Results Based Agri-environment Payment Schemes

Arable Conference

An introduction to Results Based Agri-environment Payment Schemes

Vicky Robinson
Project Manager, Natural England

RBAPS England

- **Upland grassland – Wensleydale, North Yorkshire**
  - Habitat for breeding waders
  - Species rich hay meadow

- **Arable – Norfolk & Suffolk, Eastern England**
  - Winter bird food
  - Pollen & nectar mix

Co-delivered by Natural England & YDNPA

Builds on links with EFNCP and NUCLNP

RBAPS England - Aims

- ✓ assess the environmental performance of habitats under RBAPS agreements
- ✓ compare the RBAPS approach to control sites within the pilot boundary
- ✓ test accuracy of farmer self-assessment of results
- ✓ test cost effectiveness of RBAPS approach
- ✓ explore agreement holder and stakeholder attitudes to RBAPS

Project timeline

2016

- Developing result measures, thresholds, payment rates
- Recruitment of participants/baseline assessments

2017

- Delivery
- Monitoring and evaluation
- Control comparisons

2018

- Delivery
- Monitoring and evaluation
- Final report & dissemination

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Grassland

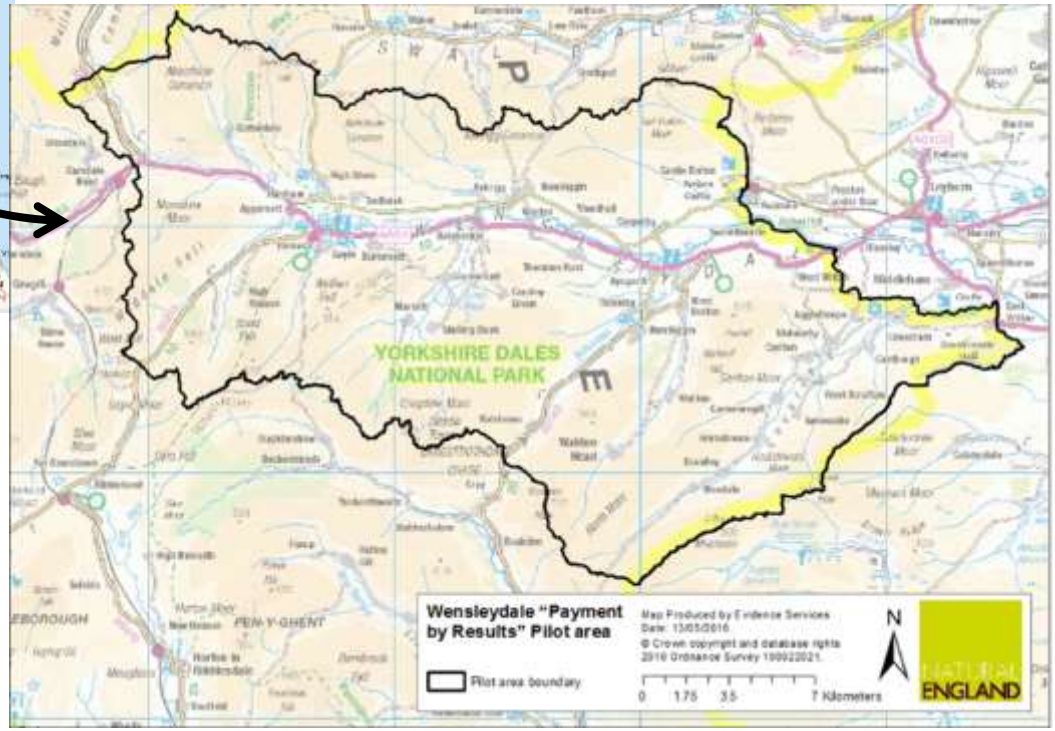
Wensleydale pilot area

Heavily designated: SAC, SPA, SSSI

21 UK priority species: Curlew and Lapwing

17 UK priority habitats: 661 ha upland and lowland meadow

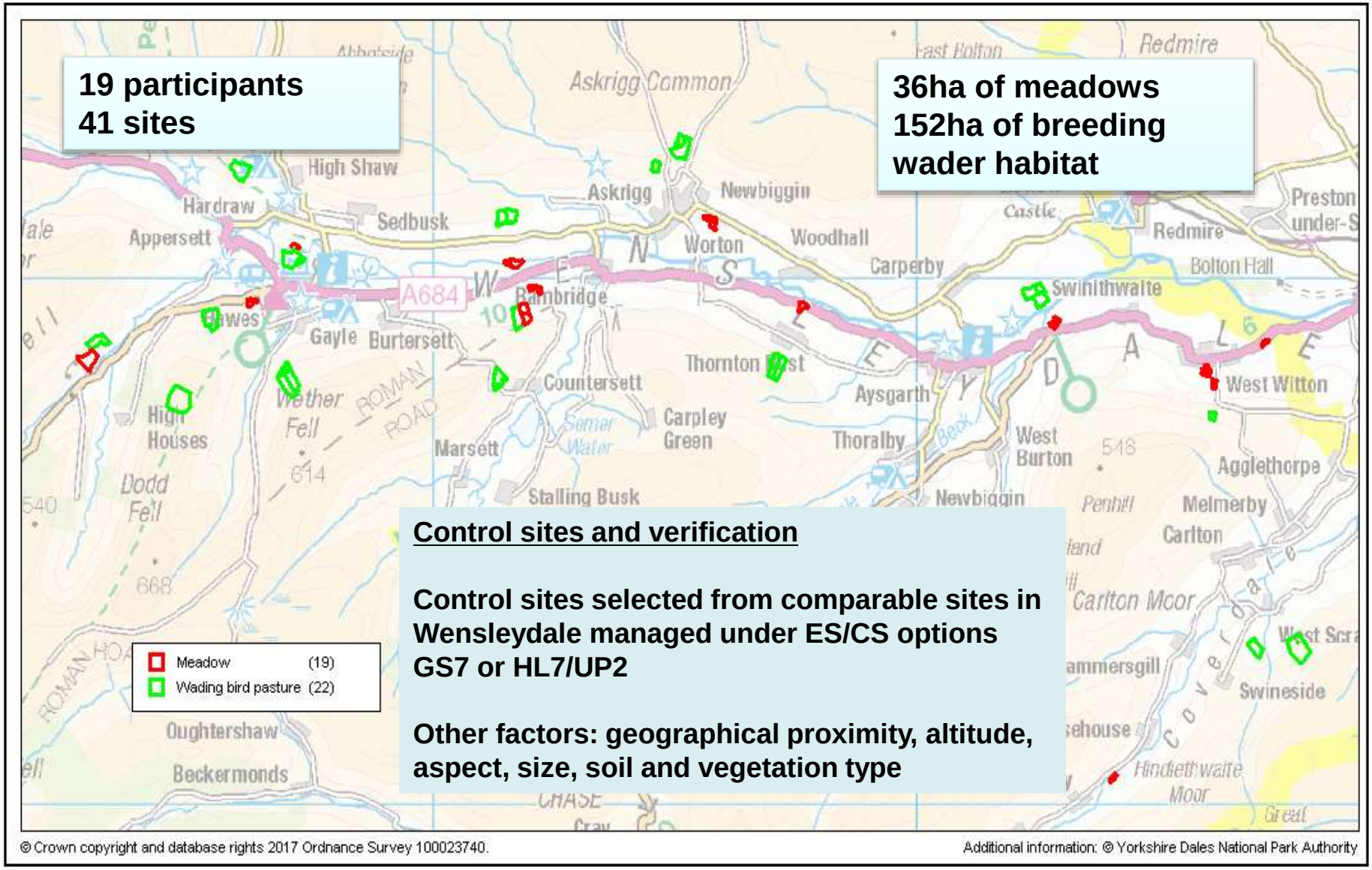
In terms of Ecological Networks, Wensleydale includes 2 of the top 5 meadow aggregations in the YDNP



The in bye or moorland fringe is an important area for curlew, snipe, redshank and lapwing.

