

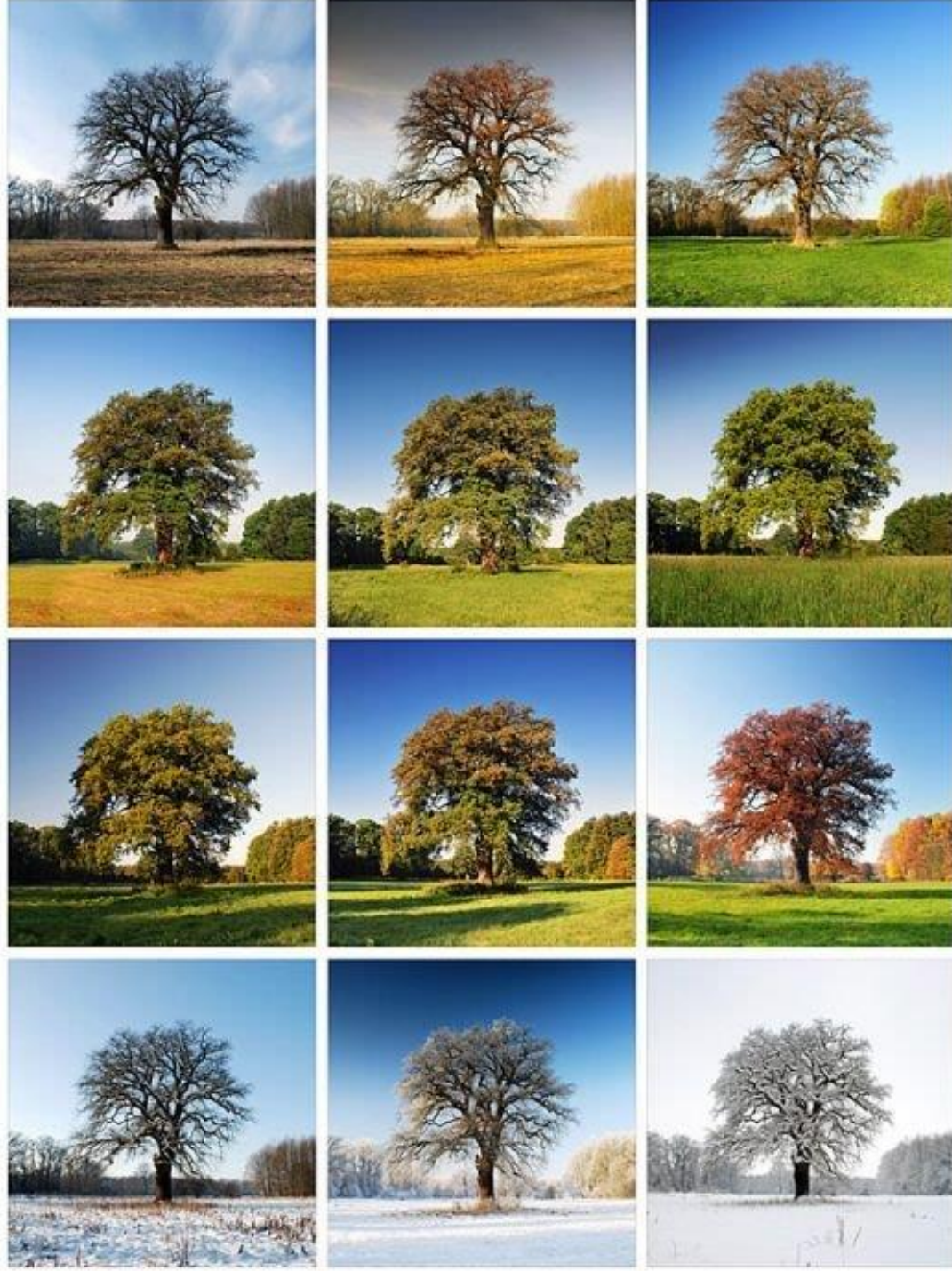
Seasonal constraints or opportunities? Teaching and learning field ecology throughout the academic year

Q&A 'seasonal constraints'

Three case studies

Share ideas 'seasonal opportunities'

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Q&A 'seasonal constraints'



What ecological field skills are important for your learners to know/ be able to do?

