European Food Safety Authority

Ecological Parameters

Sub WG ”Focal species and ecological parameters“

What are ‘ecological parameters’?

- **FS** = Focal species
- **PD** = Diet of farmland birds and mammals
- **PT** = Proportion of diet obtained in the treated area

European Food Safety Authority

Focal Species

Mark Clook, Pesticides Safety Directorate; UK

Valencia workshop 2007

What concerns are there?

- Lack of information on what a focal species is and should represent
- Lack of information on focal species
- How do you select a focal species?
- Need for ‘standardised’ focal species?

Focal vs indicator species

Guidance document is developing the following ideas:

Tier 1 = indicator species (screening step)
Tier 2 = generic focal species
Tier 3 = focal species

Your thoughts + views welcome

Indicator species

What is an ***indicator*** species?

- It is proposed to have an *indicator* species at Tier 1 = screening step
- Species is **not** real
  - Has high food intake rate
  - Consumes all one type of food
  - Food has high residues

Indicator species

What is an ***indicator*** species?

- Represents ‘worst case’ for exposure
- Parallel to FOCUS Steps 1 and 2?

Generic focal species

What is a ***generic*** focal species?

- A species that is not real but is considered to be representative of all those species potentially at risk
- 'Species' is built up on the basis of ecological knowledge of a range of species that could be at risk
  - Has high food intake rate
  - Food has high residues on it

Generic focal species

What is a ***generic*** focal species?

- ‘Species’ is built up on the basis of ecological knowledge of a range of species that could be at risk
  - Food potentially more than one type
  - Should be representative across MS
- Potentially more realistic?

What is a ‘focal species’

- Occur in the crop
- Be prevalent
- Occur frequently
- Food intake rate and food type ensure it has a high exposure profile

- ‘Cover’ all species?
  - Maybe several focal species/crop
  - Together they are protective for all species

An ideal 'focal species' should:

- Use the crop
  - high frequency of occurrence on crop fields
  - in significant numbers - high average density compared to other species
- Have a high food intake rate to body weight ratio
  - e.g. a small bird eating mainly leaves

An ideal 'focal species' should:

- Eat food with high residues
  - e.g. the crop itself
- Be protective for other species
  - If the risk is considered acceptable for focal species it should follow that all other species are also protected

Focal Species

FS studies should:

- determine the quantitative composition of the bird or mammal community present in the crop of concern

- Consider both the numbers of individuals found in crop fields…

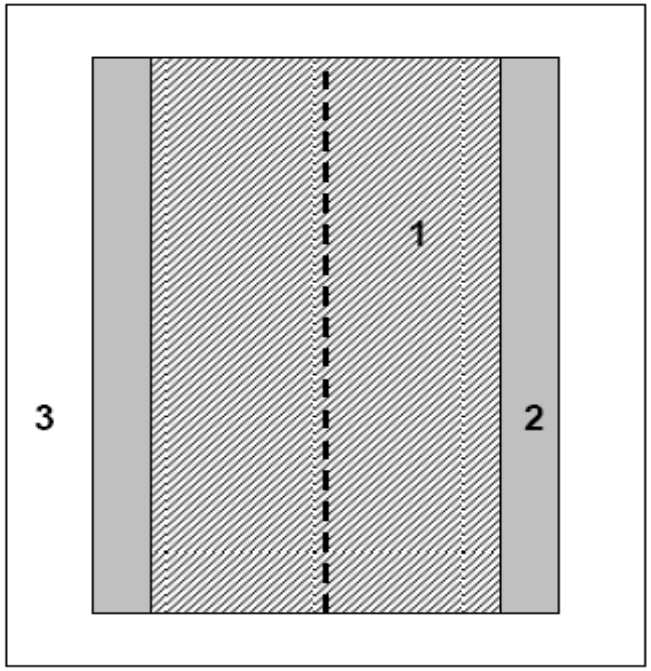
Focal Species

- …and the proportion of crop fields in which they are found –
  - abundance, dominance, population density
- Is a single flock of 1000 starlings on 1 field = 100 fields each with flocks of 10 starlings?
  - Frequency of occurrence, prevalence, ‘widespreadness’

How do you determine a focal species?

- Study sites
  - Where? When? How many?
- Survey of fields
  - What? Why?
- Survey of birds/mammals
  - ‘line transect method’
  - ‘field survey method’
  - Live mammal traps

Survey methods



1	'In-Crop transect band' (max. 100 m and exclusively within the strawberry field)
2	'Outside transect band' as in-crop; this type is absent in fields less than 100 m wide.
3	'Outside transect band' as off-crop
– – –	Line transect

How should the data be analysed?

