

# Re-fresh on brownfields

Most brownfields have the following key features: Hot, dry, open, unconsolidated/compacted material, good structure

Essentially, many brownfields are like heathlands or calcareous grassland even if they don't have the characteristic plants

# Target groups for survey

Therefore the groups to cover for a brownfield invertebrate assessment will reflect those that you may mind on these wider countryside semi-natural habitats

# Bees and wasps (aculeate hymenoptera "aculeates")

Approximately 590 bees, wasps and ants in the UK Of which 1/3 are under threat 50% of scarce bees and wasps found on brownfield



sites







# Aculeates continued – intricate relationships



- Good prey resource in grassland
- Vertical or near vertical faces for wasp nests
- Nest site in close proximity to water
- Plentiful flower resource for adult wasps



Odynerus spinipes – solitary wasp Chrysis virdula –parasitic wasp

# Butterflies and moths

Butterflies and moths - a declining group

24 Butterflies (nearly 50%) on BAP & over 150 moths listed on BAP or requiring further research



Dingy skipper (UKBAP) – bare ground, bird's-foot trefoil



Grayling (UKBAP) – bare ground, short grass



Small blue (UKBAP) – kidney vetch

# Other useful groups

Beetles (Coleoptera)

Hoverflies





Robberflies, beeflies, soldierflies

→ High proportion of scarce species



Other groups such as Ground bugs 

less data on distributions



# Survey approaches

What do you want to find out? Comparative data

Standardised surveys (suite of sites)

Useful when comparing similar sites

CSM methods in NERR005 – 2 visits.

Can increase number of visits. 4 covers
main flight periods (April-August).

Methods:

Sweep netting (4 x 20 mins)

grubbing (30 mins)

Pitfall trapping – may not be allowed due to contaminants - breach of insurance policy

Also vandalised on publicly accessible sites –

use with caution.

Pond dipping/sieving

# Survey approaches

What do you want to find out? Site evaluation

Site assessment (single site)



Most surveys will adopt this approach Consult NERR005 for suggestions

Sweep netting, spot sampling and grubbing, 4 visits (April-August) High quality sites - anywhere from 7-20 in a single season

# Survey approaches

What do you want to find out? Presence/absence of a species.

# **Targeted**



Focused on a single species such as dingy skipper – not often required but presence can lever further survey effort for other groups.

Survey effort - depends on the focus of the survey. Single "one-off" events are not recommended. At least 2 visits required even for single species presence/absence work.

Timing is essential – should be in peak flight period

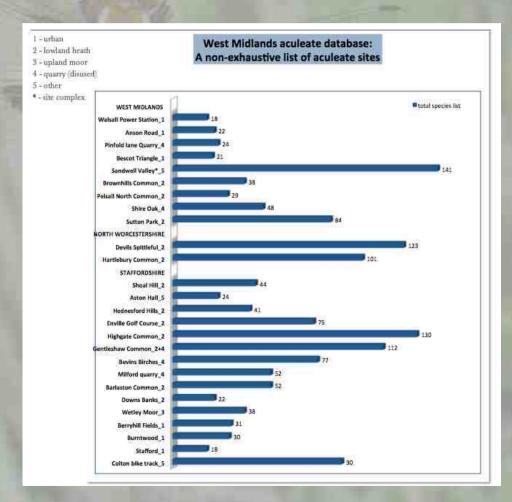
Surveying brownfield invertebrates – Buglife 2012 Andy Jukes Conops Entomology Ltd



# Analysis of results

Databases of sites – not enough sets of site data for most regions

conopsentomology.co.uk



# Analysis of results

ISIS – Invertebrate Species – habitat Information System (2007)

Invertebrate NVC

Primarily developed for CSM of SSSIs

Designed to help move from single species work to communities and eco-system approach (habitat health)

Over 10,000 species coded into the system.

Each species has a score, based on scarcity and fidelity to a feature

### How does it work?

Input species list to spreadsheet – ISIS scores each species

Generates tables of results highlighting assemblages of "significance"

Broad Assemblage Type (BAT) - parent

Specific Assemblage Type (SAT) - sibling

BAT: F1 – unshaded early successional mosaic (rarity score: 160)

