INTERNATIONAL BIRD STRIKE COMMITTEE **IBSC26/WP-AV3**
Warsaw, 5-9 May 2003

BIRD HAZARD CREATED BY WETLANDS NEAR AERODROMES

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Abstract

Many waterfowl combine large size with flocking habit and involvement in multiple strikes. Some species are as active at night as during the day, making movements difficult or impossible to detect and predict. Wetland developments and populations of the most hazardous species are increasing. Where waterfowl populations are high, States and aerodromes are at higher risk.

Because waterfowl are not primarily attracted by airfields themselves, the most practical way of minimising strikes is to control the development of wetlands near aerodromes. However, wetland conservation and development is popular with the public and supported by national and international legislation and conventions. With wetlands, there are greater practical control problems than for other bird-attracting developments: hazard assessment is difficult, imprecise and controversial; mitigation measures are at best partially effective; and the implementation of mitigation measures is difficult to monitor, making them probably unenforceable.

Practical means of overcoming these difficulties are urgently required and, in the UK, several strategies including legislation, studies of waterfowl behaviour and improved deterrence measures are under consideration.

Key words: waterfowl, wetlands, hazard management, risk assessment, planning.

Introduction

Wetlands present different and greater problems than other bird-attracting developments in terms of:-

- Hazard assessment
- Mitigation measures
- Enforcement

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Waterfowl hazard

Waterfowl are particularly hazardous because

- **They are large or very large**
- **Many species fly in close formations**
- **Populations are based on wetlands and most movements are between wetlands or along watercourses**
- **Many are active at night and movements are difficult to detect or predict**
- **Control and avoidance measures at the aerodrome are commonly not possible**

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UK waterfowl birdstrikes

All increasing from the mid 1990s

Mallard (1080g)	38%
Grey heron (1500g)	25%
Canada Goose (3600g)	16%
Cormorant (2430g)	5%

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Assessing Waterfowl Populations

Species, numbers & movements are unpredictable, variable and related to characteristics of the wetland and to populations on nearby wetlands in a complex manner:-

- Eutrophic wetlands provide more food for more species
- Isolation from disturbance provides security for feeding, nesting & roosting
- Large open water bodies allow communal roosting

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Assessing Waterfowl Movements – isolated wetland

Roost on water - feed elsewhere:-

GEESE, SWANS, DUCKS	5-20km?

Feed on water – nest and roost elsewhere:-

GREY HERON	more than 20km? Relationship to heronries?

Other movements:-

TERRITORIAL DISPUTES	unknown
MATING CHASES	unknown: frequent & persistent (mallard)
HUMAN DISTURBANCE	unknown: prolonged for ducks & geese

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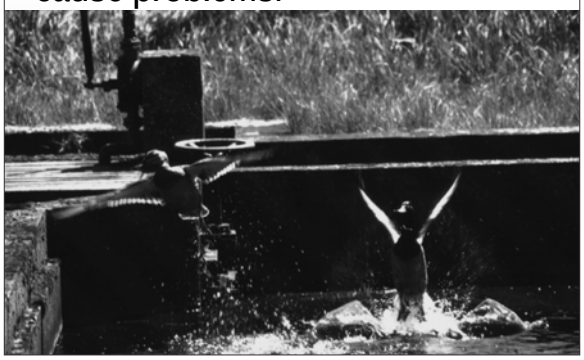
Even the smallest ponds can cause problems.



Assessing Waterfowl Movements – multiple wetlands

More wetlands increase waterfowl movements:-

- Movements *between* waters and along watercourses for the same reasons as movements from and back to isolated wetlands
- Waterfowl may use *different* waters for feeding, roosting, etc
- The number of possible flightpaths between waters is

$$F = n(n-1)$$

F = no of flightpaths (including reciprocals) and n = no of waters.

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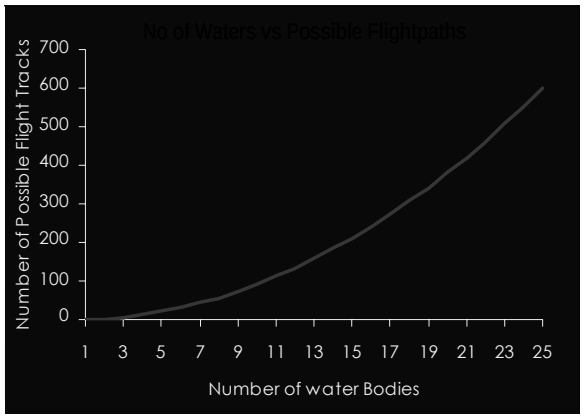

Hazard mitigation

Physical exclusion

- Only netting or similar physical exclosures are effective
- Netting is only practical over relatively small waters

Habitat modification

- Habitat management (deep, steep sides, simple shape, etc) is only partially effective and, in some circumstances, not even that.

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Hideous but effective…

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Active bird control

- Waterfowl use water as a refuge
- There are no proven scarers for waterfowl
- Waterfowl return to ponds even where they are regularly shot

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Enforcement

Impractical is unenforceable

Many waterfowl are active at night

No efficient night detection aids or dispersal techniques

More failing systems = more confusion

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Conclusions (1)

Waterfowl strikes are infrequent but carry a high risk

Aerodromes with extensive and/or increasing wetlands nearby suffer increasing strikes with waterfowl

Hazard assessment is difficult, imprecise and controversial

Mitigation measures, other than physical exclusion, are at best partially effective

Mitigation measures are probably in many cases unenforceable

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Conclusions (2)

In the absence of good scientific knowledge about waterfowl movements, we have no robust case for objection to plans to create wetlands around aerodromes, but we cannot discount possible risks either.

With populations of most species increasing, and new species arriving, how do we predict future hazards?

Solution? Object to everything to be safe, or allow an application based on "best guess" assessments?

Whatever course of action we take, we must be able to show consistency

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Conclusions (3)

If we get it wrong, the consequences will be with us "forever." Serious mistakes have already been made, and airports and airlines are paying the price.

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