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What constraints does the academic year cause when teaching ecological skills, or other environmental topics?

How can seasonality influence students perceptions of practical learning or visits?

Winter supplementary feeding for farmland birds

Student Thomas Houlden; Supervisor Dr Ian Grange

Rationale:

OP3 Countryside Stewardship option for supplementary feeding of farmland birds requires spread of seed mix at ground level

(Natural England, 2015) – is this most effective?

Question:

Do target farmland birds differently use feeding stations placed at 0m, 1.5m and 3.0m height adjacent to a hedgerow?



Images: RSPB



Methods:

- Three 1.5x1.5m feeding trays at 0m, 1.5m and 3.0m.
- Seed mix compliant with OP3.
- Surveys and camera traps February and March.
- Weighing of remaining feed and composition.
- Chi-squared.



Findings:

	Number of visits. Target bird species	Simpson's 1-D. Target birds.	Simpson's 1-D. All birds.
0m	4	0.00	0.55
1.5m	60	0.61	0.83
3.0m	83	0.79	0.84

- Statistically significant difference $p < 0.05$ among number of visits from target bird species.

Conclusions:

- Vigilance when feeding may explain preference for above ground feeding for target birds.
- Ground feeding more attractive to non-target species.
- Consider cost of non-target species feeding under OP3.



Hazel phenology and woodland edge effects

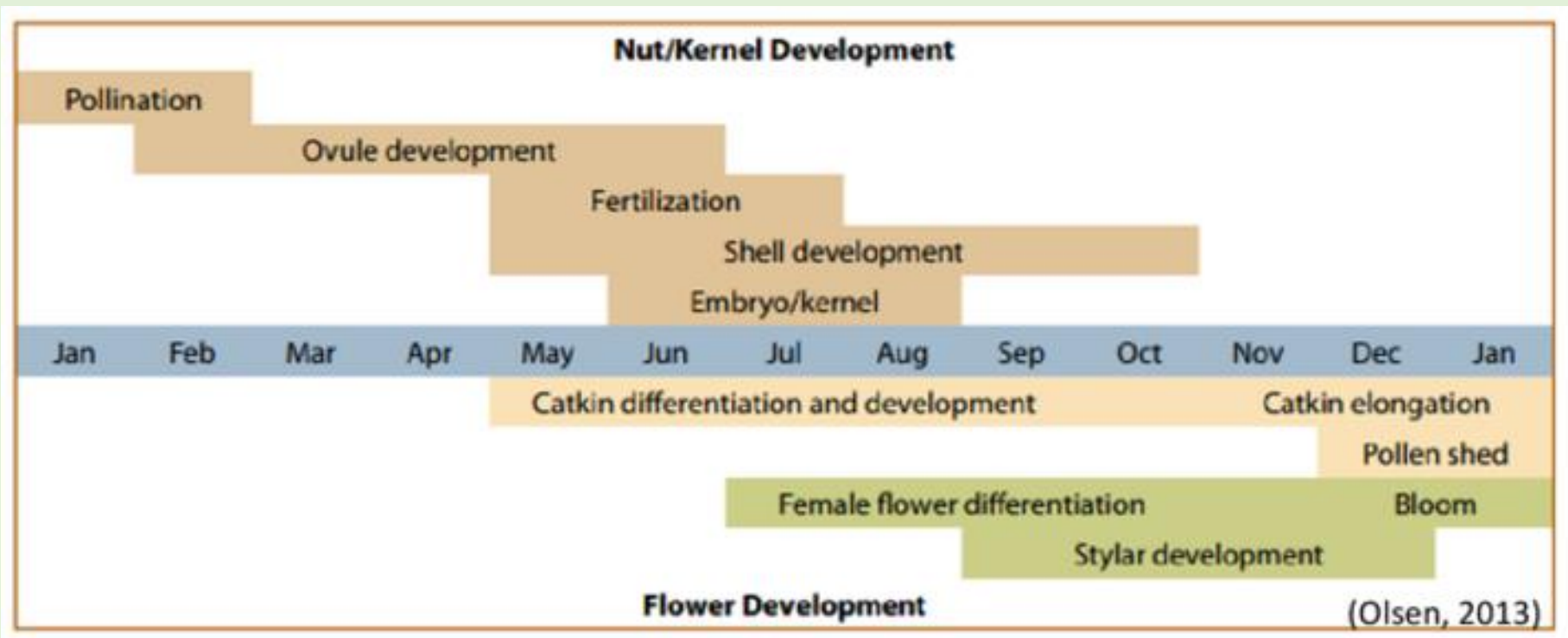
Student Zoe Koenig; Supervisor Kelly Swallow