131 expiring agri - environment agreements at or during project phase

Project Site locations



Upland hay meadows

Objective: To undertake sustainable agricultural management to produce good quality herb rich hay

A single self assessment in June/July undertaken by the farmer, looking specifically at 2 key habitat features needed to meet the objective:

1. Range of positive and negative plant species
2. Impact of damaging activities

Assessment of range of species undertaken by following a set line through the meadow, with the farmer stopping 10 times to ID plant species

Meadow assessments

- Score of 146 = £260/ha

Score / Total points	1 40 -79 points	2 80-119 points	3 120-159 points	4 160-199 points	5 200+ points
£/ha	112	186	260	334	371

Upland grassland for breeding waders

Objective: To provide suitable feeding, nesting and chick rearing habitat for breeding waders

A single self assessment in March/June undertaken by the farmer, looking specifically at 5 key habitat features needed to meet the objective:

1. Vegetation height
2. Rush cover
3. Scale of wet features
4. Quality of wet features
5. Damaging operations

Breeding wader Assessment

Vegetation height

Mixed sward height where between 25 - 75% of the field is short and the rest varied, tussocks frequently seen and well distributed	10
Over 75% long. Short swards confined to very small parts of fields (e.g. gateways, sup feed sites only) Tussocks indistinguishable from other tall vegetation	5
Over 75% short with little to no variation in height. Tussocks rare or absent	5
No difference in height – either all short, or all long with no variation	1

Rush cover

10 – 30% cover, well scattered with local areas of dense rush	10
>30% rush cover, large areas of dense rush and tall vegetation	5
Absent or sparse <5%	1

Scale of wet features

Field is damp across the majority of the area with a number of wet areas scattered across the field	10
Damp areas are contained to approximately 10% of the field, e.g. springs, remainder of field is dry	5
Damp areas are rarely seen	1

Quality of wet features

Wet features contain a mix of shallow pools and wet vegetation, gently sloping edges, 50% of the edge is mud with less than 25% rush or tall vegetation	10
A number of wet features on the site but not meeting all criteria above	5
Steep sided, no muddy edge, dense rush cover, inaccessible to birds	1

Points = Pounds

Total score 30 points = £139/ha

Tier	1	2	3	4	5
Total points	<9 points	10-19 points	20 – 29 points	30 – 39 points	40 points
Grant £/ha	35	69	104	139	174

Farmers are also asked to record bird presence but this has no effect on the score as it is outside farmers control

Guidance and training

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Results

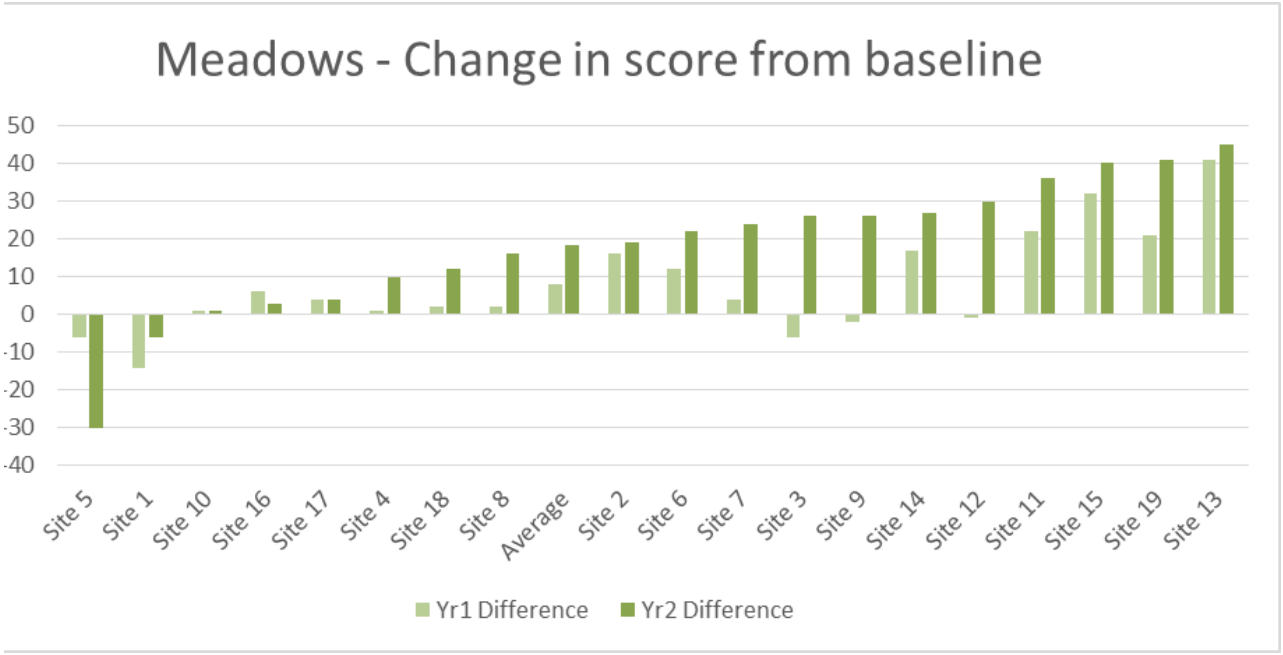
YORKSHIRE DALES
National Park Authority

Upland hay meadows
Performance of PBR meadows from baseline to year 2

	Baseline	Year 1	Year 2	Average points difference to baseline	Average Payment tier change
Average points score	84	92	102	+22	+0.6
Number of positive plant species seen	19	22	19		
Number of negative species seen	3	4	5		

By the end of year 2:

- 12 of the 19 meadows had an increase in payment tier
- 6 meadows remained on the same payment tier
- One meadow dropped down a payment tier
- an average 21% increase in score



Upland hay meadows
Species changes

8 species with a year on year increase in frequency – including some of the rarer species

Compared to baseline, there has been an 8% increase in species frequency of the meadows

Top 10 frequently occurring species (% of all stops)

	Base	Year 1	Year 2
Sweet vernal grass	88.42	93.32	97.37
Red clover	76.32	91.58	94.73
Ribwort plantain	67.37	77.89	74.74
Yellow / hay rattle	55.26	68.95	64.74
Pignut	43.16	50.00	80.00
Hawkbits	23.16	31.05	31.58
Eyebrights	16.84	19.47	20.53
Vetches	7.89	6.84	8.95
Soft brome	5.26	16.84	2.63
Wood cranesbill	4.74	1.58	4.21
Greater burnet	4.21	5.26	5.79

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Upland hay meadows
Change in farm management

YORKSHIRE DALES National Park Authority

Lime spre

late by

On average, a PBR farmer undertook
4 new management actions

Small baled hay by 4 farmers

Seed introduction by 9 farmers

Weed control by 4 farmers

Late hay cut by 2 farmers

Sensitive machinery use on wet soils – 1 farmer

Upland hay meadows
Accuracy of farmer surveys

	Year 1	Year 2
Average score – farmer	92	106
Average score – adviser	92	102
Average points difference	+/- 18	+/- 10
Same score as adviser	8%	16%
% of fields where there was an agreement on the payment band	69%	74%

