

RESTORATION OF ECOLOGICAL HABITATS TO MITIGATE THE EFFECTS OF AIRPORT RUNWAY DEVELOPMENT

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ECOLOGICAL RESTORATION CONSULTANTS

Tim Walmsley - MANCHESTER AIRPORT

Peter Gately - THE ENVIRONMENT
PARTNERSHIP

MANCHESTER AIRPORT

3 terminals and 2 runways

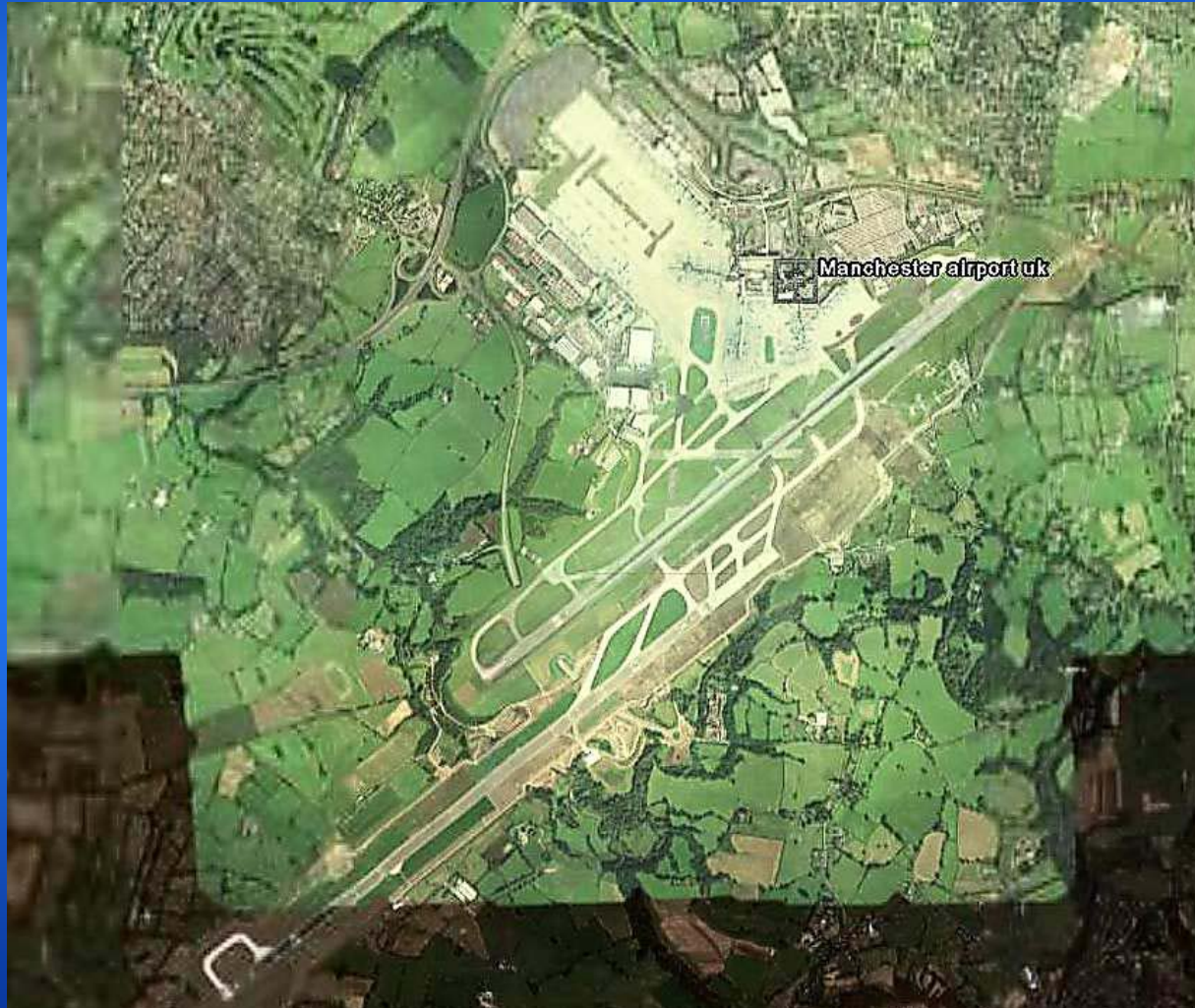
23 million passengers

230,000 movements



CONSTRUCTION OF RUNWAY 2

Constructed 1997 - 2001



PRACTICAL RESTORATION - LARGE DEVELOPMENT PROJECT

DESIGN OF THE ECOLOGICAL MITIGATION MEASURES

Baseline Ecological Surveys

Woodlands

Grasslands

Hedgerows

Rivers

Ponds

Protected species

Bats

Badgers

Great Crested Newt

Kingfisher

Birds and invertebrates

Amphibians

ECOLOGICAL MITIGATION - ANIMALS

LOSSES

Amphibians

43 Ponds

24 Great Crested Newt
ponds

Bats : loss of buildings
trees, woodland,
hedgerows

Badger: main sett lost

GAINS

46 new ponds

Restoration of 51 other
ponds

3 new bat barns

250 bat boxes on trees

5.1km new hedgerow

ECOLOGICAL MITIGATION - PLANTS

LOSSES

15 km hedgerows