- Average number of birds per unit area counted on a particular field type = Abundance, (or % Dominance)
- FOfield = number of fields a particular species was present on – spatial frequency of occurrence (or % Prevalence)
- FOsurvey = number of surveys in which species was present in – temporal frequency of occurrence

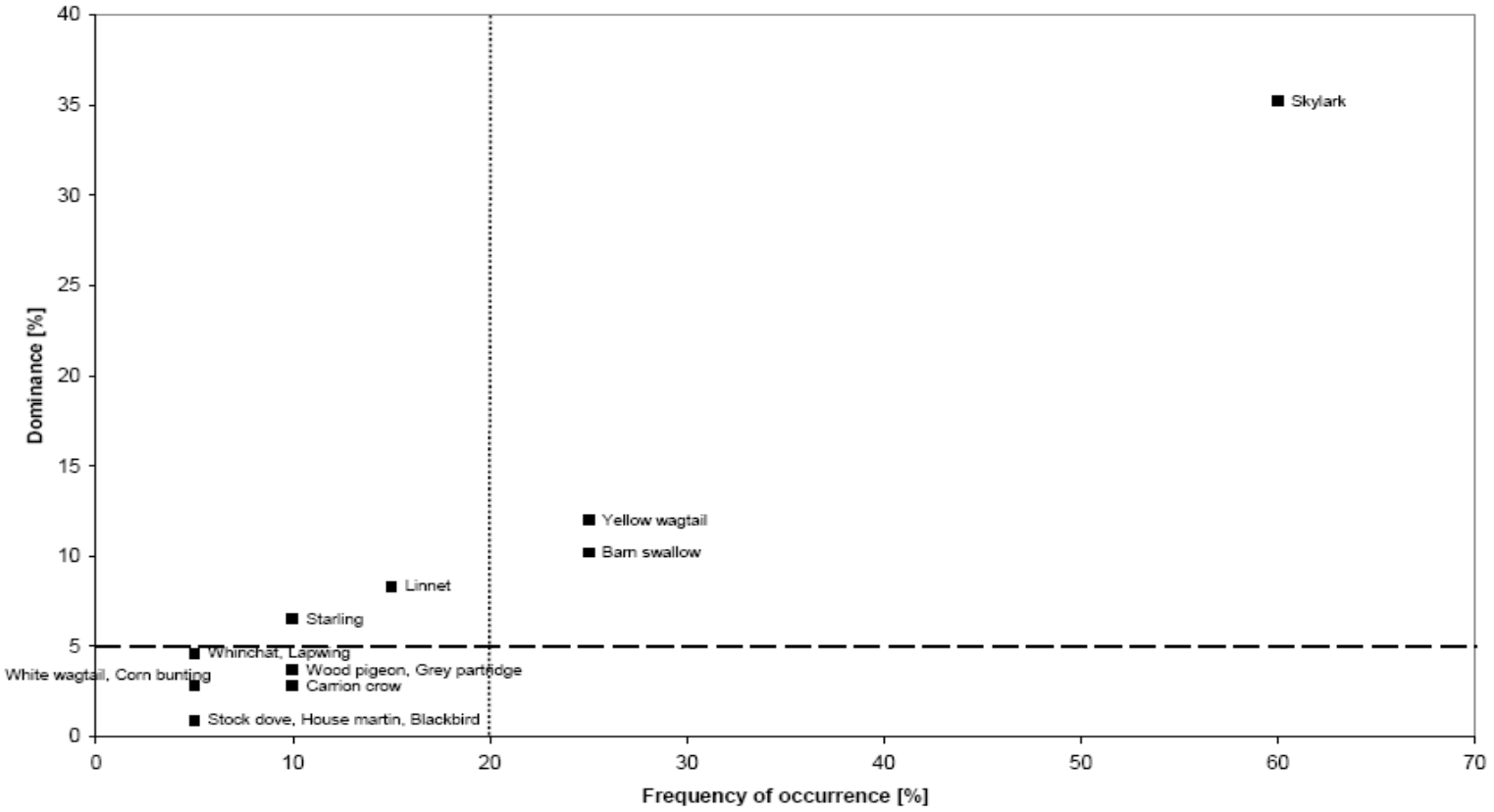
Frequency of occurrence on fields

Species	Number of strawberry fields where the species was observed (n = 20)	FO_{field} [%]
Skylark (*Alauda arvensis*)	16	80.0
Wood pigeon (*Columba palumbus*)	11	55.0
Barn swallow (*Hirundo rustica*)	10	50.0
Yellow wagtail (*Motacilla flava*)	10	50.0
Carrion crow (*Corvus corone*)	8	40.0
Feral pigeon (*Columba livia* f. dom.)	5	25.0

Frequency of occurrence in surveys

Species	Number of surveys where the species was observed (n = 60)	FO_{survey} [%]
Skylark (*Alauda arvensis*)	41	68.3
Yellow wagtail (*Motacilla flava*)	18	30.0
Wood pigeon (*Columba palumbus*)	16	26.7
Barn swallow (*Hirundo rustica*)	15	25.0
Carrion crow (*Corvus corone*)	10	16.7
Feral pigeon (*Columba livia* f. dom.)	5	8.3