In year 1 farmers tended to score lower than the adviser

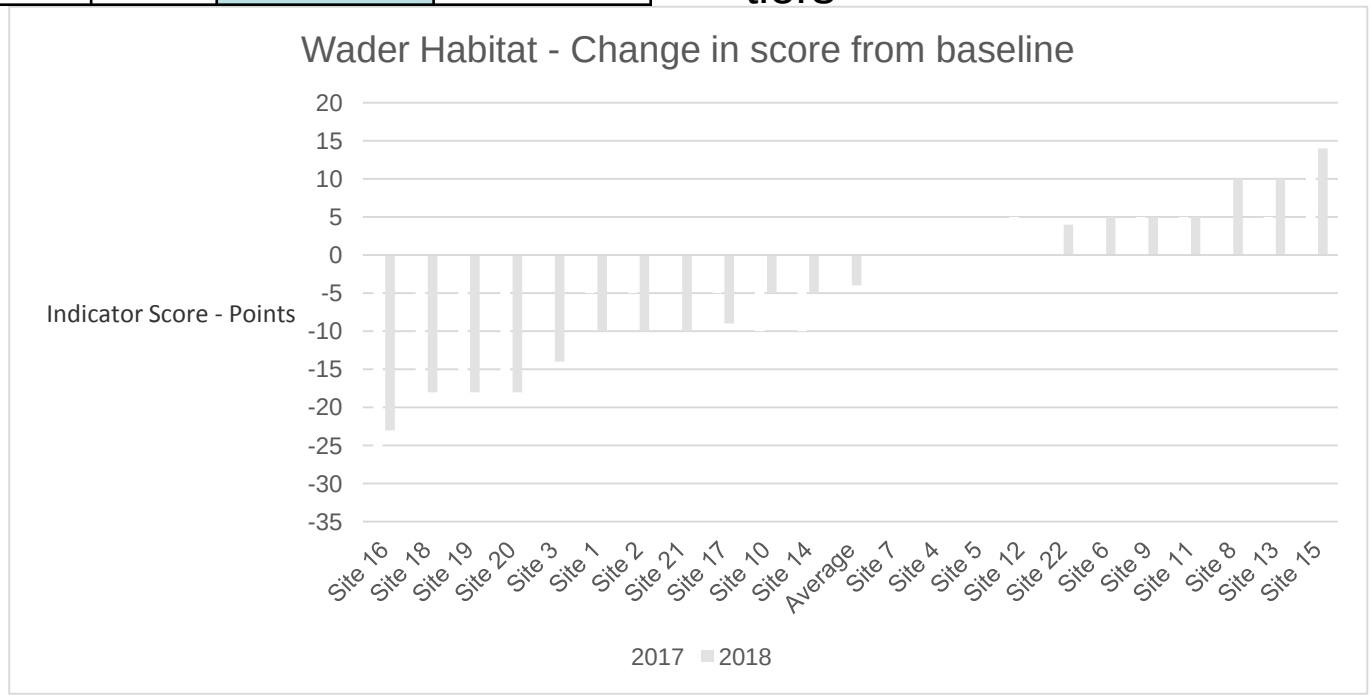
In year 2 farmers tended to score higher than the adviser

Breeding wader habitat
Performance from baseline to year 2

	Baseline	Year 1	Year 2	Average points difference to baseline	Average Payment tier change
Average points score	31	27.5	27.5	+/- 8.8	
Average payment tier	4.1	3.3	3.5		-0.55

By the end of year 2:

- 3 of the 20 wader sites had an increase in payment tier
- 7 sites remained on the same payment tier
- 6 sites dropped down one payment tier
- 4 sites dropped down two payment tiers



Breeding wader habitat
Analysis of the scores – a tale of two halves

The positives:

- Improvement in grassland management
- Reduction in rush cover
- No damaging operations recorded

The negatives:

- The two dry springs took their toll on the wet feature measures

Assessment criteria	% of fields at Baseline	% of fields at Year 1	% of fields at Year 2
Vegetation height score 10	79	74	94
Cover of rush score 10	37	47	50
Extent of wet features across field score 10	79	53	39
Quality of wet features score 10	37	26	33
Damaging operations score < 5% cover	100	100	100

Breeding wader habitat
Key habitat changes

3 farmers b

6 farmers created shallow pools

On average, a PBR farmer undertook 4 different management actions to improve the PBR score

5 farmers undertook selective mowing of vegetation

7 farmers used different stocking levels and type of livestock

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Breeding wader habitat
Accuracy of farmer assessments

YORKSHIRE DALES National Park Authority

	Year 1	Year 2
Average score – farmer	33	32
Average score – adviser	27.5	27.5
Average points difference	+/- 7.25	+/-6.65
% of fields scored the same as adviser	25%	25%
% of fields where there was an agreement on the payment band	30%	35%

- Farmers tended to score higher than the adviser
- More negotiation required
- Impact of dry spring main issue
- Different survey times on 4 sites
- Payment bands more sensitive to a difference in score
- Assessment methodology needs further work

Control sites
Comparison to breeding wader habitat

Year 1 – Year 2 results - waders	RBAPS	Control
Increase in score	44%	22%
Decrease in score	33%	44%
Same score	33%	33%
Increase in payment band	22%	11%
Decrease in payment band	22%	22%
Maintained same payment band	55%	67%

Control sites
Comparison to upland hay meadow habitat

Year 1 – Year 2 results - meadows	RBAPS	Control
Increase in score	79% ⇦	40%
Decrease in score	10.5%	60% ⇦
Same score	10.5%	0%
Increase in payment band	37% ⇦	0%
Decrease in payment band	5%	10%
Maintained same payment band	58%	90% ⇦

PBR sites have performed more strongly than control sites

More control sites had a drop in score than PBR sites

Very little change in the control sites

	Average score (points)	
	Participants	Control
2017	92	134
2018	102	124
% Change	+11%	-7%

Farmer attitudes towards PBR

Attitudinal survey at the start in 2016 and repeated in Autumn 2018

ADVANTAGES	DISADVANTAGES
Management flexibility / no prescriptions	Weather conditions/ factors outside the farmers control could affect score
Financial reward (for)	Time burden of administrator to train and deliver scheme
Environmental improvement	Currently only two options available
Farmers focused on environmental results	Conflict of opinion / scores between farmer and adviser
Less bureaucracy	Costly to deliver
Learning about nature	No capital works for walls or barns
Simple scheme & easier to administer	

Farmer attitudes towards PBR

- Training and advice very important
- Increase in knowledge of habitats & species most valued take home element of the project
- Increase in confidence, ID skills improved
- 93% of respondents had actively worked towards improving their score
- Motivation shared between passion for environment and increase in payment
- 50% of farmers discussed/shared their learning & experience with others
- Pace of change did not diminish their determination to achieve
- Overall they are proud and pleased about their results

The weaknesses and more to learn…..

- Keeping it simple is a very difficult process – not easily achieved first time round
- Limited baseline data for the control sites
- Subjective scoring methodology – difficult to move away from?
- Using a single straight line transect
- Weather dependant features – not entirely under farmers control
- Missed opportunity to include other features in scoring eg historic environment, landscape features
- Resource heavy in the first 2 years but would this lessen if given a longer project?
- Only 2 years to measure any change

The strengths (result!)

SUCCESSFUL

FAIRNESS

FLEXIBILITY

SIMPLE APPROACH

LESS PAPERWORK

RESULTS ACHIEVED

GUIDANCE IS KEY

ENGAGED FARMERS

RECOGNITION

SKILLED FARMERS

MINDSET CHANGE

CONFIDENCE

HABITATS MORE VALUED

INVOLVEMENT

KNOWLEDGE BUILDING

TRUST

And finally…..

We have found this interesting and has given a new generation of farming an interest in the environment which they didn't have before. Have got our children involved in helping too.

The ability as a group of farmers - we have demonstrated that we can deliver more and better results without the need of prescriptions.

It's been rewarding but in some ways frustrating experience!

The key is low admin burden and expert help plus reasonable payments. The scheme is a good model.

Can farm without bureaucracy and prescriptions whilst still getting some financial reward if delivering outcomes.

