

 **FORSVARET**
Royal Norwegian Air Force
Inspectorate of Flight safety

 

Birdstrikes in maritime operations, Royal Norwegian Air Force

Inspectorate of Flight Safety
Major Oerjan Funderud

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Background

- Maritime operations
 - P-3 Orion (Coast Guard, ASW ++)
 - Helicopters (Coast Guard & SAR)

  

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Mission First, Safety Always

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Abbreviations used in this brief:

- BS = birdstrike(s)
- RNoAF = Royal Norwegian Air Force
- a/c = aircraft
- CG Coast Guard

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The question:

- *Where* do we encounter birdstrikes, *why* do we fly there, *how* does birdstrikes inflict on our operations, and *what* can we do to minimize the risk of birdstrikes?



The study

- 11 years
01.01.2000 – 31.12.2010
- All registered birdstrikes of RNoAF
- Categorization of parameters
 - Altitude, airspeed, phase of flight ect
- Cost (the military problem)



Cost

- Military organization vs civilian airlines
- How to define cost?



Category of damage

- | | | | |
|---------------|---|---|-----------------------|
| Damage | } | 1. No damage. No cancellations | Serious Damage |
| | | 2. Small damage or major inspection required. 1 flying period cancelled (4 hrs) | |
| | | 3. 2 flying periods cancelled (1 working day) | |
| | | 4. 1-3 working days | |
| | | 5. >3 working days | |
| | | 6. Mishap Class B (major component destroyed) | |
| | | 7. Mishap class A (casualties / aircraft destroyed) | |



Findings



RNoAF

All aircraft



RNoAF in general

- 11 years
- 240 birdstrikes
- ~24 BS annually
- ~ 2 BS monthly



Severity of BS (all of RNoAF)

- Mishap (class A & B) ~2%
- BS with high potential of damage: ~6%
- Insignificant BS: ~92%





Aircraft categories vs damage

- 1 of 5 BS causes damage
- 1 of 10 BS causes serious damage
- Multiengine propeller a/c take a lot of damage!
- RNoAF Helicopters have not been grounded more than 1 flying period (4 hrs) because of BS.



Phase of flight

- Phase A (Approach, Landing & Takeoffs)
- Phase E (Enroute)



Phase of flight

- Phase A (Approach, Landing & Takeoffs)
 - Share of BS total 56%
 - Share of BS with damage 10%
 - Share of BS with serious damage 3%
- Phase E (Enroute)
 - Share of BS total 43%
 - Share of BS with damage 35%
 - Share of BS with serious damage 24%



BS vs altitudes

- RNoAF total:
 - 83% of all BS occurs at or below 500' AGL
 - 94% of all BS occurs at or below 1000' AGL
- RNoAF total ENROUTE
 - 76% of all BS occurs at or below 500' AGL
 - 92% of all BS occurs at or below 1000' AGL



Maritime operations

with focus on fixed wing aircraft



Multiengined propeller aircraft

- We just heard that multiengine propeller a/c take a lot of damage...
- Why?





Multiengine propeller aircraft

- Share of BS causing damage:
- C-130:
 - Damage 10%
 - Serious damage 5%
- P-3:
 - Damage 48%
 - Serious damage 28%



P-3 vs damage and phase of flight

- Approach, takeoff and landing phase:
 - Damage 24%
 - Serious damage 5%
- **Enroute phase:**
 - **Damage 70%**
 - **Serious damage 52%**





Potential for risk reduction

- If we want to **reduce the number of birdstrikes**, we need to focus on our airfields and the approach, landing and takeoff phase.
- If we want to **reduce the risk** concerning birdstrikes, we need to focus on the enroute phase of flight
- Even more so, below 1000' AGL



A new mindset

- Example from the real world
- **New technology**
- From 200' AGL to 1000' AGL
- Speed limit below 2000' AGL
- Landing light on





Coast Guard missions, before & after

- Before July 2005:
 - Share of Enroute BS on CG msn 69%
 - BS rate on CG msn per 1000 hrs 0,7
- After July 2005:
 - Share of Enroute BS on CG msn 40%
 - BS rate on CG msn per 1000 hrs 0,3



Conclusion



RNoAF military maritime operations

- Helicopters are damaged in a small degree by birdstrikes
- Fixed wing aircraft take considerable damage from BS offshore
- The biggest potential for risk reduction in military maritime operations is in the enroute phase of flight
- Time below 1000' AGL should be minimized



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The end...?