Dominance vs frequency of occurrence



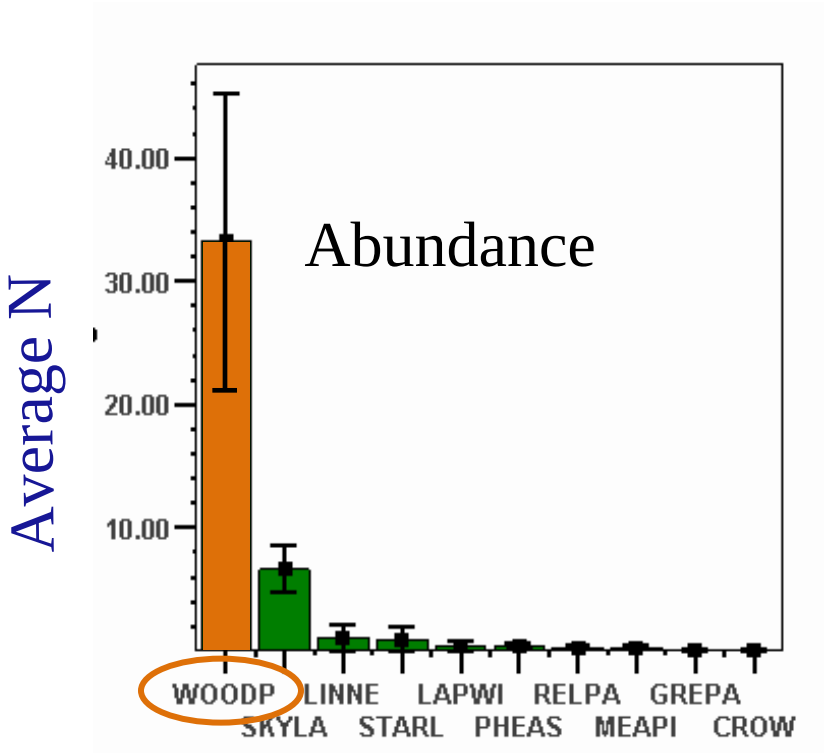
Focal species

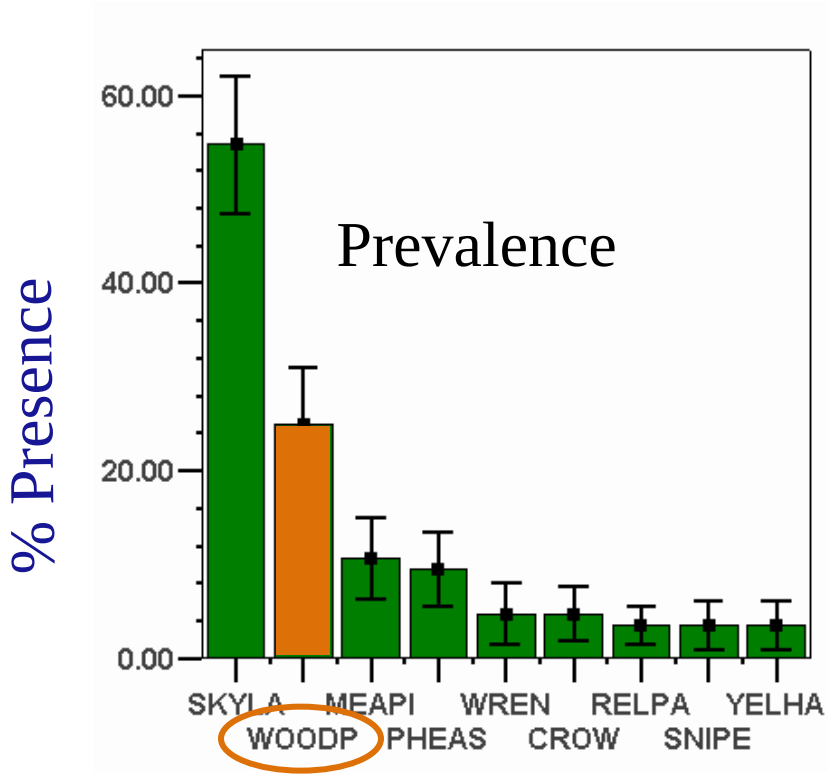
- FOfield > FOsurvey > dominance
- Size – diet – foraging strategy
- Focal species – could be more than one?

Worked example

- Oilseed rape in the winter in the UK
- Approx 42 fields
- Range of locations
- Visited through winter
- Method of assessment – field survey + transect

Worked example – which is the focal species?





Better if species chosen is <u>both</u> abundant and prevalent

Worked example

- **Even better if:**
  - **abundant and prevalent in the crop,**
  - **prefers the crop to other alternatives**
  - **eats large amount of food in relation to body weight (eg tends to be small and consumes low energy food)**
  - **chooses foods that have large amounts of residue**

Other issues

Need also to consider:

- Have a high food intake rate to body weight ratio (FIR/bw)
- Consume food with high residues
- Species dependence on crop
- ‘Cover’ all species?

Conclusion

- Next steps for the subgroup?
  - Lack of information on what a focal species is and should represent
  - Lack of information on focal species
  - How do you select a focal species?
  - Need for ‘standardised’ focal species?
- Next steps for the workshop?