Thanks to everybody who has helped me with the scheme. I do think it can work and farmers with high value land should be encouraged to take part.

Results Based Agri-environment Payment Schemes

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David Ward

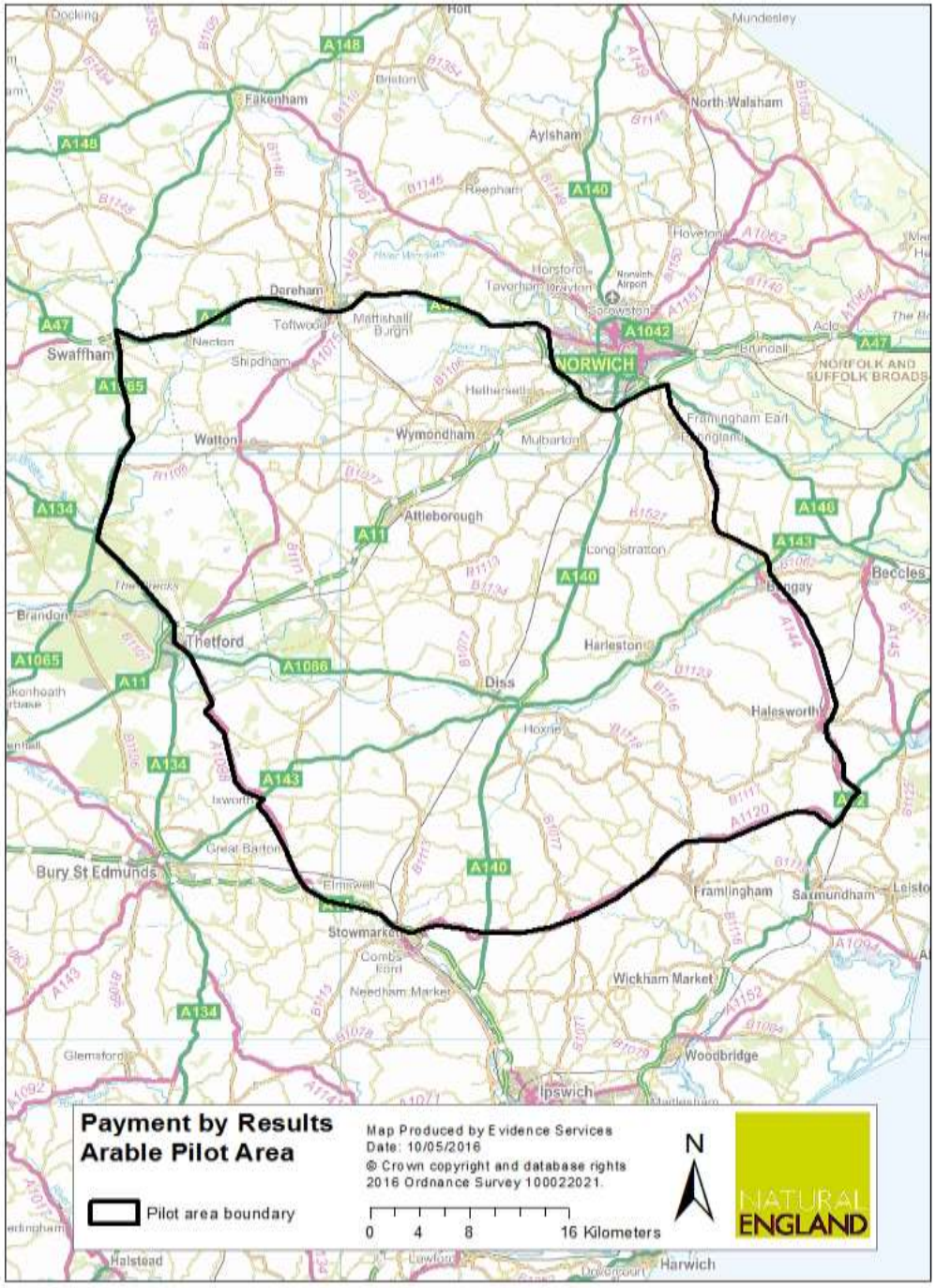
Land Management Adviser, Natural England

Objectives of Project

Simple Objective:

To improve the standard of winter bird food and pollen & nectar plots. Does a PBR approach achieve that aim?

Arable pilot



Choice of Participants

Contacted 250 existing agreement holders

Requirement – had to be growing winter bird food plots and/or pollen & nectar plots already under ES or CS

36 registered an interest and ended up with 15 agreement holders

18 WBF PBR plots totaling 25.04 ha + 15 WBF Baseline plots + 13 WBF Control plots

11 P&N PBR plots totaling 16.94 ha + 11 P&N Baseline plots + 13 P&N Control plots

What is the Ideal WBF plot

Difficult to quantify although easily recognised

- Good plant population
- Not too sparse (or dense)
- Not dominated by ‘weeds’
- A variety of seed producing plants (unless managing for a specific species)
- High seed yields
- Well managed – attention to detail
- Seed provision over a long period
- Good location

- A good plot would provide an abundant and available supply of small seeds during the autumn and winter months for farmland birds.

Prior to PBR

How to Measure a WBF Plot

We agreed there had to be some sort of quantifiable measurement

- Looked at crop cover but no relationship between crop cover and seed yield
- Crop cover apps probably wouldn't work
- Can't measure yields
- Difficult to count birds
- A possible solution was to count different crops and seed heads/plants

Assessment Table

Crop	Plants/Seed-Heads Required per Quadrat	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 10		Tick if Present in 5 or more Quadrats
Cereals	25 Seed-Heads or 25 plants						
Red Millet	4 Seed-Heads or 4 Plants	x	x	x	x		x
White Millet	4 Seed-Heads or 4 Plants	x		x	x		x
Quinoa	2 Plants		x	x	x		x
Fodder Radish	1 Plant	x	x	x	x		x
Dwarf Sunflowers	1 Plant	x		x	x		x
Linseed	5 Plants						
Mustard	2 Plants	x	x				
Gold of Pleasure	5 Plants						
Spring OSR	1 Plant						
Buckwheat	4 Plants						
No. of Crops Present in 5 or more Quadrats	5						

Assessment Process

Agreement holder carries out an assessment September or October. The agreement holder chooses the ideal date

Any crop/species has to be present in at least 5 quadrats/assessments to count as present in the plot as a whole

Only the listed crops count but can sow any mix

Plots assessed to give an accurate representation of the plot.

Photos taken of the assessment quadrats but their value is questionable

Payment Rate

Results Criteria: Number of Established Sown Species Producing Seed*	Grant payment rate where 50% or more of plot assessments reach the required plant or seed head threshold
5+	Tier 6 (£842)
4	Tier 5 (£674)
3	Tier 4 (£505)
2	Tier 3 (£337)
1	Tier 2 (£168)
0	Tier 1 (£0)

What is an ideal P&N Plot

Difficult to quantify although easily recognised

- Full crop cover of sown flowering plants
- Not dominated by ‘weeds’ or grasses
- A variety of different flowering plants
- Well managed – attention to detail e.g. clean, level, fine seedbed, topped when necessary, arisings removed & re-established as required
- Flowering species present throughout mid to late summer
- Good location

- A good plot would provide an essential food source for beneficial pollinators between early and late summer.

