BIRDTAM and Radar Bird Detection

Air Forces needs and requirements
Operational impact

Serge Sorbi (BAF)
BAF RADAR BIRD OBSERVATION
HISTORY

• **1965 : Polaroïd pictures**
  – Successive pictures of the 2-D radar screen.
  – Visual interpretation of the pictures.

• **1984 : Bird Observation System Semmerzake (BOSS)**
  – 3-D radar, extraction of tracks which are not aircraft

**Tough radar technology was used, the measurements were not accurate at all because no software was dedicated to bird detection.**
BAF RADAR BIRD OBSERVATION

HISTORY

• 2006 : Radar Observation of Bird Intensity (ROBIN)

For the first time, a system really dedicated to bird detection

• 2007 : Partner of European Space Agency “FlySafe project”

Booster for international coordination and problem approach
BIRDTAM at BAF before « ESA FlySafe project »

- Poor bird detection spatial coverage.
  - only MPR Glons radar for Belgium

ROBIN detect to 150 km

Most of the birds detected to 80 km
BIRDTAM at BAF before « ESA FlySafe project »

- No accurate altitude information.
  - just within the limits of beam 1 or 2
  - « From ground to 6000 ft »
BIRDTAM at BAF before « ESA FlySafe project »

- No automatic generation of the BIRDTAM
  - human dependant, human interpretation, human resources

- Manned by 3 ornithologists
- During BAF normal flying hours and aircraft night flight, during migration period.
BIRDTAM at BAF before « ESA FlySafe project »

- Gaps in data availability.
  - Regular radar maintenance or communication problems leading to data incoming breakage.
    => no other source of information.

- Ornithological knowledge
- Internet info.
BIRDTAM at BAF before « ESA FlySafe project »

• No standardization and coordination between BE, NL and GE.
  – No standardization in the BIRDTAM calculation.
  – Different BIRDTAM validity periods.
  – Different ways of broadcasting BIRDTAM to the pilots.
  – Different flying restrictions for a same BIRDTAM.
BIRDTAM at BAF before « ESA FlySafe project »

• Trans-border broadcasting problems
  – For a common border georef square, different BIRDTAM calculated by different countries.
BIRDTAM at BAF before « ESA FlySafe project »

- Trans-border broadcasting problems
  - European BIRDTAM broadcasting system sometimes modified the national BIRDTAM level or validity period introducing confusion to the pilots.
Phasing out of the MPR radar

- The after MPR « life »...

  - Untill now main data sources are MPR radar of Glons (BE), Wier (NL) and Millingen (NL).

  - Millingen and Glons are closing in the coming years, so what after?

Millingen in 2013

Glons in 2015
Birdstrike prevention « en route »

• What do pilots need?

  – **Nowcast**: accurate real time information about high bird density
    » Location (georef square)
    » Altitude (accurate layer)
    » Validity period of the warning (regular accurate update)

  – **Forecast**: accurate prediction of the coming hours Bird Intensity
    » For better flying operation planning.
Birdstrike prevention « en route »

• What do pilots need?
  – Clear and effective broadcasting
    » For Belgium’s area but also for neighbouring countries

PILOTS NEED FRIENDLY READY MADE INFORMATION, NO INTERPRETATION, NO DECISION, JUST APPLY THE RULES!
NOWCAST - BIRDTAM calculation

- 3 to 5 minutes after getting the radar picture...

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<th>NOTAM REPORT: 080423/0656</th>
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<td>B) 0804230608 C) 0804230745</td>
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<td>G) 4500 FT AGL)</td>
<td>« Bird Intensity » and georef square location</td>
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<td>« Altitude layer »</td>
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</table>
NOWCAST - BIRDTAM broadcast

AFTN message

MOSA : meteorological support
Available to every Squadron flight
Navigation room

+ by E-mail as back up mean
NOWCAST - BIRDTAM broadcast

- **FlySafe Product**
- **BIRDTAM Office**
- **BIRDTAMs**
  - **AFTN + EMail**
  - **MOSA**
  - **AirBaseFlyingGroup**
  - **FlyingSquadron**
- **European BIRDTAM Broadcasting system (TrabenTrarbach)**
- **FAX**
Impact on flying operations

- Official BAF guidelines
  - « As soon as a BIRDTAM with intensity ≥ 5 is issued, the missions in the concerned area and in the layer between 1000 ft above the upper given altitude and 1000 ft below the lower given altitude have to be cancelled »
  - « When the bird intensity is 8, all normal flying training is cancelled. Airborne missions flying outside the affected blocks, may continue to completion. Full stop landings only are permitted »
Impact on flying operations 2007

<table>
<thead>
<tr>
<th>BIRDTAM</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>% of the year nights</th>
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<tr>
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<td>26</td>
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<td>52</td>
<td>73</td>
<td>60</td>
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<tr>
<td>Number of days</td>
<td>17</td>
<td>26</td>
<td>22</td>
<td>4</td>
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AFFECTED FLYING OPERATIONS

<table>
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<th>BIRDTAM</th>
<th>≥ 5</th>
<th>≥ 7</th>
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<tbody>
<tr>
<td>NIGHTS (n=70)</td>
<td>11</td>
<td>9</td>
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<tr>
<td>DAYS</td>
<td>50</td>
<td>5</td>
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</table>
Need of BIRDTAM FORECAST

- No FORECAST capability before FlySafe Project.
  - No possibility to adapt flight planning and flying operations to coming Bird Intensities

⇒ Flights cancelled, flying program disturbed, waste of money and waste of human resources.
Impact of bird migration on F-16 night flight

- 2 F-16 airbases open
- 1 diversion airbase open

05.30 pm
End of daily flying window

09.30 pm
Mission preparation

09.45 pm
Aircraft take-off

10.00 pm
BIRDTAM

10.10 pm
Night Flight cancelled

STOP
Impact of bird migration on F-16 night flight

Stand-by for nothing!

Flight planning disturbed, time & money lost
Need of BIRDTAM FORECAST

- No possibility to plan increasing of « aerodrome » bird control activities after heavy nightly bird migration.

  • With a forecast of the migration intensity, you know that at the end of the night you will have to face with more birds on your aerodrome, so you can increase or adapt your activities or your number of BCU teams.
And finally, we wish all the best to our Belgian Air Force colleague who is joining today his space cottage да́ча!