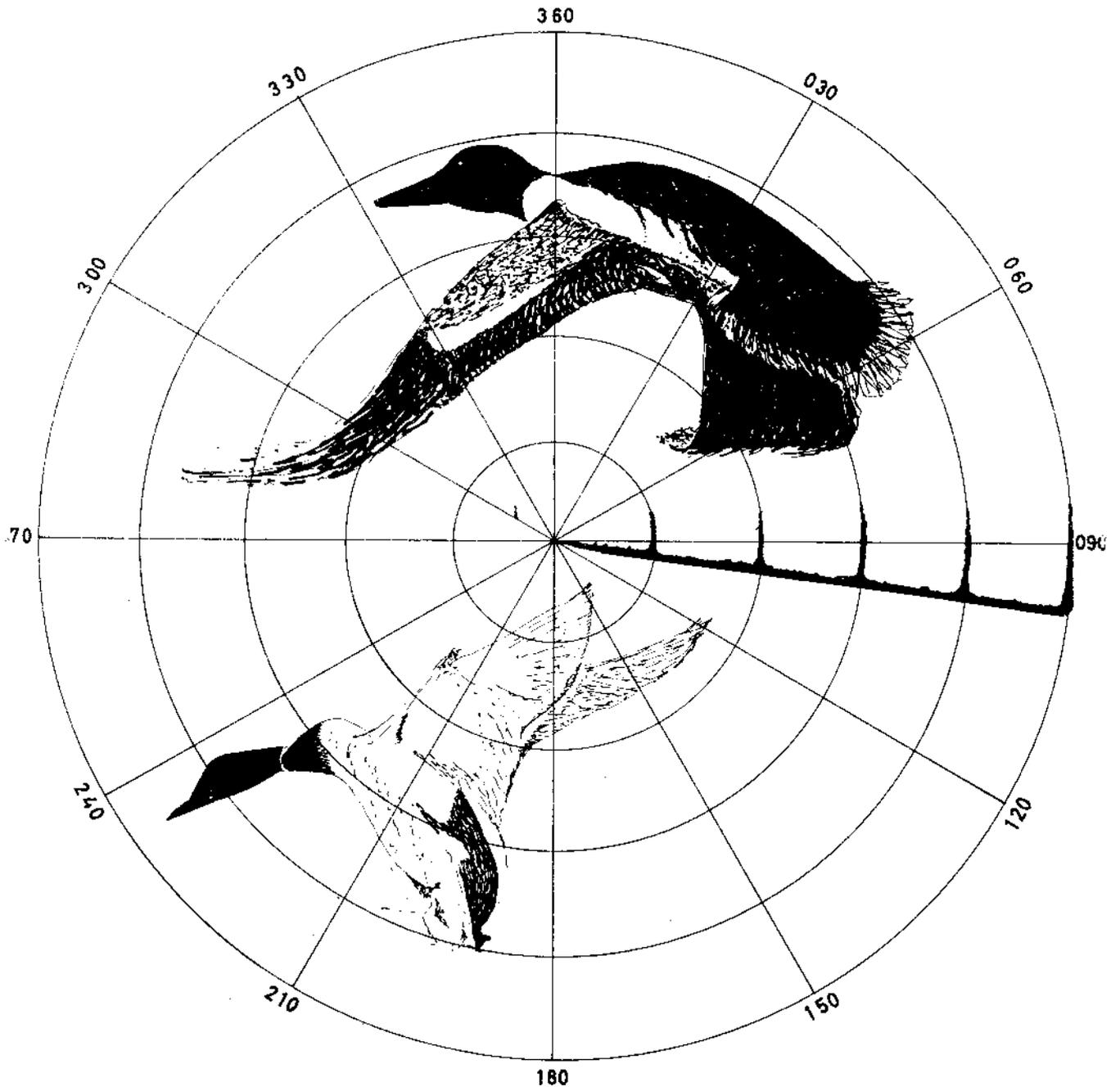


MAY 1973

8 - CONFERENCES RELATED TO W.G. RADAR

- 8- 1. "Highlight of the NATO-Gibraltar Bird Migration Radar Study", by Mr. E.W. Houghton, UK.
- 8- 2. Electronic Counting of Birds, by Lt P. Clausen, Denmark.

# Bird Radar Working Group



MAY 1973

"HIGHLIGHTS OF THE NATO-GIBRALTAR BIRD MIGRATION RADAR STUDY "

by E W Houghton, The Royal Radar Establishment, U. K.

Summary

A Royal Air Force - Royal Radar Establishment team have been taking part in a bird migration radar study with Belgium, Danmark, France, Germany, Holland, Norway, Sweden; Switzerland and the Canadian Armed Forces in Europe. This exercise, coordinated by the Bird Strike Committee Europe, is aimed at reducing bird strikes on aircraft. The study has had support and funds from the Scientific Council of Nato.

A chain of radars, visual observation posts and meteorological stations from Scandinavia to the Mediterranean have been employed to watch the migration of birds. Migration to be seen from Gibraltar are narrow-front movements of raptors (e.g; eagles, vultures, buzzards, kites, harriers and hawks) and soaring birds, and broad-front movements of passerines (e.g; thrushes, larks, pipits and wagtails) and waterfowl across the Mediterranean, and seabird migrations in and out of the Mediterranean.

Visual observations at Gibraltar have been made before and throughout the study by a team of ornithologists lead by Ernest Garcia. Visual observations, although limited in range coverage, provide valuable evidence of species involved and often a record of birds flying below the radar beam.

The radars operated by the Royal Air Force at Gibraltar are well-sited to observe movements over the Iberian Peninsula, across the Straits and over Morocco. In Spring, they enable "early warning" to be given of the migration to Europe.

An S-band air traffic control radar provides early warning and all-round surveillance of bird movements. A twenty-four hour, 16mm cine-film, lapse-time record was made of the PPI for assessment of echo intensities and the tracks of bird movements every day during Spring and Autumn.

A high-resolution X-band tracking radar was used to obtain flight and radar echo characteristics of single birds or of single-echo dominated groups of birds.

Positional and echo data, together with time-code and voice description of each tracking radar engagement were recorded on 7-track magnetic tape for subsequent analysis.

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Although the attempt to correlate bird movements and weather information is the chief feature of this cooperative project, it will be some time before each country has evaluated their analysis results. These regional conclusions must then be assembled by the BSCE working group and coordinated in such a way that they try and explain some riddles of pan-european migration.

There are, however, many results of the Gibraltar study that can be used almost immediately for improving air safety in the region, and which, when assembled with results from other European countries, could help pan-european air safety.

Some highlights of the preliminary analysis of results from Gibraltar will be described and illustrated with slides and a short film.