4.5 ha ecologically
valuable and/or
ancient woodland

5.3 ha flower-rich
grassland

GAINS

5.1km new hedgerows

3.6 ha translocated
woodland

4.5 ha translocated
grassland

24.8 ha new wildflower
grassland

25.2 ha new woodland

6 new trees for each one
removed

PLANNING AGREEMENT WITH CHESHIRE COUNTY COUNCIL

15 year Landscape and Habitat Management Plan

Section 106 planning agreement

Establish a Nature Conservation Steering Group

Employ an ecologist and landscape architect



RESTORATION OF BAT ROOSTS

One Brown Long Eared Bat nursery roost was lost to the development



Plecotus auritus

Farmhouse
demolished



EXISTING BUILDINGS CAREFULLY DISMANTLED



Survey for bats

Collecting bat droppings

Existing roof timbers used in construction of new building

CONSTRUCTION OF NEW BAT BARN

Mimics layout of original roof structure but 25% smaller

Same environmental conditions as original building (e.g. temperature) maintained in new building

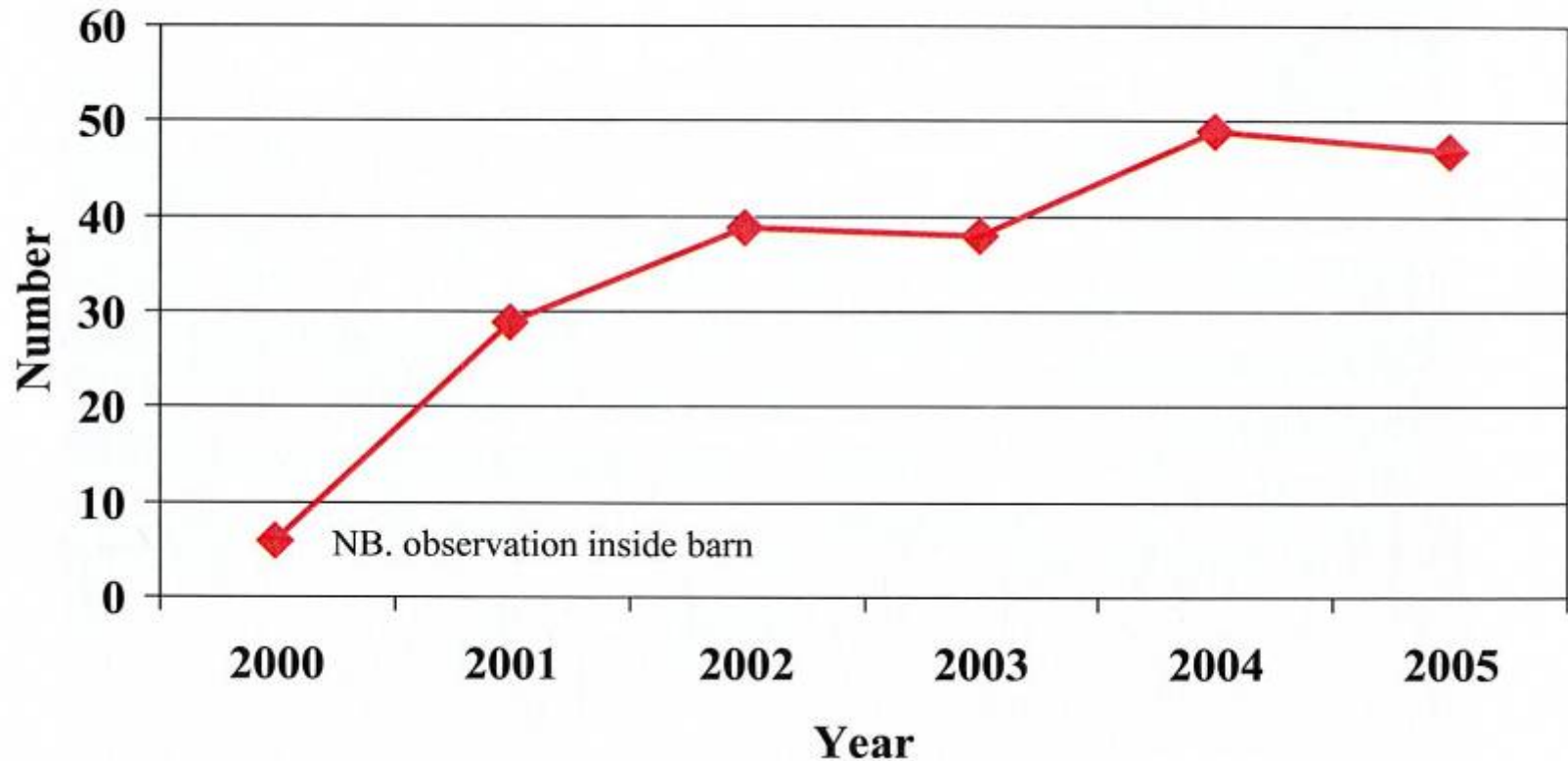
Today have largest over wintering brown long eared bat colony in Cheshire



