

ECOLOGICAL DISTURBANCE AND BIRD HAZARD CONTROL

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Summary

An airport's long grass policy can be temporarily and locally reversed by man - made and natural ecological disturbances. This report examines the events and processes which have a significant negative impact on bird hazard control.

Key words: Habitat Modification, Long grass, Hazard Management, Landscapes

1. Introduction

In the natural environment an area that has been cleared of its vegetation subsequently undergoes what is known as ecological succession. In a predictable sequence of steps the land will be recolonised by a series of distinctive plant communities. These are referred to as seral stages. The successional process will ultimately result in the climax stage which, in temperate climates, is a deciduous woodland.

The grassland seral stage is an early successional phase and habitat management at airports for bird hazard control through the maintenance of a long grass policy seeks to arrest the process of succession in order to deter birds (CAA 1990). This technique has been very effective in reducing bird strikes in Ireland (e.g. Kelly 1990). Occasionally the long grass seral stage may be disrupted either due to extreme meteorological events or as result of infrastructural developments. Both forms of disruption are examples of ecological disturbance which is defined by White and Pickett (1985) as 'any relatively discrete event in time that disrupts ecosystem, community or population structure and changes resources, substrate availability or the physical environment'. For example, exceptionally heavy rainfall such as occurred on the east coast of Ireland in June 1993 may, albeit temporarily, convert an area of long grass into a wet meadow and attract water birds. Anon. (1995) cites a spectacular example of the effects of a summer drought on grasslands at Amsterdam Airport Schipol, which appears have resulted in a 75% increase in the number of birds frequenting the airfield over the following winter.

Infrastructural developments may be a severe negative impact on the long grass environment, resulting in a relatively sudden switch from an area that is effectively protected against birds, to one that is a major attractant of hazardous species such as gulls.

In this brief paper some steps to mitigate the negative impact of infrastructural development on bird hazard control are listed. These developments, such as runway and taxiway construction, apron extensions etc., will result in a predictable sequence of ecological disturbances whose impact can be reduced with proper planning and consultation. Initially, there will be a nudation where the grassland is removed with the topsoil, and this is an immediate attractant of gulls. Thereafter the site will be a large area of exposed soil which, over the winter months, may result in significant areas of ponding. This in turn may encourage gatherings of Lapwing (*Vanellus vanellus*) which had been previously been excluded by the implementation of the long grass policy.

2. Phases of Development

In broad terms the process of infrastructural development occurs in four phases:

- planning of the Development;
- site preparation;
- site construction;
- site Rehabilitation.

Each of these phases is dealt with separately below.

Planning for Infrastructural Development

Once the plans have been agreed, the impact of the work on bird hazard control should be discussed with all the relevant sections at the airport, including the unit responsible for birdscaring, airfield management and the airline operators. Airline operators must be advised that the forthcoming development may result in an unavoidable increase in bird hazard. Planning should also consider the optimal timing of the development to take advantage of seasonally reduced bird hazard. At many airports this is likely to be from early spring to midsummer when Black-headed gulls (*Larus ridibundus*) and Lapwings are absent or in very low numbers. In practice, this may not be possible because the development would then coincide with the busiest period of the year in terms of air traffic movements. Nevertheless the optimal timing of early phases of infrastructural development may have a major effect by mitigating the negative impacts on bird hazard control.

The construction company involved should be fully briefed about the importance of best practice in relation to bird hazards and legally obliged to follow such principles. The terms of the contract should contain relevant binding clauses regarding waste disposal, site operation and site rehabilitation.

Site preparation

Site preparation is a critical phase in development and if necessary the site should be drained before the building work is started. The construction of the haul roads should be completed with the least practicable disturbance of the surrounding grasslands. Signage should be prepared in advance of showing permitted routes and, where necessary, barriers should be erected which discourage entry by lorries and other vehicles to vulnerable grassed areas.

Stripped topsoil will have to be retained on or near the site for the landscaping and the rehabilitation phases of the project. It should not be stored in large flattened areas as these are susceptible to ponding and attract both gulls and plovers. Conical heaps are the safest way of retaining the topsoil. The height and dimensions of the heaps are determined by various considerations such as obstacle and ILS limitation. While this method does not wholly prevent their use by birds, most gulls and particularly plovers seem to avoid conical heaps of topsoil.

Site construction

This will generally be the longest phase of the development. The construction on the site may result in large areas of compacted soil within which ponding will readily occur after heavy rainfall and attract both Lapwings and Black-headed gulls. All available techniques of bird scaring will be required to keep such areas free of gulls, plovers and other potentially hazardous species. Sometimes it may be possible to pump off surface water to a nearby drain, but where this is not feasible a barrier technique can be used. Experience at Dublin Airport has shown that 'humming twine' attached to bamboo canes and covering the area concerned is a most effective method for deterring gulls and plovers. The contractor is required to regularly maintain the 'humming twine' and have sufficient stocks of both twine and bamboo to cope with all eventualities.

Communication between the contractor and the bird scaring team is important during this phase of the development. It is also very important that bird scaring is carried out at weekends and during holiday periods.

Site rehabilitation

This means returning what remains of the grassland to its previous ecological state and a recurring problem is that this may not be satisfactorily accomplished. However, it is essential that reinstatement is fully carried out to the specifications originally set out in the contract. Generally these will specify depth of top soil to be laid down and down and the type of grass seed to be used. Experience at Dublin Airport has shown that an approved landscape sub-contractor is much more likely to deliver an acceptable rehabilitation of the grasslands than the main civil engineering or building contractor.

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