Rationale:

Woodland edge effect impact on hazel phenology has rarely been studied.

Question:

Does distance from woodland edge impact on rate of hazel catkin development in two woodlands under different management?



Methods:

- Two woodlands.
- Catkins sampled from twelve hazels at varying distance from the edge in each woodland in January.
- iButton temperature loggers.
- t-test.
- Spearmans rank.

Findings:

Averages	Dukes Brake Location A	Vines Brake Location B
Temperature (°C) <i>Taken from a 24 hour period</i>	5.6	6.6
Catkin length (mm) <i>Combining all averages from each wood</i>	35.7	14.5

- The less intensively managed woodland had significantly longer catkins at the time of sample ($p < 0.001$).
- No significant correlation between catkin length and temperature or distance in either woodland.

Conclusions:

- Significant difference between sites may be due to rides.
- Light is a further avenue for investigation.



Added value of beetle banks into crop habitats

Student Will Bowers; Supervisor Kelly Swallow

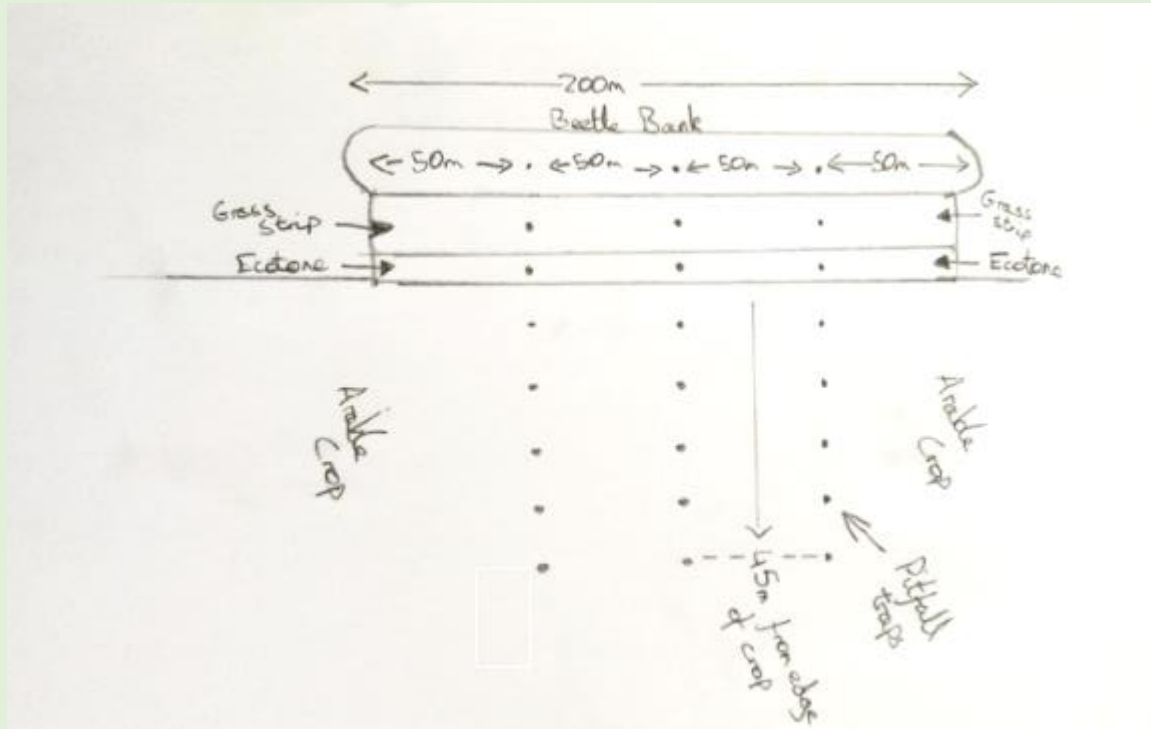
Rationale:

To research whether beetle banks are associated with higher number of beneficial Carabidae within the surrounding crop (Frampton *et al.*, 1995 Jahnova *et al.*, 2016;).

Questions:

Is there a significant difference in Carabidae numbers between the beetle bank and: a) adjacent grass strip; b) ecotone; c) winter wheat crop.

How do temperature regimes vary among these three habitats?



Methods:

- Systematic sampling pitfall traps September and April.
- iButton temperature loggers January-February.
- Mann-Whitney U.
- F statistic.

Findings:

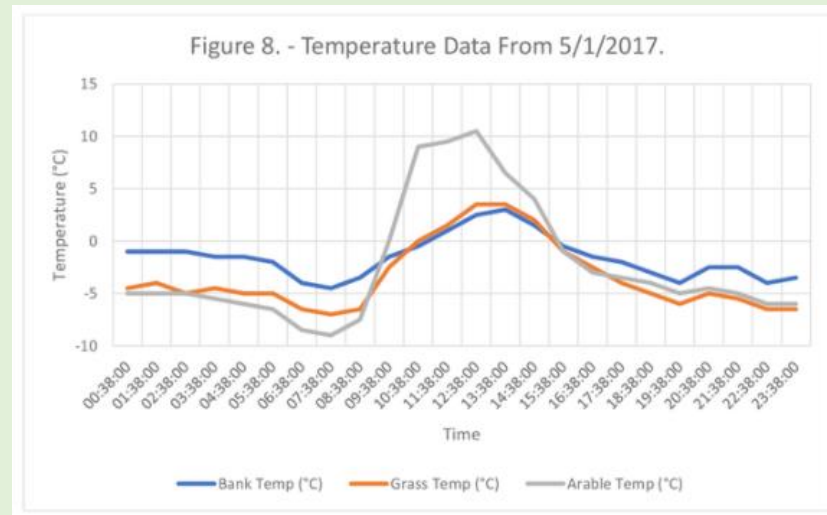
- Carabidae counts generally significantly higher on beetle bank compared to crop in April.
- Temperature statistically significantly less variable on the beetle bank than a) grass ($p < 0.001$), and b) crop ($p < 0.0001$)

Conclusions:

- Beetle bank demonstrated to support more Carabidae than the crop in spring, but not in autumn.
- Beetle bank seems to support overwintering Carabidae – higher and more stable temperature.

Table 2. The Difference (p-value) that Distance from the Beetle Bank has on Total Beetle numbers (Mann Whitney-U).

	Sep-16 (p-value)	Apr-17 (p-value)
Bank to Grass	0.561	0.133
Bank to Ecotone	0.211	0.758
Bank to 5m	0.591	0.05
Bank to 15m	0.082	0.071
Bank to 25m	0.167	0.026
Bank to 35m	0.226	0.028
Bank to 45m	0.149	0.485



Ecological skills

	Farmland birds	Hazel phenology	Beetle bank
Fauna identification	✓		✓
Flora identification		✓	
Survey design	✓	✓	✓
Sampling methods	✓	✓	✓
Risk assessment	✓	✓	✓
Industry application	✓		✓
Ecological theory	✓	✓	✓
Field mapping		✓	✓
Use of technology	✓	✓	✓
Data collection	✓	✓	✓
Data analysis	✓	✓	✓
Data interpretation	✓	✓	✓
Reporting findings	✓	✓	✓
(After IEEM, 2011)			

Share ideas 'seasonal opportunities'



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