BEEHIVE BARN BROWN LONG EARED BAT

SURVEYED 4 TIMES IN SUMMER AND WINTER
FOR HIBERNATING BATS

EMERGENCE COUNTS



BAT BOXES IN TREES

250 new boxes erected
44% contained bats (2005)
Mainly Pipistrelles



Various designs to
encourage several species

NEW PIPISTRELLE BARN



4 gable ends

Bats move around the roof during the day according to temperature

Monitored monthly April to September

Numbers 2000 - 2005
range 103 - 347

WOODLANDS LOST TO THE DEVELOPMENT



Two small areas
of ancient
woodland lost to
the development

Ancient
woodland = land
with continuous
woodland cover
since at least
1600

WOODLAND TRANSLOCATION



WINTER 1997 Trees felled

Soil - upper horizon plus some tree stumps (e.g. *Fraxinus excelsior*) moved to receptor site

Receptor site - topsoil stripped

Donor soil spread

Dead wood (containing invertebrates)

CONTROL SITE UNAFFECTED BY CONSTRUCTION MONITORED EACH SPRING (MAY)

EXISTING ANCIENT AND SEMI-NATURAL WOODLAND BASELINE SURVEY 1995

Plot sizes 40m x 40m or 20m x 20m

National Vegetation Classification Communities

W8 base-rich soils

W10 base-poor soils

W8

CANOPY

Ulmus glabra

Quercus robur

Fraxinus excelsior

Corylus avellana

Crataegus monogyna

GROUND

Allium ursinum

Mercurialis perennis

Anemone nemorosa

Primula vulgaris

Circaea lutetiana

Hyacinthoides non-scripta

RECEPTOR SITE- FIRST AND SECOND YEARS



First spring

Allium ursinum (Wild Garlic)
and other vernal ground flora



Second year

Regeneration of *Fraxinus*
stump

WOODLAND TRANSLOCATION RECEPTOR SITE - 2004

20 random samples	2000	2002	2004
Total number of species	65	59	45



Key indicators of ancient woodland

Increase (I) or Same (S) since 1998 . Presence - percentage of samples

<i>Anemone nemorosa</i>	S	50%
<i>Mercurialis perennis</i>	I	50%
<i>Allium ursinum</i>	S	45%
<i>Primula vulgaris</i>	I	5%

WOODLAND TRANSLOCATION RECEPTOR SITE - 2005

Dense bramble (*Rubus*
spp. complex) developing
in some sectors



EVALUATION 1

- Long-term monitoring is essential and will be continued for at least 8 years
- Many typical woodland ground flora species
- There is scope to introduce additional species in future years (local origin)
- Existing plants plus seed bank = potential for populations to spread as the tree canopy develops
- Sufficient shade after 10 years to suppress *Rubus spp.* and non-woodland species

EVALUATION - 2

- Translocation technique - last resort!
- Not an attempt to create an exact replica of the original but to develop woodland with similar characteristics
- Retaining local genetic populations



THANK YOU FOR BEING HERE

MORE DETAILS AVAILABLE ON

WWW.ecologicalrestoration.co.uk



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