

Robin, the new bird extractor on relaf long range surveillance radar

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ROBIN, THE NEW BIRD EXTRACTOR ON RNLAf
LONG RANGE SURVEILLANCE RADAR

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Summary

ROBIN stands for Radar Observation of Bird Intensity and Notification. It is the acronym for the successor of KIEVIT, the Dutch electronic counting system at work since 1978. It consists of a computer configuration with hardware and software modules. Using pattern analysis algorithms, it processes digitized raw video into synthetic bird video. Functions are arranged in software as much as possible, to keep open the option of future improvements. The system is designed to serve as an operational instrument as well as research tool. More details will be included in the booklet "The Application of Radar for Bird Strike Reduction" to be issued during the second half of 1988.

4.2. Work done during the meeting

- The following papers nicely combined the technical and biological aspects of radar ornithology, going from large to small scale:
 - a) R.P. Larkin illustrated the fascinating capacities of pulsed doppler weather radars for bird detection in combination with modern computer technology. Dedicated software is presently in preparation for the Next Generation Weather Radars (NEXRAD) for the USA.
 - b) L.S. Burma showed a series of slides explaining the echo pattern analysis within the new Dutch bird extractor ROBIN, becoming operational this year.
 - c) The small scale observations by tracking radar in Switzerland (R. Bruderer) have now reached a stage where bird tracks and bird numbers can be directly fed to a personal computer.

The second sequence of papers switched to more biological (field) work:

- d) E. Larsson told about Swedish expeditions to Greenland where field observers and a big radar station revealed spectacular flights across the inland ice towards WNW and ESE.
- e) E. Bruderer reported on radar observations at six sites in southern Germany and Switzerland. Rather constant loadings resulted in southward deviating tracks under the influence of the frequent westerly winds in southern Germany, while in the Swiss lowlands the birds flew WSW.
- f) Nocturnal observation of migrating birds up to two kilometers by means of a new technology, thermal imaging, demonstrated surprisingly new possibilities for wildlife studies. This heat camera was used by L.S. Burma in combination with a tracking radar.

- Report from other countries

- g) Germany reported the continued use of polaroid photos. A video tape nicely illustrated the additional filming system on some airport radars.
- h) The BOSS system in Belgium is still working as reported in Copenhagen enlarging their reference data set.

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- i) USA: After a serious multiple bird strike with a Galaxy at Dover Air Force Base the USAF evaluated several radar types in order to monitor permanently bird movements. A GPN 20 fan beam radar was selected.
- j) Denmark: the FAUST system is still in operation at three radar stations.
- k) Norway continued to use polaroid photos at three ATC radars.
- l) Finland: Visual and radar observation has been used operationally in cooperation with Estonia.
- m) Israel: Realtime warnings to pilots are given on the basis of radar data from Ben Gurion airport. Altitudes and routes of soaring birds are studied by means of a motor glider.

- Special discussion on a dedicated bird radar

A number of specialized working group members formulated design criteria for a small pencilbeam radar (side view range for a gull (G 100 cm²): 10 km) fully dedicated to bird detection and quantification in three dimensions. The need for such an automatically operating instrument has been stated already in the early seventies, but ideas were divergent. Now, the agreement is surprisingly full. The bird radar should serve, in the first place, at locations with a clear bird problem such as certain airports and shooting ranges. Combined into networks they also could monitor large scale bird migration. Finally, they can help to calibrate the bird counting systems at existing larger radars. The booklet "The Application of radar for bird strike reduction" will contain a chapter on this important agreement.

4. RECOMMENDATIONS

- a) International cooperation with respect to further development of electronic assessment of bird hazards by radar should be intensified.
- b) When quantifying bird movements, emphasis should be put on the proper inclusion of bird numbers at low level.
- c) The industry should be approached to develop, commercially, a small bird radar according to ESSE specifications.

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