Existing P&N Plots

How to Measure a P&N Plot

As with WBF plots there has to be some sort of quantifiable measurement

- But wanted good crop cover in year 2+
- In year 1 there is no relationship between crop cover and long term success
- Crop cover apps may work
- Can't measure yields and not feasible to count plants
- In theory could count pollinators but probably not practical

P&N Assessment Form

Quadrat number	1	2	3	4	5	6	7	8	9	10	Flower species present in 5 or more stops - Yes/No
Species present	**Record all sown flower species present in each quadrat by entering X in the appropriate box**										
Alsike clover	X	X	X	X		X	X	X	X	X	Yes
Crimson clover											
Red clover	X	X	X	X	X	X	X	X	X	X	Yes
White clover											
Sainfoin			X			X	X		X	X	Yes
Lucerne	X	X		X			X	X	X		Yes
Bird's-foot trefoil		X	X	X	X	X		X	X		Yes
Black medick/yellow trefoil	X	X			X		X	X	X	X	Yes
Common vetch		X			X	X					No
Black knapweed	X			X	X						No
Yarrow											
Oxeye daisy											
Musk mallow			X			X				X	No
Wild carrot											
Red campion											
					Number of species recorded in 5 or more stops						6

Pollen and Nectar

An assessment is undertaken over the summer between 15 June and 15 October

In year 1, is a sown species present – yes or no

In year 2, same as year 1 but estimate percentage crop cover cover

Species to be present in five or more quadrats to count

Plots assessed to give an accurate representation of the plot

Photos taken of the assessment quadrats representative

Pollen & Nectar Payment Table

Result Criteria: Number of sown flowering species present	Results Criteria: Percentage cover of flowering sown species * and Grant payment rate					
	0-49	50-59	60-69	70-79	80-89	90-100
5+	Tier 1 (£0)	Tier 6 (£423)	Tier 7 (£494)	Tier 8 (£564)	Tier 9 (£635)	Tier 10 (£705)
4	Tier 1 (£0)	Tier 5 (£353)	Tier 6 (£423)	Tier 7 (£494)	Tier 8 (£564)	Tier 9 (£635)
3	Tier 1 (£0)	Tier 4 (£282)	Tier 5 (£353)	Tier 6 (£423)	Tier 7 (£494)	Tier 8 (£564)
2	Tier 1 (£0)	Tier 3 (£212)	Tier 4 (£282)	Tier 5 (£353)	Tier 6 (£423)	Tier 7 (£494)
1	Tier 1 (£0)	Tier 2 (£141)	Tier 3 (£212)	Tier 4 (£282)	Tier 5 (£353)	Tier 6 (£423)
0	Tier 1 (£0)	Tier 1 (£0)	Tier 1 (£0)	Tier 1 (£0)	Tier 1 (£0)	Tier 1 (£0)

Arable Assessments

Payment Calculations

Standard approach – based on income foregone or partial budget. Used for all Agri-Environment schemes and conforms to EU rules

Take into account costs incurred, costs saved, income lost and income gained.

Also included in the costs were training events, meetings and carrying out the plot assessments

Training & Advice

NO prescriptions. Entirely up to the agreement holder what they do and when

But we did try and provide advice which they could use or not

Training meeting with Marek Nowakowski and Peter Thompson

Training days on farm with the group

Written advice notes

Plant ID guides

WBF Plant ID Guide

SPECIES

Mustard - *Brassica nigra*

Growth habit: a brassica which can be hard to differentiate in the early growth stages and superficially closely resembles spring oilseed rape and fodder radish.

Leaf: it has a much coarser and hairy leaf with white spine like hairs on the leaf and stem compared to spring oilseed rape. Looks like fodder radish in the early stages.

Flower: similar to spring oilseed rape but tend to be a duller yellow. Flowers often covered in pollen beetles.

Seed head: very hairy/bristly and much shorter/stouter than fodder radish and OSR.

Seedling

Photo: David Whiting

Leaf

Photo: David Whiting

Flower

Photo: David Whiting

Seed Head

Photo: David Whiting

P&N Plant ID Guide

SPECIES

Black medick - *Medicago lupulina*

Growth habit: low growing hardy annual (occasionally biennial) that can behave like a perennial due to the production of high levels of viable seeds in good growing conditions.

Leaf: downy, trifoliate leaflet (5-20 mm) with a toothed margin and distinctive tip at the end of each leaflet. The petiole (leaf stalk) of the central leaflet is noticeably longer than for the other two leaflets.

Flower: yellow.

Flowering period: April - August.

Additional information:

- distinctive black kidney-shaped coiled seed pods;
- can outcompete less vigorous, slower-growing flower species such as bird's-foot trefoil in the first year after sowing so keep the seed rate low i.e. max 0.50 kg/ha;
- can tolerate cutting in first year but will not flower if cut too close to flowering

Seedling

Leaf

Growth Habit

Flower

Farm Events

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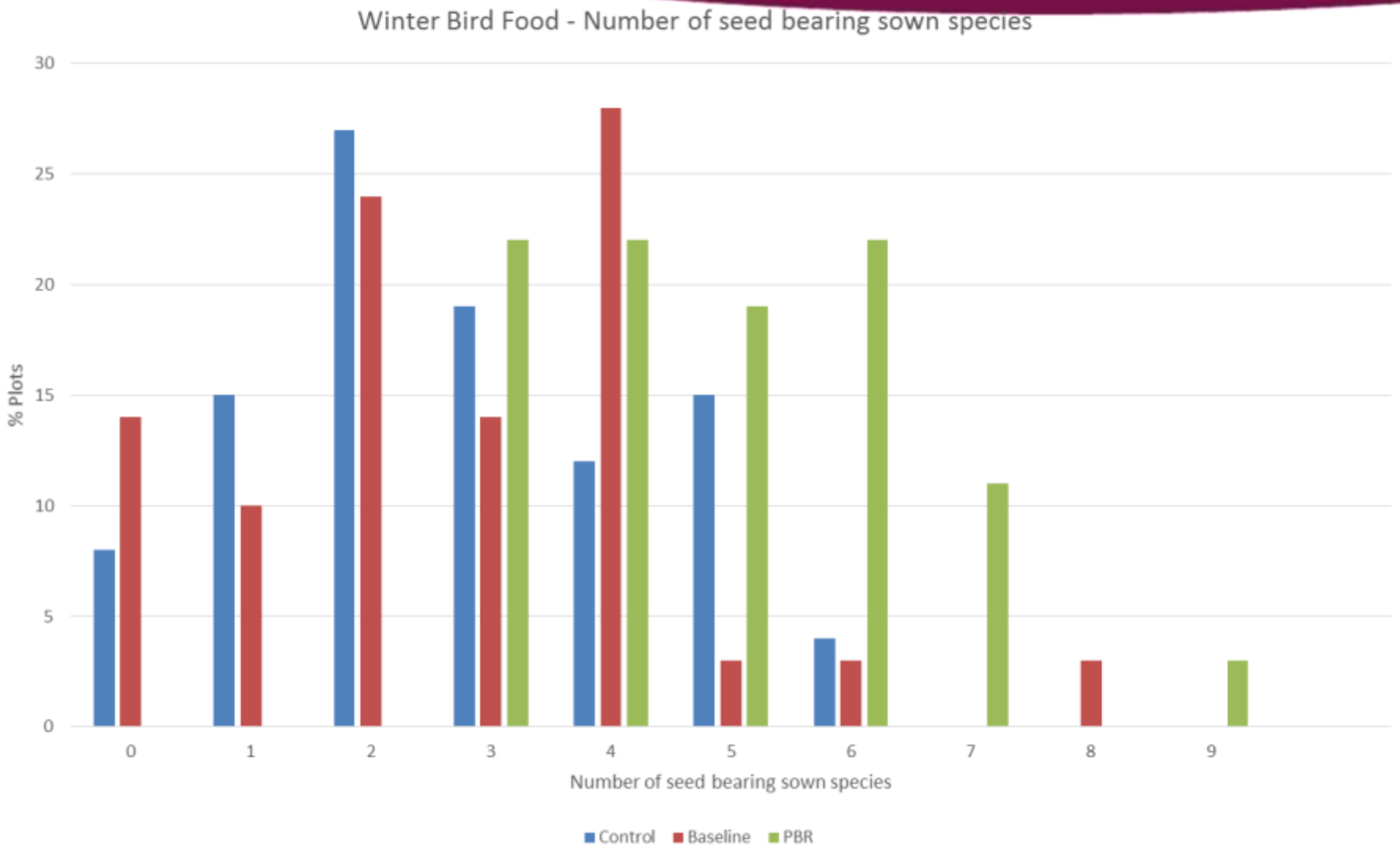
Vicky Robinson

