Is it necessary to destroy birds on aerodromes?

by V.E. Jacoby

A.N.Severtzov Institute of Evolutionary Animal Morphology and Ecology. Academy of Sciences of the USSR. Moscow, USSR.

The problems of birds destruction on aerodromes appears usually after each serious bird strike. Some aerodrome specialists consider the bird destruction on aerodromes to be the fastest and most effective way of bird strikes prevention. Hundreds, thousands and even hundred thousands birds are known to be destroyed with the help of shooting, trapping, chemical substances in the area of aerodromes. But as far as I know - there is no reliable information about the reduction of birds number as a result of such destruction or trapping ended by longterm decrease of bird-strikes.

Destruction of 500 000 of 6 millions black birds (mostly starlings and cowbirds) with the help of chemical substances at winter night rests in the area of 2 airbases in USA didn't give any noticeable decrease of population of starlings - the basic bird dangerous for planes(ICBP, 1975). 340 million black birds are registered in USA on 100 biggest night rests only. Therefore the withdrawal of 0,5 million of birds from all population at country scall has rendered minimal effect to it. The destruction of 20.000 albatroses on US Airbase Midway didn't bring any reduction of birdstrikes number. Comparatively large number of black crows are trapped with the help of big cages at several BRD aerogromes (at Frankfurt/ Main airport up to 1000 in the year).But we have no proper information showing that this measure decreases the number of crows collisions with planes though the young birds who are most dangerous for planes according to our data (Jacoby, 1974) are being trapped in the first turn.

In my opinion the decrease of gulls (Larus argentatus) reproduction at colony near Copengagen airport as a result of chemical destruction of embryos in eggs, as well as pigeons sterilization can possibly decrease the birdstrikes peak in time of young birds appearance on aerodromes. Unselective shooting, trapping or destruction by chemical substances doesn't liquidate favourable factors attracting birds to this place (food, nesting, nightrest,

recreation). Therefore created vacuum is fulled quickly. Even complete destruction of any limited gulls colony doesn't guarantee the colonization of this place on next year by birds from neighbouring colonies. An analysis of birdstrikes and examination of bird's behaviour in the sight of a plane shows that adult local nesting or settled birds on aerodrome know the danger coming from a plane and don't fly across runway when taking off and landing of planes takes place. At present time such experienced birds are not repelled on the number of aerodromes even if the birds look for food nearby runway. This reletes in the first turn to local settled crows and to rooks nesting on aerodrome or nearby. The shooting or destruction of these birds by other methods is senseless, because they are not dangerous for planes. The shooting of part of these birds will end by the fact that survived birds will be afraid of a man with gun but not of a plane on aerodrome - what is more important. The plane on aerodrome becomes the powerfull repellent mean for local birds. Therefore under intense traffic and frequent landings and taking off - there are practically no birdstrikes. They are noted in cases of long disruptions in flights; early in the morning in time of the first take-off or first landing after night disruption. In other time of day - also after disruptions in flights and in darkness which makes difficult for birds to disclose plane and to fly-off in time.

The bird's learning of plane danger takes place in three situations: directly - birds see other birds knocked down by plane or birds are thrown away of plane by airwave and indirectly - unexperienced bird follows the experienced one which takes-off timely in a sight of a plane. When we destroy the experienced birds we reduce the possibility of indirect learning of other birds and increase the possibility of the arrival of unexperienced birds at their place and thereby the probability of birdstrikes.

I venture to show you one example of shooting of home-pigeons which used to fly to airport Kherson for several klm from city in the second half of summer. Owing the permission of hunting inspection sixty pigeons were shot by hunters in two days. Pigeon's arrival stopped for several days but then resumed again because the reason attracting birds to airport-ripened seed of birds buckwheat - was not eliminated. Birdstrikes resumed simul-

taneously with pigeon's arrival. This example of shooting of birds coming to airfield shows that this measure to prevent bird strikes is unsufficient. The exclusion of bird buckweat from airfield plant cover might be more effective measure in this situation.

At the same time there are small populations of home-pigeon (Columba livia) which are nesting at some Baltic airfields (Riga, Tallin). The birdstrikes with these local populations aren't noted here.

