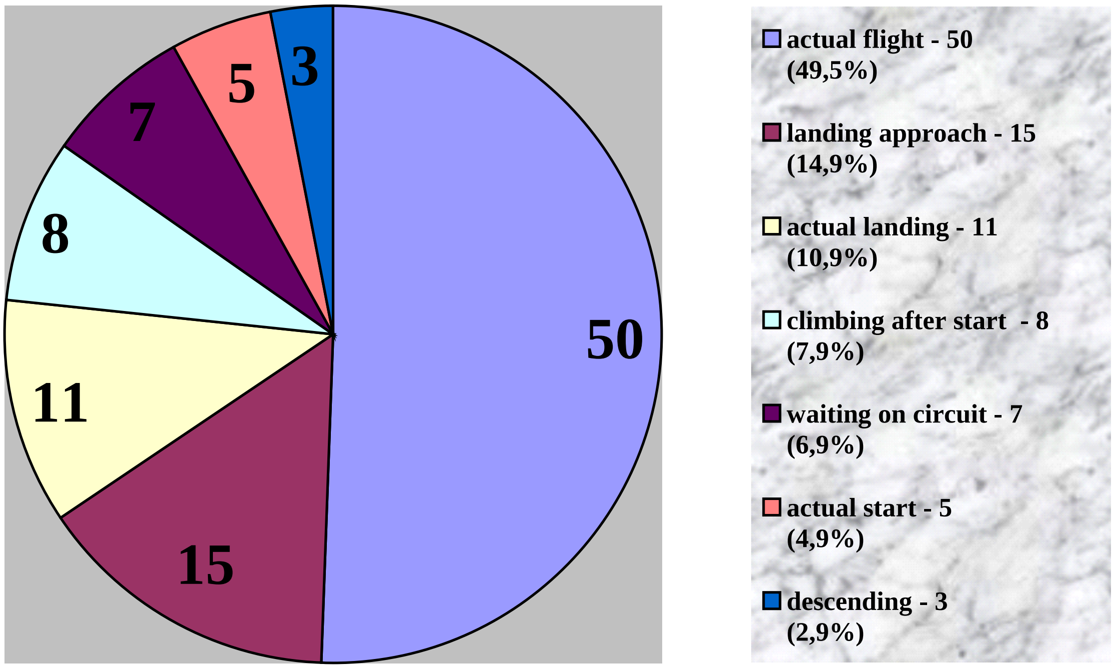




Chapter V. Classification of collisions by flight phases.

There is very interesting correlation between the number of collisions that occurred in the phase of the landing approach and an actual landing and the number of collisions that occurred in the phase of the start and climbing which is approximately 2:1. It means that at airbases all active measures to reduce an occurrence of birds has to be aimed above all at the areas of landing approach and an actual landing.

Classification by flight phase Σ = 101



Besides – with regard to location of collisions – we have verified the fact that a risk of collisions within lowland areas (elevation under 400 meters), along rivers and large water areas is higher than within highland areas.

Chapter VI. Classification of collisions by velocity and type of aircraft.

Despite the following graphs aren't direct usable for protection of airbases, it can be interesting to compare frequency of collisions by different planes and velocities. The first graph shows that maximum of collisions of military planes and helicopters occur at the speed of 200-300 km/h (124-186 mph). Other graphs can't be considered reliable, because there is not similar level of flown hours and these results are valid only for the set period and they haven't universal applicability.

Classification by velocity, classification by aircraft and by damane (planes, helicopters will by during the conference.

Chapter VII. Conclusion.

Mentioned facts and data have served for working of new measures that were implemented into the activities of biological protection stations in this range:

1. An activity of station members is aimed at the most dangerous species of birds. To reduce an occurrence of gulls, pigeons and turtle-doves we use active measures, in particular trained birds of pray and pyrotechnical methods. In the case of massive occurrence of swallows and martins we propose in advance limitation of air traffic. There has proved right to obstruct nesting on buildings (martins) or inside them (swallows) by different technical methods.
2. All measures that reduce an occurrence of birds at airbases are aimed above all at the most dangerous months from May to September and all pilots and crews are periodically advised about the time periods 10-12 a.m. and 1-5 p.m.
3. If it is possible the training isn't performed at altitudes under 300 meter and during preflight planning the fact that the risk of collisions rises along rivers and large water areas is taken into account.
4. All active measures against birds (biological and pyrotechnical) are concentrated into the areas of landing approach and an actual landing.
5. In the case of collision all available measures are taken to obtain credible data with the emphasis on providing biological material to identify bird species.
6. It is necessary to improve the coordination with civilian ornitology and falconry organizations.
7. Information should be based also on "Bird strike risk – warning procedures – Europe", that is generally used by NATO Armils in Europe.

Ltc. MVDr. Milan ŽUFFA-KUNČO

Chief of the Veterinary Service
of the Headquarrters of Joint Forces