Project Manager, Natural England

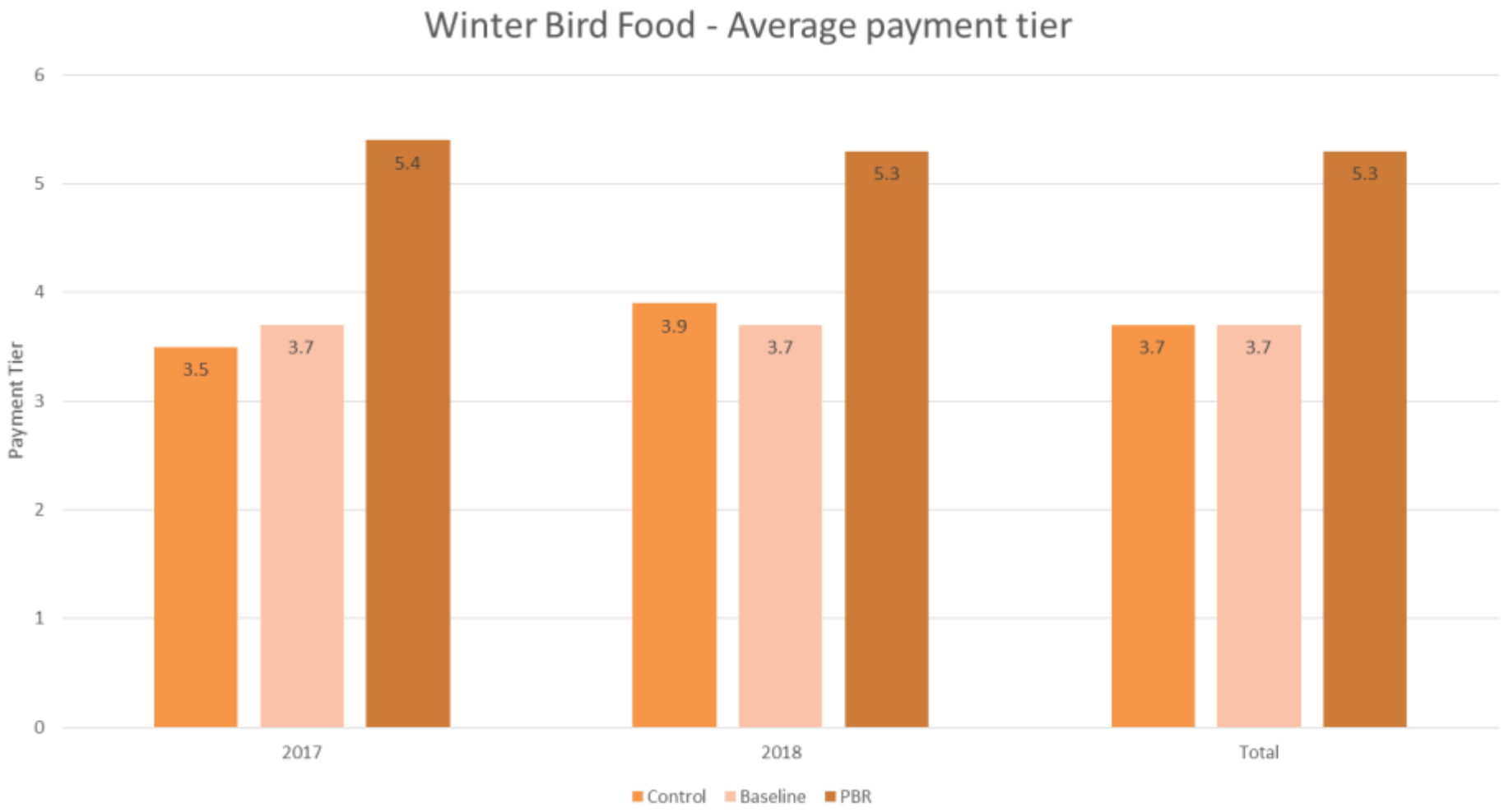
Thank You!