That is why there is no necessity to destroy them. Thus it is unexpediently to destroy adult local nesting birds for preventing the birdstrikes. The decrease of young birds number at airfield with the help of the destruction embryos in eggs, the sterilization, the selective shooting or catching birds from limited airfield's population must decrease the probability of bird-strikes theoretically. But it is not always possible to characterize the effectiveness of these measures in practice because populational vacuum becomes full quickly by birds from neighbour populations or by the increase of reproduction rate at the expense of repeated eggs laying and the increased eggs number in layings. Therefore the effect can be short or poore because the number of bird strikes isn't big at every airfield. I consider the shooting of young birds which are potentially dangerous for plane to be uneffective because the survived birds which saw the shooting learn to fear a man with gun or the car from which the shooting was done but not a plane. From another side the shooting of several birds in combination with recording of distress calls increases the effectiveness of their action considerably. The use of chemical substances for lessening of feed attraction of territory (herbicides, insecticides, rodenticides) or for direct scaring, exception from the grass cover of plants attracting birds; the drainage the swamps or reservoirs, elimination of dumps and other anthropogenic sources of food nearby airfields - all these measures prevent the landing of the local birds at processed places but don't prevent transit flight on low altitudes of migrating birds - the most dangerous for planes.

In such a way all measures of the creation of ecological unattractive situation prevent only the bird's take-off from runway or nearby it as well as possible birdstrike during run and

running start of planes along runway immediately before touching or after alienation. This is very important for young and migrating birds which appeared at airfield for the first time. So far as active scaring means are concerned - that is pyrotechnical and acoustical repellents - the distance of their action amounts by pyrotechnical measures (signal rocket) to 100-120 m en horizontal and up to 50 m at vertical and by acoustical repellents depending from loudspeaker's power and wind's speed and direction. Effective action zone of one loudspeaker amounts to 500 m. These means can be used not only for bird's scaring during their flight over runway line but at the plane glissade near airfield. The practice has shown that these measures are the most effective in concern of young local and migrating birds which conceive them for the first time. When such repellents are used frequently birds get accustomed to them if they are not strengthened by shooting. But the plane becomes a repellent for birds appearing many times at airfield within the area of runway and they learn to avoid the collision with planes.

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Consequently scaring measures are the effectivest for birds which are the most dangerous for plane. And on the contrary - when the action of an acoustic repellents is decreasing, the local birds become undangerous for planes. In connection with there is no necessity to strengthen by shooting the action of acoustic and other repellents. There is only sharp necessity to detect and scare the young local birds during their appearance at airfield.

All this can be referred also to migrating birds. Because of their first appearance at an airfield, poor orientation towards fast flying plane, lack of knowledge how to extrapolate tremendous (comparatively to their own) speed of plane, the absence of learning that runway is the most dangerous place at airfield - the birds flying low over an aerodrome strike most frequently with plane. That is why the migrating birds are the most dangerous for plane. The shooting of these birds will not give good result because it will not learn the survived birds to avoid running plane. Besides it is impossible to kill all migrating birds flying across an airfield.

It should be noted that at the Soviet Union airfields there are no guns for shooting or scaring the birds. The shooting at airfield is also prohibited. Therefore the most popular is birdscer-

ing by signal rocket of the same type as very pistol. The shooting of birds can be carried out only after hunter inspection's permission and with invitation of local hunters for this. As far as I know, the shooting of pigeons at airfield Kherson was the only one action of this kind. The passage of firecars with working sirens along runway at several airfields is often sufficient for bird scaring on runway and nearby.

Besides, the planes scare birds by themselves in time of intense flights. If we broadcast the distress call from firecar or flight manager car or shot from rocket - the local birds will acquire quickly the conditional reflex and the very sight of these cars is becoming a repellent for them.

In the human activity there appear situations analogous to bird behaviour on aerodrome. According to statistics the schoolchildren and young in driver's experience people get most often in such conflict situation with cars. When these people acquire the experience of extrapolation of direction and speed of their own and other cars - the number of the conflict situation decreases sharply.

We can afford to show another comparison in relation to the migrating birds. The probability of conflict situations between cars and people arriving to England from the countries with right-hand traffic movement is greater than with english people. The fast learning the visitant people to the walking and passage under new consitions is the most effective method for preventing the people's collision with cars. We can't do the same with birds. That's why the timely discovering and scaring of birds with all possible means in the period of the local nesting young birds appearance at airfield and in time when birds appear for the first time at aerodrome after post nesting migration as well as the local restriction of airfield population breeding - all this without shooting and other forms of direct birds distruction - are optimal forms for preventing the birdstrikes without the destruction of birds.

B. Avr