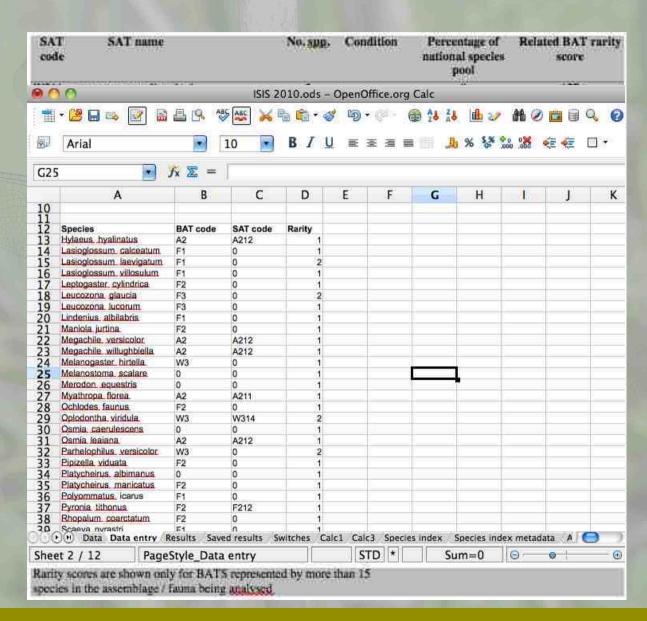
SAT: F111 – bare sand and chalk (440 species. SAT score: 18)

F112 – open short sward (200 species. SAT score: 12)

F113 – exposed sea cliff (currently not in use)



# Example imput



# Using ISIS

Inter site comparison – in conjunction with standardised survey method

Primarily developed for CSM of SSSIs

Can still be used for wider countryside sites

Highlights assemblages of "significance" on a National scale

Needs contextualising

# Classifying sites for development purposes

Only one criteria of significant currently used

Colin Plant (2009) for IEEM

Works well for most sites

As with ISIS, needs contextualising especially towards sites with high significance and geography

| Importance   | Description  | Minimum qualifying eriteria  |
|--|--|--|
| International (high)<br>importance   | Europeus important<br>site (re. SAC)   | Internationally important invertebrate populations present or containing RDB.1 (Eindangured) species or containing any species protected under European legislation or containing habitate that are theirasened or rare at the European level (including, but not exclusively so, habitate listed on the EU Habitate Directive).   |
| National (high)<br>importance  | UK important rise<br>(SSSI)  | Achieving SSI inversebrate criteria (NCC, 1989) or containing RDB2 (Vialnerable) or containing viable populations of SDB3 (Rury) species or containing viable populations of any species protected under UK legislation or comming habitate that are threstood or rare nationally (Great Britain).   |
| Regional (medium)<br>importance<br>(fig border sites, both<br>regions must be taken<br>into account) | Site with<br>populations of<br>invertebrates or<br>invertebrate or<br>invertebrate haritan<br>considered haritan<br>into or threatened in<br>south-east England  | Habitat that is scarce or threatmed in the region or which has, or is reasonably expected to have, the proceder of an assemblage of invertebrates including at least ten Nationally Notable species or at least ten species insted as Regionally Notable for the lingibin Nature region in question in the Recorder database or alsowhere or a combination of these emegories amounting to ten species in total. |
| County (medium)<br>importance<br>(fig border sites, both<br>counties must be<br>taken (mo account)   | Site with<br>populations of<br>invertebrates or<br>invertebrates habitats<br>considered scarce or<br>hard or threatened in<br>the county in<br>question  | Habitat that is scarce of threatened in the county and/or which contains or is masonably expected to contain an assemblage of invertebrates that includes viable populations of at least five Nationally Nutable species or viable populations of at least five species regarded as Regionally Searce by the anunty records control and/or field club.   |
| District (lew)<br>importance   | Site with<br>populations of<br>inversibilities or<br>inversibilities or<br>inversibilities of<br>inversibilities of<br>inversibilities of<br>the administrative<br>District  | A rather sugge definition of habitant falling below county significance level, but which may be of greater significance than merely Local. They include sines for which Nationally Notable species in the range from 1 to 4 examples are reasonably expected but not yet necessarily recorded and where this amussion is considered likely to be partly that to under-racording.                                 |
| Local (law)<br>importance  | Site with populations of invertebrates or invertebrate some or invertebrate stance or tare or threatened in the affected and population. Particle (except Scotland, where the local area may best be defined as being within a tadius of 5 islenicities. | Habitats or opecies unique or of some offier significance within the local area.   |
| Importance within the context of the time only (low importance)                                      |  | Although almost no grag is completely without significance these are the areas with sostling more than expected "background" populations of cummon species and the occasional Nationally Local species.  |

# Mitigation

# Mitigation continued

There is a need for mitigation on development sites to be aesthetic



Good quality foraging

Rounded bund – not as optimal but good compromise

# Mitigation continued

Additional features

Don't forget about ponds and deadwood!

### Thanks

Andy Jukes andy@conopsentomology.co.uk

# Further reading

Edwards, M. - Management of bare ground. Natural England. IN5.4 Drake, M., et al (2007) – Surveying terrestrial and freshwater invertebrates for conservation evaluation. Natural England.

NERBOOS

## NERR005

Jukes, A., et al (due early 2013?) Managing aggregate sites for invertebrates: A practical guide to the importance and management of naturally establishing habitats in quarries. Buglife – The Invertebrate Conservation Trust, Peterborough.