Results

WBF - Plot Environmental Performance – Number of Crops



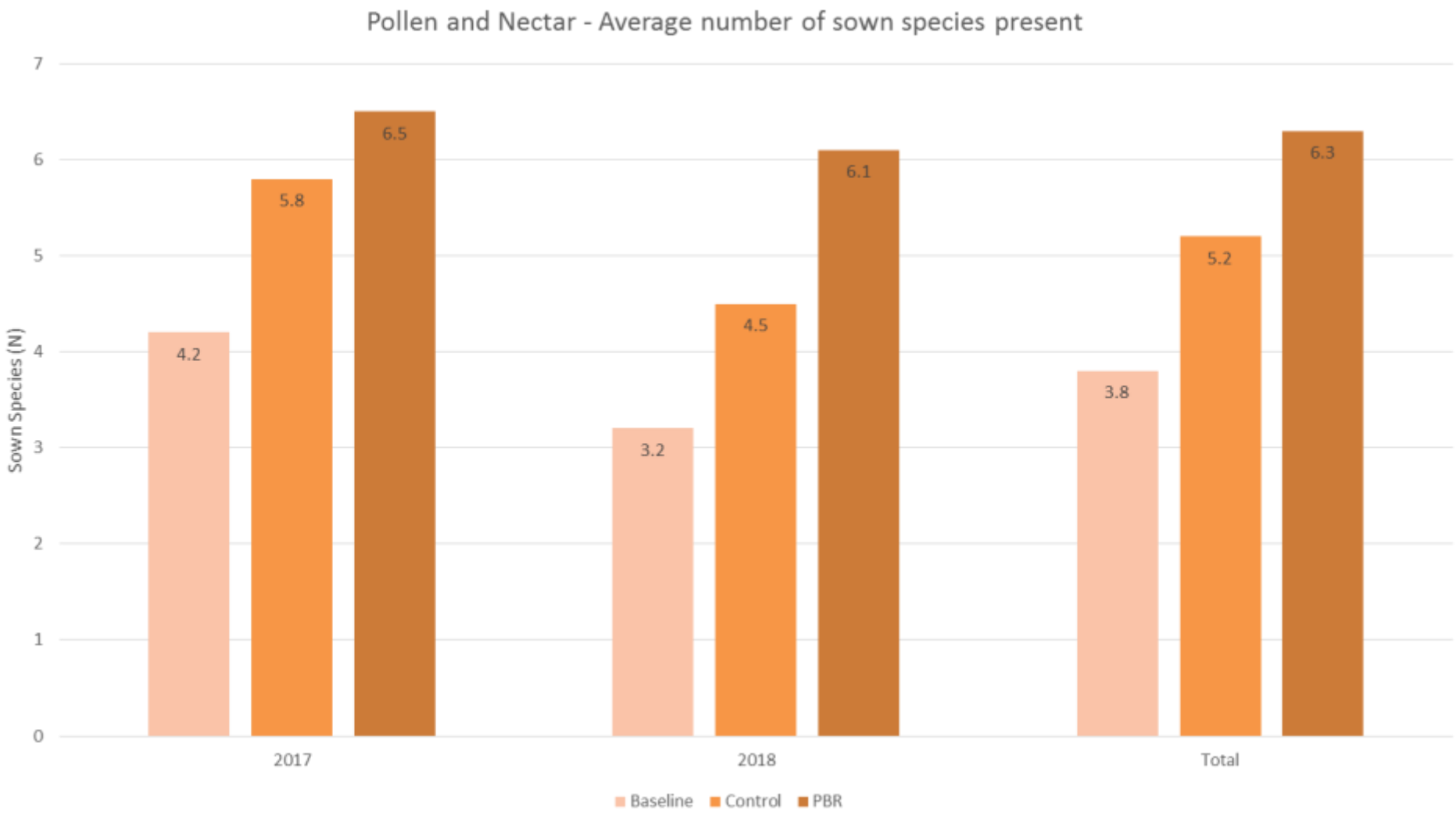
WBF – Average Payment Tier



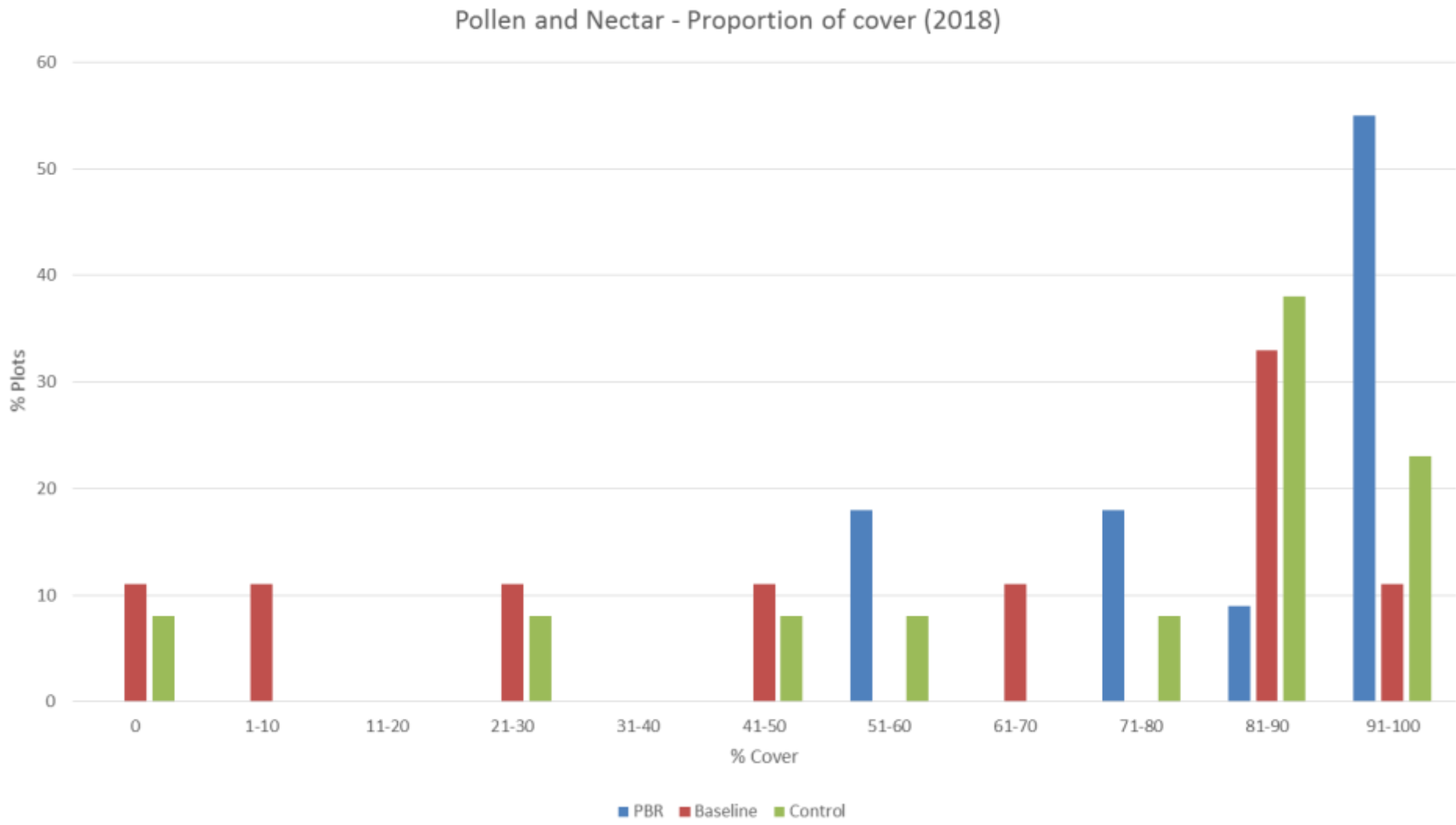
Practicalities

Results

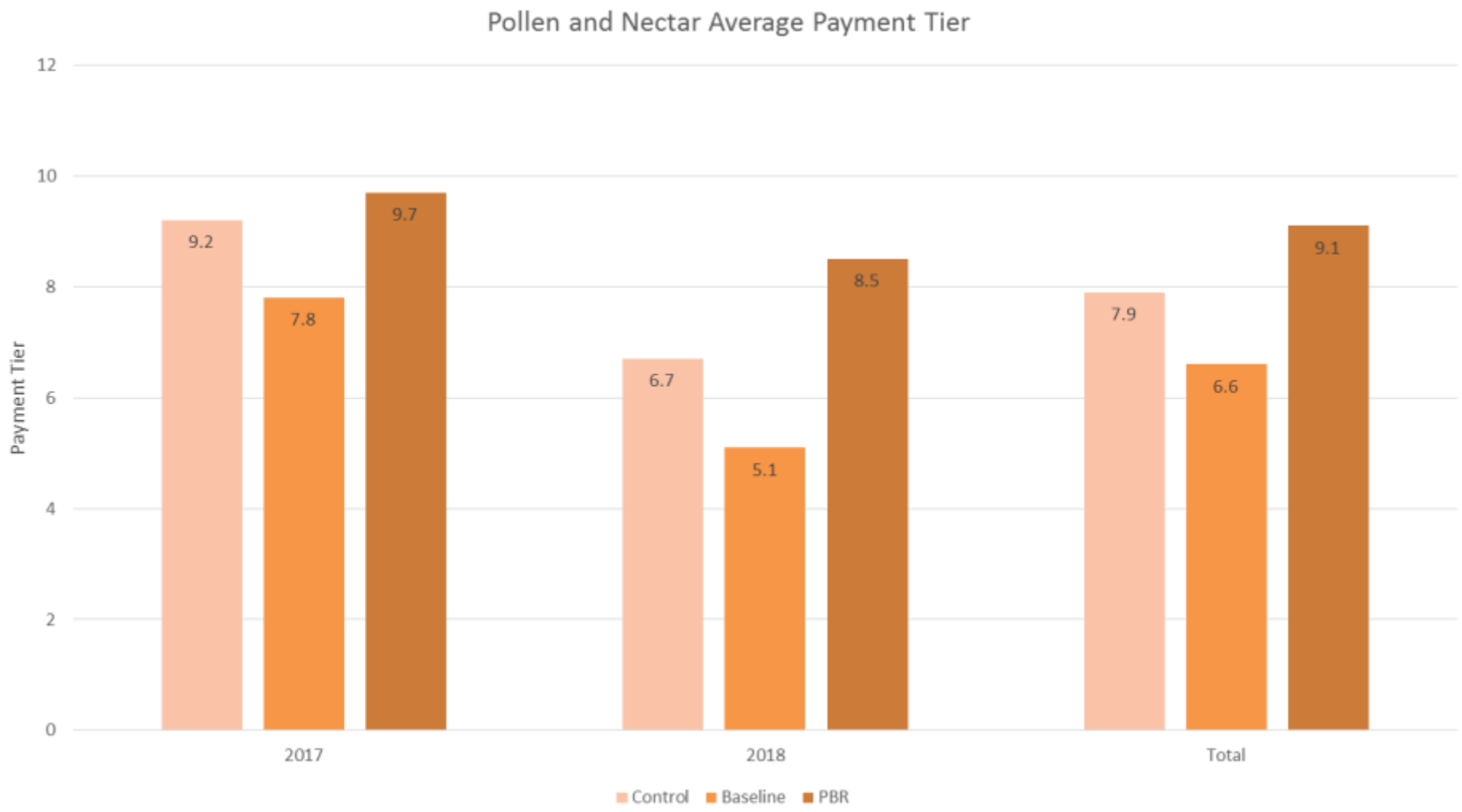
PN – Average Number of Sown Species



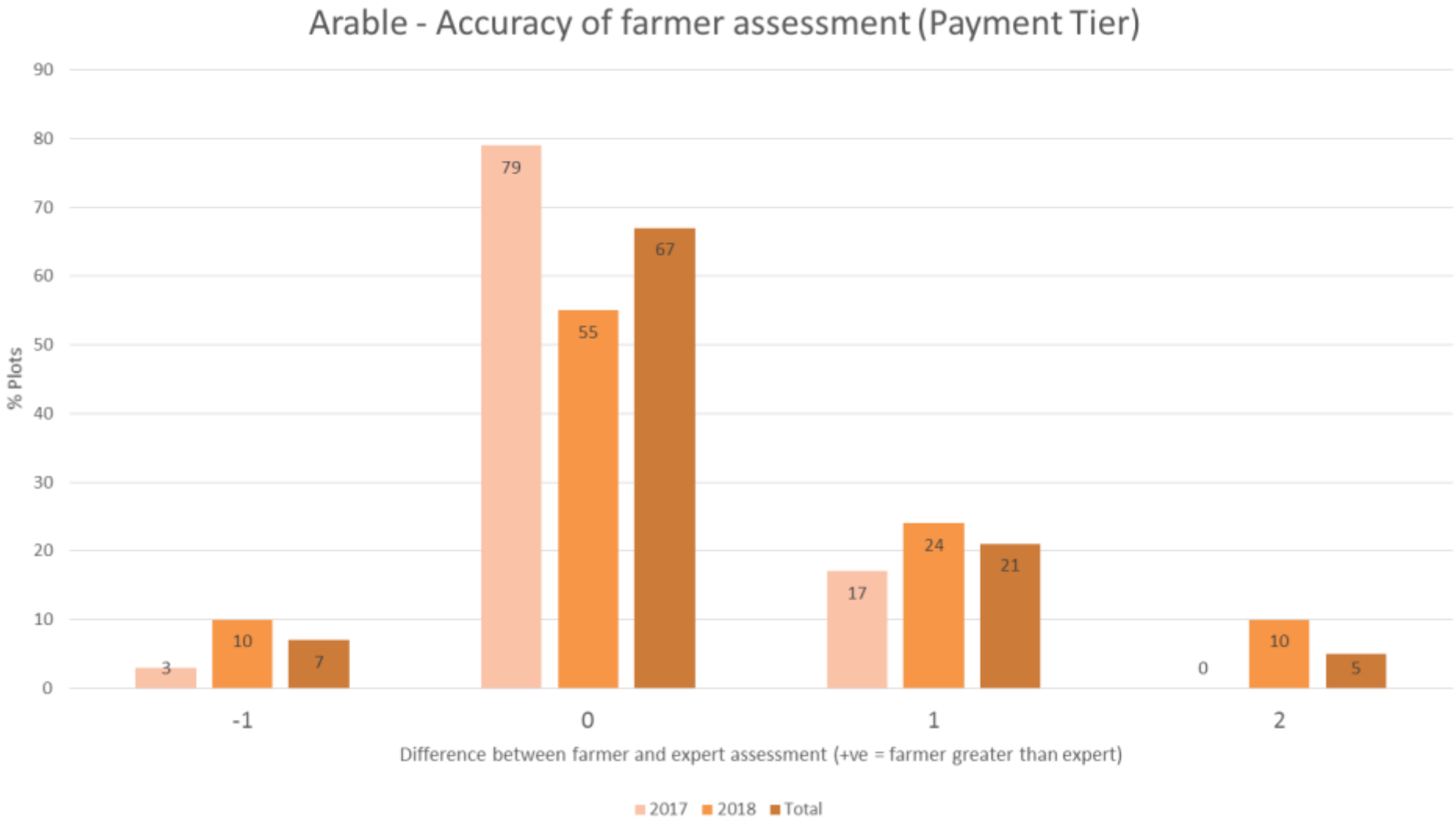
PN – Percentage Cover



PN – Average Payment Tier



Farmer Accuracy of Assessments



What the farmers have told us told us:

ADVANTAGES	DISADVANTAGES
• Flexibility and freedom • Reward for effort • Ability to use local knowledge • Incentive to produce better results • Improved knowledge • Increased biodiversity • It delivers • Measurable results • Better use of public money • Fair • Happy Birds!	• Crop failure and risk of no payment • Time consuming to complete assessments • Intensive farming of the plot vs wildlife benefits • More time consuming for the administrators due to increase in checking and time to set up an agreement. • Scalability • Getting stung by bees when doing the pollen and nectar assessment!

Farmer attitudes towards PBR

- The majority in 2018 have managed their RBAPS plots differently to their existing ES plots with a range of different activities being carried out. In 2017 all bar one managed their plots differently.

- Training/support/advice was highlighted as very important or important with plant identification followed by management techniques being the key areas.

- At the start of the project farmers were more confident managing their WBF plots than their PN, but not confident/quite confident in undertaking the assessments. Their confidence has increased with some being very confident in the assessment process for both options.

Farmer attitudes towards PBR

- Suggestions were made for both options on changing the assessment methodology.
- PN results criteria do not need to be changed, but WBF could consider some alternatives.
- In 2018 less farmers felt that a £0 payment rate would be appropriate if the minimum level was not achieved than 2017.
- Over half of the farmers have discussed / shared their learning and experience with other participating farmers on how to improve their habitat scores.
- The farmers were proud and pleased about the results they had produced.

