

**FIRST EXPERIENCE ON BIRD MOVEMENTS
OBTAINED BY RADAR MONITORING.**

Dr. Boris Murár

Military Veterinary Institute
PS - PPS 311, Baštova 6
040 01 Košice
Slovakia

Ing. Domaracky Vladimir

Slovak Airforce
Institute of Research and Testing
Rampova 7
041 21 Košice
Slovakia

SUMMARY

The paper describes the introduction of radar ornithology in Slovakia. First results with using of surveillance radar (RI, - 4AS/7,5 cm wavelength) in watching the migration birds flogs.

KEY WORDS

Radar, migration, bird detection, military aviation, surveillance radar

The first experimental bird monitoring by radar was accomplished in Czechoslovakia and took place in 1980 (Beklova 1980). The aim of this monitoring was to verify the USSR method of bird migration monitoring by radar in the environment of Czechoslovakia conditions, to find the possibilities of birds during migration and the most suitable type of radar.

Pigeons, let out in different altitudes and distances, were observed by the means of landing and surveillance radar. Using landing radar, wavelength of 3 centimetres, they were possible to be seen to the distance of 4 kilometres. With surveillance radar operating on wavelength of 10 centimetres the pigeons were not observed at all. After the 22 BSCE meeting held in Vienna we started to search the possibilities of bird monitoring over the territory of the Slovak Republic.

Within the territory of the Slovak Republic two types of radar are employed:

1. Radar secure civil aviation transport
2. Radar secure military aviation service
3. Radar of Air Defence

The about mentioned classification of radar indicates that the radar parameters of each type are adjusted to their mission. This was the background for making a decision which type of radar would be most suitable for positioning of flying birds objects.

Professor Dr. Bruderer * was asked to assist us in the decision making process matter during his one week working visit in October 1995. We came to the common conclusion that the best way is to use the surveillance radar RL - 4AS/ 7,5 cm. wavelength which seems to be suitable for bird observation. According to his recommendation we have started observing military airports and we obtained first results.

In period from 14 to 24 April 1998 we have borrowed the mobile radar RL - 4AS, which was located near the significant ornithology locality Senne rybniky within the Lowlands of Eastern Slovakia.

(Deputy chairman of Radar Working Group in International Bird Strike Committee-Swiss Ornithology Institute)

The migrating water birds look for this locality in order to relax. The aim of the watching was confrontation of visual watching migration with found reflection of birds objects on screens of radar. We took the photos of results of the made observations.

During the monitoring we found need to elaborate methods of exact localisation and orientation for visual watchers in field, because of reciprocal exaltation moving objects with radar working place. We have come to the conclusion that it is necessary to elaborate method of investigation of undesirable echo sources have been reflected in the target area.

Determinate results indicate, that radar RL - 4AS is suitable for watching birds objects mainly for the larger migration flogs.

At the present time the integrate system of control air service is being built above the territory of the Slovak Republic. In framework of this process the military and civil navigation of air service have been connected. A part of this system is the common information network, which enables the multiradar information elaboration from each radar equipment from first and second group.

The mentioned reality are making the basic assumption for building up the system, which will inform the aircrew about the birds movements over the territory of the Slovak Republic and about the case of connection on national network in other area, too.

In this case it is necessary to take attention not only on legislative and organise changes but on to following problems, too.

- continue with solving the methods of detection of the birds object with radar that determinate the movements and its basic characteristic
- make the method of establishing and dispatch of information to the system of scarring in present archive obtained information.

NOTE

The working team would like to thank the chief of Air Force and Air Defence of general staff of Army of the Slovak Republic general lieutenant Ing. Stefan Gombik for arranging good conditions and for enabling investigation for mentioned problematic.

LITERATURE

BEKLOVÁ, M., 1980: Zpráva o průběhu pokusu experimentálního sledování ptaku pomocí radiolokátoru a odplásování ptaku bioakustickým způsobem, Zpráva pro FMNO. Dokumentace kukolu SPZV 6. 1-66-020-101-0017 a VI-1-616. 1-6.