Farmer attitudes towards PBR

Positives

- Plots are having a close eye kept on them to ensure timely management decisions
- Additional operations are being undertaken to deliver the highest tier possible with resulting environmental benefits
- Environmental performance is higher for the PBR plots
- The training and guidance has been really successful
- The farmers have enjoyed getting together to share their views and experiences
- For the delivery organisation: Shift from paperwork to fieldwork

Challenges

- The dry spring made 2018 a challenging year
- Scoring sensitive for the winter bird food and pollen and nectar.
- Plant protection product availability for winter bird food could limit ability to produce reliable range of crop types.
- WBF results criteria drive more intensive management than feels ‘right’ for an environmental option
- Upscaling

Conclusions

- Environmental performance is higher with a PBR approach based on the Pilot's results criteria
- Incentive and flexibility of management is hugely valued, but if scaled up consideration of practicalities needed
- Accuracy of farmer assessments is variable with further work needed on the assessment methodology.
- PN needs a longer period of time to test management decisions when the species start to decline.
- WBF needs further work to test different mixes.

And finally…..

It has been a great learning process and a chance to have the freedom to experiment with the management of both WBF and P & N in order to work out what work best on my farm(still learning).

I should have got things right from the start!

The more that you put in, the more that you get out

Has been an opportunity to impress on farmworkers the importance of the stewardship schemes on the farm. While I wouldn't be as quick to re-drill a non BAPS plot on the farm, they will otherwise be treated the same way- which is better than they were...!

Simply you have more to lose, so you take greater care

Scale... it has got to be financially viable for the time and effort involved for all parties... schemes always are simpler when first launched and inevitably get more complex as they mature

It directly rewards for skill, effort and care